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Contents

1. IOT BASED CHILD PRESENCE WARNING NOTIFICATION....1
2. THE ROLE OF TRANSFORMATIONAL LEADERSHIP ON INNOVATIVE BEHAVIOUR AMONG NURSE U29 IN KELANTAN HEALTHCARE....9
3. THE IMPACT OF MEDIA INFODEMICS ON COVID-19 OUTBREAK IN INTENSIFYING GLOBAL PANIC AMONG MALAYSIANS: A PERCEPTION-BASED ANALYSIS....19
4. ISLAMIC VALUES OF SUMUR GUMULING, TAMANSARI, YOGYAKARTA....34
5. OPTIMIZATION OF REHABILITATION OF HOMELESS AND BEGGARS IN THE TECHNICAL IMPLEMENTATION UNIT OF BALAI PUNGAI SEJAHTERA BINJAI THROUGH RELIGIOUS GUIDANCE....49
6. COMMUNITY EMPOWERMENT IN ESTABLISHING BUSINESS GROUPS FOR SOCIAL AND ECONOMIC VULNERABLE WOMEN IN NEGLETED RAILWAY REL AREAS IN SUKADAMAI VILLAGE, MEDAN POLONIA DISTRICT....55
7. IMPROVISING TITBIT FROM NEPHELIUM LAPPACEUM SEEDS USING BOILING AND DRYING METHOD....61
8. PATRONAGE AND RELIGIOUS FRAGMENTATION IN THE POLITICS OF THE ELECTION OF THE GOVERNOR OF NORTH SUMATRA, 2018....70
9. DEVELOP RECTANGULAR WAVEGUIDE CALCULATOR APPLICATION FOR MICROWAVE DEVICES COURSE AT DEPARTMENT OF ELECTRICAL ENGINEERING, POLYTECHNIC SULTAN AZLAH SHAH....76
10. REAL TIME VEHICLE TRACKING SYSTEM VIA GPS/GPRS....82
11. PH MONITORING FOR LIQUID FERTILIZER MANAGEMENT IN BLACK PEPPER FARMING....92
12. COVID-19 SENTIMENT ANALYSIS ON FACEBOOK COMMENTS....102
13. THE EFFECT OF MOBILE LEARNING APPLICATION ON C++ PROGRAMMING STUDENT'S ACHIEVEMENT AND ACCEPTANCE....108
14. STUDENTS MOTIVATION ON THE USE OF MOBILE LEARNING APPLICATION....121
15. ASSESSMENT ON SUSTAINABILITY OF COCOYAM FOR HEAVY METAL REMOVAL IN INDUSTRIAL WASTEWATER....130
16. EVALUATION OF MATERIALS WASTAGE AND CONTROL IN SOME SELECTED BUILDING SITES IN KUCHING....144
17. DESIGN OF OMNIDIRECTIONAL ROBOT FOR FIRA ROBOSOT....155
18. UTILIZATION OF WASTE COOKING OIL BY PRODUCING DECORATIVE CENTERPIECE FOR RESTAURANT KRISTAL, POLITEKNIK MERLIMAU, MELAKA....161
19. STUDENT READINESS TOWARDS ONLINE LEARNING....169
20. ANALYSIS OF THE ESTABLISHMENT OF VILLAGE-OWNED ENTERPRISES (BUMDES) DISTRICTS IN NORTH SUMATRA....181
21. DEVELOPMENT OF IOT-BASED DATA COMMUNICATION TRAINERS USING ESP32 AND OTA....188
22. THE SPREAD OF COVID-19 FAKE NEWS ON SOCIAL MEDIA AND ITS IMPACT AMONG MALAYSIANS....195
23. ENHANCING VITAMIN C CONTENT IN SOAP PRODUCTION VIA SUBSEQUENT AMOUNT OF EXTRACT FROM PHYLLANTHUS AMBLICA AND COSNICIUM BLUEMEANUM....202
24. THE USING OF DATA MODELER FOR CREATING ERD IN DATABASE DESIGN COURSE....210
25. FACTORS THAT AFFECT THE USAGE OF E-WALLET AMONG YOUTH: A STUDY AT A PUBLIC INSTITUTION OF HIGHER LEARNING IN SOUTH SARAWAK.....222

26. STUDENTS READINESS FOR ONLINE LEARNING: CASE STUDY ON COMMERCE DEPARTMENT'S STUDENTS POLITEKNIK KUCHING SARAWAK 231
27. PORTRAITS OF SERVICES AND INSTITUTIONAL DILEMMA OF VILLAGE MATERNITY POST (POLINDES) IN INDONESIAN TRADITIONAL AND TRANSITIONAL VILLAGE..... 239
28. STUDENTS BEHAVIOUR TOWARDS ONLINE GAMING: THE FACTOR OF TREND, PEER INFLUENCE & EMOTIONAL FACTOR 253
29. OPTIMIZATION OF MARKETING PERFORMANCE SMALL MEDIUM ENTERPRISE (SMEs) IN NORTH SUMATERA..... 261
30. THE EFFECT OF KAOLIN AND BALL CLAY ON CERAMIC PROPERTIES VIA SLIP CASTING TECHNIQUE..... 273
31. THE ACCEPTANCE OF E-WALLET SERVICES AS A PAYMENT METHOD AMONG MILLENNIALS IN MALAYSIA..... 283
32. THE INFLUENCE OF POLITICAL IDENTITY TOWARDS TOLERANCE PEOPLES IN PEMATANGSIANTAR CITY DURING THE GOVERNORS SUMATERA UTARA ELECTION IN 2018. 291
33. FACTORS INFLUENCING WORK ENGAGEMENT AMONG CANCER SURVIVORS IN MALAYSIA 305
34. ONLINE NEWS COVERAGE OF THE ARAB SPRING: CORPUS-BASED ANALYSIS OF KEYWORDS 315
35. THE IMPACT OF INTELLECTUAL CAPITAL TOWARDS FIRM PERFORMANCE: EVIDENCE FROM FOOD AND BEVERAGE COMPANIES IN MALAYSIA. 330
36. THE IMPACTS OF FINANCIAL LEVERAGE ON COMPANY PERFORMANCE IN MALAYSIA.... 344
37. TEACHING AND LEARNING METHODS USING AUGMENTED REALITY TECHNOLOGY: INTERACTIVE LEARNING CAMPING EDUCATION USING AUGMENTED REALITY 355
38. CLEAVAGE STRUCTURE CHANGE IN THE 2019 GENERAL ELECTION IN INDONESIA 363
39. THE FACTORS THAT INFLUENCE THE CHOICE OF GROUP WORK'S SOCIAL WORK METHODS OF THERAPEUTIC COMMUNITY AND NARCOTIC ANONYMOUS MODEL IN THE SOCIAL REHABILITATION CENTER FOR DRUG ADDICTION. 382
40. ARE OUR STUDENTS OK? PSYCHOLOGICAL WELLBEING AMONG UNDERGRADUATES OF HIGHER LEARNING INSTITUTIONS IN MALAYSIA. 392
41. CAPITAL STRUCTURE AND FIRM PERFORMANCE: AN ANALYSIS OF CONSUMER PRODUCTS 401
42. MICROSOFT TEAMS AS AN ONLINE LEARNING TOOL: EXPLORING THE STUDENTS PERSPECTIVE..... 413
43. EXPLORATION OF FINANCIAL MANAGEMENT OPERATION OF POLITICAL AND NON-POLITICAL STUDENT ORGANIZATION: A BASIS FOR PROPOSE POLICY DEVELOPMENT 420
44. CYBER SECURITY AND MAQASID Al- SHARIAH: A CASE OF FACEBOOK APPLICATION..... 434
45. MALAYSIAN-OMANI HISTORICAL AND CULTURAL RELATIONSHIP..... 447
46. A STUDY ON STUDENTS SEATING ARRANGEMENT LAYOUT FOR COMPUTER LABORATORY 458
47. ANALYSIS ON THE HALAL STATUS OF A MEDICAL DEVICE: A STUDY ON THE SURGICAL SUTURE..... 470
48. TO STUDY THE SEASONAL FACTORS AFFECTING RURAL TOURISM: A CASE STUDY BASED ON THREE HOMESTAYS AT NEGERI SEMBILAN..... 476
49. ANALYSIS OF HALAL ASSURANCE MANAGEMENT ON IMPORTED FOOD PRODUCTS IN MALAYSIA..... 484
50. TOURIST TRACKING APPS: INNOVATIVE PRODUCT FOR TRAVEL AGENCY 494

51. POLITICAL CULTURE OF THE COMMUNITY IN PEMATANGSIANTAR CITY (CASE STUDY OF THE BIRMINGHAM SMALL ARM OWNER MOTORCYCLE SIANTAR (BOM'S) COMMUNITY IN PEMATANGSIANTAR CITY IN SUMATERA UTARA GOVERNOR'S ELECTION IN 2018 AND PRESIDENTIAL ELECTION IN 2019 503
52. WELDING PLATE CLEANING MACHINE (WPCM) 518
53. PORTABLE PLASMA CUTTER TABLE 528
54. PERTUBUHAN SILAT SENI GAYONG MALAYSIA SEBAGAI MEDIUM PEMBENTUKAN KEMAHIRAN INSANIAH: DARI PERSEPSI PELAJAR SEKOLAH MENENGAH DI MELAKA 536
55. HUBUNGAN PENCAPAIAN MATEMATIK SPM TERHADAP KEPUTUSAN MATEMATIK KEJURUTERAAN 1- DBM1013 PELAJAR DKA DI POLITEKNIK KOTA BHARU 545
56. APLIKASI BUKU PANDUAN (MODUL): STRATEGIES TO COMPLETE YOUR PROJECT (SCYP) DALAM MENINGKATKAN KUALITI PROJEK AKHIR PELAJAR DIPLOMA PERKHIDMATAN MAKANAN AMALAN HALAL SEMESTER 4 554
57. SIKAP PELAJAR TERHADAP MATA PELAJARAN STATISTIK DALAM KALANGAN PELAJAR POLITEKNIK: PERBANDINGAN DI ANTARA JANTINA DAN BIDANG PENGKHUSUSAN 562
58. TAHAP PENERIMAAN PELAJAR DIPLOMA PERKHIDMATAN MAKANAN AMALAN HALAL TERHADAP APLIKASI TEMPLATE SKRIP TEKS UCAPAN PERASMIAN (T-OS) DI DALAM MENYEDIAKAN TEKS UCAPAN PERASMIAN MAJLIS 568
59. KAJIAN MENGENAI PENGGUNAAN E-PEMBELAJARAN DIKALANGAN PELAJAR DI JABATAN PERDAGANGAN POLITEKNIK TUANKU SYED SIRAJUDDIN 588
60. KEBERKESANAN PENGGUNAAN DIGITAL MULTIMEDIA COURSEWARE (DMC) DALAM KURSUS DIGITAL MULTIMEDIA (DFT3063) 599
61. PERSEPSI PELAJAR KOLEJ KOMUNITI GERIK TERHADAP FAKTOR PEMILIHAN KERJAYA . 608
62. HUBUNGAN KEMAHIRAN KOMUNIKASI INTERPERSONAL PENSYARAH DENGAN TAHAP MOTIVASI PELAJAR: KAJIAN DI JABATAN TEKNOLOGI MAKLUMAT & KOMUNIKASI, PSMZA 617
63. PERSEPSI PELAJAR TERHADAP PENGAJARAN DAN PEMBELAJARAN MATEMATIK SECARA ATAS TALIAN SEMASA PERINTAH KAWALAN PERGERAKAN 626
64. KEBERKESANAN INOVASI *SMART INFOBOARD PC COMPONENTS* SEBAGAI ALAT BANTU MENGAJAR TEKNOLOGI *AUGMENTED REALITY* BAGI KURSUS PENGENALAN SISTEM KOMPUTER DI KALANGAN PELAJAR POLITEKNIK PANTAI TIMUR 639
65. "BELUM JUGA TUAN BERTEMU DENGAN ANAK RAJA ITU?": ADAB BERKOMUNIKASI DALAM HIKAYAT BERBINGKAI 648
66. PANDEMIK CORONAVIRUS (COVID-19): TINJAUAN CABARAN PERLAKSANAAN PENGAJARAN DAN PEMBELAJARAN DALAM TALIAN (PDPDT) DI KALANGAN PENSYARAH POLITEKNIK KOTA BHARU 662
67. CABARAN E-DAGANG DALAM KALANGAN PELAJAR KEUSAHAWANAN DIGITAL JABATAN PERDAGANGAN 673
68. TAHAP PENERIMAAN PELAJAR TERHADAP PENGGUNAAN KEMUDAHAN DI ATAS TALIAN UNTUK MENYOKONG AKTIVITI PEMBELAJARAN FLEKSIBEL BERDASARKAN ELEMEN REKABENTUK PENDEKATAN HEUTAGOGI 683
69. PERSEDIAAN TERHADAP PENGGUNAAN MS TEAM SEBAGAI PLATFORM UTAMA PdPDT DI KALANGAN PELAJAR JTMK PMS 694
70. VR360: TINJAUAN PENDEKATAN APLIKASI VIDEO INTERAKTIF BERBENTUK REALITI MAYA SEBAGAI MEDIUM UNTUK MENYAMPAIKAN KANDUNGAN PEMBELAJARAN 703
71. KECENDERUNGAN PELAJAR-PELAJAR DALAM BIDANG TEKNOLOGI MAKLUMAT DI POLITEKNIK KUCHING SARAWAK TERHADAP KEUSAHAWANAN 714

72. MENGKAJI PENERIMAAN TEMPE BERPERISA JAGUNG DAN BERPERISA REMPAH DI KALANGAN WARGA JABATAN PELANCONGAN & HOSPITALITI, POLITEKNIK MERLIMAU MELAKA MELALUI UJIAN RASA. 721
73. PENGGUNAAN TEPUNG HAMPAS SOYA DALAM MENINGKATKAN KANDUNGAN NUTRISI OKARA TORTILLA WRAP 730
74. MENGKAJI PENERIMAAN TEH KULIT PISANG DI KALANGAN PENDUDUK MERLIMAU DAN PELAJAR JABATAN PELANCONGAN DAN HOSPITALITI, POLITEKNIK MERLIMAU MELAKA MELALUI UJIAN RASA 740
75. TINJAUAN KEPERLUAN PERALATAN PELAJAR UNTUK PERSEDIAAN PEMBELAJARAN ATAS TALIAN DI KOLEJ KOMUNITI GERIK 748
76. PEMBELAJARAN ATAS TALIAN (E-LEARNING) DI KALANGAN PELAJAR JABATAN KEJURUTERAAN MEKANIKAL POLISAS, SATU TINJAUAN 756
77. PENGGUNAAN GOOGLE MEET DALAM PROSES PENGAJARAN DAN PEMBELAJARAN DI JABATAN TEKNOLOGI MAKLUMAT & KOMUNIKASI, POLITEKNIK SULTAN MIZAN ZAINAL ABIDIN 763
78. KESEDIAAN PELAJAR TERHADAP PROSES PENGAJARAN DAN PEMBELAJARAN (P&P) NORMA BARU DI JABATAN TEKNOLOGI MAKLUMAT & KOMUNIKASI (JTMK), POLITEKNIK SULTAN MIZAN ZAINAL ABIDIN (PSMZA) 771
79. IMPAK PENGGUNAAN MATEMATIK SENTUH TERHADAP PENCAPAIAN MATEMATIK MURID AUTISME 780
80. KEPIMPINAN SERVAN DAN HUBUNGANNYA DENGAN KEPUASAN KERJA GURU 792
81. KAEDAH PEMBELAJARAN PENGAJIAN MALAYSIA 1 MELALUI PERMAINAN 'APA KERAJAAN BOLEH BANTU SAYA' 800
82. KAJIAN KEBERKESANAN CENTRE OF TECHNOLOGY DALAM PENGURUSAN KECEMERLANGAN ELEMEN PdP DAN ELEMEN PENDAPATAN DI JABATAN PELANCONGAN & HOSPITALITI POLITEKNIK MERLIMAU MELAKA 810
83. KECENDERUNGAN PELAJAR BIDANG BISNES UNTUK MENCEBURI BIDANG KEUSAHAWAN DI KOLEJ KOMUNITI JASIN DAN POLITEKNIK MERLIMAU 816
84. PENGHASILAN *STAR FRUIT SYRUP* SEBAGAI KANDUNGAN TAMBAHAN DALAM MAKANAN DAN MINUMAN 827
85. KEYAKINAN DIRI PELAJAR FESYEN KOLEJ KOMUNITI GERIK SEBAGAI PERSEDIAAN KE ALAM PEKERJAAN: SATU TINJAUAN SEMASA PANDEMIK COVID-19 835
86. TINJAUAN KESEDARAN PELAJAR TERHADAP KESELAMATAN BENGKEL FESYEN DI KOLEJ KOMUNITI GERIK 846
87. PEMBANGUNAN APLIKASI PENILAIAN PROJEK AKHIR PELAJAR MENGGUNAKAN ‘GOOGLE SHEET’ DAN ‘GLIDE APPS’ 856
88. KEBERKESANAN KAEDAH PEMBELAJARAN KOPERATIF TERHADAP PENCAPAIAN PELAJAR MENGULANG KURSUS *MATHEMATICAL COMPUTING* 870
89. PERSEPSI PELAJAR TERHADAP PENGGUNAAN myFYP DALAM PELAKSANAAN PROJEK AKHIR PELAJAR 876
90. TAHAP KESEDARAN PELAJAR MENGENAI KEPENTINGAN MATEMATIK DALAM BIDANG KEJURUTERAAN DI POLITEKNIK SULTAN HAJI AHMAD SHAH 886
91. IMPAK STAFF LOCATION POINTER TERHADAP PENCAPAIAN PELAJAR PROGRAM GEOMATIK POLITEKNIK TUANKU SULTANAH BAHIYAH 898
92. KEBERKESANAN PENGGUNAAN “F_R CALCULATOR” DALAM PENGAJARAN DAN PEMBELAJARAN ENGINEERING SCIENCE (DBS1012) DI POLISAS 906
93. PERSEPSI PELAJAR TERHADAP KAEDAH PDPDT SEWAKTU PKP COVID-19 910

94. CIRI-CIRI KEPIMPINAN DAN KESANNYA DALAM *TUHFAT AL-NAFIS* KARYA RAJA ALI HAJI 924
95. MASTER WHEEL 935
96. MEREKABENTUK MEJA KIMPALAN PELBAGAI FUNGSI DENGAN LEKAPAN 943
97. CAL_DIFF 954
98. KAJIAN KEBERKESANAN PEMBELAJARAN BERASASKAN PERMAINAN DALAM MENINGKATKAN PENCAPAIAN PELAJAR MEMPELAJARI MATEMATIK 959
99. KAJIAN TINJAUAN TAHAP KESEDARAN, PENERIMAAN DAN KEBERKESANAN e-PEMBELAJARAN DALAM PELAKSANAAN PEMBELAJARAN DAN PENGAJARAN DI KALANGAN STAF AKADEMIK, JABATAN KEJURUTERAAN MEKANIKAL, POLISAS 965
100. FUNGSI TUMBUHAN DALAM PANTANG LARANG MELAYU 975
101. PENILAIAN SUMATIF DALAM KURSUS PEMAKANAN HALAL: PERBANDINGAN SKOR PENCAPAIAN AKADEMIK 991
102. PUSAT PENERANGAN PELANCONGAN KOLEJ KOMUNITI SANDAKAN 997
103. MEREKABENTUK 'MOTORISED TYRE LIFTER' 1004

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IOT BASED CHILD PRESENCE WARNING NOTIFICATION

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Abstract: *An IOT Based Child Presence Warning Notification prototype developed due to the increasing cases involved child trapped in a vehicle. This issue may cause suffocation or heatstroke which consequently causes death. The system will measure the CO2 gas and temperature in a vehicle. The user will receive the notification when the CO2 gas and temperature measurement in the vehicle exceeds a define level. The notification gives an alert so that the user alerts that they may leave their child unattended.*

Keywords: *Internet of Things, Arduino, Wireless Sensor*

Introduction

As seen on the news, there are many cases involved child trapped in a vehicle that causes suffocation or heatstroke which consequently caused death. Lately, the increasing number of heatstroke death of children in motor vehicles has been worrisome. Most of the cases occurred when parents left their children in the unattended vehicle. Since there are none warning notification attached to them that can help the parents to easily alert their presence, the children may left unattended in a vehicle for a long time which may causes the define problem.

Therefore, the aim of this project is to develop a system that will detect the presence of children in a vehicle. The project is integrated using hardware and software components that interact with network connection. This system will send an alert using a Global System for Mobile communications (GSM) module in the mobile phone. The combination of gas sensor and digital temperature is use as the detection system. A gas sensor will be used to monitor the Carbon Dioxide (CO^2) in the vehicle whereas the digital temperature is use to monitor the current temperature. The system will send an alert to the assigned number on the GSM when both the CO^2 gas and temperature increase.

Related Work

The development of safety and security system in a car environment usually used to prevent unwanted incident such as car accident as well as car theft. Some implementation of those systems become complicated as it combines with the car wiring system. As the tremendous increase of Arduino usage nowadays, researcher start to implement it to the car based system as well. The Arduino consists of both a physical programmable circuit board (known as microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on a computer, used to write and upload computer code to the physical board. Moreover Arduino is an open-source electronics platform to provide a low cost, easy way for novices and professionals to create devices that interact with their environment using sensors and actuators.

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13th – 14th December 2020

Arduino Based System

Based on a previous research, the researchers used Arduino based system as it is a simple network that integrates sensing and communications in small devices (Abhishek Ranjan, 2013) (Souvik Chatterjee, 2017) (Sucu, 2014). The Arduino also can collaborate with almost all sensor networks that make it more efficient. Furthermore the integration with GSM module gives an advantage in terms of notification especially for safety and security system.

Hardware Design

Arduino

Arduino boards are available commercially in preassembled form, or as do-it-yourself kits. It is also known as microcontroller, that integrates a number of the components microprocessor system onto a single microchip and optimized to interact with the outside world through on-board interfaces. In other word, it is a little gadget that houses microprocessor, memory (RAM and ROM), I/O (Input/Output functions) and other specialized circuits in one package. Arduino comes in different types such as Arduino Uno, Arduino R1, Arduino R2, Arduino Duemilanove. The so called basic type Arduino Uno board is the most popular microcontroller used by researcher from the previous developed system (Abhishek Ranjan, 2013) (Kumbhar, 2016) (Souvik Chatterjee, 2017) (Sucu, 2014).

Wireless SensorNetworks (WSN)

Temperature is one of the real time measurement parameter that requires a high accuracy and precision output. So, the temperature measurement system must be accurate and reliable. Most of the modern temperature measurement scheme use wireless for a faster response. The researcher used different types of sensor depend on the system requirement. Meanwhile, motion sensor is another common part in the security based system. A motion sensor uses one or multiple technologies to detect movement in an area. There are two types of motion sensor: active sensors send out ultrasonic sound waves and passive sensors detect infrared energy.

GSM Module

GSM modem is the medium to interact and communicate with the module. It is used to send and receive Short Messaging System (SMS) based on which appropriate actions taken by the user. PIC microcontroller performs as heart of whole controlling system. The researcher uses this module in order to send alert to the pre-assigned mobile number (Souvik Chatterjee, 2017).

Software Implementation

The open-source Arduino *integrated development environment* (*IDE*) is used as the software part. It is consolidates the basic tools developers need to write and test software. Typically, an *IDE* contains a code editor, a compiler or interpreter and a debugger that the developer accesses through a single graphical user interface (GUI). The Arduino IDE runs on various machines such as Windows, Mac OS X and Linux. The environment is written in Java.

Methodology

General Structure

A prototype has been developed to notify the child presence in a motor vehicle environment. The prototype will be able to display the current carbon dioxide (CO2) and temperature measurement in order to monitor the current reading of both parameters. Generally, the system consists of two main parts:

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13th – 14th December 2020

a) A measuring unit that will be placed in a closed area for carbon dioxide and temperature measurement.
b) The mobile phone with wireless communication capability to receive the notification.

The general structure of a child presence warning notification is shown in Figure 1.

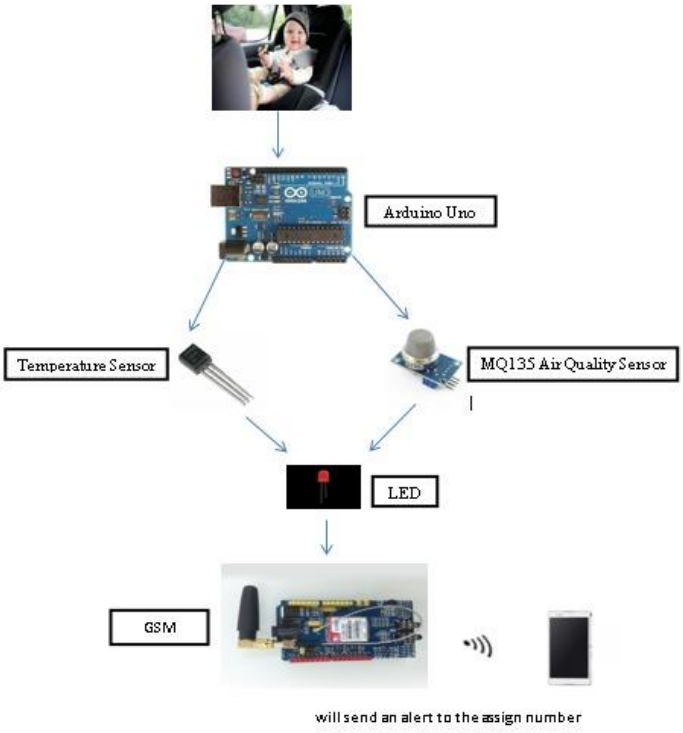

Figure 1: How the Prototype Works

Components

The prototype will require minimum basic components of Arduino Uno Board, Light Emitting Diode (LED), air quality sensor, digital temperature sensor and GSM module. After receiving the data from both temperature and air quality sensors, the data will be fetches than decoded and finally operation is executed.

Arduino Uno Board

Arduino Uno is an open-source physical computing platform based on a simple microcontroller board. It is also consist of development environment for writing software for the board. The Arduino can be used to taking input from various switches or sensors and also able to control lights, motors and other physical outputs as well. The Arduino boards are consisting of a set of digital and analogue input/output (I/O) pins. The pins could be interfaced to any expansion boards (shields) and as well as other circuits. The Arduino are typically programmed using features form the C and C++ programming languages. The Arduino Uno Revision 3 is used in this work.

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13th – 14th December 2020

Figure 2: Arduino Uno

Light Emitting Diode (LED)

LED (Light Emitting Diode) is an electronic device that permits current to flow in only one direction. It emits light when an electric current passed through it In this work, the LEDs are used to alert a signal when the temperature of CO2 level continuously going up.

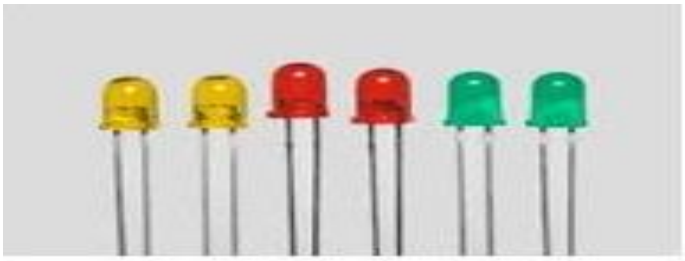

Figure 3: Light Emitting Diode (LED)

Air Quality Sensor

The selected sensor which is MQ135 air quality sensor is used for detecting a wide range of gases including NH3, NOx, benzene, smoke and also CO2. The sensor is ideal for use in an office as well as the factory or in a car in order to detect smoke or gases.

Figure 4: MQ135 Air Quality Sensor

Digital Temperature Sensor

A temperature sensor is a device, usually, a thermocouple or RTD (Resistance Temperature Detector) that provides temperature measurement through an electrical signal. The chosen sensor type which is DS18B20 has an operating temperature range of -55°C to + 125°C and is accurate to ± 0.5 $^{\circ}$C over the range of -10°C to + 85°C.

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Figure 5: DS18B20 Digital Temperature Sensor

GSM Module

The SIM900 GSM/GPRS shield provides a way to use the GSM cell phone network to receive data from a remote location. The shield will allow achieving this via any of the three methods: Short Message Service, audio and GPRS Service.

Figure 6: SIM900A GSM Modular

Hardware Structure

Figure 7 shows the implemented hardware circuit for this prototype. SIM900A GSM module is connected through serial communication with Arduino.

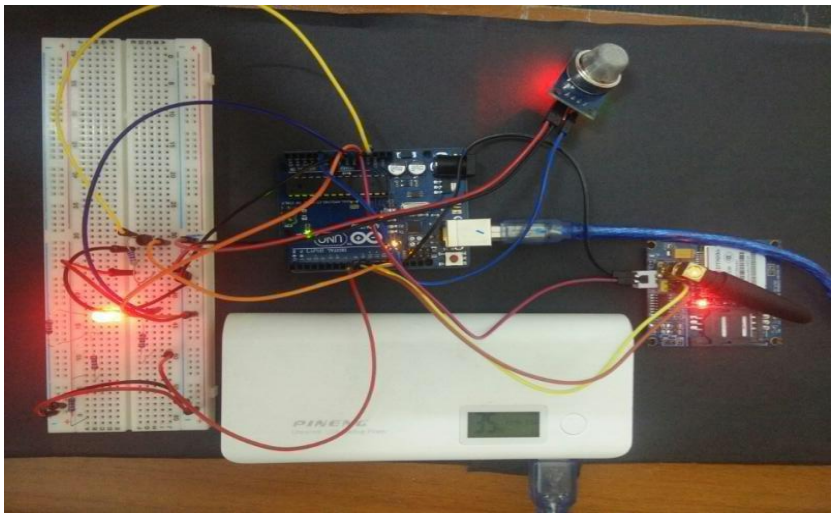

Figure 7: Implemented Hardware Circuit

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Software Structure

An Arduino Uno microcontroller was used in the measurement unit. The software will provides the temperature and and CO2 gas data measurement that was detected by the sensors on the microcontroller to the serial port and wireless module as well as other units (Arduino Software (IDE)). The software was implemented in the Arduino IDE program. Figure 8 shows the screen image taken during the progress of the program.

Figure 8: Arduino IDE Screen Display

Result and Discussion

All the components for the prototype are initialized by supplying the required power of +5V. The MQ135 air quality sensor and DS18B20 digital temperature sensor was used in order to get the CO2 and temperature measurement. A LED is also connected to the Arduino. A GSM modem is used to send SMS notification which displays the current status of environmental parameters. MQ135 sensor is used to measure CO2 gas. Continuously increase CO2 measurement in a vehicle might cause breath difficulties. By using a system, user can be notifying to threatening conditions. When CO2 exceeds a define level, the system will light up the LED and then send SMS to the mobile user in order to notify the unattended child in the vehicle.

The DS18B20 digital temperature sensor is used to measure the temperature in the vehicle. Similar to the air quality sensor operation, it will send SMS notification to user when the temperature exceed the define level. High temperature in a vehicle may cause heat stroke to an unattended child.

The prototype was tested in a vehicle with an unattended child and it was successfully working. When the CO2 gas and temperature measurement increase, the LED will light up and a SMS send to the mobile phone in order to notify the measurement.

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13th – 14th December 2020

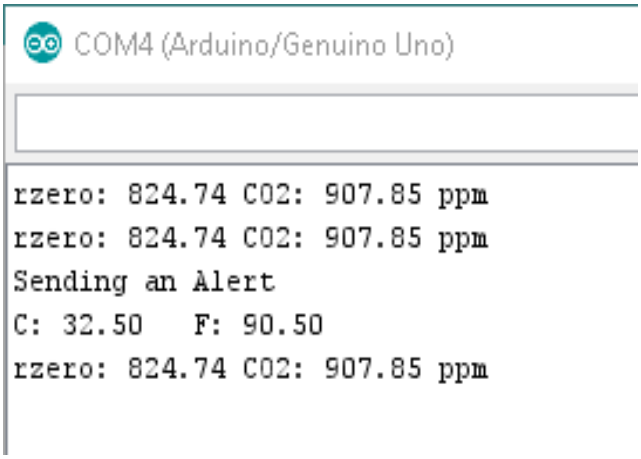

Figure 9: Serial Monitor Output

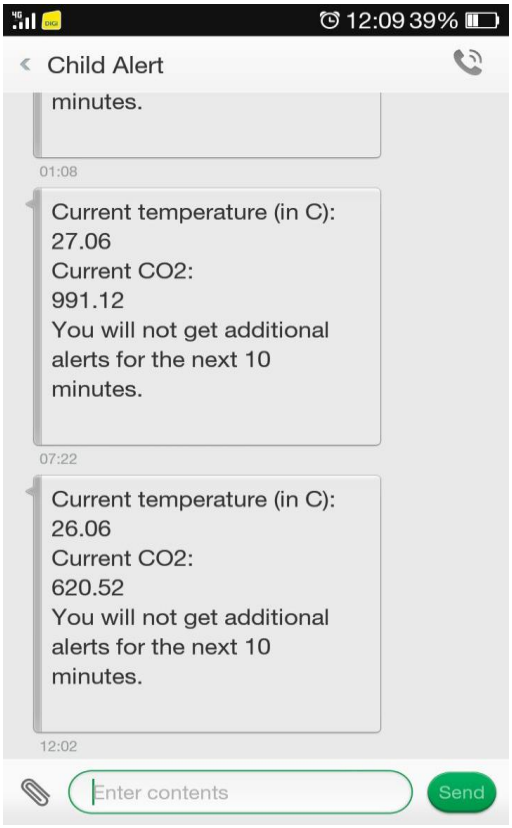

Figure 10: SMS Mobile Output

Conclusion and Future Work

The development of child presence warning system in motor vehicle prototype measured the CO2 and temperature in the motor vehicle. The MQ135 air quality sensor and DS18B20 digital temperature sensor used as the main sensor in this prototype. Both sensors will give the value of the CO2 and temperature respectively in a real time. This prototype is designed in order to monitor both CO2 and temperature by sending a simple SMS via the GSM network. The prototype was successfully implemented and tested with an unattended child in a vehicle.

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13th – 14th December 2020

In future, the addition of motion sensor in the development can be carried out to improve the efficiency of the system. Furthermore, the system also may integrate with the car horn system for this system to be more practical.

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13th – 14th December 2020

THE ROLE OF TRANSFORMATIONAL LEADERSHIP ON INNOVATIVE BEHAVIOUR AMONG NURSE U29 IN KELANTAN HEALTHCARE

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Abstract: *Past decade examining that innovative behaviour has become popular among researchers and practitioner. Innovative behaviour is considered important because of the potential for nurses to generate and translate the idea into better organizational outcome, as well as positive association to job productivity, production and contribution of ideas. Increase in innovation among nurses can increase the quality of healthcare and able to provide nurses with optimal performance. The purpose of this study is to focus on the relationship between transformational leadership and innovative behaviour at the healthcare. This study also investigates the subscales of transformational leadership to determine the subscales that effect innovative behaviour. This study used the adapted instrument, the Multifactor Leadership Questionnaire (MLQ) that measure transformational leadership and an adapted instrument of the Innovative Behaviour that measures innovative behaviour. The samples of this study involve 320 staff nurses and selected via simple random sampling in one of the states in Malaysia. The result of this indicated that no significant difference in innovative behaviour based on the demographic factors such as age, gender, length of services and educational level. Results also showed that significant positive correlations between transformational leadership and innovative behaviour ($r=.52$, $p<0.05$). The analysis of the study determined that transformational leadership dimensions were not significant predictors of innovative behaviour.*

Keyword: *Transformational Leadership, Innovative Behaviour, Nurse Innovation*

Introduction

Innovation is important for the development of organisations. Organizations that implement innovation can create more efficient work processes and have better productivity and performance (Brysiewicz, Hughes, & Mccreary, 2015). This innovation needs ideas as well as the improvement. Innovation is product of human mind by thinking outside of the box and the result of employees' ability to sense or find new opportunities and change. Many previous studies have addressed the important of innovative behaviour in the area of business management, technology, engineering and education as education as well. Nevertheless, the few studies that discussed in the area of healthcare especially in nursing (Asurakkody & Shin, 2018).

Innovative behaviour is crucial for healthcare as the system is facing many challenges with retirement, increasing the amount of elderly patients, high demand cost-efficiency and the higher need for latest advances in technology and related knowledge (Afsar, Cheema, & Saeed, 2017; Thakur, Hsu, & Fontenot, 2012). Regarding to this, healthcare need to enhancing innovation to emerge as competitive and introduce new treatments (Xerri, 2013). Hence, activated nurses innovative behaviour is needed as they are special not only among healthcare team in nursing care but in innovative ideas and able to face current challenges in healthcare

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13th – 14th December 2020

(Asurakkody & Shin, 2018). The purpose of this study is to examine innovative behaviour among nurse and the role of leader to enhance such behaviour.

According to Weng, Huang, Chen, & Chang, (2015), transformational leadership is greatly influence innovative behaviour among nurse. The success of the healthcare is the result of the hard work of a combination of leadership and followers. The cooperation among them will flourish more innovation at healthcare. Evidence from the past study Dy Bunpin, Chapman, Blegen, & Spetz, (2016) that nurses were on moderate levels of innovative behaviour. Innovation in practice does not and will not occur in isolation, they require support and guidance from the leaders. In addition, encouraging nurse to enhance innovative behaviour can increase the quality of healthcare and able to provide nurse with optimal performance. Thus, how far that nurse leaders practicing transformational leadership in predict innovative behaviour among nurses?

This study was attempted to examine the relationship between transformational leadership and innovative behaviour at their healthcare. The objectives of study are:

1. To determine the levels of transformational leadership and innovative behaviour
2. To analyse the differences of in innovative behaviour based on demographic factors (age, gender and length of services)
3. To identify the relationship between transformational leadership and innovative behaviour
4. To investigate the influence of overall transformational leadership and the contribution of each of transformational leadership dimension on innovative behavior

The hypotheses of this study are:

H1: There is no difference in innovative behaviour among respondents based on age
H2: There is no difference in innovative behaviour among respondents based on gender
H3: There is no difference in innovative behaviour among respondents based on length of services
H4: There is a positive and significant relationship between transformational leadership and innovative behaviour
H5: All dimensions of transformational leadership (idealised influence attribute, idealised influence behaviour, inspirational motivation, intellectual stimulation and idealised consideration) contribute to innovative behaviour.

Literature Review

Transformational Leadership

Transformational leadership is proved are the ones who will survive the challenges that happen in healthcare (Krepia, Katsaragakis, Kaitelidou, & Prezerakos, 2018). This study chose transformational leadership instead of other contemporary leadership due to the effective in a constantly changing environment (Krepia et al., 2018). In addition, transformational leadership showed the highest order of activeness and considered the most effective leadership style (Itzkovich, Heilbrunn, & Aleksic, 2020). The study by Gonfa, (2019), transformational leadership is seen as a leader who can stimulate innovative behaviour among employees since leader can transform or change the basic values, beliefs and attitudes of employees in order to ensure that they are willing to perform beyond the minimum levels specified by the organization. Therefore, leaders should engage specific sets of behaviours such as idealised influence attribute, idealised influence behaviour, inspirational motivation, individualised consideration and intellectual stimulation (Fletcher, Ma, & Piedimonte, 2018). Despite the initial empirical research that investigate the linked transformational leadership with employee

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13th – 14th December 2020

innovative behaviour (Afsar, Badir, & Saeed, 2014), little is known about this mechanisms in the context of nursing in Malaysia.

Nurse Innovative Behaviour

The study by Mcsherry & Douglas (2011), nurses have to gain knowledge and skills such as applying clinical technique in order to generate and develop new ways of working as well as the use of the new technologies, systems, theories, skills and collaboration with the stakeholders as agent of change that may further evaluate and enhance the nursing practice. Innovative work behaviour is a multistage, which involves the process that includes the generation, promotion, and implementation of ideas (Scott & Bruce, 1994). The first phase of innovation process is idea generation which nurses' cognitive abilities and acquire knowledge to identify problem and create new ideas to solve the problems. Second phase is idea promotion which employees need to promote their new ideas to colleagues and top managers on the usefulness of their ideas. The last phase is idea realization, refers to nurses producing the innovation model that can be experienced and applied to the work role, group and organization (Afsaneh & Morteza, 2017; De Jong & Den Hartog, 2010). Innovation requires ideas and improvements to the services provided and in this regard, this innovation process needs to be carried out so that it can increase the effectiveness and efficiency of services.

Transformational Leadership and Nurse Innovative Behaviour

Previous studies proved that transformational leadership has positive effect towards nurse innovative behaviour and indirectly affect healthcare effectiveness. Nurse leaders who are practice transformational leadership able to stimulate the thoughts and imagination of nurses, encouraging them to become more creative and innovative, to question assumptions and to think properly (Bass, 1985). According to Afsar, Masood, & Umrani, 2019; Masood & Afsar, (2017), transformational leaders improve problem awareness and problem solving among nurses. Nurses are encouraged to enhance innovation through the individual charisma of leaders (Weng et al., 2015) . Although this mechanism is widely explored, the availability of research in healthcare especially in nursing Malaysia is fairly minimal (Umrani & Afsar, 2019). In addition, the few studies that investigate definitive theory on nursing leadership that provides direction to foster innovative work behaviours among nurses (Masood & Afsar, 2017). Therefore, this study can fill the gap to investigate this link among nurses in different context and culture.

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13th – 14th December 2020

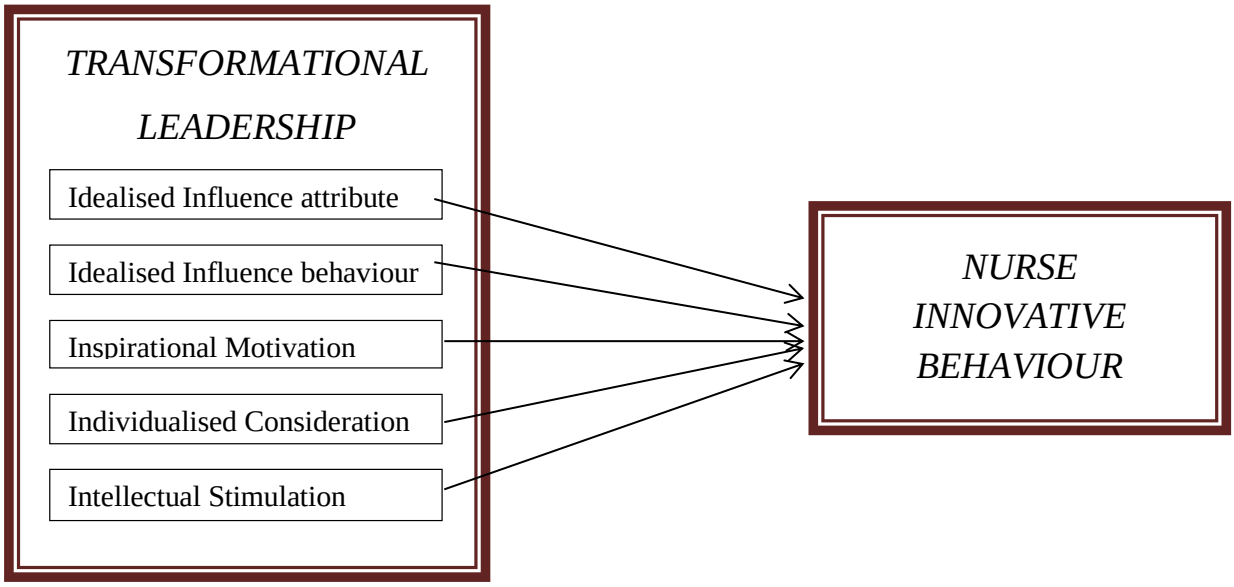

Figure 1: Conceptual Framework linking the dimensions of transformational leadership and nurse innovative behaviour

Methods

Population and Sampling

This study is correlational design since the main objective is to identify the relationship between variables which is the relationship between nurse innovative behaviour as dependent variable with transformational leadership as the independent variable and job satisfaction as the mediating variable. Respondents were selected using simple random sampling procedure. A total of 320 nurses (U29) from nine public hospitals in state of Kelantan, Malaysia were selected as respondents. The questionnaires were distributed after obtaining approval from the National Medical Resource and Research (NMMR), Medical Research and Ethics Committee (MREC) of Malaysian Health Ministry and the Director of the public hospitals. Table 1 show the demographic data of the respondents.

Table 1 Demographic Data of Respondents

Demographic profile	Frequency	Percentage
Age		
Below 30	8	2.5
31 – 40	153	47.8
41 – 50	150	46.9
>50	9	2.8
Gender		
Male	17	5.3
Female	303	94.7
Length of services		
2- 4	12	3.8
4- 6	9	2.8
6 -8	11	3.4
8 -10	26	8.1
10-12	27	8.4
12 -14	49	15.3
14 -16	48	15.0
16 above	138	43.1

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13th – 14th December 2020

Instruments

The instruments were used to measure the constructs of this study. A likert scale consists of 7-point (1=strongly disagree to 7 = strongly agree) numerical rating scale. An adapted version of the Multifactor Leadership Questionnaire (MLQ) by (Lawal, Mueller, Moretz, Gangl, & Holmes, 2012; Weng et al., 2015) was used to measure the construct. This instrument consists of 23 items. In addition, the adapted version of the Innovative Behaviour by (Janssen, 2000) which consists of 9 items.

Table 2 Reliability of the Instruments

Measurement	Variables	Construct Reliability
Multifactor Leadership Questionnaire (MLQ) *(Avolio & Bass, 2004)*	Idealised Influence (attribute)	▪ .86
	Idealised Influence (behaviour)	▪ .91
	Inspirational Motivation Individualised Consideration	▪ .93 ▪ .92
	Intellectual Stimulation	▪ .89
Innovative Behaviour *Janssen (2000)*	Idea Generation Idea Promotion Idea Realization	▪ .98

Data Analysis

Data analysis of this was conducted using IBM Statistical Package for the Social Sciences (SPSS) version 25.0. Descriptive statistics consists of age, gender and length of services were described with mean and standard deviation (Creswell, 2014). Mean values was calculated for each construct, and t-test and ANOVA were conducted for the analyses of differences in mean score of innovative behaviour based on age, gender and length of services. The Pearson's correlation test was performed to examine the relationship between transformational leadership and innovative behaviour. Multiple regression analysis was used to determine the predictive factors in the dimension of transformational leadership and innovative behaviour.

Results

The Level of Transformational Leadership and Nurse Innovative Behaviour

The mean values of the dimensions are as shown in Table 3. The mean values of the dimensions were categorised into six sections: very high (>6.00), high (5.00-5.99), moderate-high (4.00-4.99), moderate-low (3.00-3.99), low (2.00-2.99), and very low (1.00-1.99) as suggested by Chua (2006). Based on the findings, all six dimensions of transformational leadership were high. The idealised consideration dimension showed the highest mean value (M=5.29, SD =0.87) compared to the other dimensions. The result shows that the characteristic of transformational leadership such individualised consideration can stimulate more innovative behaviour among nurse.

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13th – 14th December 2020

Table 3 Mean and Standard Deviation for Transformational Leadership and Nurse Innovative Behaviour

Measures	M	SD
Transformational Leadership	4.8110	.71037
Idealised influence (attribute)	4.1227	.81281
Idealised influence (behaviour)	5.0131	.81303
Inspirational motivation	4.2131	.77384
Individualised consideration	5.2944	.86765
Intellectual stimulation	4.6938	.79129
Innovative Behaviour	4.5656	.78287

Overall, nurses in the study showed a moderate level of transformational leadership (M=4.8110, SD=0.71) and innovative behaviour (M=4.57, SD=0.78).

The Differences in Nurse Innovative Behaviour Based on Demographic Factors (age, gender and length of services)

H1: There is no difference in innovative behaviour among respondents based on age
H2: There is no difference in innovative behaviour among respondents based on gender
H3: There is no difference in innovative behaviour among respondents based on length of services

The result of t-test below shows that males nurses had a slightly higher in mean score of innovative behaviour (M=4.58 SD=0.81) compared to the female nurses (M=4.57, SD=.78), there was no significant difference between the levels of innovative behaviour between the male and female nurses (t(2)=0.056, p=.96). The first hypothesis in this study, H2 was supported.

Table 4 Independent T-Test

Variables			M	SD	t-value	p-value
Innovative Behaviour	Gender	Male	4.58	0.81	0.056	0.96
		Female	4.57	0.78		

The one-way ANOVA test was used to test the difference of innovative behaviour based on their age and length of services. It was found that there was no significant difference in innovative behaviour among nurses based on their age groups $p < .05$ in innovative behaviour for the four groups: $F(3, 316) = 0.91$, $p = 0.44$ and there was no significant difference in innovative behaviour among nurses based on their length of services groups at $p < .05$ in innovative behaviour for the eight groups: $F(7, 312) = 0.73$, $p = 0.65$. Therefore, hypothesis H1 and H3 was supported.

The mean for the respondents' length of services group 12 – 14 years is higher than the mean for the group 14 – 16 years. The post-hoc analysis confirms that respondents with length of services 12 – 14 years have higher level of innovative behaviour compared to respondents with length of services 14 – 16 years.

The mean for the respondents' age group below 30 years is higher than the mean for the group 51-60 years. The post-hoc analysis confirms that respondents with age below 30 years have higher level of innovative behaviour compared to respondent with age 51-60 years.

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13th – 14th December 2020

Table 5 ANOVA Analysis of Nurse Innovative Behaviour Based on Age and Length of Services

Variables			M	F-value	p-value
Innovative Behaviour	Age	Below 30	4.8333	.910	.436
		31 – 40	4.5247		
		41-50	4.5982		
		51-60	4.2857		
	Length of services	2 – 4	4.5648	.728	.648
		4 -6	4.4074		
		6 - 8	4.6566		
		8 -10	4.5391		
		10 - 12	4.5778		
		12 - 14	4.7578		
		14 - 16	4.4316		
		16 - above	4.5522		

The Relationship between Transformational Leadership and Innovative Behaviour

The hypothesis below is formulated based on the research objective of this study:

H4: There is a positive and significant relationship between transformational leadership and innovative behaviour

Table 6 shows the relationships between transformational leadership and innovative behaviour. Pearson's correlation coefficient (r) shows that transformational leadership was significantly and positively related to innovative behaviour ($r=.52$, $p < 0.01$). Hence, H4 was supported.

Table 6 Correlation between Transformational Leadership and Innovative Behaviour

Correlations

		Totalleadership	Totalinnovative
Totalleadership	Pearson Correlation	1	.522**
	Sig. (2-tailed)		.000
	N	320	320
Totalinnovative	Pearson Correlation	.522**	1
	Sig. (2-tailed)	.000	
	N	320	320

**. Correlation is significant at the 0.01 level (2-tailed).

The Influence of Transformational Leadership on Nurse Innovative Behaviour

The hypothesis formulated for investigate the correlation between transformational leadership and innovative behaviour is as such:

H5: All dimensions of transformational leadership (idealised influence attribute, idealised influence behaviour, inspirational motivation, intellectual stimulation and idealised consideration) contribute to innovative behaviour.

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13th – 14th December 2020

Table 7 Multiple Linear Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.525[a]	.276	.264	.67155

a. Predictors: (Constant), Totalstimulation, totalatrribute, Totalmotivation, Totalbehaviour, Totalconsideration
b. Dependent Variable: Totalinnovative

Based on the result, it shows that 0.276 of transformational leadership explain 27.6% of the variance. The all dimensions of transformational leadership did not show any significant contribution to innovative behaviour.

Table 8 The Influence of Transformational Leadership and Nurse Innovative Behaviour

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.996	.248		8.065	.000
	totalatrribute	-.009	.101	-.009	-.090	.928
	Totalbehaviour	.114	.111	.118	1.028	.305
	Totalmotivation	.154	.113	.153	1.370	.172
	Totalconsideration	.184	.110	.204	1.675	.095
	Totalstimulation	.087	.104	.088	.842	.400

Discussion

To answer the first research question and research hypothesis, this study reveals that the level of transformational leadership and nurse innovative behaviour is moderate level in public hospitals in Kelantan. The finding by Dy Bunpin et al., (2016) is consistent with the result that the level of innovative behaviour among nurses is moderate level. This study attempts to contribute evidence that nurses in Malaysia also need to give continuous effort towards their innovative behaviour in healthcare. In addition, the leaders who practice transformational leadership have proven able to give more contribution to enhance nurse innovative behaviour (Zhang, Zheng, & Darko, 2018).

This study found no difference in the innovative behaviour among nurses in healthcare based on the age, gender and length of services. This finding contradicts with the study by Korkmaz, (2020) and Dy Bunpin et al., (2016) that the level of innovative behaviour of nurses has influenced by the age, gender and length of services. The different finding might be the imbalance respond between male and female which affect the significant difference between female and male of respondents regarding the level of innovative behaviour. Innovative is important for all regardless of gender, age and length of services. However, leaders and management need to further develop strategies to increase the level of innovation among nurses by highlighting demographic factors due to that it can make it easier for leaders to identify and help to approach group of nurses regarding the level of innovation.

This study found that transformational leadership is highly correlated to the nurse innovative behaviour in the healthcare. The results is consistent with the study by Al-edenat, (2018) in Jordanian telecommunication sector which the attribute of inspirational motivation, individualised consideration and intellectual stimulation of transformational leadership had the strongest positive relationship with product and service innovation. Furthermore, other finding found that those leaders had practiced the attribute of intellectual stimulation able to develop

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13th – 14th December 2020

innovation and creative thinking among employees. It can allow leaders to challenge employees to think outside the box and the use a new approach to solve the problem or work process.

The results of the forth hypothesis which investigate the effect of all dimensions of transformational leadership towards innovative behaviour among nurses showed were not significant even though the mean levels of each dimension were high. This possible reason is that may be due to transformational leadership is not enough as factor to contribute innovative behaviour. Therefore, the leaders should consider other factors that can strengthen the predictability of transformational leadership to explain innovative behaviour. The finding from previous study reinforces that transformational leadership has a stronger influence on innovative behaviour when the mediator of motivation to learn is used to strengthen this link and effectively to increase innovative behaviour among nurse (Umrani & Afsar, 2019)

Conclusion

Present study investigates the relationship between transformational leadership and innovative behaviour and has conducted in developing country. Thus, this study can extend our understanding and knowledge of innovative behaviour, transformational leadership effects from the perspective of Malaysia. Facts that have been highlighted can contribute to the organisation to investigate more deeply the relationship between transformational leadership and innovative behaviour.

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THE IMPACT OF MEDIA INFODEMICS ON COVID-19 OUTBREAK IN INTENSIFYING GLOBAL PANIC AMONG MALAYSIANS: A PERCEPTION-BASED ANALYSIS

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Abstract: *In Malaysia, the Restricted Movement Order's implementation has turned the media to become the main primary source of information for the people. As a result, numerous mendacious news about the Covid-19 outbreak began to appear on air. Such reports and claims made in response to the outbreak, in which the World Health Organisation labelled as "infodemics," have been excessively proliferated on media (Thomas, 2020). Hence, the study explores the Malaysians' perceptions of the extent to which the Covid-19 outbreak infodemics produced by the local media amplify global panic in society. The study applies a qualitative research design, using a case-study analysis on perception to discover the Malaysians' awareness and views on the virus outbreak based on the media's information and how these contents elevate public reactions. Focus group interviews are conducted with fifteen Malaysian citizens residing at five different states in Malaysia, namely Kuala Lumpur, Selangor, Negeri Sembilan, Johor, and Pulau Pinang. A set of 10 open-ended questions are probed to participants during the interviews. Data are analysed following a deductive approach and clustered according to the research questions. The following five-step framework is applied: data familiarisation, thematic analysis framework, coding, plotting, and interpretation. The validity of data is achieved through inter-rater reliability. Four themes, namely media preferences and mainly sought information, awareness of the fake news spread on media, news reliability check, and reaction-based impact in response to the infodemics were established. The majority of the participants favoured official news broadcasts for updates on the outbreak. A few of them reported consuming infodemics that were conveyed by social media platforms. Participants indicated being well-informed on the spread of fake news on media, and 53% reported difficulties in verifying the information they received due to excessive coverage by media. Finally, 60% of the participants reported a significant influence of the infodemics they consumed towards their perceptions and reactions.*

Keywords: *Media Infodemics, Covid-19 Outbreak, Intensification of Global Panic, Perception-based Analysis*

Introduction

The Coronavirus 2019 (COVID-19) infection has become a global pandemic which recorded over 5.25 million cases and 339,000 of deaths worldwide ("Covid-19," 2020), and the number is still accumulating. The first case in Malaysia was confirmed by the Malaysian Ministry of Health in January 2020, involving three Chinese nationals entering Malaysia from Singapore ("Kronologi Covid-19," 2020). Soon after, the virus continues to extend throughout the entire nation. The first death in Malaysia was recorded in early March 2020 (Duddu, 2020). On March 18, 2020, the Malaysian government announced a two-week Restricted Movement Order (RMO) to curb the spread of the virus within the country, which later was extended further due to the increased number of infected cases.

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13th – 14th December 2020

The rapid spread of the virus has instigated excessive demand for information from society (Sokolov, 2020). In Malaysia, due to RMO's implementation, the media has turned out to be the primary source of information for the people. Studies reveal that during the times of crisis, media use in discovering information mainly on protection, latest updates, or even damage reports of the crisis is significant (Seo, 2019). Hughes and Palen (2012, cited in Seo, 2019) claim that media, especially social media, has the ability to speed up the dissemination of information during the occurrence of the crisis. As a result, numerous mendacious news about the disease began to appear on air. This fuel of claims on the media, of which the reliability was not attested, has initiated great fear among the people. The extent of this fake news and claims made with regards to the pandemic is labelled as "an infodemic" by the WHO (Thomas, 2020). In expressing his testament to the influence of media in disseminating fallacious information about the disease, hence, shaping fear and panic among the people, the WHO Director asserts that "we're not just fighting an epidemic, we're fighting an infodemic." (In Sokolov, 2020). The term "infodemic" is a combination of the word "information" and "epidemic," which is coined by David Rothkopf, a scientist and a journalist at the Washington Post press in 2003 while reporting the outbreak of equally fear-provoking related epidemic; SARS (*Merriam-Webster*, n.d.). Rothkopf (2003) explains that infodemic refers to "a few facts, mixed with fear, speculation, and rumour, amplified and relayed swiftly worldwide by modern information technologies, have affected national and international economies, politics and even security in ways that are utterly disproportionate with the root realities." (*The Washington Post*, 2003. In *Merriam-Webster*, n.d.).

Hence, this paper explores the Malaysians' perceptions of how Covid-19 Outbreak infodemics produced by the local media amplify global panic in society. Using a qualitative research design, the study aims to discover the people's understanding and opinion on the disease outbreak based on the information conveyed by the media and how these elevate public reactions. The study aims to answer the following questions:

1. What is media information mostly sought by Malaysians about the COVID-19 outbreak?
2. How do Malaysians construe media report about the COVID-19 outbreak in Malaysia?
3. To what extent do Malaysians aware of the spread of fake news on the Covid-19 Outbreak?
4. To what extent do media infodemics influence Malaysians' public reaction towards the current state of the COVID-19 outbreak?

Review of Literature

Risk Perception and Social Amplification of Risk Theory

Contemporary cognitive psychology acclaims that there are two systems in which people use to comprehend threat or risk: analytical and experiential (Slovic et al., 2004). Analysing threat or risk using an analytical method is through the utilisation of sets of normative rules, namely risk valuation, probability assessment, and formal logic, in which specific attentive measures are performed. The experiential method, on the other hand, is based on intuition, whereby a person receives minimum access to what is called "conscious awareness" (Slovic et al., 2004). Slovic et al. (2004) state that this method is known to be one of the most common and prompted ways people respond to threats or risks. It is stated that humans tend to rely on the event's image representation and its associative characteristics, which they then link to their individual experience that usually accompanies by particular sentiments and feelings (Slovic et al., 2004). This system signifies a sense to the degree of the threat or risk since all threats/risks are

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13th – 14th December 2020

regarded as naturally "subjective" (Delgado, 2014). According to Delgado (2014), people apply several psychosomatic devices when evaluating risks, one of which is the "mental shortcuts" (heuristics and risk imageries), that are found to be persistently modified by media reports. Wanchinger et al. (2013. In Delgado, 2014) indicate that there are five dominant factors which influence one's perception and/or judgment of the severity of threats/risks where the reaction is formed: "risk factors, informational factors, personal factors, direct experience, and trust." The risk factor refers to the probability and the extent of the threat/risk. The informational element is most crucial during the nonappearance of direct experience, whereby the dependence upon the information received from media sources is paramount. Another factor that helps form risk perception is the trust factor – the high level of confidence one has on the authorities' actions and efforts to protect the nation against the threat and/or risk (Wanchinger et al., 2013 In Delgado, 2014). This theory helps the researcher comprehend the driven factors that influence or build one's construct of perception regarding the Covid-19 outbreak being the most ominous threat currently affecting the nation.

Another theory that helps the researcher to gain a deeper understanding of how to measure risk perception is the Social Amplification of Risk Theory by Kaperson et al. (1988; 2010). This theory is based on the notion that hazardous occurrences correlate "with psychological, social, institutional, and cultural processes in ways that may amplify or attenuate public responses to the risk or risk event." (Kaperson et al., 1988). According to Kaperson et al. (1988), there are two phases in which intensification occurs: during the broadcasting of the threat as well as in the "response mechanisms" of the public. Amplification station processes risk signals through the assessment of the following constituents: the transcender(s) of the risk assessment, the extent of news coverage, physical significances, the personal layperson views, the public reactions, as well as the socioeconomic and political impacts (Renn et al., 1992). The higher the threat is ruled on these factors, the greater its perceived risks, "and the more people want to see its current risks reduced and regulated." (Slovic, 1987)

The more intensified the risk becomes, the greater the behavioural responses to be activated, which lead to what Kaperson et al. (1988) termed as "secondary impacts." The amplification stations are demonstrated in the below figure:

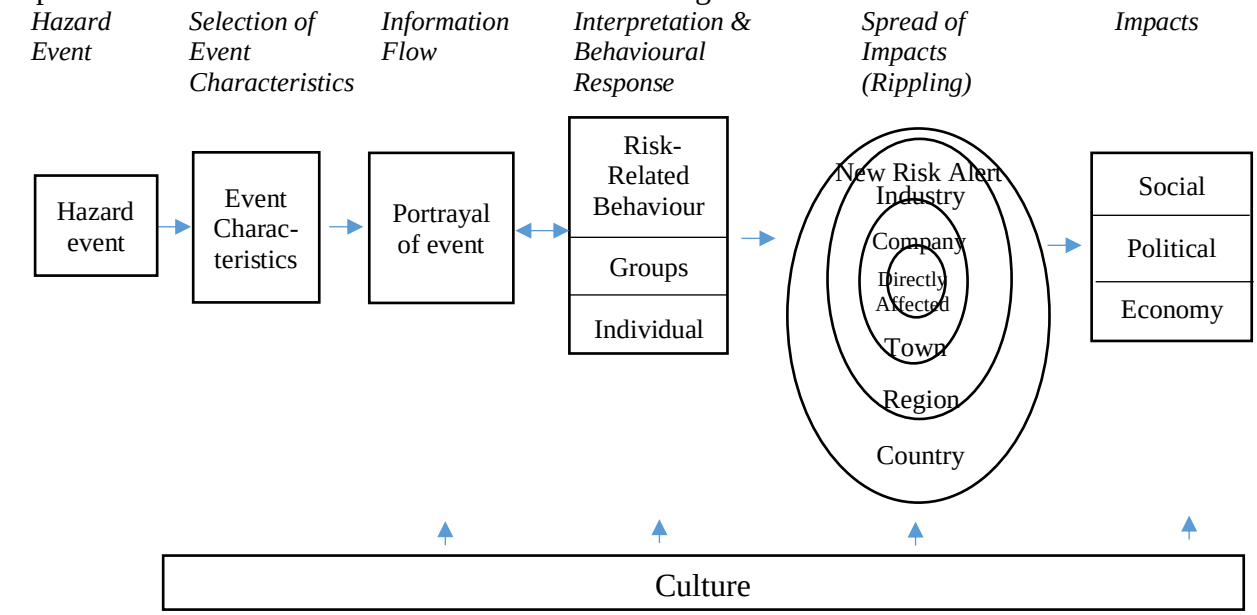

Figure 1: Social Amplification of Risk

Source: Kaperson et al., 1988: Rent et al., 1992, p.141

eISBN 978-967-2426-22-6
13th – 14th December 2020

A study conducted by Renn et al. (1992) integrated the analysis of technical assessment and the social experience of risk in the social amplification of risk framework. Based on their findings, both perceptions and social reactions have a significant association with risk exposure than the amount of the risk-related information received. According to Renn et al. (1992), an individual's selection of significant information plays a vital role in the process of decoding and processing risk-related information. The constituents of the decoded message that are conflicting with the beliefs or the recipients' values are either mitigated or disregarded. Instead, when the decoded message is in accordant with the recipients' beliefs and values, "the signals are intensified." (Renn et al., 1992). Consequently, an individual's act becomes part of the larger social units that "co-determine the dynamics and social processing of risk." (Renn et a., 1992).

Methodology

The researcher applies a qualitative research design, in which a case-study analysis of perception is performed to analyse data collected from focus group interviews. A set of ten (10) open-ended questions were probed to participants during the focus group interviews. A total of fifteen (15) Malaysian citizens residing at five different states in Malaysia, namely Kuala Lumpur, Selangor, Negeri Sembilan, Johor, and Pulau Pinang, are included in the study. The first four earlier-mentioned states are affected the most by the pandemic among other states in Malaysia (Statista Research Department, 2020). The selection of these five states is also meant to examine if there are any differences in how people from different states react to the infodemics they receive from the media. From a total of fifteen participants, ten (10) are female, and five (5) are male, and the age range of the participants is from 25 to 70 years. A total of seven focus group interview sessions with the participants were conducted from May 2020 to July 2020, using Richard A. Krueger (2002) Focus Group Interviewing protocol. Data analysis of the study was undertaken systematically following the five-step framework below:

Step 1: Data structuring and familiarisation - Transcription, translation, and reading

Step 2: Identification of a thematic framework - An explanatory structure is applied in which the research questions guide the coding plan.

Step 3: Data Coding - Sorting data into the selected framework

Step 4: Plotting/Data Linking - Arrangement of the responses into categories and identification of the recurrent themes

Step 5: Interpretation - Examination of patterns in the data, identification of clusters (causality and related themes), construction of a sequence of events, data localisation to answer research questions

In ensuring the credibility and validity of the results, an analyst triangulation method of cross-checking data is applied; whereby two raters were appointed to develop inter-rater reliability checks on the consistency of the findings. The focus group interviews are conducted in eight (8) separate sessions, in which the participants were then pooled into group characterisation following their residing states. These participants are also selected based on their active media interaction and engagement, including social media. The researcher uses the social Amplification of Risk and Risk Perception theories as the main framework of analysis in this study, which serves as a platform for the researcher to explore participants' construct systems related to Covid-19 infodemics on the media. Hence, this will also enable the researcher to reveal the formation of their constructs, which later form their reaction or behaviour.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Findings and Discussion

Media Preferences and Mainly Sought Information of Covid-19 Outbreak

The participants were asked to indicate which media sources they prefer for the latest updates on the Covid-19 outbreak and reasons for their preference(s). The analysis is as below:

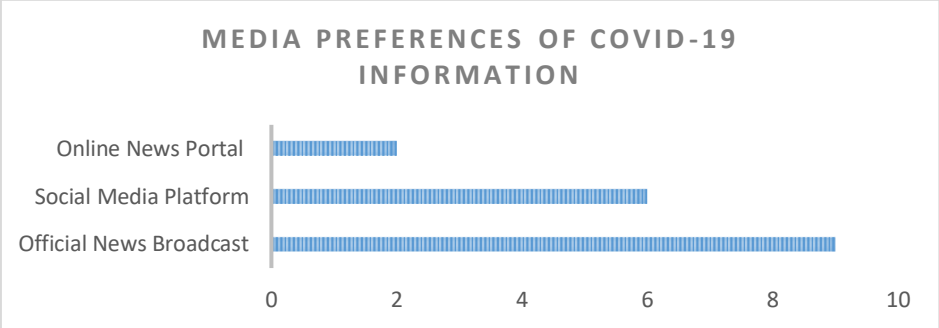

Figure 2: Media Preferences of Covid-19 Information

Based on the analysis, official news broadcast, social media platform, and online news portal are the three leading mainstream media that the participants mainly refer to in attaining the Covid-19. The majority (nine) of the participants indicated their preferences over official newscasts and press conferences for the latest updates and information on the Covid-19 outbreak. Six of a total of nine participants who preferred the official newscasts and press conferences were from the range of ages between 50 to 70 years. This preference is due to the reason of news accuracy. Additionally, six participants shared that they also turn to social media platforms for the Covid-19 updates, mainly for two reasons: information retrieval is faster and more detailed information that the official news would not highlight can be obtained. Besides, two participants also stated their preferences using the online news portal as the primary medium for Covid-19 updates because of their work schedules. Hence, it is more effective for them to refer to the online news portal. Next, the participants were asked about the sorts of information they mostly search on media regarding the Covid-19 outbreak. Twelve of the fifteen participants reflected that they are more attentive to the daily reports of the Covid-19 new confirmed and recovered cases, as well as its fatality rate. Also, two participants reported the information they mainly sought on media about the pandemic is on its preventive measures and the updates of which states in the country that is mostly affected. Besides, one participant identified that he mainly sought information through media is on the latest news of vaccine development for the Covid-19 virus and the effectiveness of the government and other countries in the world.

Awareness of the Covid-19 Outbreak Fake News Spread on Media

Participants were also asked about their opinion about media coverage of the Covid-19 outbreak and their awareness of the fake news spread on media with regards to the outbreak. Eleven participants agreed that most media in Malaysia, especially the broadcasting agencies, have excellently played their role in disseminating sufficiently up-to-date information and relevant news of the global pandemic Covid-19 to the public, preventing global panic endurance from taking place in the society. Below are some of the feedback gathered from the participants:

> *…the pro is the main official media is trying to make sure enough information is supplied to the people… like when the official announcement is made twice a day… (P2-PP)*

eISBN 978-967-2426-22-6
13th – 14th December 2020

In average, media in Malaysia is still in control in spreading news about the virus… (P3-PP)

Media in Malaysia provide sharp reports and transparent news…they showcase direct interview with the authority… (P4-JHR)

Those people are panic because they only listened to the information partially, not fully...Media is giving us a clear picture on the outbreak… (P5-JHR)

Informative and up-to-date… And provide sufficient information without detailing things as not everybody knows the details of the outbreak, but sufficient for common people to understand about the outbreak... (P7-NS)

Good coverage… focus on disseminating information from accurate data… (P8-NS)

Good and clear… they mainly highlight on important information… (P10-SLGR)

They are doing good job in terms of providing people good info to the public… that's why we don't see our people that panic… (P11-SLGR)

Malaysian newsagents are doing a great job in disseminating information about the outbreak… (P14-KL)

Four participants highlighted the occurrences of a discrepancy, spread of exaggerated information, and news overload of the Covid-19 outbreak, that triggered the incitation of panic among some people in the community, as well as distracting the community from other issues that are no less important:

...the con is some of the information are just briefed… that made people to become panic… more details are required… (P2-PP)

... but, a few media tend to politicise on the issue... (P10-SLGR)

... some media provide exaggeration of information, that's why people start to panic… (P12-SLGR)

Everywhere on media, you hear only about the outbreak… until other important news are overshadowed… (P13-KL)

The next question is examining the role of media in the construction of public belief regarding the spread of the outbreak. Participants were asked whether they believe everything they read on the media with regards to the Covid-19 outbreak. Five participants reported that they consider mostly everything they read on the media. One of the participants further explained that she considers the infodemics spread on the media due to her understanding that there is always a requirement for the official mainstream media to appear neutral in their information-sharing and the need to avoid the production of public panic

...yes, I believe, sometimes the official media tend to hide the truth, not to create panic among people… (P4-JHR)

eISBN 978-967-2426-22-6
13th – 14th December 2020

Another participant highlighted that she has difficulties in determining the credibility of the news she read on media, hence, causing her to believe almost all information she received:

Sometimes, I do face difficulties to differentiate which news is true and which is not. So, I ended up believe almost everything I read… (P3-PP)

On the other hand, six participants conveyed that their consumption of the news depends on the medium of media where the information is channeled. From the analysis, official news broadcasts are mostly relied on by the participants. Besides, another participant reported that her consumption of the information regarding the outbreak is reliant on the types of information she received, in which she only consumes health-related information.

Depends on the type - if health related, I mostly believe… if politics related - not so much … because they could be the propaganda… (P10-SLGR)

Besides, one participant raised the importance of considering only factual information received on media and the need for cross-checking.

…Just believe on facts…It's better to fact-check the information we receive, as we cannot rely on one source only… Must always do cross-check… (P6-JHR)

The following question is determining participant's self-awareness on the proliferation of Covid-19 infodemics on media. All the fifteen participants reported that they are aware of the far-reaching spread of Covid-19 infodemics across all media. The two main infodemics they encountered include the made-up preventive measures and conspiracy theories and media propaganda on the occurrence of the outbreak.

Yes, (because) nowadays, the related ministries react immediately by publishing their official statements regarding fake news. By then, we can get quick info whether it is true or fake news… (P6-JHR)

Yes, but I'm not affected by the propaganda spread on media because I rely only on news given by the DG (Malaysian Director-General of Health) … (P7-NS)

Yes, like eating garlic and ginger could prevent from getting the Covid-19 virus…it's so untrue… No evidence… (P8-NS)

Yes, very much, especially the International media, such as rumours related to China spreading the virus and so on… (P10-SLGR)

I'm aware, they tend to misuse and politise the information to attract attention from the public. For example, the issue of human right in the beginning when the government started the implementation of the MCO and the news agencies tried to create a propaganda that the country is safe from the pandemic… (P11-SLGR)

… the fake news seems to overshadow the real stories... Many are creating assumptions from what they hear or read… Old people or those who can't make good judgment will be mostly affected… (P12-SLGR)

According to one of the participants, based on her investigation, some of the alleged infodemics of conspiracies with regards to the Covid-19 outbreak spread mainly on social

eISBN 978-967-2426-22-6
13th – 14th December 2020

media appeared to correspond to the reliable study papers that she had read, which led her to consider most of the news:

> *…. some of the conspiracy & propaganda spread mostly on social media are tally with the studies that I read, especially on the use of virus transmission as a tactical strategy of war… Same like the trade war which is happening between China and the U.S…Usually this kind of news, you don't get from the official media… (P4-JHR)*

News Reliability Check

Additionally, participants have also been queried on their accountability of self-checking the news accuracy. Eight from the fifteen participants acknowledged the difficulties of assessing the Covid-19 outbreak news' validity due to excessive media coverage and reported that they consume information mainly from the official news broadcast/portal. Below are some of the participants' responses:

> *Not so… Very hard to check because there are so many news about the virus on media… So, I will see if I can adopt, I will… If not, I just take information from the official news… (P1-PP)*
>
> *I only believe news from the announcement made in official press conferences… (P2-PP)*
>
> *Information from the press conferences… That is our responsibility to find the validity of the information we receive from media… (P5-JHR)*
>
> *I only refer to official news… I don't dare to read from other than the official news, because too many exaggerated information that make me scared… (P8-NS)*
>
> *…same… Don't believe news from other than the official news… (P9-NS)*
>
> *I only refer to the mainstream media, MKN and MOH official website… (P11-SLGR)*
>
> *… Only take information from the KKM page… (P14-KL)*

Seven participants indicated that they also consume information from other than the ones conveyed by the official newscasts, such as those published on social media, but sought news accuracy. From the feedback, two main methods applied by the participants in assessing the credibility of the news include evaluating sources and fact-checking:

> *I read more of news spread on social media… sometimes the news is reliable as when I checked with several sources… Most of the times…they are just propagandas. (P3-PP)*
>
> *I am also one of the people who read on the Covid-19 conspiracies… the conspiracy theory and propaganda spread on media are quite tally with the evidences I found… I found some evidences from the claim made from the conspiracy theory spread… When I check the reliability - my evidences from the research studies and investigation suit the news propagated on media regarding the conspiracy of the outbreak… (P4-JHR)*
>
> *I always check the source of the information first before I believe or spread... through official MOH page… (P6-JHR)*

eISBN 978-967-2426-22-6
13th – 14th December 2020

I will cross-check with the ones announced by the DG Hisham Mohd Noor on the official press conferences… (P7-NS)

I read further on recent studies / articles on the flow and agendas of the news… (P10-SLGR)

…always check the additional information I got from social media with the ones on news… (P12-LGR)

Double checking through various media outlets, such as TV, internet & newspapers… (P15-KL)

Reaction-based Impact due to the Covid-19 Outbreak Infodemic News.

The final inquiry is to assess the consequence of the proliferated Covid-19 Outbreak infodemics spread on media to the participants and the people in their residing area based on their observation. Four questions were probed to the participants under this theme. First, the participants have asked to identify which news or information they read on media that mostly trigger(s) their reaction(s) with regards to the outbreak. From the feedback, eleven participants responded they were, to a certain degree, prompted by some of the news they read on media with regards to the spread of the Covid-19 virus and reacted upon the information they received. Six participants reported that the main infodemic that activated their reactions is the shortage in supplies of essential items:

The spread of the virus as well as the country's current state… I was panicked when the facemask and hand sanitizer were out-of-stock in my area… (P4-JHR)

… the most triggered news was that mask and hand sanitizer were out of supply and sold out everywhere… So I stocked up both for my family… (P6-JHR)

Earlier, after lockdown, when the MCO is announced, the government also announced that state cross-border travel is no longer allowed… I was stuck at my village… so, I become depressed and panicked… Secondly is during the second wave… too much news on how the virus is spread… every time I went out, even just to throw trash in the trash bin, I had a panic attack because I am sacred that I might get the virus... I did panic buying, mostly my kid's necessities, like tissues and pampers… due to news I heard that my area is going to have PKPD and there were short of supplies for these two items… (P10-SLGR)

I read that many people were keeping food stock… so, I end-up did the panic shopping too… (P12-SLGR)

I read somewhere that China led the virus out… I become suspicious on why would people do that - harm their own people and country. I do panic shopping… (P13-KL)

The panic shopping… (P14-KL)

Another infodemic that prompted the participants' responses is the significance of increasing the level of personal hygiene and maintain a clean environment:

… news about how fast the virus spread and reasons for its spread... I didn't dare to even step out from the house as they say the virus easily affects the elderly like me… (P1-PP)

eISBN 978-967-2426-22-6
13th – 14th December 2020

How the virus is spread and the importance of having a good hygiene… I tried to observe cleanliness at all times… (P2-PP)

How it can spread and how to prevent from getting it... I got paranoid to go out… (P3-PP)

… not so much… One that is on cleanliness… made me sanitised my whole house… (P7-NS)

Number of death everyday... I'm concerned on how severe it can be… I do ensure hygienic environment in my house… (P15-KL)

Four of the participants reported that the news of the Covid-19 spread they read on media does not prompt their panic reactions. The reason being is that they are confident with the government's capability to control the spread of the virus as well as the accuracy of the information presented by the mainstream media:

… no, because I'm following the news on a daily basis… those news are giving us factual information and guide us on what to do and so on… So, I don't get panic… (P5-JHR)

… On how the virus is spread… But, I'm not panic… The government is doing their best… (P8-NS)

Number of people cured and died... I'm not triggered by the rumours on media because I have a high confidence on the government's ability to control the spread of the virus… (P9-NS)

The information from the mainstream media and the advice from the MOH page changed my behaviour because for me only news from these sources are reliable… (P11-SLGR)

Next, the participants were asked to state their opinions based on their observation on the extent the Covid-19 infodemics influence the people in their neighbourhood area and the public in general. Eight participants attested that there had been a nonappearance of intensification of reaction among the people in their neighbourhood areas based on their observation. From the eight participants, all the three participants from Negeri Sembilan and two from Pulau Pinang reported that the people in their areas reflect a composed reaction with regards to the spread of the outbreak infodemics. Below are some of the feedback:

… A few only who went panic… Most of the people in my area are just calm. Perhaps because my area is listed as a green area… (P2-PP)

The people in my area is not panic… We do have enough food supply and so on… a few did panic buying… But I do not have any problem in my area… (P3-PP)

In my area, not so much... I don't see anyone panic… No issue of shortage of food supply or things like that... Everyone is just following the government's order accordingly… (P5-JHR)

eISBN 978-967-2426-22-6
13th – 14th December 2020

People in my area are not really influenced by the infodemics… all are relaxed and calm… (P7-NS)

My area is just calm... Everyone stays at home and buy things only needed... No panic shopping or whatsoever... (P8-NS)

I guess it is not… as I see some people still bring small children to the mall… (P15-KL)

On the other hand, seven participants, of which two participants, each from Johor, Selangor, and Kuala Lumpur, indicated the panic reaction occurrences among the people in their residing areas. From their observation, the panic reaction involved the intensification of panic buying among the people.

Some people don't comply to the SOPs and instructions… like when the government announced the PKP… there were people who still go to the market and not practicing social distancing… There are also those who were panicked and bought a lot of groceries because they read on news of the short of supply… (P1-PP)

In my neighbourhood, there is a WhatsApp group where people shared information and most of them believe it… Like, when people spread that there is lack of food supply… so, people at my area ended up committing the panic buying … Also, due to the press conference… when the ministry mentioned about the need to retain our food security… making people believe that it is really not enough food supply… (P4-JHR)

… Mask shortage… people who don't wear mask were looked weird by others… Even the shops also don't allow those who don't wear mask to enter their shops… (P6-JHR)

In the beginning, people in my neighbourhood do show panic reactions to a certain extent… (P10-SLGR)

Some people at my place do panic… and shops were almost emptied… (P12-SLGR)

… Same… I do see panic reaction in my neighbourhood… people were starting to stock-up facemasks, sanitisers and gardenia bread which later I saw a lot on the garbage bin because you know… that the bread can only last for a few days… (P13-KL)

Some were panic during the early stage of the outbreak as they were so many information being spread and some were not verified at that time… so, people get panic… (P14-KL)

Following that, with regards to the extent the Covid-19 infodemics influence the public reaction in Malaysia, ten participants reported that they observe the occurrence of panic reactions among Malaysians, especially during the early stage of the country's outbreak. It is mainly due to the massive news coverage of the Covid-19 spread, some of which were not verified.

In the beginning, many people go panic when they read a lot of information on media, like on WhatsApp, Facebook… (P1-PP)

eISBN 978-967-2426-22-6
13th – 14th December 2020

Everywhere, people started to buy a lot of masks… and the price of the masks hiked up, because there were announcements on news that we all need to wear mask… To go to public places, suddenly we are asked to wear masks… (P2-PP)

Yes, I do observe people from other states went panic, especially in the beginning where there were a lot of information spread on media that could not be confirmed… (P3-PP)
A lot of information and propaganda I read on media triggered my panic reaction… I was freaking out and did the panic buying… I feel that some media seems to be covering something like the truth about the spread of the virus… In official website, of course, they need to ensure for people to keep calm… so, I cannot rely 100% on official media as that is their nature, to show that everything is under-control, so people don't freak out… So, I read from other sources, the propaganda... (P4-JHR)

The price of mask and hand-sanitizer hikes up so much because people were panic that both are sold out everywhere… (P6-JHR)

I'm worried to go out from the house… Even to go out to throw rubbish in front of the house, also makes me scared… because I'm old and due the decline of immunisation in old people… I become phobia... I don't want others to come to my house as I have 80 years old mom staying with me... So I become extra cautious… (P7-NS)

Most people comply to the instructions because they are scared… (P10-SLGR)

… They are quite concerned… whatever media informed, people react for the security of the family and self… (P11-SLGR)

There were panic reactions among Malaysians… Perhaps, because the sellers were starting to over-charge some of the essentials items, and all the speculations spread on media… those are the things that make people become panic… (P13-KL)

People are influenced by the infodemics they read on media… Like, suddenly the price of the mask hikes up and so on... (P14-KL)

However, the remaining five participants observed that most people in Malaysia remain composed during the spread of the Covid-19 outbreak in the country compared to people from other countries in the world.

… So far, Malaysians are reacting well to the outbreak - not too bad… (P5-JHR)

I see people in other countries reacted worse than us here in Malaysia… so, I think our people are much more calm and able to follow the government's order accordingly… That's why the situation in our country is still under-control… (P8-NS)

Compared to other countries, it is clear that our government is doing an excellent job in handling the spread of information about the virus, as well as controlling the spread of the virus itself… (P9-NS)

Not as bad as people in other countries… Although a few were panicked, most are able to follow the authority's instructions accordingly and react calm… (P12-SLGR)

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13th – 14th December 2020

I guess it is not effective, as People still bring small children to the mall… (P15-KL)

Finally, participants were asked to measure their reactions and behaviours in response to the Covid-19 outbreak that are influenced by the information they consume from the media based on a five-point scale (nine-ten being mostly influenced). The analysis of the data is presented in the table below:

Table 1: Impact of Covid-19 Media Infodemics in Intensifying Panic Reactions

Scale	Indication	Frequency (n)	Percentage %
0-2	Insignificant	1	6.7
3-4	Low	0	0.0
5-6	Moderate	5	33.3
7-8	High	7	46.7
9-10	Severe	2	13.3

Based on the rate of recurrence presented in the above table, it can be observed that the majority of the participants (60%) rated significant behavioural responses with regards to the Covid-19 outbreak based on the infodemics they consumed through media, which is between high (46.7%) to severe (13.3%). On the other hand, 33.3 % of the participants indicated that they are moderately affected in their behaviours and reactions by the news and information they obtained through media. Only one participant reported that the infodemics spread on media with regards to the Covid-19 outbreak.

Table 2: Distribution of Intensification of Panic Reactions based on Covid-19 Media Infodemics According to States

State	Insignificant (n)	Low (n)	Moderate (n)	High (n)	Severe (n)
Pulau Pinang	-	-	1	2	-
Johor	-	-	1	1	1
Negeri Sembilan	-	-	-	3	-
Selangor	-	-	1	1	1
Kuala Lumpur	1	-	1	1	-

The data analysis of participants' overall observation of their reactions can also be distributed according to states. It is revealed that the majority of participants from Pulau Pinang, Johor, Negeri Sembilan, and Selangor reported a significant correspondence to the intensification of panic reactions with the Covid-19 outbreak infodemics spread by media, in which the rate ranged from high to severe. However, Kuala Lumpur participants reported that they are not significantly affected by the Covid-19 outbreak infodemics spread by media.

Conclusions

The impact of the Covid-19 infodemics spread on media in intensifying panic reactions among Malaysians. Albeit on a small scale, the study reveals that the spread of infodemics on media regarding the outbreak directly influences the public's perception of the epidemic's current state, affecting their reactions and behaviours in coping with the virus outbreak. The study also discloses that participants appear to seek personalised risk information infrequently when it comes to crisis and emergency risk communication. In this process, an individual's risk assessment results are tailored to an individual's preference intended use. They also appear to favour factual (evidence-based) information such as the statistical report of new cases and death from official media broadcasts. In addition, the study discloses that 60% of the participants

eISBN 978-967-2426-22-6
13th – 14th December 2020

reflected a significant impact of the Covid-19 infodemics spread towards their perceptions and reactions. Finally, the results demonstrate an insignificant variance in the impact of covid-19 infodemics towards the public responses with the risk occurrences in that particular state(s). Hence, it could imply that the infodemics spread on media have shaped the public's perceptions and understanding about the outbreak of the Covid-19 virus, which initiate their panic reactions.

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ISLAMIC VALUES OF SUMUR GUMULING, TAMANSARI, YOGYAKARTA

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Abstract: *Indonesia is an archipelago that has various ethnicities and religions. This country is also the one mostly populated by Moslems. With various cultures owned, Indonesia has the Islamic pattern with typical characteristics. There are many studies on Islamic heritage in Indonesia has been, but most of them have not dealt with many aspects of Islamic education. In fact, one of the objectives of Islamic building heritage in Indonesia also has a number of symbols with a deep meaning about Islamic values that are supposed to be studied. Through the form and location,an Islamic building symbolizes one of the values of Islamic teachings. Thus, students at each level can see and learn that the heritage building not only concerns with the aesthetic or beauty aspects of the building, but also deals with the aspects of Islamic values represented from the building. This is a qualitative research with the approach of Islamic Archeology in which the data were collected through observation, interviews, and documentation. The data validity techniques included: Credibility, Transferability, Dependability, and Confirmability. This study used data analysis techniques from Miles and Hubberman, which has four steps of data analysis, including: data collection, data condensation, data display, and conclusion drawing or verification. The results of this study showed that the Islamic values especially in Islamic education in Sumur Gumuling are related to the fact in which the Sultan gave the Islamic learning to his children. The Sultan tried to embed the basics of Islamic teachings to his children through symbols in the form of Sumur Gumuling, the number of floors, the number of steps, even the location of Sumur Gumuling also reflects the values of Islamic teachings as taught by the sultan. From this study, many Islamic values can be taken by students in the process of Islamic education. Learners can know the architecture of ancient relics as well as know that previous civilizations in terms of buildings have Islamic values that can be deepened and practiced in everyday life.*

Keywords: *Values, Islamic, Sumur Gumuling*

Introduction

Indonesia is an archipelago country that has various ethnicities and religions. In Indonesia, the majority of countries are Muslim. With various cultures that exist in Indonesia, the Islamic style that is owned has its own characteristics. All this happened because of the process of spreading Islam in Indonesia in the past, which adapted to the culture owned by the Indonesian people so that Islam could enter easily. So, from this process, various kinds of Islamic heritage emerged in Indonesia which also have characteristics of existing cultures in Indonesia.

There have been quite a lot of studies on Islamic heritage in Indonesia, but still not much touch on the aspects of Islamic education. In fact, one of the objectives of Islamic heritage buildings in Indonesia also has symbols that have a deep meaning about Islamic values that deserve to be studied. Through the shape and location of an Islamic building it symbolizes one of the values of Islamic teachings. So, students at each level can see and learn that the previous

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13th – 14th December 2020

heritage buildings do not only pay attention to the aesthetic or beauty aspects of the building, but also to the aspects of Islamic values to be conveyed from the building.

The Yogyakarta Sultanate was a continuation of the Islamic Mataram dynasty, which inherited legitimacy to achieve royal stability, especially in the religious and spiritual fields. With this traditional government system, it is in accordance with the Javanese cultural system, which holds many beliefs and traditions that have been rooted in the palace as a legacy from their ancestors. Kraton as the cultural center of Kejawen has a major influence in relation to the implementation of religious rituals in the form of traditional ceremonies (in this case the Islamic aspect appears) coloring religious life in the palace environment.

About two hundred years ago, Sumur Gumuling was a mosque used by kings in Yogyakarta. Gumuling well, which is still in the same complex as Taman Sari Water Palace, is one of the remaining buildings. Because previously, Taman Sari had collapsed in 1867. Sumur Gumuling uses Javanese and Portuguese architecture and resembles a circular theater with an artificial lake in the middle. In addition, there are several cavities in the middle or dome. This building was an underground mosque used by the kings of Yogyakarta to worship.

The interesting thing about Sumur Gumuling is the Islamic values contained in each shape and location of Sumur Gumuling. Because in the past, Sumur Gumuling was a place of worship for the Sultan's family while in Tamansari. With the Gumuling Well, Tamansari is not only a place for fun and recreation for the Sultan's family, but also a place of worship. This is so that the Sultan can teach his family that even if we are having fun or under any circumstances we must remember Allah SWT. As a form of devoted servants, then we always worship Allah in accordance with QS Adz-Zariyat: 56 which means: " *And I did not create jinn and humans but so that they could serve Me*. " From this it appears that the Gumuling Sumur heritage building has very deep Islamic symbols and can be known and taught to students in the process of Islamic education in schools.

Based on the description above, it shows that the Sultanate of Yogyakarta really maintains the purity of Islamic teachings even though in the implementation of traditional rituals it is still very strong with local culture. This is a reason for researchers to re-interpret the values conveyed through the legacy that is still preserved today. Because Islamic teachings today are colored with Western understandings such as modernization, liberalization, democracy, radicalism, terrorism, nationalism, and civil society.

So the researchers assume that Islamic education in Indonesia, especially in Yogyakarta, has had the impact of the universality of Islamic teachings so that discrimination appears against local culture which is considered to still contain elements of mystical ancestry. One of the cases was the dissolution of the preparation for the sea alms tradition at Pantai Baru, Bantul by a group of people that occurred on 12 October 2018. On the grounds that the sea alms tradition is an act of shirk and is against religion. This is proof that, there are still some Muslims who think that the traditions carried out by the court still contain elements of shirk.

The question that often arises is how can religion be part of culture? Doesn't religion come from God Almighty, while culture from humans. The question clearly sees religion as revelation or doctrine. Whereas what is meant here is religion as a result of human interpretation of the doctrine which is then manifested in the form of behavior. In other words, the meaning of religion here is that which has developed in society and is cultured. There needs to be an understanding of historical heritage in the form of traditions and artifacts that contain philosophies or idioms related to Islamic values, with this effort will be an additional insight for the general public to better respect the local culture of the Yogyakarta palace by internalizing implicit messages in the culture. the. In addition, understanding the values contained is an effort to maintain the purity of Islamic teachings while maintaining the

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13th – 14th December 2020

preservation of local culture, such as the implementation of local cultural rituals that require spiritual meanings and symbols that are acceptable to the community. Therefore, researchers are very interested in researching and further examining **the Islamic Values of Sumur Gumuling, Tamansari, Yogyakarta.**

Research Methods

This is a qualitative research with the approach of Islamic Archeology in which the data were collected through observation, interviews, and documentation. The data validity techniques included: Credibility, Transferability, Dependability, and Confirmability. This study used data analysis techniques from Miles and Hubberman, which has four steps of data analysis, including: data collection, data condensation, data display, and conclusion drawing or verification.

Literature Review

Islamic Values

Values in Islamic education are based on basic Islamic values. According to Langgulung, quoted by Sarjono, epistemologically, the basics in the development of Islamic education have the main source or foundation, namely the Al-Qur'an and As-Sunnah. First, the use of the Koran as a basis for education is not only based on the faith that Muslims must have that the Qur'an is a book that must be believed as a guide for life. However, when viewed from the context of the content contained in the Qur'an. The Qur'an is very clear about the guidelines for human life on earth which is completely refuted by modern science. So, it is appropriate if Islamic education makes the Al-Qur'an as a foundation in accordance with QS Al-Baqarah: 2:[1]
Meaning: This book (Al Quran) has no doubts about it; a guide for those who are righteous.

Second, one of the foundations in Islamic education is as-Sunnah. As it is known that Sunnah is everything that is mandated to the Prophet Muhammad SAW based on words, deeds, and provisions. Prophet Muhammad is a *uswatun hasanah* or *role model* in being a good human being.[2] Therefore, the output of students who have passed the Islamic education process is expected to have good behaviors. It is also in accordance with QS-Ahzab: 21:[2]
means: "There has already been at the (self) And he was a good example for you (that) for those who hope (mercy) Allah and (the arrival) of the Day of Judgment and he chants a lot of Allah. "

Third, the foundation of Islamic education which is then Ijtihad. Ijtihad in question is that which originates from the companions of the Prophet Muhammad, tabi ', tabi' tabi'in, and other Muslim scholars and scientists. Ijtihad was also born based on the teachings of the Prophet Muhammad SAW which was used as a *role model* in Islamic education. So that it has a clear source of ijtihad.

From the above explanation, it is clear that the foundations of the values of Islamic education are clear. From these foundations have directed the values of Islamic education. So according to Sarjono, based on the above foundations, the values in Islamic education are:[3]

Faith and Faith

In the educational process, it is hoped that students can develop the faith and devotion that are owned by students. As a Muslim, faith and devotion are the most important things that must be

[1] Sarjono, "Basic Values of Islamic Education", *Journal of Islamic Education Voll.II No.2*, 2005, p. 138.
[2] Translation Team for Al-Qur'an UII, *Al-Qur'an and Tafsir*, (Yogyakarta: UII Press, 1991), p. 748.
[3] Sarjono, "Basic Values ....., p. 140.

taught to students first. According to Harun Nasution, in the educational process, the main thing that must be instilled in students is the science of religion, one of which is Tauhid. By deepening the knowledge of Tawheed before other scientific fields will provide direction for students to practice the knowledge that has been learned in accordance with faith and devotion to Allah.[4]Faith and devotion are one of the core values of Islamic education. This is different from general education which does not yet have clear core values, only based on the speculations of education experts who are in accordance with the education stream adopted.

Respect for human existence with all its potential.

Allah created humans with a variety of potentials possessed by each individual. According to Syahminan Zaini who was quoted by Abdul Kodir, the potential possessed by humans consists of two parts, namely internal and external potential. The internal potential in question is the potential that humans have had since birth which includes nature and hanif, unity of body and spirit, the ability to will, and the potential for reason.[5] Meanwhile, what is meant by external potential is the potential possessed by humans who come from outside, covering the guidance of religious life and the universe.[6]

According to M. Quraish Shihab which is also quoted by Abdul Qodir, there are three gifts given by Allah to humans besides the body and divine spirit, namely: (1) the potential to know the names and functions of natural objects. As in Surah Al-Baqarah: 31:
means: "And He taught Adam the names (objects) entirely, then bring it to the angels and said: "Call me the names of these things if you are really the right people!"

Allah gave sufficient knowledge to humans about all the names and functions of all objects on Earth. So that humans can make good use of all objects on Earth. (2) experience of life in heaven related to the goodness that has been obtained in the form of sufficiency and pleasure, as well as the bad that has ever been obtained, namely being seduced by the seduction of the devil (3) religious instructions.[7] So in the process of Islamic education it must be able to maximize the existence of the potentials of students who are born and based on religious guidance and phenomena that occur in the universe.

Prioritizing the principles of freedom and independence

The process of Islamic education must prioritize a humanizing system for humans. In the sense that in Islamic education students are allowed to develop the knowledge they have learned outside the classroom. According to Harun Nasution, the learning system in Islamic education is not*teacher centered*, but*student centered*.[8] So that students are directly involved in the learning process. This aims to create an impression of the learning process that students go through. According to Munif Chatib, the learning process must be able to give the impression of learning to students. With the impression that learning will strengthen memory and understanding of the material that has been taught.[9] So that an educator in carrying out the process of Islamic education can design learning withstrategies *active learning*.

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[4] Harun Nasution, *"Islam Viewed from Various Aspects of Volume I"*, (Jakarta: UI Press, 1985), p. 34.
[5] Abdul Kodir, *"Human and Education Perspective of the Koran"* , (Bandung: Simbiosa Rekatama Media, 2019), p. 91.
[6] *Ibid*., P. 104.
[7] Abdul Kodir, *"Human*....., p. 90-91.
[8] Harun Nasution, *"Islam*....., p. 34.
[9] Munif Chatib, "Human Teachers: Making All Children Special and Champion Children", Cet. 3, (Bandung: PT. Mizan Pustaka, 2018), p. 81.

eISBN 978-967-2426-22-6
13th – 14th December 2020

According to Melvin L. Silberman, a professor of educational psychology at Temple University, United States, said that learning is not enough to listen or see something. According to research conducted by Pollio which was also quoted by Melvin L. Silberman, it was shown that in teaching by means of lectures, students only paid attention for 40% of the learning time.[10] From this explanation, students are not only limited to listening and seeing, but doing activities actively in a learning process. So that students are really interested in the learning process and are able to independently develop the learning that is being carried out.

According to Fazlur Rahman who was quoted by Abu Muhammad Iqbal, Islamic education must be able to integrate the latest sciences with old sciences.[11] So that from the process of Islamic education, students are able to develop the latest scientific knowledge.

Social responsibility

According to Maragustam, one of the functions of Islamic education is as a unifier and personal and social development.[12] From this explanation, one of the values that must be instilled in students through the process of Islamic education is to develop a character of social responsibility. According to Sarjono, Islamic education is carried out, one of which is to instill *social skills* in good students with the aim that students can make a positive contribution in the community or their environment. Social responsibility instilled in students through the process of Islamic education includes:[13]

Tolerance
Responsibility
Collective justice
Cooperation and others.

From the values of Islamic education above, the researcher will find out about the Islamic values contained in the gumuling well using the Islamic archaeological approach. It aims to get what Islamic values are contained in the gumuling well.

Meaning of Building Form from Gumuling Well Gumuling

Sumur is a part of Taman Sari Yogyakarta which functions as a place of prayer or worship for the sultan or royal family. The community gave the name Sumur Gumuling the *Underground Mosque* because of its underground location, but the Sultan named it Sumur Gumuling. The name of the underground mosque only comes from the surrounding community. The name Sumur Gumuling is taken from the word Gumuling which means circle which symbolizes the number one to teach that there is only one god. Meanwhile, what is meant by a well is a well that is located right in the middle that functions as a place for ablution for the royal family before performing prayers, so it is called Sumur Gumuling.

This was conveyed by Mr. Okto Liftianto, namely:[14]

"The underground mosque refers to the community because of its position and being under and used by the sultan for worship until now it is called an underground mosque. Even the

[10] A*ctive Learning: 101 Strategies to Teach Any Object*, Raisul Muttaqien translation, Active Learning: 101 Active Student Learning Ways, Cet. 11 (Bandung: Nuansa Cendekia Publisher, 2016), p. 24-25.
[11] Abu Muhammad Iqbal, *"Islamic Education Thought"*, (Yogyakarta: Student Library, 2015), p. 618.
[12] Maragustam, *"Philosophy of Islamic Education Towards Character Building"*, (Yogyakarta: Postgraduate Faculty of Tarbiyah and Teacher Training (FITK) Sunan Kalijaga State Islamic University (UIN), 2018), p. 95.
[13] Sarjono, "Basic Values ....., p. 143.
[14] Interview with Okto Liftianto in Yogyakarta, 13 December 2019.

eISBN 978-967-2426-22-6
13th – 14th December 2020

writing in the guiding and foreign tour books is written Underground Mosque, but that's okay because it's a mosque, but it's still called Sumur Gumuling. "

The Gumuling well is underground with a passage that connects directly to the Kraton. However, in some references it is said that the alley connects directly to the south coast, even though this tunnel only connects to the Kraton. This hallway connects to the Kraton so that if an attack occurs when the royal family or sultan is in Taman Sari, they can pass through the hallway to return to the Kraton. This myth developed because the tunnel in the gumuling well connects to *Segaran Kidul* which means the south coast or parangtritis, even though what is meant is *Segoro Kidul* which is meant by the Kraton. This was conveyed by Mr. Okto Liftianto, namely:[15]

"So the Gumuling Well was built underground using an underground tunnel to go to the mosque. Even there was a passage which had now collapsed. It is said that people called it to Segaran Kidul or to the Kraton because there used to be a lake here (Tamansari) called Segaran Lor and behind the Kraton it was called Segaran Kidul. It went straight to the ground. Its function is also to save the sultan's family if something happens to return to the Kraton. Well, then there is a kind of myth or legend that is inherent in the community (the hallway), he said, connecting to Parangtritis. There is no passage to get there (Parangtritis). It's a myth. So here, after we learn, we know that our parents used to say that when we mentioned Parangtritis, Parangkusumo, and so on, they always said Segoro Kidul. Never mention a name. Even my own parents always say this "if you play at Segoro Kidul be careful". Well, found it. It means that in Gumuling Well, Segoro Kidul is Segaran Kidul behind the Kraton. Not the one there (Parangtritis). That's just what people call Segoro Kidul as Parangtritis. Eventually people said that the alley reached Parangtritis. Because, people used to call it (Parangtritis) Segoro Kidul while what it meant was Segara Kidul behind the Kraton. "

Gumuling well has two floors, each of which has a place for a priest. The lower floor is used for the female royal family, while the upper floor is used by the male royal family. In its use, the male congregation who is on the top floor prays first, after that the women pray with male priests who have not prayed. The philosophical value of using the floor is that the sultan wants to teach his family members that women are behind men in the sense that the female leaders are men. Apart from the philosophical value, the purpose of using the floor is in a war strategy if there is a sudden attack from the enemy, then women can first save themselves by entering the hallway that connects to the Kraton after that the men so that the men can protect. women from attack.

The meaning of Gumuling well which is right next to Kenanga Island which functions as a fun place for the royal family, namely so that the sultan's family can continue to remember that whatever blessings have been obtained we must continue to be grateful and not forget to worship Allah.

[15] Interview with Okto Liftianto in Yogyakarta, 13 December 2019.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Figure 1. Kenanga Island which is located in Tamansari

Source: Documents personal

The meaning of the number of stairs contained in the well, which is five, there is a ladder, which means odd, which means that God is odd or one, namely Allah SWT. However, in another literacy it is stated that the meaning of the five steps is to symbolize the number of five pillars of Islam. Based on the results of the interview with the researcher, the informants tended to be more inclined towards the number of steps which symbolized the five pillars of Islam. Mr. Okto Liftianto explained all this, namely:[16]

"The Gumuling well is circular in shape. Two floors both underground and above. So, why is it called Sumur Gumuling? Gumuling is taken from the word circle, so it is circular. There is one priest's place above and below. There are two priests right there. Well, in the middle there is a well. So often people call it "this is called Sumur Gumuling" that's not a well. The gumuling is because the shape (the building) is circular symbolizing the number one. Why do you represent the number one? This is what I said earlier that Tamansari is part of education for the children of the sultan. Symbolizes one that God is only one, so Allah God is no other. Because, even though there are Hindu and Buddhist cultures here, it's just culture. But philosophically, the sultan teaches Islam that his god is one. So then the floor below is used for women, above for men. So two floors, right? Now the priests are two men and women, but the priests are still all men. Even though it is understood that it is a woman, the priest is still a man. But those who pray first are the men above. Then when it is finished, the women pray. The question is why are there women below, right now, if the mosque is on the second floor, the women are above? Is not it?. So there is a culture or philosophy that the sultan teaches women behind men. So, nothing is what men first. Because back then his gender was still strong. Secondly, I said earlier that the sultan was also a war strategist, so because Tamansari was also a fortress so that if something happened there (Sumur Gumuling) the first ones to run to save themselves through secret passages were women, because the tunnel was there. under.

[16] Interview with Okto Liftianto in Yogyakarta, 13 December 2019.

eISBN 978-967-2426-22-6
13th – 14th December 2020

In the end, the men protect the women. That was the sultan's strategy why women were under the former. And the location of Sumur Gumuling is next to Pulo Kenongo, where Pulo Kenongo functions as a place for the sultan's family entertainment or entertainment such as learning to dance, batik, and so on. So why did the sultan build a mosque near Pulo Kenongo? Now to teach earlier about religion. Hey you have fun when it's time to pray immediately pray. So you have to remember the Almighty. That means it was built near Pulo Kenongo. Well, then the location of the underground mosque (Sumur Gumuling) is not only near Pulo Kenongo but also in the middle of the lake or artificial lake that I mentioned earlier, namely Segaran Lor. So what does that mean? The Sultan teaches us to pray in the middle of water, which means that humans cannot live without water. The point is to be grateful for the water earlier from the gift of the Almighty. So, they prayed in the middle of the lake. And the underground mosque (the gumuling well) is built in a circle, in the middle of it is hollow and not closed. Under it are the five stairs which mean the pillars of Islam. The Sultan taught his children that if we face Allah it is straightforward. So, make it open and the stairs are right in the middle of the well, in the middle of the mosque, which means that the pillars of Islam are in accordance with the meaning in the Qur'an. "

Figure 2. Stairs at Sumur Gumuling symbolizing the pillars of Islam
Source: Personal documents

From the explanation of the results of the interview above, it can be seen that each corner of the Gumuling Well has certain philosophical values. It aims to teach Islam to the sultan's family. So that through the symbols in Sumur Gumuling there is a deep lesson in getting to know the teachings of Islam.

Islamic Education Values in Gumuling Well

Every corner of the Gumuling Well has meanings about Islam. So that it can become Islamic religious learning for students when visiting the Gumuling Well. In accordance with the results of the interview with Mr. Okto Liftianto, namely:

"If you bring the schoolchildren, they also explain about the Gumuling Well, which is a place of worship, and continues to teach them that the sultan used to teach about Islam using several symbols including a ladder symbolizing the pillars of Islam. Why used to have two priests when

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13th – 14th December 2020

they prayed the same. It continues that Islam has always taught about togetherness or tolerance. You want an example that there is tolerance and togetherness even though the sultan adheres to Islam and has a mosque here (Tamansari) in the Kraton also has a mosque, he still respects the culture of other religions, for example Hinduism enters here, Buddhism enters here from symbols (symbols). So to teach the true religion of Islam, if we want to reflect with the Islamic empire in the past, that Islam does not differentiate from other religions. "

So, from all the explanations above, it can be drawn the Islamic values contained in the symbols contained in the Gumuling Well which include:

First, the meaning of Sumur Gumuling which comes from Gumuling which means circular teaches that there is no God but Allah. This is in accordance with QS Al-Ikhlas: 1:[17]
Meaning: Say: "Allah is one"

In the above verse it explains that there is no God but Allah SWT. So this is very important to become a foundation in religion to be a person who believes and has devotion to Allah SWT. The essence of Tauhid itself means to exalt Allah SWT, both in terms of believing that only Allah SWT has the right to be worshiped, also believes in believing in good names and noble qualities for Allah.[18]

According to Zaini Dahlan, the word *Ahad is* translated as the word Esa, taken from the word *Wahdat* which means unity. The word *Ahad is* used for a name or an attribute. If used as a meaning of nature, then the word *Ahad* can only rely on Allah SWT alone. So it is different from *Wahid* which means one. The word *Ahad* can no longer add or subtract, either in thought or in reality.[19]

According to Ismail Al-Faruqi quoted by Abu Muhammad Iqbal there are three meanings contained in tauhid, namely:[20]

Humans as creatures are only creatures created by Allah SWT. Humans must carry out His commands and stay away from His prohibitions which have been determined according to the purpose of human creation.

The fulfillment of Divine will with the intention of obtaining happiness is not for avoiding torment. Allah SWT is the only Lord of the universe.

So that through the circular form derived from the word Gumuling and the theories about tawhid that have been described, it can be concluded that what the Sultan meant was to teach his families that Allah is Sunday or there is no God but Allah SWT. with the three meanings that have been explained by Ismail Al-Faruqi, it is closely related to the meaning of the circle in the gumuling well. With this meaning, we realize that humans are one of the creatures of the Almighty Essence and the creator of the universe. Humans on Earth must obey His commands and stay away from His prohibitions.

According to Wahab, quoted by the Qoriah tauhid is the purification of worship to Allah, the point is to serve oneself only to Allah purely and obey all commands and stay away from all His prohibitions with a sense of humility, love, hope and fear of Him. In simple terms, monotheistic education is a process of guidance to develop and strengthen humans in knowing the oneness of Allah.[21] From monotheistic education will lead to the goal of Islamic education.

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[17] Translation Team for Al-Qur'an UII, *Al-Qur'an* ....., p. 1136.
[18] Ayi Darmana, "Internalization of the Value of Tawheed in Science Learning*"*, *Journal of Islamic Education*,. VolXVII No.1, 2012, p. 70.
[19] Zaini Dahlan, *"Tafsir Al-Fatihah & Juz 30"*, (Yogyakarta: UII Press, 2011), p. 272.
[20] Abu Muhammad Iqbal, *"Thought*....., p. 641.
[21] Ulfah Muadhatin Qoriah, Ibrahim Bafadal, and Mustiningsih, "Management of Curriculum Implementation and Learning Based on Tauhid in the Character Building of Students, *JAMP: Journal of Educational Administration and Management*, Vol. 1 No.2, 2018, p. 189.

eISBN 978-967-2426-22-6
13th – 14th December 2020

There are several expert opinions quoted by Rohman and Hairuddin regarding the objectives of Islamic education, including:[22]

Ibn Khaldun

Ibn Khaldun argues that the goals of Islamic education are ukhrawi and worldly oriented. Islamic education must form a human being a servant who is obedient to Allah and one day he can face all problems in the world properly and in accordance with the guidance of Islamic teachings.

Al-Ghazali

Al-Ghazali formulated the goals of Islamic education into two aspects, namely forming a full-fledged human being to always be closer to Allah and towards the happiness of life in the world and the hereafter. According to Al-Ghazali, the goal of Islamic education is the perfection of a servant in achieving happiness in this world and in the hereafter. Humans can achieve happiness in this world and in the hereafter is through knowledge. With this virtue, it will give happiness in the world as well as a way to get closer to Allah for true happiness.

From the opinions of several experts above, the researcher concludes that one of the goals of Islamic education is to form devoted servants to Allah which of course must be with a strong foundation, namely the cultivation of tawhid. It is very urgent in Islamic education to really pay attention to the inculcation of tauhid in students, because according to Shiddieqy quoted by Qoriah et al. that the purpose of studying the science of monotheism is to carry out something that is obligatory for us to perfect it, namely to believe in Allah and His attributes that are obligatory on Him and to purify Allah from all the qualities that are impossible for Him, and believe in the basics of justifying the Messenger.[23] To realize all of this, the environment, both family, school, and community, must play an active role in tauhid education for students. Because in the educational process the role of family, school and community is very important to determine the outcome of the educational process.

The role of the family in the educational process is the first place students or children go through the educational process. Apart from parents having an obligation to care for, family also has a responsibility to educate. The family has an obligation to teach about morals, fiqh that is done everyday. In addition, the family is obliged to provide examples of what has been introduced to the child. So, the child is really able to understand.

If it is related to the cultivation of tauhid carried out by the sultan through the symbols in Sumur Gumuling, then we can see that this is done within the scope of the family. The Sultan strives for his family to have a strong monotheism. Not only limited to understanding, but also able to apply the true essence of tawhid. So, in Islamic education in the present era, the family must be able to instill tawhid in children starting from the family sphere. This is very important, because it will be an asset that will shape the behavior of the child.

Prophet Muhammad SAW was also taught to the children the first time he was taught, namely about tauhid. As hasith quoted by Shaykh Jamal Abdurrahman that a hadith narrated by Ibn Abbas which reads:[24] The

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[22] Miftahur Rohman, and Hairuddin, "Concept of Purpose of Islamic Education in Perspective of Socio-Cultural Values, *Al-Tadzkiyah: Journal of Islamic Education*, Vol. 9 No.1, 2018, p. 25.

[23] lfah Muadhatin Qoriah, Ibrahim Bafadal, and Mustiningsih, "Management ..... p. 189.

[24] Shaykh Jamal Abdurrahman, "*Islamic Parenting Child Education Method of the Prophet sallalahu 'alahi wasallam"*, Cet. 22 (Solo: Aqwam, 2019), p. 81-82.

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13th – 14th December 2020

Prophet Muhammad SAW said: "Teach your child at the beginning of his speech the utterance of laa ilaaha ilallah and teach him to say laa ilaaha ilallah at the end of his life. . "

So, it is very important in the process of Islamic education in the family circle to instill the value of tawheed in children. Researchers argue that tawhid is the most basic asset for the child before other sciences. Because, through strong knowledge of monotheism, the knowledge that will be studied will become the deeds of worship of the child because it is intended to worship Allah SWT.

Next is the role of the school. After a child or student gets teaching within the scope of the family, the student will get additional education in a school. School as a place of education is expected not only to provide knowledge on the cognitive aspects. But also on the affective and psychomotor aspects. So that schools play a major role in shaping the mindset and behavior of students.

In the learning process it is hoped that the values of monotheism can be fostered in students. If at home the values of tauhid have been obtained, then the school is tasked with strengthening these values of tawhid. In each subject, the sciences that are taught can be integrated that everything is created by Allah SWT. Because, in Islamic education there is no dichotomy of knowledge, but all knowledge comes from the Qur'an.

Second, the number of floors, which number two, where the lower floor is used for the female royal family, while the upper floor is used for men and has the message of the role of men and women in Islam. according to Solichin in the human capacity as servants, there is no difference between men and women, because each will get an award from Allah in accordance with the level of devotion found in QS An-Nahl: 97:[25]

means: "those who do good, both men and women in a state of faith, then it will certainly We gave replies with a better reward than apaa they have done."

Both have the same potential and the opportunity to be an ideal servant who is also in accordance with Surat al-Hujurat: 13:

means: "O people! Indeed, We have created you from a man and a woman, then We made you nations and tribes so that you would know each other. Indeed, the noblest among you with Allah is the most pious. Truly, Allah is All-Knowing, All-Thorough. "

Specificity that is allocated to men such as a husband is higher than a wife, a male protector of women, men get more inheritance and allowing men to do polygamy does not result in men becoming main servants. These advantages were given to men in their capacity as members of society who had "more" public and social roles when the verses of the Qur'an were revealed.

Figure 3. Priest's place downstairs

Source: Personal documents

[25] Translation Team for Al-Qur'an UII, *Al-Qur'an* ....., p. 931.

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13th – 14th December 2020

Figure 4.6. Place of the priest on the top floor

Source: Personal documents

Furthermore, according to Solichin, men and women alike carry out the mandate and accept the primordial agreement with Allah as stated in Al-A'raf: 172:[26]
means: "and (remember) when your Lord took from loins (spine) of the children of Adam their descendants and God took a witness against them (as he said,), "Am I not your God?" They replied, "Yes (You are our Lord), we testify. "(We do that) so that on the Day of Judgment you will not say," Verily at that time we were careless about this. "

According to Thahir, who was quoted by Maslamah and Murzani, the Koran does not teach the Qur'an teaches that there is no difference between men and women. Before Allah men and women have the same position. Therefore, the views that corner the position of women should be changed, because the Qur'an always calls for justice, security and peace, prioritizes good and prevents evil.[27] Thus, there is no discrimination between men and women in Islam.

From the explanation above, gender issues that exist today cannot be separated. According to Nasaruddin who was also quoted by Maslamah and Murzani, the understanding of religion which cornered women as if men were considered the main sex and women as the second type were sedentary in the subconscious of women and lasted so long, giving the impression that women did not deserve to be equal to men and form an unbalanced work ethic between the two types of servants of Allah. Voices to reconstruct the interpretation of the verse concerning the territory of women for the umpteenth time were heard again through a seminar entitled "*Gender Bias* in the Interpretation of the Koran" held by the Center for Women's Studies at the State University of Jakarta at Hotel Indonesia on Tuesday, 28 May 2014. According to gender studies expert, Nasaruddin, the problem of justice has tended to eliminate the basic problem. So far, he said, we have focused more on the problem, which is actually a result of birth. Nasaruddin emphasized that this gender phenomenon indicates that the understanding of religion (theology) is the main cause (*prima causa*) in giving birth to various gender-biased perceptions.[28]

According to researchers' observations, Gumuling Well is a very unique place of worship, because at this time there is no place of worship or mosque that has a special place for an imam on each floor. At present the mosque has only one Imam's seat which can be located on the floor or bottom of a mosque at present. This is very questionable in today's

[26] Mohammad Muchlis Solichin, "Islamic Education Based on Gender Equality", *Journal of Tadris*, Vol. 1 No.1, 2006, p. 52.
[27] Maslamah and Suprapti Muzani, "Concepts of Islamic Perspective Gender", *Sawwa Journal*, Vol. 9 No.2, 2014, p. 281.
[28] Maslamah and Suprapti Muzani, "Concept ....., p. 282.

circles. It turns out that when examined more deeply, it is not only in terms of the uniqueness of the building, but also it contains Islamic values that should be deepened. This will be a loan that learning Islam in the Gumuling Well is also found in the place of the existing imam.

As servants of Allah, according to researchers, men and women have the same rights in self-development, including in seeking knowledge. This was also stated by Langgulung, who was quoted by Putra that one of the basic rights of individuals, both men and women, is to get an equal education. Education is very important because it is with education that humans can be knowledgeable, have dignity, and ultimately achieve a prosperous life in the midst of society. In the review the concept of Islamic education is associated with *tarbiyah*, *ta'lim*, and *ta'dib*. The three of them have a deep meaning concerning humans, society and the environment in relation to Allah SWT. Langgulung formulates Islamic education as a process of preparing the younger generation to fill the role, transfer of knowledge, and Islamic values that are aligned with human functions to do good in the world and reap the results in the hereafter.[29] Therefore, from the use of floors in Sumur Gumuling, it means that the roles of men and women who have to develop themselves are the same, but from this, men and women can carry out their respective functions properly. From this, the value of Islamic education found in the use of floors in Gumuling Well, students are expected to respect each other between men and women, because in Islam there is no gender that is superior, because everything is the same, namely as servants of Allah.

Third, the location of Sumur Gumuling which is adjacent to Kenanga Island and in the middle of an artificial lake, namely Segaran Lor. The value of Islamic education from the location of the Gumuling Well which is adjacent to Kenanga Island contains the value that every human being must not forget his god, namely Allah SWT. In the results of the interview with Mr. Okto Luftianto explained:[30]

"So why did the sultan build a mosque near Pulo Kenongo? Now to teach earlier about religion. Hey you have fun when it's time to pray immediately pray. So you have to remember the Almighty. That means it was built near Pulo Kenongo. "

under no circumstances should humans remember when it is time to worship. In accordance with Surah Adz-Zariyat: 56, namely:[31]

Meaning: "I did not create jinn and humans but to worship Me."

If it is related to Islamic education, according to Jalal, who was quoted by Has, he said that through the process of Islamic education, students are expected to realize that they are fully servants of Allah SWT. So, students can serve themselves to Allah SWT.[32]

Meanwhile, Gumuling well is located in the middle of the artificial lake Segaran Lor. Symbolizes that every human being cannot live without water. In the sense that water is very important in human life. So, it is fitting for humans to always be grateful to the one who created water, namely Allah SWT. This was also explained by Mr. Okto Luftianto, namely:[33]

"Well, then the location of the underground mosque (Sumur Gumuling) was not only near Pulo Kenongo but also in the middle of the lake or artificial lake that I mentioned earlier, namely Segaran. Lor. So what does that mean? The Sultan teaches us to pray in the middle of water,

[29] Aris Try Andreas Putra, "Gender Roles in Islamic Education", *Journal of Islamic Education*, Vol. III No.2, 2014, p. 334.
[30] Interview with Okto Liftianto in Yogyakarta, 13 December 2019.
[31] Al-Qur'an Translation Team UII, *Al-Qur'an* ....., p. 944.
[32] Muhammad Hasdin Has, "Dynamics of Educational Characteristics of the Perspective of the Qur'an (Study of Thematic Analysis of Verses on Education), *Journal of Ta'dib Vol. 7 No.2*, 2014, p. 151.
[33] Interview with Okto Liftianto in Yogyakarta, 13 December 2019.

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13th – 14th December 2020

which means that humans cannot live without water. The point is to be grateful for the water earlier from the gift of the Almighty. So, they pray in the middle of the lake. "

In Islamic teachings all mankind should always be grateful to Allah SWT. Because, humans have been given various kinds of favors in life. So that in learning Islam, students should be taught to be grateful for the blessings that have been given by Allah SWT. as a few verses below:

Meaning: "Therefore, remember you to me, I will remember (also) to you, and give thanks to Me, and do not deny me." Al-Baqarah: 152)

According to Ibn Qoyyim, as quoted by Akmal and Masyhuri, in an attitude of gratitude there are three meanings, namely:

Through gratitude we can know that there is a blessing present in a person's mind, after that witness it and distinguish it.

Can receive the favors that have been given by Allah SWT with humility to Allah SWT who has given these favors.

From this research, there are many Islamic values that can be taken by students in the process of Islamic education. Students can know the ancient heritage architecture as well as know that previous civilizations in terms of buildings have Islamic values that can be deepened and practiced in everyday life. Researchers hope that this research will further enrich their insights about cultures in Indonesia which are full of Islamic values and can be used as learning materials for students in the process of Islamic education.

Conclusion

Of all the problems studied, previous literature reviews, theoretical frameworks, research methods and approaches, as well as the discussion in the previous chapter. The researcher draws conclusions, namely: The researcher finds that Islamic values, especially in Islamic education in Sumur Gumuling, are the sultan giving Islamic learning to his children. The Sultan tried to instill the basics of Islamic teachings in his children through symbols ranging from the shape of the Gumuling Well, the number of floors, the number of steps, and even the location of the Gumuling Sumur which had the value of Islamic teachings that the sultan would teach.

From this research, there are many Islamic values that can be taken by students in the process of Islamic education. Students can know the ancient heritage architecture as well as know that previous civilizations in terms of buildings have Islamic values that can be deepened and practiced in everyday life.

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OPTIMIZATION OF REHABILITATION OF HOMELESS AND BEGGARS IN THE TECHNICAL IMPLEMENTATION UNIT OF BALAI PUNGAI SEJAHTERA BINJAI THROUGH RELIGIOUS GUIDANCE

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Abstract: *This research was carried out in the Regional Technical Implementation Unit of Balai Pungai Sejahtera Binjai based on the interest that the function of social housing as a shelter or rehabilitation for homeless people and beggars when they are caught raided by Pamong Praja Police Unit. The great responsibility of rehabilitating homeless people and beggars to be built and equipped with skills in order to function socially as it should in a society that later when out of this orphanage they do not return to the streets but are able to return to carry out proper ness as they should. One of the programs implemented is religious guidance that is routinely implemented. Religious guidance is one of the main programs implemented. This research uses qualitative methods that are expected to provide a more specialized and deep perspective. Data collection is conducted using interview techniques, documentation and limited group discussions. The analysis uses a qualitative approach by dividing the subject according to thematic. The results show that social service recipients are very welcome to the religious guidance programs provided by the institution. The institution facilitates religious teachers who can always discuss and study Islam while in the orphanage. This religious coaching also trains the religious mental still attached and imbued in life, people will not quickly despair in acquiring daily needs and will avoid begging activities. The Institution believes religion is the most important capital in life so that anyone will find it easier to survive if they believe in the religious values it has*

Keywords: *Religious Guidance, Homelessness, Beggars, Balai Pungai Sejahtera*

Introduction

North Sumatra Province has 147 Regional Technical Implementation Units (UPTD) under the auspices of the Social Service of North Sumatra Province. Each UPTD has a special task of carrying out services or rehabilitation in certain fields. Areas managed by UPTD include the problem areas of teenagers who drop out of school, blind people, commercial sex workers, the elderly, homeless beggars and others. Some of the existing UPTD are as follows: Social Institutions Bina Remaja Nusa Putra Tanjung Morawa that handles the problem of teenagers who drop out of school and equip them with skills, Bhakti Sei Buluh Social Home accommodates and empowers the blind, Parawarsa Berastagi Social Home that handles commercial sex workers (PSK) netted raids by Satpol PP to be fostered and given skills, The Children's Social Home Pengekepen Kabanjahe which is a child orphanage that accommodates children who are displaced and delivered by their parents, Werdha Abdi Binjai Social Home which accommodates elderly and elderly displaced people, Netra Baladewa Tebing Tinggi Disability Social Home which accommodates the blind and equipped with skills such as massaging, PSTPA Dharma Asih Medan which handles child care for busy parents so that their

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13th – 14th December 2020

children are not delivered at the time of parents work, Harapan Bahkapul P.Siantar Social Home that accommodates the elderly displaced, UPTD Balai Pungai Sejahtera Binjai which handles the problem of homeless beggars who are netted raids by Satpol PP to be fostered and equipped with skills in order to function socially as appropriate in society.

In the study of social welfare science every orphanage engaged in services and rehabilitation must certainly carry out all its activities based on scientific rules related to social work practices. Social welfare science has provided theories and rules that must be implemented by each institution that carries out the activity.

Especially in uptd Balai Pungai Sejahtera Binjai certainly interesting to be researched, seeing that the function of social institutions as shelters or rehabilitation for homeless people and beggars when they are netted raids by PP police. A great responsibility to rehabilitate homeless people and beggars to be fostered and equipped with skills in order to function socially as they should in a society that later when they leave this orphanage they do not return to the streets but are able to return to live their lives properly.

One of the coaching programs carried out is Religious Coaching. Religious activities, meaning "activities related to the field of religion that exists in the life of the community in carrying out the rules of Islam in everyday life.

Literature Review

UPTD Karya Pungai Binjai Profiel

UPTD Social Services Homeless and Beggar Binjai addressed at Jalan Perintis Kemerdekaan number 4, Binjai with a land area of 22,800M² and a building of 4,556.25M². UPTD Social Services Homeless and Beggar Binjai consists of two orphanages namely The Social Home Of Karya Pungai was established in 1958 under the auspices of the Social Service of North Sumatra Province, and the Bina Karya Sejahtera Social Home (PSBK) was established in 1983 under the auspices of the Regional Office of the Ministry of Social Affairs (now the Ministry of Social Affairs).

UPTD Social Services Homeless and Beggars Binjai specifically carry out rehabilitation of homeless and beggars and vulnerable families will be poor. With the task of providing professional services and social rehabilitation that includes physical, mental services and changing attitudes in a more positive direction in filling the life by providing work skills, socialization and further coaching provided to the citizens with the aim that the citizens after completing the training can play an active role in the life of the community.

Beggars and Technical Implementation Unit

Medan City Regional Regulation Number 6 Year 2003 concerning The Prohibition of Homelessness and Beggars and The Practice of Moral Impairment in the City of Medan provides the following definition:

1. Homeless people are people who live in circumstances that are not in accordance with the norms of a decent life in the local community and do not have permanent housing and employment in certain areas and live wandering in public places.
2. Beggars are people who earn income by begging in public in various ways both in the form of mending and other reasons to expect mercy from others.

Social institutions can be used as social rehabilitation centers that are at the forefront of carrying out the duties and functions of social welfare implementation and the pillars of service intervention and social rehabilitation. UPTD is an option that must be available in addition to

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13th – 14th December 2020

other main options, namely family and community-based social services and/or private, so that the community has a choice according to their condition.

Some research that is theorized by traced provides information that can help build a better discourse of thinking. The following are the results of previous research cited by researchers to strengthen the arguments of researchers on the problems studied as follows:

1. Irwansyah (2018), showed that the development of skills at UPTD Balai Pungai Sejahtera Binjai is more focused on agricultural skills, considering the area of land owned by the UPTD. With this, the residentts are given good experience in agriculture, especially in the hope that they will not rely on begging again when leaving the orphanage.
2. Anggriana, T.M, Dewi.N.K, (2016), Based on observations and in-depth interviews the researchers concluded that there are several problems experienced by homeless and beggars in the Homeless and Beggar Social Rehabilitation Center, the problem is related to: 1. Economic problems, 2. Educational problems, 3. Socio-cultural problems, 4. Environmental problems 5. Legal and citizenship issues. 6. Mental attitude is not healthy.

Furthermore, research that has been done by researchers on the theme of Homeless and Beggars as follows:

1. Husni Thamrin (2017) Cutting off Beggars Spread in Medan. Hasil Penelitian menunjukkan Based on the results of research and discussion, as well as to answer questions in this research then the research conclusions are as follows:
    a. Noexpertise, skill, and enough venture capital to survive after getting out of The Social UNIT for the prosperous Pungai Binjai and NGO KKSP and PKPA Medan city that provides services to homeless and beggars;
    b. A sense of comfort into a beggar than other jobs.
    External factors, namely:
    c. Solicitation of others to work as beggars and vagrancy life; b. The magnitude of the earnings from begging; c. Loss of control of the social community environment no matter to members of society who are working to become beggars.
2. Husni Thamrin (2016), Model of Social welfare service in handling social welfare of Bums and Beggars in Medan to develop the system and non system of nursing, namely: 1) issue a policy in the form of rules of Medan to deliver criminal fines and sanctions for the community who give money to beggars in Medan as well as provide sanctions fines/criminal to the person/groups of people that are organizing others to work as beggars in Medan; 2) enable the role of community-based social welfare (WKBSM) as a social control of society by applying local wisdom in Medan.

Religious Guidance

The development of diversity provided has the aim to increase patience in worship in accordance with the religion embraced by the target citizens. Religious development is carried out through religious activities that are routinely carried out by the citizens so that the citizens become devout people so that the mental possessed is well formed. In conducting religious guidance UPTD Balai Pungai Sejahtera Binjai has set an agenda of religious activities that must be followed by all citizens:

a. On Tuesday morning, all residentts received a spiritual flush ahead of the activity together with the officers in the field.
b. On Fridays, it is obligatory for mothers of muslim citizens to participate in religious activities.
c. On Thursday afternoon after the zuhur is required to all citizens listen to religious

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13th – 14th December 2020

lectures. In this case the Speaker of religion is an expert in the field of Islam, and by the orphanage builders are given time to give religious lectures to the target citizens.

According to the head of UPTD, religious mental guidance is the most useful and valuable coaching for the targeted citizens. This is because according to him, as long as a person's religious mentality is still attached and imbued in life, people will not quickly despair in obtaining daily needs. Moreover, religion is the most important capital in life so that anyone will find it easier to survive if they believe in their religious values.

The majority of the targeted residentt at UPTD follow all religious activities carried out 100% because they feel that it is indeed a necessity that will be their provision in addition to the agricultural program because the activity is enlightening themselves because there are religious lectures that can shape them to be closer to god and become a better self later. As for the resident who follow the religious activities sometimes because of illness and have asked permission before. Mental and spiritual development is always applied to create a human being who is religious and obedient to the command of god almighty.

The effect on religious guidance is very rapidly developing on each resident. The majority of residents said they had a close relationship with the employees at the time. while those who say less familiar because they claim not to be considered face-to-face by other resident and claim to get along with employees fairly and do not want to be so excessive if there are no problems or problems to be discussed with employees. from the data, researchers can conclude that employees and citizens both maintain good relations so that researchers feel that there has been a harmony atmosphere in this UPTD. With the religious guidances, at least reduce the negative side of resident for their daily activities. The majority of cresident have never done anything wrong during their stay in this area, because they nailed this regulation is firm enough that residents are afraid that if they make a mistake, they will get punishment from employees..

If the resident done anything wrong, then in fact the UPTD has sanctions for mistakes and violations committed by resident. various forms of punishment given by the UPTD to resident who make mistakes are aimed at improving discipline and sense of responsibility and to change the behaviour. Based on the data can be known the form of punishment given by the UPTD to its resident who make mistakes that are recognized by the citizens that are not fed. In this case the UPTD punishes by not being fed for one day or cut off its ration of food before the punishment is given usually the citizens who commit the violation are given a warning in advance.

The closeness of the residents to the UPTD employees builders to a harmonious relationship. The behavior of resident can be reflected from the actions they took during the deliberation activities. Many resident who have been able to interact with various things by listening correctly to the results of deliberation even though the responses are only a small part. Thus, the behavior of residents in this field as a result of religious guidance carried out by the UPTD can be said to have changed in a positive direction. Overall, religious guidancet makes people always think positively and receive various inputs from outside where previously residents while still on the street could not open themselves and offer good interaction with others.

Religious Guidance Strategies

This religious activity becomes an alternative religious educational institution for those who do not have enough energy, time and opportunities to study religion in the formal education

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13th – 14th December 2020

path. This is what makes religious activities have their own values and characteristics compared to other religious educational institutions. Given its flexible implementation and open to all times and conditions, the existence of religious activities has become a long life education institution for the people of the targeted citizens (Fudholli Al Hasyim, 2012)

The first strategy is to use informative strategies, this strategy emphasizes on providing information and religious messages to be conveyed. The agency conveys information awareness of homeless and beggars fostered by providing information on various religious education. The message that is often conveyed is about praying, maintaining relationships, and do the best effort.

Remind each other to pray as one of the pillars of Islam and practice surrender to the most loving and merciful Of Allah SWT. Maintaining good relations between resident are also carried out through congregational prayers. Togetherness is always encouraged by the institutions so that the lives of the targeted citizens are safe and peaceful. Furthermore, we want to try to change fate by running skills programs and implementing them in their daily lives. Verses of the Quran that are always conveyed and reminded to the citizens of the built:

> *God does not change of a people fate until they change what is in themselves. And if Allah desires evil for a people, there is none who can a guardian over them, and they have no protector besides Him." (TQS. Ar-Ra'd [13]: 11).*

The second strategy is a persuasive strategy, in which this strategy is carried out by conveying praise and persuasion to the target citizens to be interested in participating in the programs implemented. Residents are invited to participate in trying and applying the skills gained during their stay in the institution. Encourages not to despair and rewards that are commensurate with the results of his work. For example, homeless beggars who successfully run their businesses, for example agricultural businesses, then the rewards are given as part of their efforts.

The third strategy is a coercive strategy, where the emphasis on this strategy is to provide a message of threat or frightening consequences if citizens do not follow what is conveyed by the institution. For example, "one day those who do not pray will go to hell". (Mutiawati, 2014)

UPTD Panti Karya Pungai has run an informative, persuasive and also coercive strategy. Informative methods are more related to their delivery with lectures, speeches, giving advice and also spiritual guidance face-to-face. In the delivery of his informative message has also been drawn persuasive and coercive things. Persuasive means that giving appeals to the private citizens to participate and strive for religious knowledge and understanding and practice.

Conclusion

1. UPTD Panti Karya Pungai Sejahtera Binjai specifically carry out rehabilitation for homeless and beggars and vulnerable families will be poor. One of the programs carried out is religious guidance that is expected to provide positive value for the targeted citizens.
2. Religious guidance provides benefits, among others, providing the spirit of living life and not despairing, closer to the creator, having a good relationship with fellow citizens and employeesUPTD so as to create a harmonious life
3. Strategies carried out in religious development are informative strategies, persuasive startegi and coercive strategies

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Undang-Undang

Peraturan Daerah Kota Medan Nomor 6 Tahun 2003 Tentang Larangan Gelandangan dan Pengemis Serta Praktek Tuna Susila di Kota Medan.

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13th – 14th December 2020

COMMUNITY EMPOWERMENT IN ESTABLISHING BUSINESS GROUPS FOR SOCIAL AND ECONOMIC VULNERABLE WOMEN IN NEGLETED RAILWAY REL AREAS IN SUKADAMAI VILLAGE, MEDAN POLONIA DISTRICT

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Abstract: *One of the treatments for persons with Social Welfare Problems, which later appeared in many urban areas, is Women with Social Economic Vulnerability. An adult woman aged 18-59 years who is not married or widowed and does not have sufficient income to be able to meet her basic daily needs is called a woman who is socially and economically vulnerable. Various studies have found that women have the potential for social capital which can be a productive alternative strategy to improve the family economy. Every community in an environment must have assets that can be used by developing their social and cultural potential. It's just that a stimulus is needed in developing these assets. In Medan Polonia District, there is one rail area that has been abandoned and is no longer used by the Railway Company. In the vicinity of this rail, the life of the average population is still poor and needs attention so that it can be improved and empowered. The data of this paper were collected through interviews and limited group discussions which were then summarized by the team and analyzed using a qualitative model. The results showed a positive response given by socio-economically vulnerable women to the training provided to improve skills, but only a few people later had the initiative to open a Damai Sejahtera business group with a business that started to build liquid palm sugar "morsip". Encouragement and motivation from the Community Service Institute of the University of North Sumatra through the community service team is able to build an entrepreneurial spirit by using network potential and minimal funds.*

Keywords: *Community Empowerment, Social and Economic Vulnerable Women, Railroad, Social and Cultural Potential*

Introduction

Handling people with social welfare problems (PMKS) should be one of the government's priority programs. This has been stated in Law No. 11 of 2009 About Social Welfare. In the Law it is stated that social welfare is a condition of meeting the material, spiritual, and social needs of citizens in order to live decently and be able to develop themselves so as to carry out their social functions.

One of the handling of social welfare problems (PMKS) that later appeared in many urban areas is social economic vulnerable women (PRSE). An adult woman aged 18-59 is unmarried or widowed and does not have enough income to be able to meet the basic daily needs of so called social economic vulnerable women. PRSE are included in people with social welfare problems (PMKS). Most of these PRSE are widowed and are particularly vulnerable

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13th – 14th December 2020

to social problems, when compared to married or unmarried women. Starting from separation with the husband, economic insecurity will appear especially for women whose economic condition is inadequate, especially those who have children and should act as a parent (single parent) that will add to the burden of a widow's life.

The low economic status of women in Indonesia is partly due to the lack of women in accessing resources in their families, communities or countries. Efforts to reduce poverty and injustice experienced by women will have implications for the welfare and survival of families and communities. This history can be seen when Indonesia is experiencing an economic crisis that adversely affects family incomes thus increasing the number of poverty and unemployment. This condition is seen as having an even worse effect if policymakers and programs ignore the different conditions and abilities of various elements of society including men and women. In addition, according to Izza (2009:74) that women have a more diverse perception than men in welfare or poverty that is in addition to aspects related to income access, asset ownership, quality of health, food and opportunities, also look at things related to family life such as family harmony, security, lack of relationships with loan sharks, lifestyle, the ability to help parents and others as well as social relationships with neighbors. From these conditions, the government responded, one of which was through women's empowerment policies that led to the improvement of the family economy

The family economic empowerment program is part of poverty reduction schemes and improving the welfare of the community. There are programs that are educational (karitatif) and productive. If the orientation of the program is in the aspect of empowerment, it must be integrated through the correct dimension of the process by placing the community directly encouraged in the 'engaged' position. If empowerment does not run smoothly, it will cause economic and social disparities.

Observing the empowerment of women according to Linda (in Herliawati, 2009:13) is a process of change in which individuals or groups with little or no power gain power and the ability to make choices that can affect their lives. The power structure that has it, what resources and how to leverage it directly influences women's choice to be able to take advantage of it in their lives. While Gita Sen (in Herliawati, 2009:13) states empowerment is an attempt to change power that forces women's choice, autonomy and affects health and well-being.

From both opinions, women's empowerment boils down to the concepts of gender mainstreaming, gender equality and justice. Ultimately, women's empowerment patterns require fundamental change so as not to undermine women's position and autonomy. Therefore, it is necessary to take a strategic approach that is able to guarantee and direct women empowerment activities in the effort to keep women in two domains, namely domestic (household) and public (society). The choice of community empowerment strategies in poverty reduction with the target of women and families is to increase participation in potential-based economic activities and local resources.

Based on the results of research conducted by Thamrin (2018) that every community in a linggungan must have assets that can be used by developing their social and cultural potential. It's just that stimulus needs to be developed in developing these assets.

Literature Review

Social and Economic Vulnerable Womwn (PRSE)

Social welfare is an integral part of the ideals of independence and is the goal of state development. In an effort to alleviate poverty, the Social Service groups the population that is the target of poverty alleviation, namely the population group with Social Welfare Problems (PMKS). PMKS is a person, family or community that due to an obstacle, difficulty or disorder

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13th – 14th December 2020

is unable to carry out its social functions, so it cannot be met the needs of its life both physical, spiritual and social adequately and reasonably. These obstacles, difficulties and disorders can be in the form of poverty, neglect, disability, social assistance, backwardness, alienation/remoteness and environmental changes (suddenly) that are less supportive, such as disasters. According to the Ministry of Social Affairs, there are at least 22 operational definitions and characteristics of each type of PMKS. Of the 22 types of PMKS, one of the categories is women, namely Social and Economic Vulnerable Women (PRSE).

Women's welfare must be an important agenda in poverty alleviation programs because women's welfare in general can reflect the welfare of the family and can be a guarantee for the welfare of other PMKS groups, namely children, elderly, and family members who suffer from diseases. This is related to the reductive role inherent in women. The reductive role is the role associated with childcare responsibilities and domestic duties. In Indonesia, especially in marginalized communities the argument can be understood because:

1. Women, from a local cultural point of view, live more at home and have more free time;
2. Women work more in the domestic sector so that they know more about their nutritional and health needs for their families;
3. There are constraints for women to access microfinance for businesses. Many reports state that women are often the target market of loan sharks (moneylenders), pawnbrokers, and sellers of household goods (such as: clothing and kitchen utensils) with credit facilities.

Implementation of Empowerment

Medan Polonia subdistrict is directly adjacent to The District of Medan Johor to the south, District Medan Petisah to the north, District Medan Baru to the west, and District Medan Maimun to the east. District of Medan Polonia is one of the subdistricts in the city of Medan which has an area of about 8.92 km2. The distance of the sub-district office to the Medan Mayor's office is about 8 km.

Medan Polonia district is inhabited by 57,501 people where the largest population is in Sari Rejo Village, which is 28,063 people and the smallest population in Angrung Village is 1,854 people. When viewed from the area of the village, Suka Damai Village has the largest area of 3.62 km2 while Angrung Village has the smallest area of 0.40km2. (BPS Medan City: 2019)

The population of Medan Polonia subdistrict is 57,501 people consisting of 29,122 men and 28,379 women. Based on age group, the population distribution of Medan Polonia subdistrict is relatively more productive age population and at least in the next age group.

In Medan Polonia Subdistrict, there is one rail area that is displaced and no longer used by the Railway Office Company. Along the tracks are already standing buildings and forged by residents. This rail line is bordered by Johor Building District. The villages that are passed by the derelict rails are Suka Damai and Sari Rejo Villages

Around this rail the lives of the average population are still in a level of concern and need attention to be improved and empowered. The empowerment carried out by the Community Service Team of the University of North Sumatra was carried out by focusing on the Establishment of Business Groups for SocioEconomic Vulnerable Women in the Abandoned Railway Area of Sukadamai Subdistrict of Medan Polonia.

It is designed after discussing and seeing things that can be used as the basis for carrying out Community Service are as follows:

1. PRSE is one of the problems in development and belongs to the category of People with Social Welfare Problems (PMKS) that has been determined by the State

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13th – 14th December 2020

2. The derelict railway area can be said to be a slum area whose problems are very complex.
3. There is already a basic capital in the form of a joint arisan group followed by 10-12 people that has lasted more than 5 years.
4. It is expected that when formed business groups can be the next model of formation, and become an example so that the surrounding population is able to develop existing potentials.

Women's Empowerment of PRSE is carried out by conducting training. This training aims to build awareness that they have potential that can be developed to overcome life problems faced. They are trained to be able to identify potentials and assets owned. The interesting thing to find is that they feel they do not have the potential and assets that can help solve the problem. This then changed after the discussion and got an explanation that the potential and assets are not only in the form of goods or capital. They finally realize that family, friends, neighbors, community environment, education, knowledge, skills are also potentials and assets that can be used to solve problems faced daily.

After PRSE is trained to be aware of the potential and assets that have empowerment continued by giving skills to map the problems faced. The results showed that women are socially and economically vulnerable to feeling limited to develop their potential, because courage and domestic work are a burden in their activities.

The next stage of PRSE is aware of the conditions and problems they face and is able to map their potential, and then the next step is to increase the capacity of individuals. In this devotional capacity to be increased is the courage of trying and the skill of taking the opportunity to try. Each individual has creativity and potential that can be developed. Especially if it is able to unite the forces and is ready to design a joint effort. Many problems faced and asked by participants, especially business funding issues. PRSE is invited to understand that capital is not always the main thing, reseller system, network utilization can be the main solution.

After carrying out the training, it is continued by carrying out mentoring. This assistance is done only for PRSE who have an interest in opening a joint venture. From the discussions and talks conducted during the mentoring, it was decided by a group of PRSE will open a joint venture with the name "Damai Sejahtera" that does not use much capital. The use of networking and friendship is used as the basis for trying. It was decided to make a business "nak duren" that sells durian basic ingredients. Materials and products sold are processed friendship network that gives capital products to sell and with branding "nak duren".

Furthermore, the results of the assistance were developed again joint efforts by seeing the opportunities of coffee shops that need liquid palm sugar. This business opportunity is explored by looking for information on the price of sugar in the village of one of the group members. After being taken into account, it then agreed to produce liquid palm sugar with the name "morsip" taken from the village from which the sugar was produced. This shows that PRSE when encouraged and given skills will do everything in its power to change its economic life. The process of empowering women has also been widely researched and the results of the research carried out by the researcher have a lot of interesting things. In the research conducted by (Dewi, 2012) women's motivation to work include husbands not working, low household income and a high number of household dependents. (Astuti, 2012) in his research on the empowerment of poor women based on the utilization of local resources, the number of poor families is still high enough that the empowerment of poor women with the use of local resource bases can alleviate poverty. (Budhi, 2013) in his research on the analysis of factors that affect poverty alleviation in Bali, poverty is a disease for developing countries such as the

number of poor people, agriculture, industry and Gross Domestic Product (GDP) affect poverty alleviation in Bali. (Rizal and Chandra, 2016) in his research of factors that affect women entrepreneurship socioeconomic conditions are weak and difficulty finding work, it is very difficult for women to hone the skills that exist in a group or individual of women.

It is realized to empower PRSE has challenges that are not easy. The process of mentoring and encouragement must continue to be carried out simultaneously. Increased knowledge, insights and skills must be continuously augmented and developed. The real participation of PRSE and the support of helpful parties such as universities, enterpreunur and local government is a force that must be continuously improved.

Conclusion

1. This Community Service and development activity has completed most of the stages of activities with good reception from partners of Medan Polonia Subdistrict and socioeconomic vulnerable women who live around abandoned railway tracks in Sukadamai Village. The positive response given by PRSE at the time of training, but only a few people who later have the initiative to open a joint venture with Damai Sejahtera with the need to be built :nakduren" and "morsip"
2. Encouragement and motivation from the University of North Sumatra Service Institute through the dedication team is able to build entrepreneurial spirit by using the potential of networks and funds roughly.

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IMPROVISING TITBIT FROM NEPHELIUM LAPPACEUM SEEDS USING BOILING AND DRYING METHOD

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Abstract: *Rambutan (Nephelium lappaceum), which is known as an exotic fruit is believed to have been originated from Malaysia. Due to its Malay name rambut, which means hairy, it is sometimes called as "hairy litchi." Rambutan fruit is generally ovoid or ellipsoid in shape and varies in colour from pinkish to deep red or reddish orange to yellowish red. Beneath the skin, one could find a large seed, which is surrounded by a translucent, white juicy flesh or aril with a sweet and delicious flavour. Nowadays, healthy snack has become a choice among customers as for them to lead a healthy life. Looking at its needs, a study has been conducted to produce a Nephelium lappaceum seeds titbit (NLST). The Nephelium lappaceum seeds are reported to contain various phenolic compounds, such as ellagic acid, correlating and geraniin, which could be beneficial health constituents. One of the major reasons for discarding Nephelium lappaceum seeds as industrial or agriculture waste is the slightly bitter taste of the seeds. The bitter taste is believed to be due to the presence of alkaloids, tannins, saponins, and phenolic contents. Nephelium lappaceum seeds chosen because these seeds contain polyphenols. Polyphenols are found in fruits, vegetables and grains. This study was conducted to examine the level of respondent's acceptance of NLST. Questionnaire instruments using the Hedonic scale are used to investigate the level of acceptance to our product were randomly distributed to 30 respondents in Tourism & Hospitality Department staffs in Politeknik Merlimau Melaka. Data were analysed descriptively using SPSS version 22. The analysis showed that NLST was accepted at a good level by the respondents with a mean value of 4.79. In conclusion, this Nephelium lappaceum Seeds Titbit was received optimally by the respondents.*

Key Words*: Nephelium lappaceum seeds, titbit, Hedonic scale*

Introduction

Rambutan *Nephelium lappaceum L* are we know are exotic fruit commonly found in South East Asia region such as Indonesia, Malaysia and Thailand (Marisa, 2006). Some physio-chemical properties have been used to describe the characteristics of rambutan seed, either edible part or non-edible one. The seed and peel of rambutan are considered as wastes, therefore, some scientists have attracted to investigate the biological activities of seed and peel to seek the possibility of both to be developed as functional food. Several biological activities, which are beneficial to human health are reported in rambutan fruit, namely antioxidant, antibacterial, antidiabetic and anticancer. Some physio-chemical properties and the active compounds present in the fruit, seed and peel of rambutan along with the biological activities supporting rambutan fruit as functional food (Rohman A., 2017).

During rambutan harvested, the fruit have reached optimum visual and sense quality. Rambutan rapidly deteriorate unless proper handling techniques are employed. The rambutan fruits are deseeded during processing and these seeds (~ 4-9 g/100 g) are a waste by-product of the canning industry and some studies were showed that rambutan seed possesses a relatively

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13th – 14th December 2020

high amount of fat and this fat are similar to those of cocoa fat, although have some different physical properties. However, in the present research about rambutan seed fat continued increasing due to from previous research was found that this fat can use as substitute in cocoa butter for chocolate products (Zzaman et al., 2014). Therefore, researchers also said that the extracted fat from rambutan seed not only could be used for manufacturing fuels but it also has a possible to be a source of natural edible fat with feasible industry use.

However, seeds and their rind have not been given much attention such that most times these parts of fruit are discarded even with their hidden nutrient. The seeds and rind which are often the waste part of the fruits have not generally received much attention with a view to being used or recycled rather than discarded (Johnson et. al., 2013). The main factor rambutan seeds has been chosen because these seeds contain polyphenols. These Polyphenols are found in fruits, vegetables and grains. The average human can consume polyphenols in now to 23 mg. Other benefits of polyphenols are anti-microbes. Phenolic acid is a class of antioxidants or substances eliminate free radicals, which can clog blood vessels and resulting in changes in DNA that can lead to cancer and other diseases (Marisa, 2006).

In improvising this *Nephelium lappaceum seeds titbit* (NLST), several aspects have been assessed and several problem statements have been studies. The researcher found an alternative solution to reduce wastage of the seeds of rambutan by improvising it as a titbit with different kind of flavour. The research objective is to determine the level of consumers' acceptance over *Nephelium lappaceum seeds titbit*.

Literature Review

Rambutan (Nephelium lappaceum L.) fruit is an exotic fruit that grows in Southeast Asia Rambutan is expected to originate from Indonesia and Malaysia regions, with a highest genetic diversity in Kalimantan, and then spread throughout the Southeast Asian region (Kuswandi et al. 2014). Rambutan (Nephelium lappaceum) fruit is well renowned for its appealing soft hairy skin varying in colour from either green, red, yellow, or orange yellow (Li et al., 2018). The fruit is normally sized at around 3–6 cm in length and 3–4 cm in diameter. The fruit is composed of peels which are 45.7%, pulp which is 44.8%, seed which is 9.5%, and embryo which is 6.1% of the total weight (SolisFuentes et al., 2010). The diversity of species in the Nephelium genus in the world reaches 22 species, 16 species were found in Indonesia. Nine of them are the species of rambutan that are consumable, however, only five species have been cultivated, one of them is N. lappaceum (Djuita et al. 2017).

Studies have shown that fruits and vegetables contain among other vital nutrients, an appreciable quantity of vitamin, fibre, antioxidants, phytochemicals and a daily consumption of at least 5 to 10 servings of a wide variety of fruits and vegetable is an appropriate strategy for significantly reducing the risk of chronic diseases and to meet nutrient requirement for optimum health (Liu, 2004). Darajati et al. (2016) reported that rambutan seeds are slightly bitter in taste and have narcotic properties given the fact that they contain alkaloids. Although fresh rambutan seeds are believed to be toxic, some folks in the Philippines have been reported to safely consume the roasted ones (SolisFuentes et al., 2010). However, based on the brine shrimp lethality test, Chai et al. (2019) confirmed that the roasted rambutan seed powder is not toxic and is safe for human consumption. N. lappaceum has been used as traditional medicine for centuries especially as a remedy for diabetes and high blood pressure (Kaushik et al., 2010). The fruit is believed to be stomachic, astringent, anthelmintic and believed to be a good remedy to treat diarrhea and dysentery. The leaves are used in poultices for treating headache (Suganthi A and Marry JR., 2016)

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The fruit flesh that can be consumed is aryl. The fruits contain carbohydrates, fat, protein, ash, mineral, and vitamin C, while seeds contain fat, protein, fibre, carbohydrate, ash, and mineral (Harahap et al. 2012; Manaf et al. 2013). However, the rambutan, both fresh and dried pulp, has been revealed containing ascorbic acid content higher than in the peel, with showed a lower content of carotene (Johnson et al., 2013). Rambutan fruit is potential to be used as functional food due to its capability to provide beneficial health effects. Underutilized part of rambutan (rind and seed) contain some active components which are reported to prevent some diseases (M Wahini et al., 2018).

But, rambutan's rind and seed is considered as a waste. Rambutan are consumed, fresh, canned or processed and its consumption results in the production of vast amount of rambutan waste from their seeds and rind, disposal of these rambutan wastes can have a serious environmental impact which is becoming harder to solve (M Wahini et al., 2018). Much effort will therefore be needed to develop the nutritional and industrial potential of by-products waste and these underutilized agricultural products (Fila et al., 2012). Rambutan seed waste has become a noteworthy problem in rambutan canning industry that need to be solved (Febrianto, et al., 2016). Previously, Norlia et al. (2011) also said rambutan seed is considered as a waste in rambutan canning manufactures with a noteworthy value as much as 94,500 tonnes/year from Thailand, Indonesia and Malaysia alone.

Previous studies showed that the extraction of fat from rambutan seed can be the alternative to utilize rambutan seed, as the fat can be used in candles, soaps and fuel manufacturing (Morton, 1987). Furthermore, research carried out by SolisFuentes et al. (2010) and Sirisompong et al. (2011) showed that edible rambutan fat has the physical and chemical characteristics that make it possible to be applied in the food industry as confectionery ingredient. Febrianto (2013) and Febrianto et al. (2014) then reported that fermented and roasted rambutan seed fat have similar characteristic with cocoa butter and potential to be utilized as cocoa butter substitute. As such, the potential of the rambutan seed fat as a source of cocoa butter substitute in confectionary products has been highlighted (Issara et al., 2014). Considering its advantageous nutritional components, the rambutan seed can be utilized as a promising source for future applications in the food industry (Andri Cahyo Kumoro et. al, 2020)

Research Methodology

Standard Procedure and Dehydration Process

50g of rambutan seeds required in making 1 packet of *Nephelium lappaceum seeds titbit* as shown as Table 1. The Nephelium lappaceum seeds throughout dehydration process in electric food dehydrator machine. The processes started from peeling, wash and boiling the seeds, before put them in the dehydrator. It takes 12 hours at 40^{o}C and the Nephelium lappaceum seeds will frying until its golden brown as presented in Figure 1. The time and temperature of dehydration vegetable fruits and veggies are good at about 130°F or 135° F for between 4 and 12 hours. According to Vinskofski (2015), the best temperature to dried vegetables is generally at 125°F/52°C. Higher temperatures may cause the outside of the vegetable to harden while the inside remains moist, causing spoilage. The low temperature used in dehydrating vegetables helps to preserve nutrients and most vegetables can be dehydrated; some require blanching first, but for many vegetables, prep is as simple as chopping or slicing.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 1: Recipe of 50gm of Nephelium Lappaceum Seeds Titbit

INGREDIENTS	QUANTITY
Nephelium Lappaceum Seeds	50gm

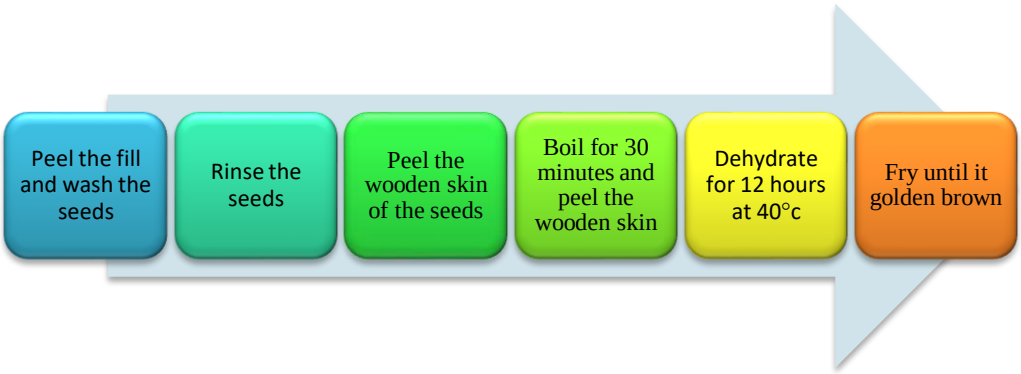

Figure 1: Dehydration Process of Nephelium Lappaceum Seeds

Standard Recipe and Process Nephelium Lappaceum Seeds Titbit with Flavour

The process of preparing Nephelium lappaceum seeds titbit started with peeling the skin of the rambutan and also the fill in order to get the seed. Secondly, wash all the rambutan seeds that has been peel and continue with boiling the seeds with 2 tablespoons of salt for 30 minutes. This step is to make sure that the rambutan seeds is cook perfectly so that it will be edible to eat. Then, peel the wooden skin of the seeds and wash the seeds to remove the access skin. The next step is arranging the rambutan seeds in the food dehydrator, dehydrate for 12 hours in 40°C. After it has been dehydrated, allow it to cool to room temperature before frying without oil the rambutan seeds until it's golden brown. Coated with cinnamon powder, salt, sugar or spicy cheese powder, let it cool to avoid condensation inside packaging. Lastly, put in the seal packaging.

Table 2: Recipe of Nephelium Lappaceum Seeds Titbit with Flavour

Ingredients	Quantity
Rambutan seeds	50 grams
Cinnamon powder	1.3 grams
Salt	1.5 grams
Sugar	1.1 grams

Sensory evolution

The hedonic test with 5 hedonic scales was done by 30 respondents that consisted of students and staffs at Politeknik Merlimau, Melaka in order to determine the level of consumer's acceptance over Nephelium Lappaceum Seeds Titbit (NLST). Hedonic scales are indicating the extent of their like or dislike for the food. The most common hedonic scale is the 9-point hedonic scale known as a degree-of-liking scale. This scale has achieved wide popularity since it was first invented in the 1940s at the Food Research division of the Quartermaster Food and Container Institute in Chicago, Illinois (Peryam and Girardot, 1952). Peryam and Pilgrim (1957) note that the hedonic rating can be affected by changes in environmental conditions, but the relative order of sample preference was usually not affected. The 5 scale hedonic test was

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13th – 14th December 2020

comprised of 5 = Like very much, 4 = Less a little, 3 = Not sure, 2 = Dislike a little and 1 = Dislike very much as stated at Figure 4.

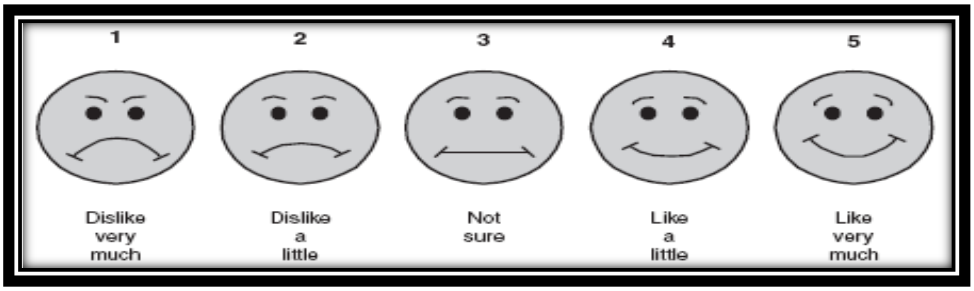

Figure 2: Five Levels Facially Hedonic Scale

(Munro, 2017)

Data Analysis Technique

The data obtained have analysed by using the Statistical Package for the Social Sciences (SPSS) version 22 to get mean and percentage result. The interpretations mean score scale that used to analyse as shown as Table 3.

Table 3: Range of Interpretation Mean

MEAN SCORE	INTERPRETATION	LEVEL
1.00 - 2.49	Low	Poor
2.50 - 3.49	Medium	Medium
3.50 - 5.00	High	Good

(Sources: Wiersma, 1995)

Finding & Discussion

Demography Analysis

The demography analysis in this research was age and gender of the 30 respondents. Based on the Figure 3, 33% of the respondent age 34 years old and above or 10 respondents, followed by 27% or 8 respondents from 30 to 33 years old, as for 26 to 29 years old also 27% or 8 respondents. Meanwhile, for respondents age 22 to 25 years old was 10% or 3 respondents and last 3% or 1 respondents comes from the age 18 to 21 years old. The smaller percentage was from 18 to 21 years old with 3% or only 1 respondent.

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13th – 14th December 2020

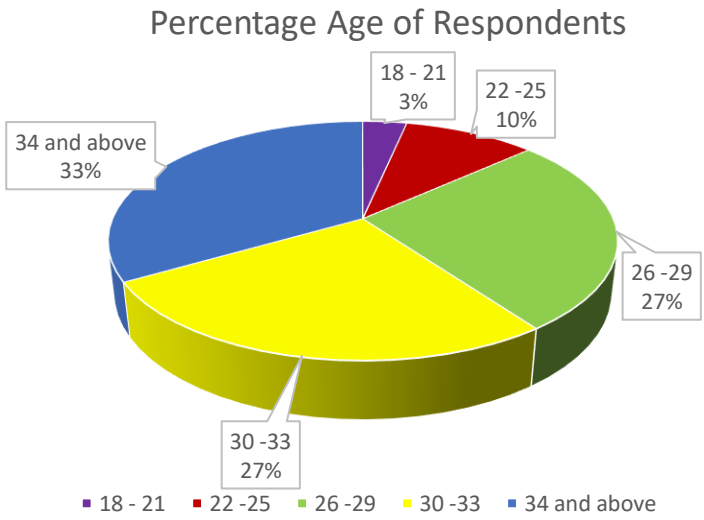

Figure 3: Percentage of Age Respondents

For gender data, the majority was come from female respondent that are 17 respondent or 56.7% compare to male only get 13 or 43.3% respondents. The data shown at the Figure 4.

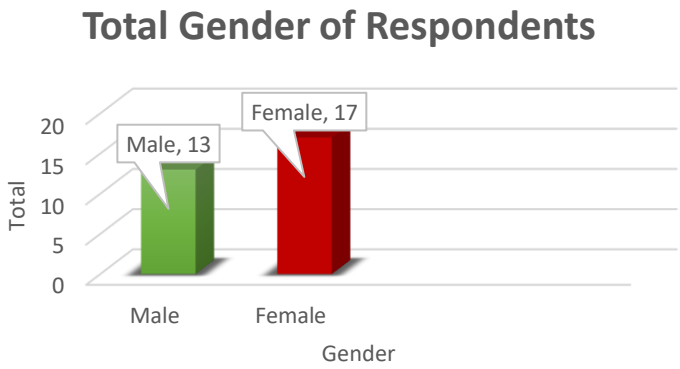

Figure 4: Total Gender of Respondents

Consumer's Acceptance of Nephelium Lappaceum Seeds Titbit (NLST) by Sensory Evaluation

Sensory evaluation is a vital instrument in measuring the patterns of product as well as to determining the level of consumers' acceptance over the product. 30 respondents (staffs) of Politeknik Merlimau, Melaka became the respondents for this research. There are five characteristics determine consumer's acceptance of Nephelium lappaceum seeds titbit in term of smell, taste, texture, colour and overall product.

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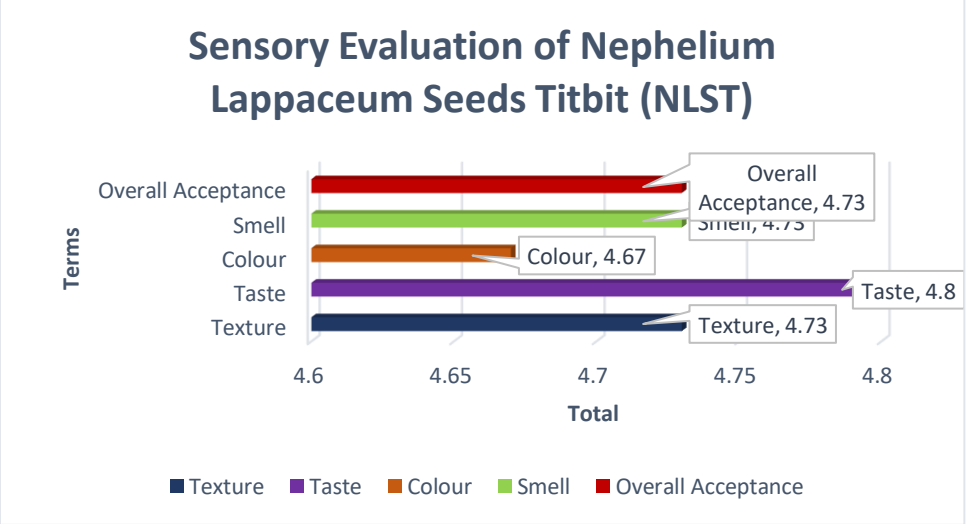
13th – 14th December 2020

Table 4: Mean Score of Respondents' Acceptance of Nephelium Lappaceum Seeds Titbit (NLST)

Terms	Mean	Interpretation
Texture	4.73	High
Taste	4.80	High
Colour	4.67	High
Smell	4.73	High
Overall Acceptance	4.73	High

Data analysis in Table 4 and Figure 5 indicated the mean score of level acceptance consumers towards Nephelium Lappaceum Seeds Titbit (NLST). The highest score mean is from taste that is 4.80. It gives the high interpretation of the product. The respondents like the taste of titbits because it is almost taste like almond. Smell and texture got the same mean, which are 4.73. It interprets that the respondent accepted the smell of titbit and like the texture too. Most of the respondents like the combination of the titbits with cinnamon and salt because of the lightness & freshness. The third characteristics that analyzed is color. The mean score of color is 4.67. For overall product, the mean value is 4.73. Therefore, the overall acceptance of respondents is at high level. It means that the Nephelium Lappaceum Seeds Titbit (NLST) is accepted among the community Politeknik Merlimau, Melaka.

Figure 5: Bar Chart of Sensory Evaluation of Nephelium Lappaceum Seeds Titbit (NLST)



Conclusion

Through this research, generally, the respondent accepted the product and the result interprets the level of acceptance product was high. Therefore, researcher will continue by sending the product to be examine the nutrition fact in Nephelium lappaceum seeds titbit at Melaka Biotechnology Corporation. With respect of the product, the researcher believes that Nephelium lappaceum seeds titbit will be a different product that can be accepted in the market. Further investigations are needed to better evaluate the positive and negative interactions on Nephelium lappaceum seeds titbit quality improvement.

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PATRONAGE AND RELIGIOUS FRAGMENTATION IN THE POLITICS OF THE ELECTION OF THE GOVERNOR OF NORTH SUMATRA, 2018

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Abstract: *Political practice in the implementation of the election for the Governor and Vice Governor of North Sumatra in 2018 is divided into two parts, namely the political fragmentation practice, including identity politics, culture, social, religion and the political practice of patronage as a representation of the political practice of power, including aspects of political dynasties, money politics , campaigns, success teams and other practical political practice attributions. Interestingly, the field findings in the implementation of the election for the Governor and Deputy Governor of North Sumatra in 2018 found practical interdependence between the fragmentation and patronage dimensions, such as in the case of using money politics in the form of religious targets. Data collection techniques used observation, literature review and in-depth interviews. The data obtained were analyzed and outlined in the form of field reports. The results showed the strategy to promote the figure of Edy Rahmayadi who is close to the ulama, has good worship, good morals, and his family is in harmony. In his campaign, he conveyed issues and social development, for example observing and broadcasting Islamic holidays, building an Islamic Center, expanding the Grand Mosque and issues of social and social economy. In the Christian community, Edy Rahmayadi is also close to his character, he even attended Christmas events and visited Christian and Catholic figures. In influencing Christian voters he used several Christian figures such as JA Firdinandus, Jhoni Pardede. As a former TNI High Officer, he was introduced to a patriotic, nationalist figure who did not differentiate between religions.*

Keywords*: Politics of Fragmentation, Politics of Patronage, Election of Governor and Deputy Governor of North Sumatra, Politics of Identity*

Introduction

The election of regional leader is a political phenomenon that occurs in the post-reform era in line with the implementation of regional autonomy. The selection of regional leader who politically choose regional leader candidates also changes from an indirect electoral system to a direct electoral system and will then run simultaneously. The election of governors and vice governors of North Sumatra in 2018 as a derivative of the political process mandated by the law conducts the process of selecting candidates for governor and vice governor for the period 2018-2022, then becomes the focus of attention in the research conducted.

The process of selecting regional heads is not only focused on the political aspect of choosing a candidate for the leadership, but also links with various aspects that have an impact

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13th – 14th December 2020

on the process of choosing regional leader. The various aspects include ethnicity strategies in the form of kinship, patterns of relationships between religions, as well as socio-cultural backgrounds of people who become constituents or voters. The offending between these aspects plays a significant role even though it runs in ideological idioms and is endowed with the use of the economic aspect of money as an element that fuses the meeting between those aspects. Administratively, the money motives in the political activities of regional leader is permitted under Electoral Commission regulations with agreed usage restrictions, such as in the form of campaign funds. In practice, the motive of money becomes a wild ball that is used at the will of regional head candidates who follow the election of regional leader as the main element in conducting political activities.

Political practice in the implementation of the election of governors and vice governors of North Sumatra in 2018 into two parts, namely fragmentation political practice, covering identity politics, cultural, social, religious and patronage political practices as a representation of political practices of power, covering aspects of political dynasties, money politics, campaigns, successful teams and attribution of other practical political practices. Interesting field findings on the implementation of the election of governors and vice governors of North Sumatra in 2018 obtained the existence of practicality between the dimensions of fragmentation and patronage such as in the case of the use of money politic in the form of religious targets

Identity Politics; Patronage and Religious Fragmentation

Politics and identity are two things that are interconnected in life in general, politics is not only expressed in the form of power but rather to the essence of interest. In this study, the interaction and dynamism of the life of the people of North Sumatra from the beginning of colonial times to the present use both things on the reality of life.

Identity that was originally a sign and a form of differentiator in socio-cultural life became a form of interest of groups that must face each other in the contestation of interests, as well as batak identity that has complexity from the definition to the practice of life also becomes a form of identity that is dialectical with the political side of interest.

Furthermore, politics and identity in the discourse sphere of ethnic and religious entities can be narrated as the context of the reality of life, the existence of naming ethnic and religious etnitas is recognized by some members of the supporting community as a form of expression owned by the community but in some other communities becomes a different and situational view. Differences in the self-mention of ethnicity become a form of bending and liquidation of ethnic identity. Quoting Agustono (2010:164) who gives a view on ethnicity is an adaptive thing that can change according to a particular interest and time, besides ethnicity is also not a gift so that it can freely construct its identity. However, ethnic identity changes still use ethnic roots and bring them up in configurative forms such as ethnic division in private forms; religious dimension.

Perret (2010:16-17) reinforces the notion of ethnic identity as an identity space that has various levels, in the sense that ethnic identity is a collection of symbolic and tangible reference rooms as signs of identity that can be chosen to deal with certain situations. The competition between ethnicity and religion still places the existence of the entity as a symbol in life, the entity does not have the ability to side between the two ethnic and religious naming groups so that the entity is formed in the following expressions and life forms with all its rules and equipment. Similarly, Auge (1995:45) states that the language of identity (expression) must be defended from threats from inside and outside ethnic circles to make it meaningful and have value for the (ethnic) community.

eISBN 978-967-2426-22-6
13th – 14th December 2020

In political science literature, between identity politics and what is political identity has a different understanding. Political identity is a construct that determines the position of interest of the subject, within the bonds of the political community. Meanwhile, political identity will refer to the mechanism of identity organizing politics, both in political identity and social identity that become the source and means of politics (Setyaningrum: 2005).

Donald L Morowitz (1998), as one of Duke University's political experts, has defined identity politics as a very firm line to determine who will be included and who will be rejected. That line of determination would certainly seem i can't be changed. Therefore, the status of both members and non-members will appear to be permanent. It is very noticeable that identity politics as a source and means of politics in the fight for political power is increasingly visible in modern political practice. Especially when the big democratic parties held in Indonesia are GENERAL ELECTIONS, and REGIONAL ELECTIONS.

In the 2018 PILGUBSU (North Sumatera Regional Election for Governor and vice governor) that has ended, we can certainly see various sources from both print and Electronic media and even see firsthand the occurrence of identity politics practice itself. Many community leaders and community groups gave their views on the events of identity politics at PILGUBSU 2018. Secretary of PW Al.Jami'iyatul Wasliyah Sumut namely Drs. H. Isma Arya Pulungan said Identity politics is a game of political elites.

> "Religious Identity Politics is actually a game of Political Elites this situation appeared in pilgubsu 2018 because of the bias of the DKI Regional Elections in 2017 which in the case of blasphemy by one of the candidates for Governor of DKI Basuki Tjahya Purnama (Ahok)." (Drs. H. Isma Arya Pulungan).

Furthermore, he said that at the time of the election of the regional leader in North Sumatera before PILGUBSU 2018, the term identity politics both ethnic and religious was almost said to be non-existing. Since the existence of cases in the capital city of Jakarta then spread to various regions, especially in North Sumatra known so far with its heterogeneous.

> "North Sumatra since long ago both the election of the Regional Leader of the new order period until the Reformation period, there has never been a Religious Identity Politics, only in the 2018 Elections the nuances of Religious Identity Politics appeared. In addition to the impact of pilgub DKI is also a candidate factor that is only two pairs (Edy Rahmayadi / Musa Rajekshah / Muslim-Muslim) and (Djarot Syaiful Hidayat / Sihar Sitorus / Muslim-Christian), so that Islamic voters crystallized choosing the spouse of Edy Rahmayadi-Musa Rajekshah. Even since long time ago North Sumatra was used as a national example in religious life, tolerant of each other, mutual respect for North Sumatrans who were built from the pride of Tribes and Religions, always in a safe and conducive state." (Drs. H. Isma Arya Pulungan).

Related to identity politics in PILGUBSU 2018, Chairman of PW Muhammadiyah North Sumatra, Prof. DR. H. Hasyim Syah Nasution, MA also gave an opinion. He said identity politics is difficult to eliminate, especially if it is related to one's religion or faith. So, what can be done according to the professor of UIN Sumut is moderation of identity meaning more broadly. National identity, religious identity, if narrowed even there will be rejection, especially if the religious understanding is classic (Fanatic).

> "North Sumatra is indeed a very hetrogen region. But if the question of religion can not even ethnic as well. For example, where there was once a Regent in the majority ethnic area in the area, comes from ethnic minorities (Madina, Samosir, Taput, Karo,

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13th – 14th December 2020

> and Nias). In fact, I witnessed the confession of a Professor from a State University in North Sumatra (Name kept secret). He is Christian, but in the 2013 Governor election he did not choose a candidate for Governor who is Christian, but he chose Gatot Pujo Nugroho / Tengku Erry Nuradi, because Tengku Erry Nuradi's wife surnamed Sitorus and the Professor surnamed Sitorus. This proves identity politics will remain." (Prof.DR.H.Hasyim Syah Nasution, MA).

Therefore, Prof. Hasyim said the necessary moderation in the future is not Identity Politics in a narrow sense. The meaning of moderation in the context of Islamic education, religious moderation means teaching Religion not only to form devout individuals personally, but also able to make religious understanding as an insturmen to reward other Religions. Here's what it's all about avoiding violence reduction and understanding extremen. In the case of the interview results, it is seen how religion loses to ethnicity, namely the case of lecturers who choose because of ethnic attachment even though they are different religions.

The same opinion was also expressed by Christian community leaders in North Sumatra Dr. RE.Nainggolan, MM mentioned that the viscosity of the soul and attitude of Batak Toba people towards ethnicity and culture is higher than Religion. That is why for batak people will be insulted if called unincised rather than non-religious.

> Related to the North Sumatra Governor Election it was evident when H Syamsul Arifin in the 2008 governor elections won in several areas around the Lake Toba.He did not bring issu identity politics but carried his campaign jargon " Friends of All Tribes". Even in a meeting with batak people, he introduced himself once given the surname Silaban, and batak people referred to him as "halak hita" or "our man". That is why batak people will be closer to strong support than a religious belief. But this can not be used as a reference to respond to the phenomenon that occurred. If we can see more from the other side, we can see that religion is superior to ethnic order.

The result of an interview with one of the Chairman of the DJOSS campaign team at PILGUBSU 2018 is Jumiran Abdi. He said Pilgub 2018 was able to defeat the ethnic forces of Java because of religious issu. Javanese people will also be moved if they talk about religious beliefs. That is what is experienced so that Javanese voters are not together to choose the DJOSS pair because the couple is a rainbow couple (Islam / Christian). In Pilgub 2018 almost all Ethnic Javanese Organizations such as PUJAKESUMA, PENDAWA and others even participated in campaigning to meet the Javanese community in North Sumatra. If the count on paper of the ethnic Javanese population in North Sumatra is about 60 percent should DJOSS win because only Djarot is ethnic Java from these two pairs of candidates.

For the people of North Sumatra according to Jumiran actually in choosing a more fragmatis leader is not fanatical. But if they are faced with religion, then they will be more fanatical than because of the tribes, including the Javanese tribe in North Sumatra. Different in Java Island about religion there is no problem even in one household with different family religious beliefs does not matter. They can live in harmony and peace. Different in North Sumatra.

Meanwhile, from the opposing party represented by Ikhwan Ritonga (Deputy Chairman of the DPRD from Gerindra Faction) mentioned that identity politics that appeared in the 2018 Elections is only part of the political strategy because of the pair of two candidates and different religions. This political strategy is not to ignore the voters of nonmuslims, but eramas mission " Muslims ruled, Christians influenced".

For the Grindra Party, the first party carried Edy Rahmayadi and Musa Rajeck Shah,

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13th – 14th December 2020

and this direct order from Chief Gerindra Prabowo Subianto had objective and mature considerations. His strong military background, courageous, mastered north sumatra because the son of the region and had served in North Sumatra and had a broad national insight, became the basis for his election as a candidate for Governor.In the course of time it turns out that gubsu candidates who fight only two couples, and some have different identities, then the team. Eramas uses a winning strategy approach to identity politics, whose ultimate goal is to achieve victory.

One of the Charismatic Ulama Sumut KH. DR. Amiruddin, MS, stated that the aroma of Identity Politics that occurred in Pilgubsu 2018, is not permanent. In the event of a Religious Identity Politics is not based on sentiment with candidates who are not Muslims, but only as a winning strategy tool. According to him, the support of Muslims to eramas couples is not only because of religious sentiments, but the figure of Edy Rahmayadi has requirements in Islamic leadership. One of the things that the Scholars saw was the morality of these two figures, and their obedience in religion. The pious and the good-doers must be loved by the people.

Muslims in North Sumatra thirst for such a figure, moreover the couple is committed to building a better Islamic civilization in North Sumatra. For example, developing the Great Mosque, building an Islamic Center, and building other social institutions. Identity politics is legitimate, identity is flexible, most importantly the leader is good manners and strives to improve the welfare of society.

Identity Politics is not a threat, people see it not because of sentiment. In the teachings of Islam all factions must be protected, in politics competition is natural and the Djoss party also does the same. People's hope to Eramas couples so that their Vision and Mission can be carried out, especially the first mission, to realize a dignified North Sumatran society in life because it has faith and taqwa. This is a picture of Edy Rahmayadi's commitment to make North Sumatrans protected in carrying out their worship.

The politics of religious identity that occurred during the Election is only the influence of the political atmosphere in the country. North Sumatran society and all religious people already understand the condition of North Sumatra's Pluralism. There is no negative impact that occurs after regional election, North Sumatra remains conducive, other religious people understand the situation.

Secretary of PW NU SUMUT namely Drs. H.Muhammad Hatta Siregar also gave the opinion that identity politics will make up the ethnic and religious cities.

> "Identity politics if it continues every election of regional heads and presidents, will cause ethnic and religious cities, especially in North Sumatra. There will be friction for regions with a majority in certain religions and ethnicities (above 70%) of course there is no problem if there will be repeated frictions." (Drs. H.Muhammad Hatta Siregar).

Secretary of PDIP North Sumatra, DR. Soetarto, MA gave a view on whether Pilgubsu 2018 is loaded with Identity politics. From the results of the interview he said that wherever there will be Identity Politics. But I see in North Sumatra is not the effect of Identity Politics, because post Pilgub 2018 North Sumatra remains dynamic, safe, and conducive. Importantly Identity Politics should not campaign for Black Compagne. I think Identity Politics is a tool of personification only. He acknowledged that the majority of Christians voted for the DJOSS pair. But the DJOSS couple also in gaining their support to the maximum win the hearts of the people of North Sumatra through cross-Ethnic and Religious. PDIP strategy wants to ground North Sumatra Bhineka Tunggal Ika. According to him, Identity Politics in the Governor's election was only a game of Political Elites, and he was not worried that Identity

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13th – 14th December 2020

Politics in North Sumatra caused conflict horizontas. Even if the people choose the Leader because of the similarity of religion it can not be prevented, but he hopes not to build a democracy put forward identity let alone religion that will harm the life of Democracy.

Conclusion

1. For the people of Sumatra in choosing a more fragmatis leader is not fanatical, but if they are faced with religion, then they will be more fanatical than because of the tribes, including the Javanese tribe in North Sumatra. Different in Java Island about religion there is no problem even in one household with different family religious beliefs does not matter.
2. Identity Politics that occurred in the last Pilgubsu 2018, is not permanent. In the event of a Religious Identity Politics is not based on sentiment with candidates who are not Muslims, but only as a winning strategy tool
3. Identity Politics in the Governor's election it is only a game of Political Elites only, and Identity Politics in North Sumatra does not cause horizontal conflict. Even if the community chooses a leader because of the similarity of religion it can not be prevented,

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13th – 14th December 2020

DEVELOP RECTANGULAR WAVEGUIDE CALCULATOR APPLICATION FOR MICROWAVE DEVICES COURSE AT DEPARTMENT OF ELECTRICAL ENGINEERING, POLYTECHNIC SULTAN AZLAH SHAH

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Abstract: *The purpose of developing this application is to help semester 5 students, Diploma Electrical Engineering (Communication) in Polytechnic Sultan Azlan Shah to check their calculation result for Rectangular Waveguide exercise. This is because, students always obtain different values when key-in their calculation in their calculator. Research respond is from 37 students who registered DEE50043 – Microwave Devices course for June 2020 session. This application is built by using ADDIE model which apply the evaluation phase to identify the effectiveness of this application. The outcome will determine the objective of this research. This calculator application is evaluated by using interview observation. The disadvantage of this application is that it can only be operate using Android system. Nevertheless, this application will help the students in checking their calculation values which needed a lot of input to their calculations. Apart from getting the right answer, student will be trained indirectly to key-in the right method and sequence when sitting for final examination.*

Keyword: *Microwave devices, rectangular waveguide, scientific calculator, and application*

Introduction

In engineering course, mathematic in one of the important subjects in problem solving method. The usage of calculator is the main device that is used to calculate the solution. Even though, the same input was key-in, the result will not be the same. During exercise in class, students will come out with different answer. This will affect the students when doing self-exercise, where they will not be confident with their calculation and this will encourage them to imitate or copy others' answer.

For Rectangular waveguide topic, student needs to skilful with power of 10 numbers. This number is called prefix. Example of prefix number that is frequently used by engineering students are pico (10^{-12}), nano (10^{-9}), micro (10^{-6}), kilo (10^{3}), mega (10^{6}) and giga (10^{12}). Table 1 shows some of the formula used in rectangular waveguide topic.

Table 1: Rectangular Waveguide Formula

Cutoff wavelength, λ_c	$\lambda_c = \dfrac{2}{\sqrt{\left(\frac{m}{a}\right)^2 + \left(\frac{n}{b}\right)^2}}$
Cutoff frequency, f_c	$f_c = \dfrac{c}{2}\sqrt{\left(\frac{m}{a}\right)^2 + \left(\frac{n}{b}\right)^2}$

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13th – 14th December 2020

	$f_c = \frac{1}{2\sqrt{\mu_0 \varepsilon_r}} \sqrt{\left(\frac{m}{a}\right)^2 + \left(\frac{n}{b}\right)^2}$

Courses that involved with mathematical calculation always linked to one of the subjects that is hard to pass. Studies from (Sabita Mahanta, 2012) shows that 37% boys considered mathematics to be a hard subject whereas 39.2% girls considered mathematics to be a hard subject. Students of polytechnic engineering students came from different basic studies background. Not many students from pure science stream enter polytechnic. So, when different stream students entered engineering, with poor mathematics basic, students are unable to score their mathematics result. However, this factor is not an issue as the students are already learn the basic usage of scientific calculator in secondary school. Their only weakness if that they tent to make mistake when applied the formula in calculator.

Literature Review

There are several studies in Malaysia regarding the usage of calculator in teaching and learning. From the studies, it states that the usage of calculator can give positive affect to the students through attitude and higher achievement (Noraini, 2006). Through her research, the affect shows that the higher achievement improves critical thinking ability, spatial visualization skill and understanding of connection among graphical (Noraini, 2006). This research is supported by Kor Liew Kee & Lim Chap Sam (Lim, 2016) where they agrees that the usage of calculator can improve the concept understanding.

Android technology is in rapid develop nowadays. McKimm states that learning from web is also said as online learning or e-learning because the content of course is delivered online (McKimm, 2003). Discussion could be made through forum, email, video conference and video streaming. When Android technology is also used in teaching and learning, it is said to be web base learning.

A studies from Kyong Jee Kim, Shijuan Liu and Curtis J. Bonk, state that the benefits from learning online is that the method of learning is flexible, more interactive space between student and lecturer and able to build virtual teaming skills. (Kyong Jee Kim, 2005)

A.D.D.I.E model is chosen to develop Rectangular Waveguide calculator. ADDIE is stand for analysis, design, development, implementation, and evaluation. This model was first developed by Dick and Cary in the year of 1978 and was improved by Russel Watson by the year 1981. According to Muruganatham, he said that this model is the basic form of developing practice and education program. (Muruganantham, 2015)

Rectangular waveguide is designed based from ADDIE model, where according to Kruse (Kruse, 2002), this model is based on technology – based training which is systematic and has more advantages. Malachowski (Malachowski, 2002) phrase that ADDIE is a simple design, simple application and cycle model. This cycle concept is supported by Peterson (Peterson, 2003) as shows in Figure 1.

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13th – 14th December 2020

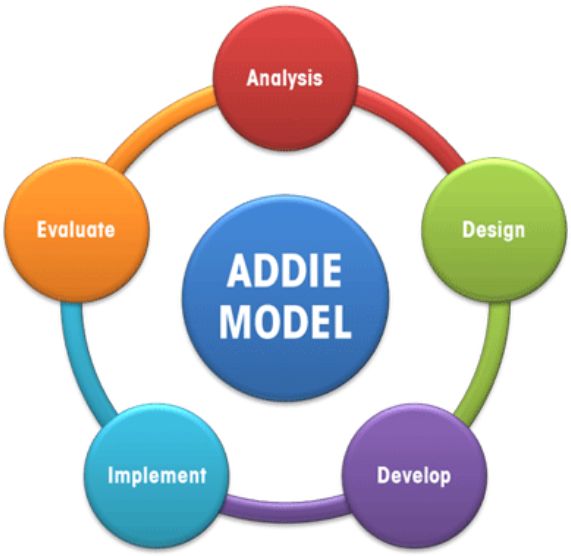

Figure 1: ADDIE Model Cycle

Research Methodology

Analysis

Problem statement and identify source of problem and solution is under analysis phase. (Muruganantham, 2015). Achievement scope will be listed and compared with skill, knowledge, and students' ability to identify types of instruction. (Allen, 2006)

Problem facing by Microwave Devices students is unable to key-in correct input in their scientific calculator, type fx-570MS. Student will get confuse which order to calculate first.

Design

To outcome the students' problem of having difficulties in key-in correct input in their calculator, a calculator specific for rectangular waveguide is designed. This design is based from (Mayfield, 2011) where at this stage, designer will designed a suitable instruction to apply strategic learning which will accomplished this objective.

Development

According to (Reinbold, 2013), product will be developed according to planning at design phase. There are a lot of apps that can be used, but Openasapp is the most suitable for this calculator design where input formula is key-in by suing Microsoft Excel. File from Microsoft Excel will be import to Openasapp software. This system will be converted data form Microsoft Excel to a suitable display at students' mobile phone.

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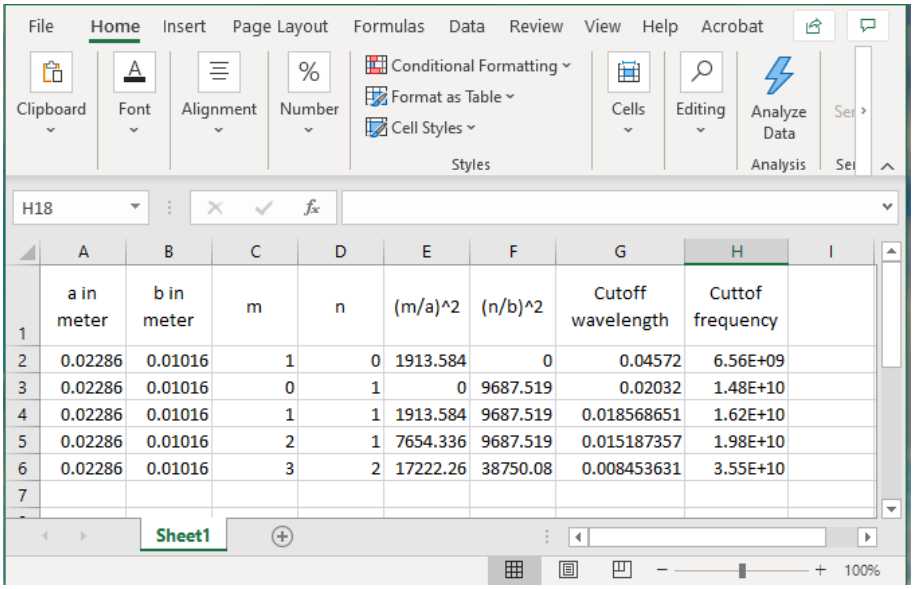

	A	B	C	D	E	F	G	H	I
1	a in meter	b in meter	m	n	(m/a)^2	(n/b)^2	Cutoff wavelength	Cuttof frequency	
2	0.02286	0.01016	1	0	1913.584	0	0.04572	6.56E+09	
3	0.02286	0.01016	0	1	0	9687.519	0.02032	1.48E+10	
4	0.02286	0.01016	1	1	1913.584	9687.519	0.018568651	1.62E+10	
5	0.02286	0.01016	2	1	7654.336	9687.519	0.015187357	1.98E+10	
6	0.02286	0.01016	3	2	17222.26	38750.08	0.008453631	3.55E+10	
7									

Figure 2: Formula written in Microsoft Excel

Implementation

(Allen, 2006) suggest that at this phase operation evaluation can be obtained at the site. From here, students of DEE50043 – Microwave Devices for June 2020 session has tried out this Rectangular Waveguide Calculator.

Evaluation

(Peterson, 2003) state that evaluation component at ADDIE model is done in formative evaluation for the students and summative evaluation at the end of the course as improvement method.

Rectangular Waveguide Calculator is evaluated using observation method where achievement of students is observed. This method is chosen according to (Nasha, 2008) where by research observation, one can be observed by their subject variable behaviour.

Result and Analysis

Android application has been developed in the name of Rectangular Waveguide Calculator. Figure 3 show the interface of the application. At the moment, two formulas of rectangular waveguide is applied.

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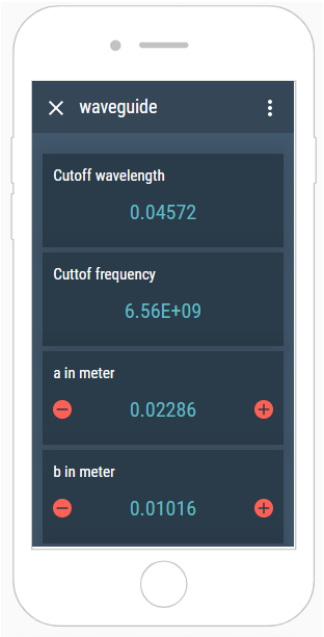

Figure 3: Interface of Rectangular Waveguide Calculator

Advantages of this apps is it can only run by Android operation system. User with Mac operation system is unable to use this apps. Students must know the term of E+ as it indicated number power of 10.

Based on observation, students are more confident when doing exercise. It is because they obtained the right calculation result. At the same time, students with less knowledge in key-in input in their calculator, has gain their confident and key-in skill as they will try again and again until they get the right answer. Moreover, students are less independent to their lecturer for the right answer.

Conclusion

As a conclusion, this calculator apps is successfully built and has been applied to Microwave Devices student. By using this apps, students are ready anytime to do rectangular waveguide exercises as they are more confident than before. Students are also less dependent waiting for lecturer to give the right answer.

However, students with MacOs is unable to use this application as it is only design for Android OS. Another disadvantage of this application is it cannot add notes are student references.

This research has completed the process of developing application by using ADDIE model for first cycle and the result finding will be carried to Analysis phase at the second cycle which brings to value added process.

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13th – 14th December 2020

REAL TIME VEHICLE TRACKING SYSTEM VIA GPS/GPRS

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Abstract: *This paper was proposed due to the implementation of the vehicle tracking system by using GPS-GPRS technology. The current location of the target will be track by the satellite to the GPS sensor embedded in the vehicle and the location coordinate will be sent through GPRS service by using GSM network provided. The latitude and longitude of the location are produced from the GPS receiver with the aid of antenna to received or transmit the radio signals wave. The microcontroller which is the heart of the system is used to instruct all the devices accordingly. The LCD display is used to show the current location of the vehicle which is connected to microcontroller. The location of the vehicle will be sent via SMS technology to the phone which located far away from the vehicle in linked format to the Google Map service.*

Keywords: *GPS, GPRS, Vehicle Tracking System, Satellite, SMS*

Introduction

Nowadays in Malaysia, the cases of stolen vehicles increase from year to year. The Department of Statistics Malaysia statistic shows that there are 35,953 cases of stolen vehicle reported in 2018. The statistic consequently contributes 50.1% to overall property crime. Most of the cases occurred on the unattended vehicle at the parking space whether it is guarded or not even there is a surveillances camera around.

Therefore, the aim of this project development is to track the vehicle location in real-time. The current location of the target will be track by the satellite to the GPS sensor embedded in the vehicle and the location coordinate will be sent through GPRS service by using Global System for Mobile communications (GSM) network provided.

Figure 1: Vehicle Theft

Source: Department of Statistics Malaysia

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13th – 14th December 2020

The shipping industry was the pioneer in developing the tracking systems because they need to know the whereabouts of the vehicle at any given time. The maritime Automatic Identification System (AIS) is a radio communications system by which vessels continuously broadcast their identity and position over public airwaves using unencrypted VHS radio signals. In United States, March 24, 1989, there was a tragedy with the oil tanker Exxon Valdez which spilled millions of crude oil into the water of Alaska. In response, the United States Congress passed the Oil Pollution Act (OPA-90), part of which called for the Coast Guard to develop a vessel tracking system for tankers going into Alaska (Cutlip, n.d.).

The Global Positioning System (GPS) is a miracle made attainable by a group of satellites that orbit the earth. At least four satellites are needed to calculate the four dimensions of X, Y, Z (position) and time. Therefore, navigation is the primary function of GPS. The GPS, is used to transmit accurate signals, which enable the GPS receiver to calculate and display the exact location, estimate time and velocity to the end user. The Global Positioning System can provide extremely accurate location information for mobile objects and people which is far superior to earlier tracking technique (R. Bajaj, 2002).

In order to achieve for an application capable of obtaining real-time coordinate information of the vehicle, the system need to keep track the data that received from satellites into a storage and it cannot be achieved because the information can only be accessible when the vehicle is available. Automatic Vehicle Location (AVL) is an active system which has been developed to transmit the coordinate information in real-time. Real time vehicular tracking system incorporates a hardware device installed in the vehicle (In-Vehicle Unit) and a remote Tracking server (Dinkar, 2011).

This is where the GPS tracking vehicle is being used. It can track and trace the vehicle that has been installed with the GPS module equipment in real-time. The vehicle can be trace using the coordinate being produced from the GPS inside the vehicle which transmitted signal to satellite and sent it to the mobile device such as mobile phone. In the mobile phone, the geographic coordinate of the vehicle can be inserted to well-known web mapping service such as Google Map. It can show the satellite imagery, street maps, 360° panoramic views of streets, real-time traffic conditions and route planning for traveling by foot, car, bicycle or public transport.

GPS. The GPS, is used to transmit accurate signals, which enable the GPS receiver to calculate and display the exact location, estimate time and velocity to the end user. The Global Positioning System can provide extremely accurate location information for mobile objects and people which is far superior to earlier tracking technique (R. Bajaj, 2002).

Literature Review

In our daily life, we have been surrounded with many signals such as microwaves, radio waves, infrared radiation, visible light, ultraviolet radiation, X-rays and gamma rays. The GPS Navigation systems has been introduced with the signal from the earth to the satellite at the sky. It is the greatest invention to be able to communicate throughout the whole world in an instant with the satellite technology.

The introduction of PC to produce the result of the positioning information to the user that is using the GPS navigation device is a must. Therefore, the use of Google Maps or any related software is needed to pin-point the position information from the GPS signal. This transmitted information is displayed on the display unit by using the google earth to display vehicle location in the electronic google maps (Yanamadala, 2013). The PC will be link to a GPS module and must be connected to the internet regardless what type of geographical that they have.

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13th – 14th December 2020

The GPS tracker is use as a tracking device which will be plug into a phone to function correctly which will also get the signal from satellite. This satellite computes the longitudes and latitudes of vehicle coordinates, then transform it into the short message form by using GSM communication controller and this message is sent to the monitoring center through the GSM network (Mishra, 2012). It will send a text message from the tracker device to the phone vis SMS to alert that the Google Maps or any mapping software is ready to be used. GSM modem is providing with a SIM card which uses the same and regular communication process as we are using in regular phone (J.S.Bhatia, 2013). The GPS module will provide the data from the GPS tracker to the microcontroller and the result will be sent to the phone via SMS on the positioning information.

Figure 2 shows the block diagram of the project. The programming software named Arduino IDE is being used to manage the whole process with the aid of GPS receiver and GSM/GPRS module. The coordinate of the vehicle will be detected by the GPS receiver through radio wave. Then the coordinate will be sent via SMS to recipient from the GSM/GPRS module using mobile network. The 16x2 LCD display can be used to displaying the coordinate. The model for GPS module used is NEO-6M-0-0001 and the GSM/GPRS model is SIM900A. Arduino UNO R3 is the microcontroller board that is used to insert the coding for instruction of the project.

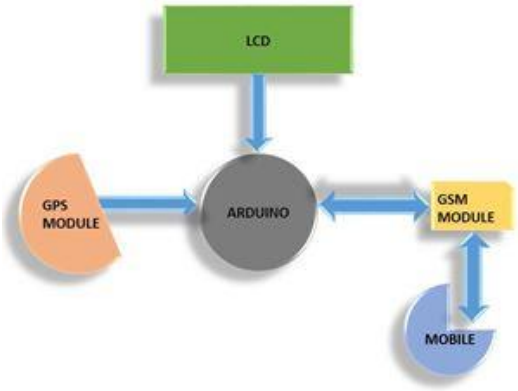

Figure 2: Block Diagram

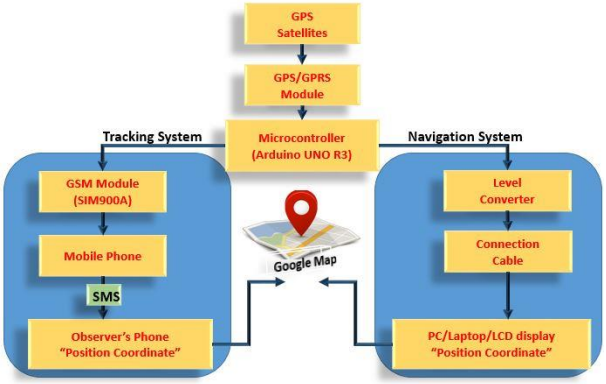

Figure 3: Design Block Diagram

Upon completion the programming within the hardware, this device can be install inside a car or any vehicle that suitable and power it up as shows on Figure 3. Later, use any phone that has been assign to receive the SMS when the vehicle is "starting the engine" or "stopping the engine", in the laymen term is whether the vehicle is moving or stop, the SMS will be sent once. Then from the SMS will be a link to the Google Map with the real-time coordinate. After clicked the link, the Google Map will show the current location of the vehicle.

The accuracy coordinate will be different, depending on the location of the vehicle is whereabouts. If the vehicle is inside a tunnel, the signal will be lost and there will be no coordinate sending through SMS. If the GSM had a signal, the coordinate that the GPS is sending will be slightly differ from the actual location. Even, under a tree or surrounded by building, the coordinate will be affected. Same goes to parking underground building and cloudy weather.

On the vehicle installed with the GPS system will be a LCD display which is optional and the system will be affected if omit it. The GPS will have their own power supply (external battery) installed and will not "shutdown" upon vehicle stop. It is because, the GPS need time to communicate with the satellite in order to pin-point the location. The switch button will be

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13th – 14th December 2020

install to manually shutdown the GPS if the vehicle is not moving for a long period to extend the life span of the battery. External power can be used as secondary source or backup from 9V battery or car charger. Although the GPS system support only 5V of power needed, the external power supply can be used directly because of the voltage regulator will convert all source into 5V constant power supply.

Component Required

Arduino UNO R3 - is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started (Figure 4).

"Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of USB Arduino boards, and the reference model for the Arduino platform; for an extensive list of current, past or outdated boards see the Arduino index of boards.

Arduino IDE 1.8.5 - The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuine hardware to upload programs and communicate with them (Figure 5).

Programs written using Arduino Software (IDE) are called sketches. These sketches are written in the text editor and are saved with the file extension. ino. The editor has features for cutting/pasting and for searching/replacing text. The message area gives feedback while saving and exporting and also displays errors. The console displays text output by the Arduino Software (IDE), including complete error messages and other information. The bottom right-hand corner of the window displays the configured board and serial port. The toolbar buttons allow you to verify and upload programs, create, open, and save sketches, and open the serial monitor.

GSM Module (SIM900A) - is an ultra-compact and reliable wireless module (Figure 6). The SIM900A is a complete Dual-band GSM/GPRS solution in a SMT module which can be embedded in the customer applications. Featuring an industry-standard interface, the SIM900A delivers GSM/GPRS 900/1800MHz performance for voice, SMS, Data, and Fax in a small form factor and with low power consumption. With a tiny configuration of 24mmx24mmx3mm, SIM900A can fit in almost all the space requirements in user applications, especially for slim and compact demand of design.

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13th – 14th December 2020

Figure 4: Arduino UNO R3

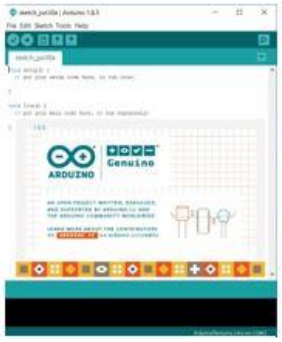

Figure 5: Arduino IDE

Figure 6: GSM (SIM900A)

GPS Module (NEO-6M-0-001) - is a well-performing complete GPS receiver with a built-in 25 x 25 x 4mm ceramic antenna, which provides a strong satellite search capability (Figure 7). With the power and signal indicators, it can monitor the status of the module. Thanks to the data backup battery, the module can save the data when the main power is shut down accidentally. Its 3mm mounting holes can ensure easy assembly on an aircraft, which thus can fly steadily at a fixed position, return to Home automatically, and automatic waypoint flying, etc. Or it can be applying on smart robot car for automatic returning or heading to a certain destination, making it a real "smart".

16x2 LCD display (optional) - is an electronic display module and find a wide range of applications (Figure 8). A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. A16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data.

The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to be displayed on the LCD.

Power Supply - is an electrical device that supplies electric power to an electrical load (Figure 9). The primary function of a power supply is to convert electric current from a source to the correct voltage, current, and frequency to power the load. As a result, power supplies are sometimes referred to as electric power converters. Some power supplies are separate standalone pieces of equipment, while others are built into the load appliances that they power. Examples of the latter include power supplies found in desktop computers and consumer electronics devices.

Figure 7: GSM/GPRS (NEO-6M)

Figure 8: LCD Display 16x2

Figure 9: Power Supply

9V battery - The nine-volt battery, or 9-volt battery, is a common size of battery that was introduced for the early transistor radios (Figure 10). It has a rectangular prism shape with

eISBN 978-967-2426-22-6
13th – 14th December 2020

rounded edges and a polarized snap connector at the top. This type is commonly used in walkie-talkies, clocks and smoke detectors.

It contains at most six (6) AAAA cells are connected in series. Each individual cell is 1.5 volts, so 6 x 1.5 = 9.0 volts. Since the cells are connected in series, that means the overall current rating for the battery assembly is the same for each AAAA cell. So, each AAAA cell is rated at 2.1 amps with an energy capacity of 550 mAh (milliamp-hours).

Connecting Wires (Jump wire) - (also known as jumper, jumper wire, jumper cable, DuPont wire, or DuPont cable – named for one manufacturer of them) is an electrical wire, or group of them in a cable, with a connector or pin at each end (or sometimes without them – simply "tinned"), which is normally used to interconnect the components of a breadboard or other prototype or test circuit, internally or with other equipment or components, without soldering. Individual jump wires are fitted by inserting their "end connectors" into the slots provided in a breadboard, the header connector of a circuit board, or a piece of test equipment (Figure 11).

10 K Potentiometer - is a three-terminal resistor with a sliding or rotating contact that forms an adjustable voltage divider (Figure 12). If only two terminals are used, one end and the wiper, it acts as a variable resistor or rheostat.

The measuring instrument called a potentiometer is essentially a voltage divider used for measuring electric potential (voltage); the component is an implementation of the same principle, hence its name. Potentiometers are commonly used to control electrical devices such as volume controls on audio equipment.

Potentiometers operated by a mechanism can be used as position transducers, for example, in a joystick.

Figure 10: 9V

Figure 11: Jump Wire

Figure 12: 10K Pot

Voltage regulator 5V - Voltage sources in a circuit may have fluctuations resulting in not providing fixed voltage outputs (Figure 13). A voltage regulator IC maintains the output voltage at a constant value. 7805 IC, a member of 78xx series of fixed linear voltage regulators used to maintain such fluctuations, is a popular voltage regulator integrated circuit (IC). The xx in 78xx indicates the output voltage it provides. 7805 IC provides +5 volts regulated power supply with provisions to add a heat sink.

External antenna - The only reason to use an external antenna instead of an internal antenna is if the device being used will be mounted in a location where it cannot acquire the GPS signal (Figure 14). The internal antenna can receive the GPS signal through the windshield and even a light, canvas top but not a hard or thick top. Some devices have an internal high sensitivity GPS antenna built into them (i.e. GPSMAP 7xx series). These devices may be able to pick up the GPS signal in locations where older internal antenna devices could not.

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13th – 14th December 2020

Arduino IDE Hourly Build - It contain the latest and greatest (and, possibly, buggiest) from the Arduino IDE. Formerly known "Nightly Builds" (Figure 15).

Figure 13: Voltage Regulator

Figure 14: External Antenna

Figure 15: Arduino IDE Hourly Builds

Circuit

The circuit connection for GPS Tracking Vehicle via GPS as shown in Figure 16. The Arduino UNO R3 digital pin 8 is directly connected to GPS module pin Tx. The digital pin 9 is directly connected to GPS module pin Rx. The serial connection on pin 8 and 9 with Rx and Tx are using "Software Serial Library". The will be an external antenna directly connected to the GPS/GPRS module antenna port. The additional "Tiny GPS" library is used for the GPS connectivity.

The GSM/GPRS module pin TxD and RxD are directly connected to Arduino UNO R3 pin 10 and pin 11. The serial connection on pin 10 and 11 with Tx and Rx are using "Software Serial Library". The will be an external antenna directly connected to the GSM/GPRS module antenna port.

The "Liquid Crystal" library is used for displaying the output coordinate. The are 16 pin on the LCD display but only 6 pin need to be initialize inside the program. There will be 4 unused pin on the LCD that will not be connected.

The potentiometer voltage-in will be connected to ping 2 and pin 3 LCD display into 5V Arduino UNO R3. The pin 2nd pot will be connected directly to pin 1 LCD display. The 3rd pin pot will be directly connected to pin 4, 5 and 6 LCD display to the pin ground GSM/GPRS and Arduino UNO R3. The digital pin 2 on Arduino UNO R3, will be connected to ground. This pin is the crucial for this project because it will use as a switch whether to connect or disconnect.

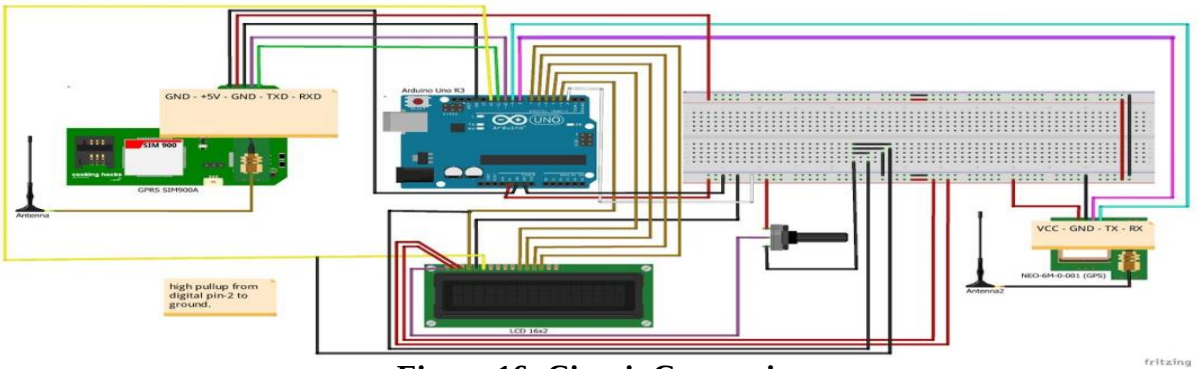

Figure 16: Circuit Connection

eISBN 978-967-2426-22-6
13th – 14th December 2020

Real-Time Testing

This is the section that proven the whole explanation and the theory about this project. The snap-shot that is taken are from the real-time testing.

Step 1: The GPS Tracking Vehicle device was put inside a car in Kuala Lumpur. The recipient mobile phone is at Bandar Baru Salak Tinggi, Sepang, Selangor. The digital pin 2 at Arduino UNO R3 currently is connected to ground has been pull (disconnected). This will trigger the sendSMS function. As shown in Figure 17, the location that the GPS send to the recipient mobile phone. This is the default location that has been set inside the program.

Step 2: The default location coordinate is shown in Figure 18 that has been sent to the recipient mobile phone. This happened when, recipient click on the link (https://msps.google.com/maps?q=2.925330,101.700870) that has been sent into their SMS inbox. This experiment is to test for the Google Map to function with the location that has been provided by the GPS.

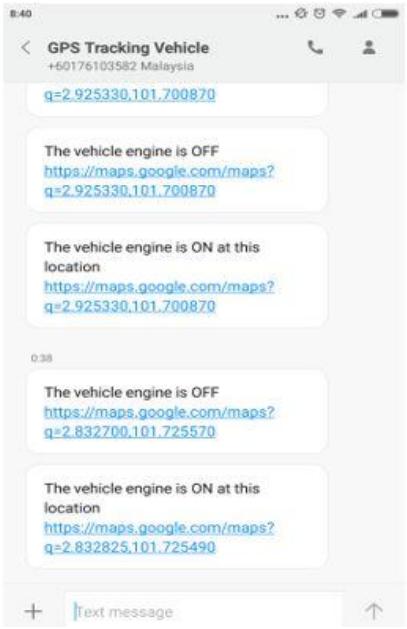

Figure 17: SMS Send Default Location

Figure 18: The Google Map location

Step 3: The real-time location that the GPS send to the recipient mobile phone is shown in Figure 19. This is the location that has been replaced with the real-time coordinate from the GPS module to the GSM/GPRS module that has been program earlier. The current latitude is 3.1550746 and longitude is 101.6866636. This situation happens only when the digital pin 2 at the Arduino UNO R3 is connected or disconnected again.

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13th – 14th December 2020

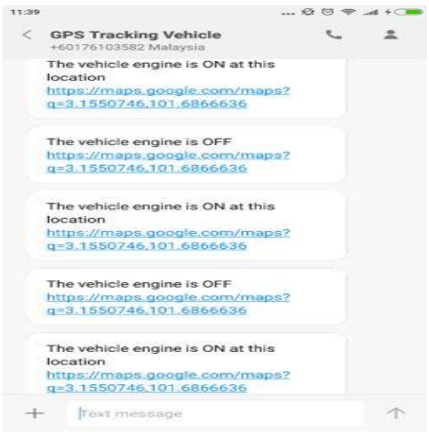

Figure 19: SMS Send Real-Time Location

Step 4: As shown in Figure 20, the real-time location of the coordinate that has been sent to the recipient mobile phone. This happened when, recipient click on the link **(**https://msps.google.com/maps?q=3.1550746,101.6866636 **)** that has been sent into their SMS inbox. This experiment is to test for the Google Map to function with the location that has been provided by the GPS.

Step 5: The Google Map shown in Figure 21 can be manipulate to our need. Now the location of the vehicle is known. We can share the location with someone or go there using the direction from Google Map option.

Figure 20: The Google Map Location for Coordinate lat: 3.1550 lon:101.6866 (Real-time)

Figure 21: The Google Map Location in Bigger View

eISBN 978-967-2426-22-6
13th – 14th December 2020

Conclusion

The purpose system integrates a global positioning framework utilizing Arduino Uno, GSM and GPS module. The GPS are utilized to obtain its own position information of the vehicles. By utilizing the Google Map service, the location of the vehicle will be sent via SMS to the phone which located away from the vehicle in linked format.

The testing part shows that the system able to give information about the location of the vehicle in real-time where the vehicle is place somewhere at Kuala Lumpur and the phone is placed at Salak Tinggi. The location is given in the latitude and longitude format.

Using this purpose system, the location of stolen vehicle could be solving. At the end, the car stolen cases could be decrease.

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13th – 14th December 2020

PH MONITORING FOR LIQUID FERTILIZER MANAGEMENT IN BLACK PEPPER FARMING

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Abstract: *There is lacking technology application in black pepper farming to automate daily routine activities in monitoring black pepper vines growth and nutrient need. With the revolution of Industry 4.0 (IR4.0), and tremendous improvement in internet of things (IoT), application of precision agriculture to pepper farming is thing to consider for its beneficial. This paper to explore the use of IoT to monitor fertilizer requirement for pepper vines using pH sensor. The pH sensor attached to Raspberry Pi 3 will be collecting the data and forwarding it to cloud database for farmer reference and take decision based on data presented in form of digital report from the database. The Python environment provides the space for coding in Raspberry Pi. SQL and PHP software are used to design user interface and data management in the relational database management system. The information about pH, provides a better understanding of how pH parameter affects the growth of pepper vines. Farmer will be able to access the information anywhere and anytime. Therefore, our proposed system will greatly help the pepper farmers in Sarawak in managing the usage of fertilizer as a way to minimize farm inputs, thus increase their profit.*

Keywords: *Internet of Things, Raspberry Pi, Python, pH Sensor, Pepper*

Introduction

In Sarawak, pepper is produced and planted by rural dwellers which are concentrated in certain districts of Kuching, Samarahan, Sri Aman, Betong and Sarikei Divisions. The crop is very important to Sarawak as the crop supporting the livelihood of about 33,000 rural farmers. The present estimated planted area is about 16,700 hectares (Ting, L. E., 2019). However, the current practice for pepper production, from land clearing, stem nursery, pest management to harvest is maintained and monitored via traditional methods (Adama, A et al 2018). Fertilizer is the most costly farm inputs for pepper farmers to boosting the farm yield, the soaring price of fertilizer both for organic and inorganic thus reduce the profit they reap from the pepper product. Therefore, the application of precision agriculture could be the mitigation step forward to reduce the farm input specially the usage of unnecessary fertilizer for the pepper vines need. As Sarawak moving toward digital technology and the smart farming is a way forward, hence a small-scale prototype development of IoT for black pepper farming is a necessary to gauge its benefits. With IoT, it can help farmers operate and maintain their irrigation equipment remotely, as well as help them monitor the moisture, nutrient requirements, growth and soil pressure levels.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Motivation

The agriculture sector in Sarawak will experience drastic changes over the next five years with the application of Smart Farming, in line with the state's vision in transforming its economy and being in the forefront of the digital world (Ahmad, D. A. M. A., et al. 2020). However, the black pepper farmers still employ the traditional practice of farming from site preparation to harvesting. With escalating cost of farm inputs such fertilizer, pesticide and labour, it is very hard for pepper farmers to sustain their farm. Furthermore, pepper requires large volumes of nutrients to maintain significant growth and yield (KMT Sulok et al. 2018). According to Yap nutrient uptake of a mature stand of pepper amounts to 202 kg N, 13 kg P, 156 kg K, 18 kg Mg, and 68 kg Ca per hectare per year. Hence, there is a need to explore some other alternatives with is cost effective and able to monitor the usage of farm input in systematic manner. Thus, this paper is to propose the usage of IoT in black pepper farming to transform traditional practices to smart farming.

Objectives

The objectives of this paper are:

- To manage the usage of fertilizer in pepper farming.
- To develop apps based using Raspberry pi.
- To record the information of fertilizer usage in pepper farming.

Literature Review

There are numerous researches have been conducted on agriculture domain to improve yield production and at the same time to reduce agriculture input such fertilizer, pesticide and labour cost. The Fourth Industrial Revolution (IR 4.0) represent a new dimension in the way we live, work and communicate with one another. Sony M. (2020) in his study found that, there are more advantages in implementing IR 4.0 such as Internet of Things (IoT) that combine hardware, sensors, software's, data storage, microprocessors, and connectivity to unleash a new wave of competition wherein the traditional manufacturers will have a tough time to survive. Due to huge benefits that can be earned by the farmers in implementing IoT, this paper is to explore the potential of IoT in pepper farming. There are many environment factors that affecting pepper vines growth and production.

This paper is focusing on the soil pH environment. Nugroho, L. E., et al (2017) developed a monitoring information system and integrated the previous application with progressive web app approach for palm oil plantation. Their system can be accessed via smartphone or desktop by employee. Saraf, S. B., and Gawali, D. H. (2017) introduced the smart farm irrigation system for monitoring and controlling of drips through wireless sensor network using android phone. They used cloud computing to monitor and control a set of sensors and actuators to assess the plants water need. Remote monitoring soil parameters such as pH, temperature and soil moisture were designed by A., Na et al (2016) to support user to make decision regarding the application of fertilizer and choice of crops sown. The entire system developed using STM32 Nucleo platform. Fukatsu, T., & Hirafuji, M. (2014) developed an application called Open Field Server to provide information in effective, individualize and practical manner which incorporate weather monitoring for growth prediction, insect counting for pest damage forecasting, crop growth monitoring with image data, wild animal surveillance, and farm operation recognition. The field server can be managed via remote management program. Hsu, H. T., et al (2018) research on agricultural management monitoring system based on the Internet of things. Their system captured the agriculture environment parameters which is using humidity sensor, a temperature sensor, a carbon dioxide sensor and a Wi-Fi

module to design a wireless agricultural monitoring system. The system able to control remotely watering equipment or opening sun visor. The research help to manage the farm effectively and efficiency.

System Design

Figure 1 shows the architecture of the proposed system. There are six modules for liquid fertilizer management in black pepper farming as depicted in Figure 1.

1. Micro controller – Raspberry Pi
2. pH sensor
3. Fertilizer Pump
4. GSM Module
5. Web Database
6. Fertilizer Management Apps

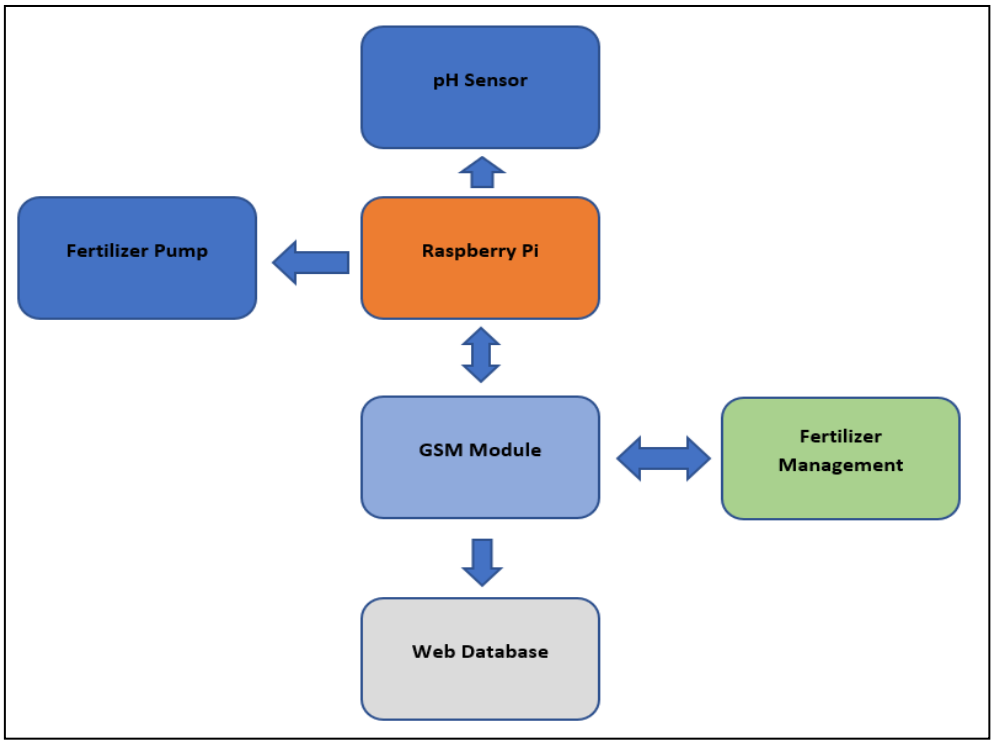

Figure 1: Fertilizer Management using IOT

Microcontroller – Raspberry Pi

Figure 2 shows the architecture of the fertilizer management system using IoT technology. The central processing unit which consists of Raspberry Pi 3B+ model performs the main role of the entire system. It is responsible for controlling the pH sensor to get the soil acidic or alkaline status in real time mode. Raspberry Pi has a wide range of IDEs that provide developers with good interfaces to develop applications. In our case, we are using Python integrated development environment to enables us to develop programs in communicating with pH sensor, fertilizer pump controller, GSM module, fertilizer management apps and web database. The data from the sensor is then send to the web database for storing and monitoring by the farmers.

eISBN 978-967-2426-22-6
13th – 14th December 2020

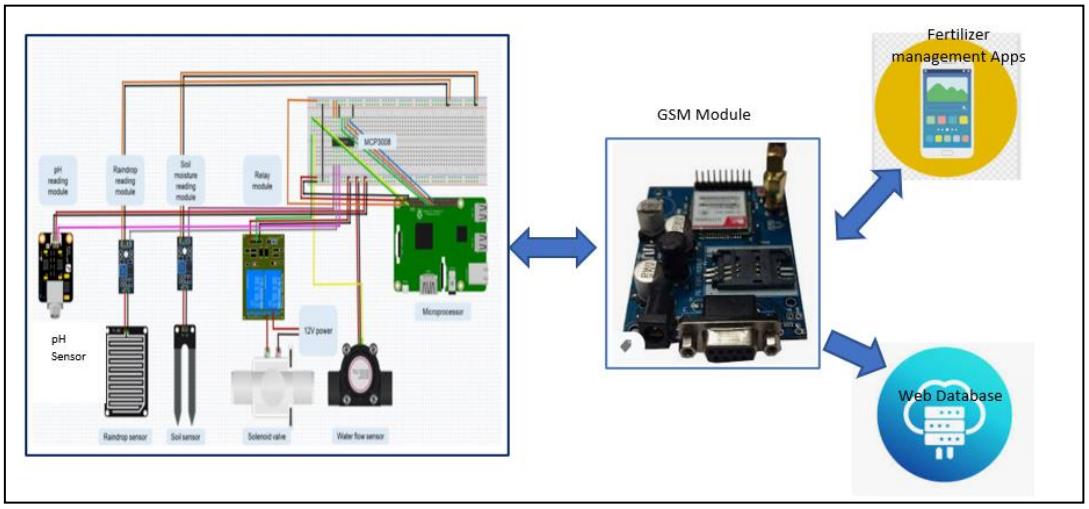

Figure 2: System Architecture For Fertilizer Management using IOT

PH Sensor

In this project we are using DFRobot Gravitity Analog pH sensor which is designed to measure the pH of the solution and retrieve the acidity of alkalinity of the soil. It is also called the hydrogen ion concentration index. The pH is a number between 0 to 14, the neutral condition for the soil is pH = 7; pH < 7, which means the soil condition is acidic; pH>7, which means the soil condition is alkaline. For black pepper vines to grow healthily, the pH should be between 5.5 to 6.5. The pH sensor collected data from pepper environment and sent data to Raspberry Pi module. The Raspberry Pi module sent data via GSM module to website database. The expected output as shown in Figure 3: pH data on web and Apps. Based on pH value obtained from the sensor, farmer will have some insights on the fertilizer requirement for the pepper vines and thus able to make sound decision on pepper farming activities as shown in Figure 4: Graphical pH report representation. For pepper vines, the pH value should be between 5.5 to 6.5 and which indicates that the vines have enough nutrients for the uptake. If the pH value less than 5.5, it indicates that the plot require farmer action to put up fertilizer such with contain calcium and magnesium to the soil (Ann, Y. C. 2012).

#	Date	PH Value	Status
1	2020/08/01	5.97	Optimal
2	2020/08/02	5.87	Optimal
3	2020/08/03	5.99	Optimal
4	2020/08/04	5.97	Optimal
5	2020/08/05	6.47	Optimal

Figure 3: PH Data On Web And Apps

eISBN 978-967-2426-22-6
13th – 14th December 2020

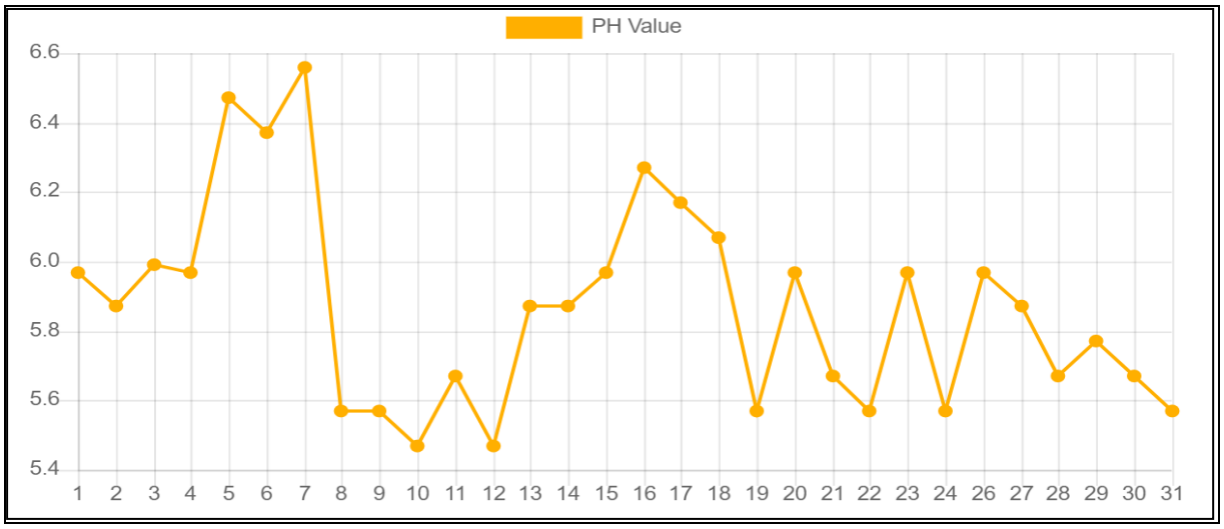

Figure 4: Graphical PH Report Representation

Fertilizer Pump

The conventional fertilization methods from site preparation to harvesting system usually result in wasting lots of fertilizer. The high or low amount of water or fertilization can damage the pepper vines's roots leading to unhealthy crops. The pepper vines are very sensitive to over watering or fertilization which causes diseases to settle in. Pepper is a plant of the humid tropics and requires 2000-3000 millimetres rainfall annually (Sivaraman, K et al 1999). Hot humid conditions are good for growth of pepper plants but continuing humidity over long periods of time favours the incidence of fungal diseases, such as Phytophthora foot rot. Based on pH data presented on the web database, the user will be able to make sound decision to either switch on the pump using fertilizer management apps from his/her mobile device.

GSM module

As our system need to communicate with sensor, fertilizer pump, web database and fertilizer management apps, GSM module also called GSM modem is mandatory. We subscribed with Celcom provider for our SIM card for data transmission from Raspberry Pi and pH sensor to the web database and to switch on and off the fertilizer pump from Fertilizer Management Apps. To communicate with all the devices in our system, the python program is developed.

Web Database

MySQL is most popular and open source relational database and driving force behind the mushroom of dynamic websites and is one of the best ways of storing data for web applications. Our system employed the MySQL as relational database to store data from sensors such as pH, soil moisture, temperature and farmer information. In this system we focusing on storing pH sensor and fertilizer pump management. The data is stored and can be viewed via website www.agrofarming.info. The interface as shown in Figure 5: Web Interface and Figure 6: Mobile Interface.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Figure 5: Web Interface

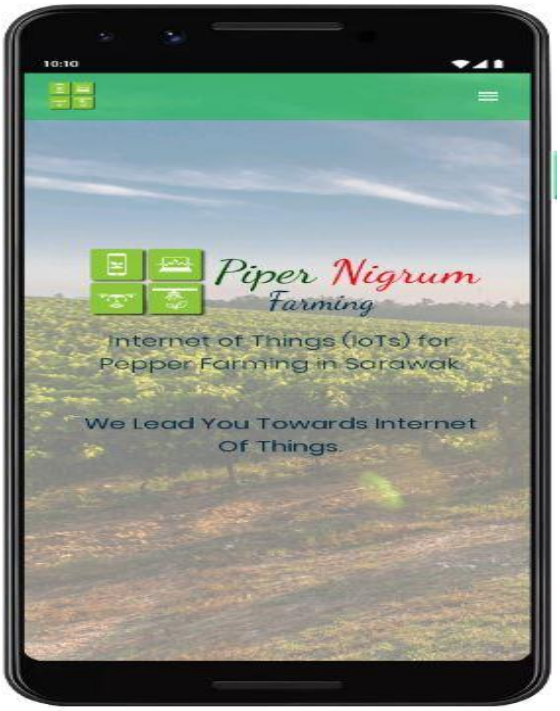

Figure 6: Mobile Interface

Fertilizer Management Apps

Farmer can control the fertilizer and water pump via app's switch On or Off button that can control the pump. This application is controlled by raspberry pi to switch on fertilizer pump. All the data of fertilization and watering of the farm will be recorded in the database. The system will send the data such as status of the pump, time and day. Then, the output will be

eISBN 978-967-2426-22-6
13th – 14th December 2020

shown from the agrofarming.info website, the farmer can track every record when the fertilizer was used. The process involved between Apps and Raspberry Pi as shown in Figure 7.

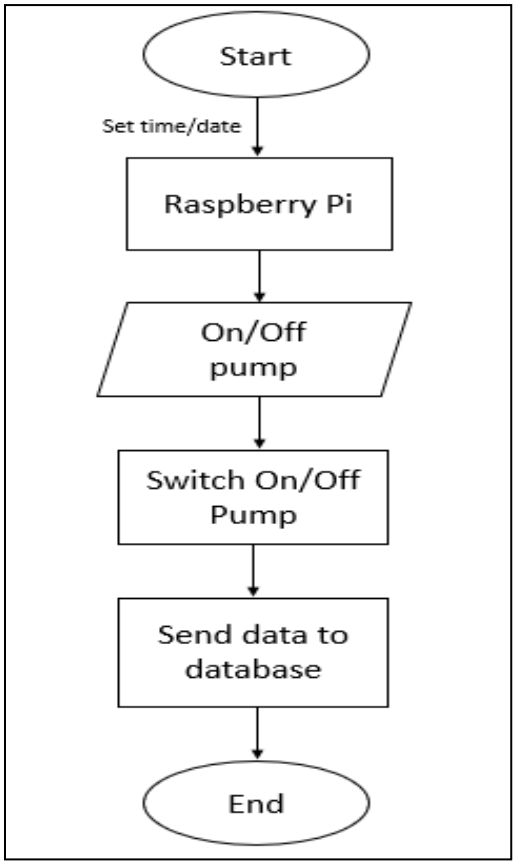

Figure 7: Communication between Apps And Raspberry Pi

Result and Discussion

Fertilizer Management Apps

To help pepper farmers with efficient, reliable and well informed for their pepper vines status, the apps is developed using android platform. This section will explain the apps developed for pepper farmers specifically in Sarawak region. All the data from sensors, pH data and water and fertilizer information are sent via wireless to the web based database, MySQL. Hostinger is used as a webserver and PHP as the tool to develop the interface between IoT system, database and users or farmers. Below is the description of the Android application for the project. The app system has the interface as shown in Figure 8.

eISBN 978-967-2426-22-6
13th – 14th December 2020

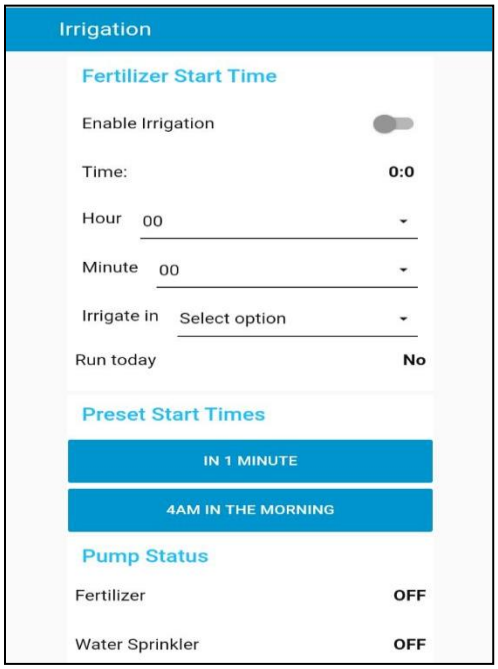

Figure 8: Fertilizer Management Apps Interface

Pump Duration Operation Time

In this apps, once the pump on, the system will record the duration of pump operation time. This is important to provide optimum watering and fertilization of pepper vines. Too much water and fertilizer will cause fungal or diseases infections to the pepper vines.

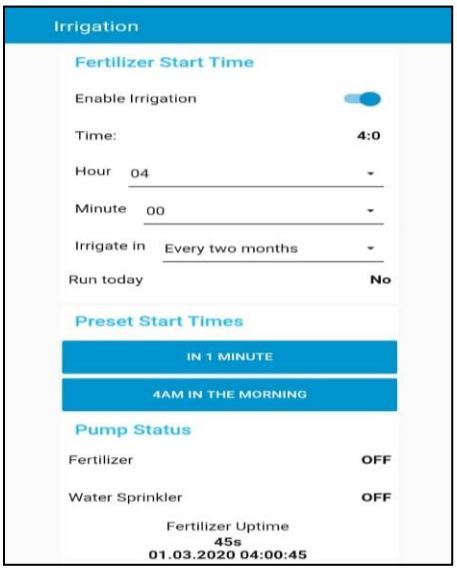

Figure 9: Pump Operation Time

Scheduling Water And Fertilizer Pump

Farmer may schedule the watering and fertilization of the pump when they sure about the condition of the farm environment. This can be done when farmer have local weather data that can determine when a farm should be watered or fertilized. The interface for the module as shown in Figure 10.

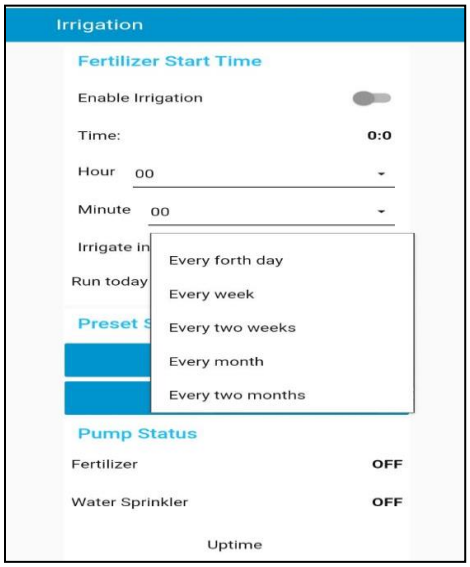

Figure 10: Scheduler

Manual Switch On/Off

The apps also provides manual switch on and off the water and fertilize pump when the farmers noticed that pH readings are below 5.5 or more than 6.5. Below shows the recommendation action to the farmer when the pH reading as shown in Table 1 Environment factor and Fertilization.

Table 1: Environment Factor and Fertilization

Environmental Factor	Description	Fertilization Recommendation
Soil pH	Below pH 5	Apply lime
	Between pH 5 to 7 – Normal	Fertilization or fertigation regime
	above pH 7	Apply Urea (nitrogen) / peat moss

Summary

The results show that the proposed system is proven to be able to manage the usage of the fertilizer in black pepper farming. The system gives the information about the soil pH status. Accurate fertilizer information provided to the farmers on soil pH status will make it easier for the farmers to make sound decision on pepper farming activities such as predicting the amount of water and fertilizer required. The adaptation of precision agriculture through IoT implementation enables a sustainable agriculture that allow farmers to maximize yields and reduce the use of natural resources.

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13th – 14th December 2020

COVID-19 SENTIMENT ANALYSIS ON FACEBOOK COMMENTS

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Abstract: *Malaysia recorded its first COVID-19 case on 9th March 2020 and recorded a total of 59,817 by end of November 2020. Buzz in social media over COVID-19 and measures by the Government to curb infection spread among citizens. The study aims to understand Malaysian public awareness and perception of COVID-19 related issues on Facebook during the 1st and 2nd week of Movement Control Order (MCO). Data mining was conducted on DG Tan Sri Noor Hisham Abdullah's official Facebook account user comments and total of 77,351 comments were collected between 18 March and 14 April 2020. The analyses included data pre-processing and sentiment analysis to identify and explore sentiments in discussion topics within the first two weeks of lockdown. The results yield majority of comments are in Malay language, and mix languages of English and Malay as secondary type. Secondly, sentiment analysis showed that people have positive reaction towards the frontliners and all efforts by the Ministry of Health towards fighting the pandemic. Many of positive remarks are given in form of prayers, which is in line with Islamic teaching of positive thinking and optimism especially during crises. In conclusion, sentiment analysis is effective in producing useful insights about trends of COVID-19 discussion on social media, collecting public perception and feedback of COVID-19 efforts by the Government and gives a different viewing angle of current situation on the ground. These findings can be useful for health officials or the Government in developing communication mitigation plan or conduct extensive study on pertaining issues within areas of concerns.*

Keywords: *sentiment analysis, COVID-19, machine learning, machine learning*

Introduction

Throughout history, mankind has experienced many episodes of infectious disease outbreaks, irrespective of ethnicity and geographical location (Rudra, 2020)**.** Most recently, a new disease outbreak from Wuhan, China has spread globally, with only 584 cases reported in 23 January 2020 has increased 13-fold to more than 118,000 cases in 114 countries and COVID-19 officially declared as a pandemic by the World Health Organization (WHO, 2020), (WHO, 2020). During this pandemic, a clear guideline and strong leadership is needed to steer public out of baseless fear and mass panic. Crisis management theories and models proposed on modern world focuses more on step-by-step procedures to follow, whereas from the perspective of Islam, crisis are managed beginning with knowledge and skill, endurance and having faith of a higher power (Eid & Arnout, 2020).

Social media platforms are medium where people congregate and freely expresses opinions, thus these platforms can offer meaningful insights on public's perspectives towards

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13th – 14th December 2020

social change and during crisis situation. These social media platforms collect and store vital information concerning emotions and reactions of mass public, which can be useful in producing insightful feedback to interested parties. Facebook, Instagram, Twitter and Reddit are among popular free social media sites, and globally, Facebook has the highest percentage of social media users. In Malaysia alone, Facebook records 84.47% of social media users for the last one year (StatCounter, 2020). Hence, Facebook is chosen as the best platform to conduct this study among Malaysian population.

This study examines emerging thematic issues and sentiment analysis of the general public towards COVID-19 pandemic through comments on Facebook posts. Malaysian's emotions, beliefs, and thoughts are gathered to allow policy makers make better informed decisions.

The focus of this paper is on Malaysian discussion on Malaysia's Director General (DG) of Health's official Facebook account who posted about COVID-19 crisis. Posts collected during first two weeks of Movement Control Order (MCO) dated 18 March to 30 March 2020 (Week 1) and 1 April to 14 April 2020 (Week 2). The objectives of the paper are as follows: (1) to deploy sentiment analysis model to analyze comments collected and (2) to identify sentiment of Malaysians towards Malaysian government's effort in handling of COVID-19 and MCO.

Literature Review

With regards to COVID-19 and sentiment analysis, there are lack of social-media based data research looking into the spread of information and general public's emotions on the disease. For the year 2020, a handfull of studies conducted relating to COVID-19 and sentiment analysis on social media. In China, Shen et al. studied relationship between symptoms and diagnosis posts made on Sina Weibo, a social media platform specific to China, with prediction of COVID-19 cases (Shen, et al., 2020) wheras Huang et al. found location distribution and epidimiological characteristics of patients based on comments related to COVID-19 made to Sina Weibo site (Huang, et al., 2020). These next two studies collected datasets in their native language and font. On the context of Italian social communication, a study on capturing sentiment of Italians (in Italian language) during lockdown decree produced disharmony result and found a need for more reliable classification on text analysis, possibly require human intervention to conduct classification process (Sciandra, 2020). In Myanmar, Facebook is one of the main social media platform for expressing opinions and feelings. Since comments collected are in Myanmar native language and uses Zawgi font type, Zawgyi fonts are converted to Unicode before conducting any machine learning processes (Aung & Pa, 2020). Sciandra dataset are collected using Twitter API whilst Aung & Pa collects via Facepager (data crawling tool).

Common methods of sentiment analysis and classification can be found in several studies are Naïve Bayes and SVM, and bi-gram or tri-gram. Sethi et al. (2020). built a model to conduct sentiment prediction based on gathered tweets with hashtag #COVID19 and #coronoavirus found SVM clasification with unigram feature set works the best in any settings. Aung and Pa (2020) on the other hand, utilizes Word2Vec to train word associations from large high-dimensional corpus of semantics and word vectors, which then later found Logistic Regression performed the best for sentiment analysis.

Methodology

We collected comments from Malaysia's DG of Health Facebook account to monitor the Malaysian social media discussion about COVID-19. His Facebook account was chosen for

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13th – 14th December 2020

the study due to his credibility as the DG of Health and being a health practitioner, he embodies persona of a trustworthy person (Ipsos MORI, 2005). It is also important to consider DG's leadership in handling the crisis in Malaysia, as one of the criteria of selecting this Facebook account for the purpose of this study. The first week of MCO is the first time Malaysian government impose movement and economic restriction onto Malaysian as preventive measures against the spread of COVID-19. Public reactions on the restrictive movements order and were collected at its initial phase and other COVID-19 progress are continuously observed and collected for the purpose of this study.

Data Collection

Dataset collected on both weeks consists of 77,351 comments of English, Malay, Arabic and combination of three languages. The files produced by NCapture, an NVivo web extension (qsrinternational, 2020) in Excel format as unstructured data which enables us to conduct further analysis and review comments in simple format. The datasets are limited to this Facebook account and the specified duration is as measure to control the polarity and content of comments to suit the purpose of study within the context specified. Summary of dataset collected for Week 1 and Week 2 as per Table 1.

Table 1: Dataset Collected Week 1 And Week 2

Week	Number of Comments
1	43,733
2	33,618
Total	77,351

Learning Phase

Both datasets underwent learning phase before being analyze for text filtering and sentiment analysis. Learning phase enables datasets to undergo pre-processing and language detection process thus the comments are clean from unnecessary characters, numbers, emoticons and then group the comments into languages.

Data Pre-Processing

Pre-processing was conducted using the Natural Language Toolkit (NLTK) package due to its easy-to-use interface to over more than 50 corpora and lexical resources. NLTK enables us to work with suites for classification, tokenization and tagging, which will be conducted later in the process. Steps conducted as follows:

- null handling of comments whereby comments that are null by unique user accounts are removed;
- text cleaning by removing URL, hashtags, numbers and non-Roman characters. This is to normalize text encoding and allow corpus to process comments better. URL, hashtags and non-Roman characters are removed as it does not contribute to text categorization of comments. Emoticons are translated to words as it will help in giving a better result in sentiment analysis; and
- removal of stop words to simplify and condense comments into related words only.

Language Detection

Three languages detected in pre-processed comments were English, Malay and Arabic and mix of languages were detected. This phase aims to separate the comments into English and Malay language groups by Week 1 and Week 2. Malay language and other languages will be translated

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13th – 14th December 2020

into English for ease of analysis of sentiment. Furthermore, translating Malay language to English is also due to lack of comprehensive Malay text corpus available. Table 2 shows the number of comments for Week 1 and Week 2 in English, Malay and mix languages:

Table 2: Language Groups by Week

Week	Language	Number of Comments
1	English	1,266
1	Malay	23,142
1	Mix	19,325
2	English	6,187
2	Malay	21,699
2	Mix	5,732

Malay and mix languages comments are translated into English using the Translation API from Google Cloud Platform (GCP). Neural Machine Translation (NMT) model in Translation API is used to translate the Malay and mix languages into English. This model is the same model Google use for the Google Translate. It is to note that the Arabic language are Islamic prayers and well-wishes.

Text Filtering

Text filtering enables us to conduct sentiment analysis and text categorization onto a more precise and clean dataset. At this stage, on and off topic separation is performed on Week 1 and Week 2 datasets of both English and translated Malay language. On/off topic is not conducted on mix languages dataset due to its complexity to translate mix languages into English using Translation API GCP. Continuation from this is separated On/Off topic for English and translated Malay datasets will be processed for sentiment analysis.

On/off topic separation process must be conducted manually because many comments were written in jargon, short form or even mix of English and Malay languages in a sentence. Hence, machine learning process for on/off topic separation cannot be conducted due to this limitation. Criteria for on/off topics are:

- On topic: words, sentences, comments related to subject of discussion/post in Facebook; and
- Off topic: mentions (tag Username in comments), emoticons, Arabic words/wishes written Roman characters, provocateur comments, insensitive comments.

The initial corpus had total of 43,733 comments for Week 1 and 33,618 comments for Week 2. After conducting On/Off Topic separation, comparison of On/Off topic are as in Table 3.

Table 3: On/Off Topic Separation Ratio

Week	On	%	Off
1	4,145		20,263
2	27,203	:	683

Comparison between both weeks shows more comments related to discussion or post in the Facebook in Week 2 (97.56%) compared to Week 1 (16.98%), whereas Off topic comments are prevalent in Week 1 (83%) compared to Week 2 (2.45%). Next we attempt to identify sentiments among the comments collected.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Sentiment Analysis

Facebook comments collected were analyzed for polarity using pre-trained model Natural Language API in GCP. Natural Language (NL) API inspects given text and identifies prevailing emotional opinions within the text, especially user's attitude as positive, negative or neutral. Firstly, the analysis is conducted using pre-trained model in NL API against training data. Then, the model is used on English and Malay translated comments, of both On and Off topic comments. We found that despite having the comments in English and translated to English from other languages, NL API could not identify sentiments of some comments. It is noted however that due to small sample size Malay translated language, there are possibility where machine learning will mismatch representativity of actual dataset with training set (Ceron, Curini, & Iacus, 2016). Sentiment distribution by week as in Table 4.

Table 4: Sentiment Distribution by Week

Week	Positive	Neutral	Negative
1	73.88%	14.5%	11.61%
2	82.12%	11.03%	6.84%

Due to reliance on Translation API GCP to translate Malay and other languages to English contributes towards possible mislabelling of sentiments. We believe that in order to obtain realistic and reliable results, use of supervised learning with human translation for each comments can yield better result (Ceron, Curini, & Iacus, 2016).

Conclusion

This Facebook comments analysis can give insights into public awareness and perception of the COVID-19 pandemic in the context of Malaysian public. Based on the data, Malaysian uses Malay language predominantly in social media communication. Due to lack of Malay language text corpus, translation of Malay language to English is necessary before sentiment analysis process can take place. Due to limitation of time to conduct this study, we conduct translation into English using Google Translation API, which possibly contribute towards some of the comments lost in translation. We found majority of Malaysians have positive sentiment towards COVID-19 and MCO efforts being done by the Government. Majority of the positive sentiment are well-wishes and congratulations towards the frontliners and leadership of DG of Health. Many of positive remarks are given in form of prayers, which is in line with Islamic teaching of positive thinking and optimism especially during crises, as in surah Al-Baqarah verse 216 "*Fighting has been enjoined upon you while it is hateful to you. But perhaps you hate a thing and it is good for you; and perhaps you love a thing and it is bad for you. And Allah Knows, while you know not."* (The Noble Quran). It is with hope that outcome of this study can spark interests of public stakeholders into developing in-depth study towards producing comprehensive policy in handling health communication on social media.

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13th – 14th December 2020

THE EFFECT OF MOBILE LEARNING APPLICATION ON C++ PROGRAMMING STUDENT'S ACHIEVEMENT AND ACCEPTANCE

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Abstract: *Mobile learning applications are extensively known year after year and are used today by millions of students and educators all over the world. It is an extension of distance education, supported by mobile devices equipped with wireless technologies like smartphones or tablets that benefit students' learning in or out of the classroom. This study aims to investigate the effectiveness of mobile learning applications on student's achievement as well as to identify the acceptance level of students towards mobile learning application. Thus, this study uses a quasi-experimental design that involves two groups of students. One group receives the mobile learning application (MLA) method while another group receives the interactive multimedia learning (IML) method. Respondents in this study consist of 60 Politeknik Balik Pulau students. The students were divided into two groups, 30 students received the mobile learning application (MLA) method and the other 30 students received the interactive multimedia learning (IML) method. The study data were collected through pre-test and post-test questions to measure student's achievement and questionnaires were used to identify the level of student acceptance. The analysis of Covariate (ANCOVA) revealed that there is a significant difference in student's achievement between MLA and IML. In addition, the student's acceptance level of using mobile learning applications was positive. This outcome shows that the use of the mobile learning application method can enhance students' achievement in learning C ++ programming.*

Keywords: *Mobile Learning Application; Interactive Multimedia Learning; Achievement, Acceptance*

Introduction

Programming Fundamentals course introduces the fundamental concepts of C++ programming and provides a comprehensive introduction to programming for Information Technology majors in Polytechnic. Topics include data types, control structures, pointer, structure, functions, arrays and the mechanics of running, testing and debugging. Practical lab sessions will help to develop the skills required to identify the best data and program constructs to solve well-defined problems. This course is necessary component in Digital Technology field. In real life of technology perspective, all system use programming. Programming future systems will be an important aspect. Having the knowledge of programming fundamentals concepts benefits students in learning other advance programming language and prepare them in IT field industry after graduated. Therefore, students' understanding in learning this course needs to give attention by educators and constantly improved from time to time. One of the strategy is learning methods through mobile learning.

The innovation of mobile and wireless communication technologies has stimulated an increasing number of studies concerning mobile learning, in which students are able to learn via mobile devices anytime and anywhere. According to Crompton (2013) mobile learning is

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13th – 14th December 2020

a learning across multiple contexts, through social and content interactions, using personal electronic devices and use mobile device at their convenient time (Doris, 2011). They can share content or activities among everyone with instant feedback in appealing manner. Based on this viewpoint, this study proposes an experimental study to examine the effect of mobile learning application on student's achievement and investigate student's acceptance level towards mobile learning application in C++ programming to keep improving the learning achievements of students.

Problem Statement

Nowadays, programming is a much valuable skill. However, novice students often reveal difficulties to understand this course. The students in the study by Jenkins (2002) found that few students find learning to program easy. The researcher examined what makes this most basic of skills so difficult to acquire. The result found that the educators should acknowledge that programming is difficult and supply adequate support to students. This study also supported by Piteira and Costa (2013) in study titled learning computer programming: study of difficulties in learning programming. This study reported that programming students have greater difficulties to understanding programming structures and concepts. Result of the study found that educators have to create and adapt strategies, to improve learning computer programming. The polytechnic students also had low achievement in programming courses include C++. The polytechnic lecturers who were interviewed also expressed their agreement about these low achievements. The polytechnic students were also found to have greater difficulties to solve a certain task, understanding programming structures, programming language syntax, and programming concepts. Consequently, the researcher found strategies to improve learning C++ programming through a mobile learning environment. The researcher developed C++ mobile learning application as the learning material for the students to understand C++ programming effectively.

Literature Review

Mobile learning has been defined as learning facilitated by mobile devices such as mobile phones, tablet, and personal media players (Herrington & Herrington, 2007; Valk, Rashid, & Elder, 2010) in both formal and informal educational settings (Quinn, 2011; Traxler, 2010). Mobile learning has become widespread as the development of mobile devices with advanced wireless communication technology has encouraged learning "on the move," using mobile devices in educational settings. It allows students to access learning content from various locations and times (Jones, Scanlon, & Clough, 2013; Hyman, Moser, & Segala, 2014; Garcia-Cabot, de-Marcos, & Garcia-Lopez, 2015), and share learning contents with others (Woodill, 2011). This technological innovation has encouraged higher education institutions to increase the use of mobile technology to fulfil their students' expectations and needs. At present, many undergraduate students bring their own digital devices to university, especially small, portable ones such as smartphones and tablets (Dahlstrom, Walker, & Dziuban, 2012; O'Bannon & Thomas, 2015), and they expect to access academic resources using their mobile devices.

Many researchers have demonstrated that learning via mobile application had indirect effects on positive affect through autonomy, competence and intrinsic motivation, and on achievement (Jeno & Adachi, 2018). According to (Ab. Hamid & Fung, 2007), mobile game technology into a mobile learning system make the learning process more fun and effective for students. In the study titled The Effect of Mobile Learning Applications on Students' Academic Achievement and Attitudes toward Mobile Learning by Demir, Kadir; Akpinar, Ercan (2018) reported mobile learning can create positive impact on academic achievement and performance

eISBN 978-967-2426-22-6
13th – 14th December 2020

and increase the motivation of students. Omer Ozer & Figen Kılıç(2018) investigate The Effect of Mobile-Assisted Language Learning Environment on EFL Students' Academic Achievement, Cognitive Load and Acceptance of Mobile Learning Tools reported a significant difference in academic achievement and mobile learning tools acceptance level of students in the experimental group. There is a little of research examine the effect of mobile learning application on student's achievement in C++ programming and acceptance towards mobile learning application. Thus, researchers believe that investigate the effect of mobile learning application on student's achievement in C++ programming is great important and beneficial in information technology educational field.

In examining the level of student's acceptance towards mobile learning application, researcher adapted Technology Acceptance Model (TAM) as a guidance. Figure 1 presents original version of TAM (Davis, 1989). Researcher also refer to the study titled Student Acceptance of Mobile Learning by Donaldson (2011). The results of the study indicate that performance expectancy, social influence, perceived playfulness of learning, and voluntariness of use were all significant determinants of behavioural intention to use mobile learning.

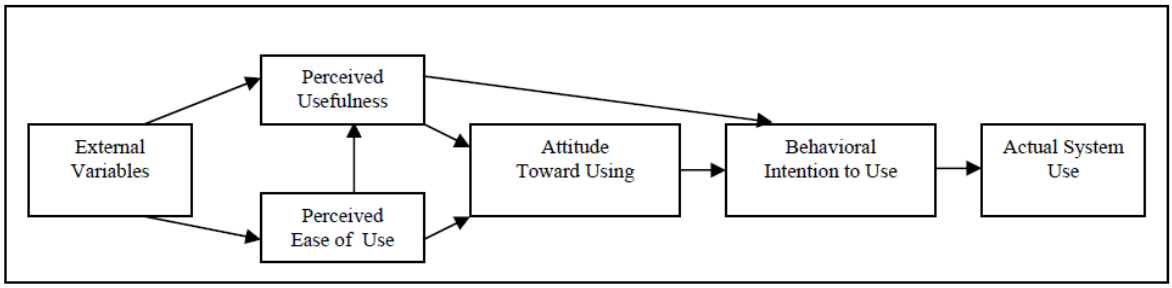

Figure 1: Original Technology Acceptance Model

Source: (Davis, 1989)

Research Objectives

The objectives of the study are:

i. To examine the effect of mobile learning application on student's achievement in C++ programming.
ii. To examine student's acceptance level towards mobile learning application in C++ programming.

Research Questions

The following two (2) research questions guided this study:

i. Is there any significant difference in achievement between mobile learning application (MLA) method and interactive multimedia learning (IML) method?
ii. Is there positive level of student's acceptance towards mobile learning application in C++ programing?

Research Hypotheses

There are two (2) hypotheses in this study:

H1 There is a significant difference in achievement between mobile learning application (MLA) method and interactive multimedia learning (IML) method.

H2 There is a positive level of student's acceptance towards mobile learning application in C++ programing.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Conceptual Framework

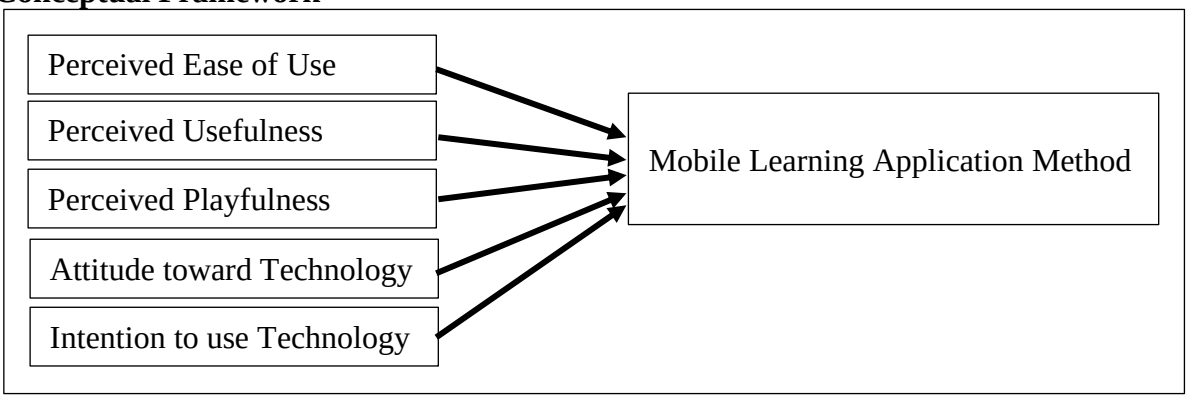

Figure 2: Conceptual Framework

Research Methodology

Research Design

This study applied a quantitative approach. An experimental study in which the non-equivalent quasi-experimental research design was applied. The purpose of using this research design is simplified in the table below:

Table 1: Research Design

Research Method	Purpose	Data Collection	To measure
Quantitative	To measure student's achievement and the level of student's acceptance towards mobile learning application method in C++ programming.	Pretest posttest Questionnaire	Achievement Acceptance

Data was collected from both the mobile learning application (MLA) method and interactive multimedia learning (IML) method.

Table 2: Experimental Group

MLA	Mobile learning application	Design and Develop using HTML Code
IML	Interactive Multimedia learning	Interactive multimedia learning created using Microsoft PowerPoint

Research Variables

In this study, there are two (2) independent variables and two dependent variables as shown in the table 3 below:

Table 3: Research Variables

Independent Variables **(Treatment)**	Dependent Variable
1. Mobile learning application (MLA)	Achievement
2. Interactive multimedia learning (IML)	Acceptance

Independent variable

In this study, there are two (2) independent variables. First, mobile learning application (MLA) and the second is interactive multimedia learning (IML).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Mobile Learning Application (MLA)

This study use mobile learning application to investigate the effect on student's achievement. In this platform, the students were given the opportunity to go through the mobile application contain C++ learning. This platform will provide them with notes, videos and quizzes for them as additional reference in C++ learning. For the notes, there are five (5) topics created in this application. The topics include Introduction to Fundamentals of Programming, Basic Program Elements, Program Control Structure, Array, Structure and Pointer and Function. The interfaces of the mobile learning application are shown in Figure 3 below:

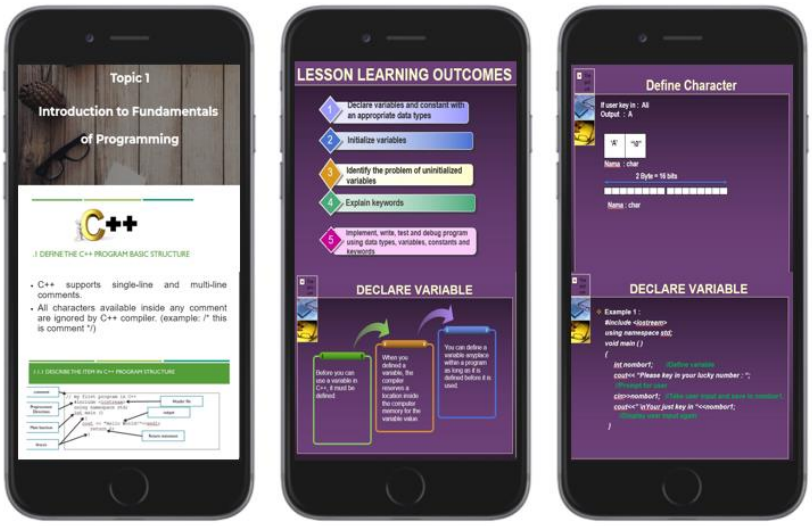

Figure 3: Mobile Learning Application (MLA)

Interactive multimedia learning (IML)

The interactive multimedia application is an application, which uses various media sources such as text, graphics, images, sound or audio, animation and video. This study used multimedia application that comprises notes, videos and quizzes. For the notes, this platform also provided five (5) topics, which is Introduction to Fundamentals of Programming, Basic Program Elements, Program Control Structure, Array, Structure and Pointer, and Function. This application is created using Microsoft PowerPoint 2016 with multimedia element. This method is used to the control group. Unlike MLA group, in this IML, no mobile application interface such as a menu, etc., the quizzes are less interactive and no hyperlink among the chapters. The interfaces of multimedia application are shown in Figure 4 below:

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13th – 14th December 2020

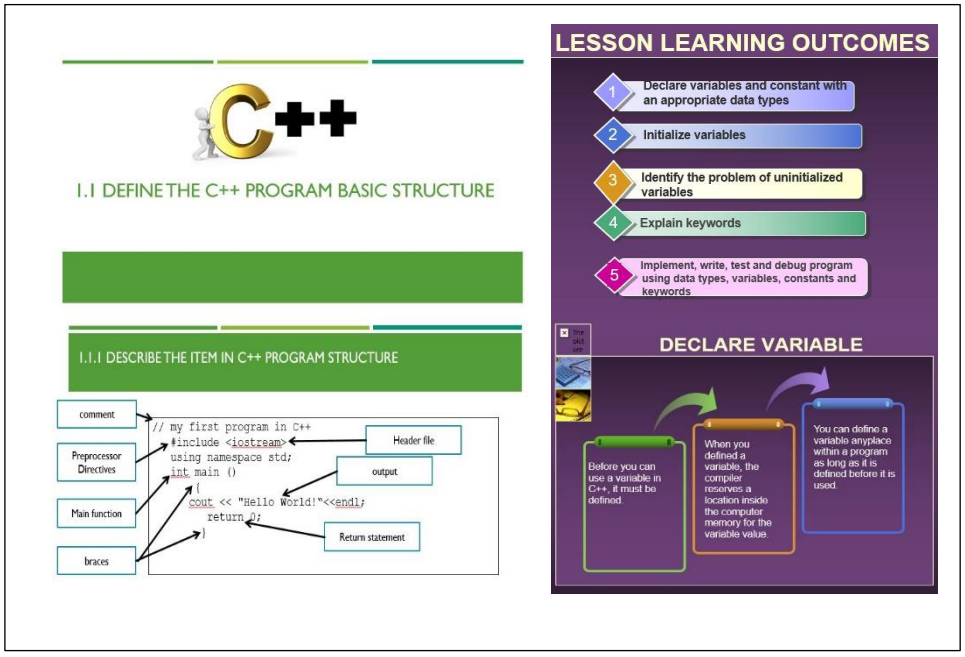

Figure 4: Interactive Multimedia Learning (IML)

Population and Sampling

Based on Krejcie and Morgan (1970), the sample size selected is 70 students from Politeknik Balik Pulau, Penang, Malaysia who registered DFC20113 Programming Fundamentals course. A simple random sampling was applied in selecting these students. These students are randomly divided into two groups, namely the treatment group (MLA) and the control group (IML).

Pre-Test and Post-Test

Pre-Test and Post-Test are used to determine the achievement of students' understanding of the C++ programming before and after receiving the MLA and IML learning methods. Each pre-test and post-test contains 30 objective questions. Printed question paper is used and students are required to answer on the paper. The duration of pre-test and post-test is 45 minutes. The question will covered all five (5) topic that they have learned in programming fundamentals course.

Instruments

There are two (2) instruments used to measure all two (2) variables. A pre-test and post-test were used to measure the students' achievement while questionnaire was used to measure level of student's acceptance towards mobile learning application. For the questionnaire, there are six (6) sections include demographics, accessing students perceived ease of use, perceived usefulness, perceived playfulness, attitude towards technology and intention to use technology. The items in the questionnaire used a five-point scale, ranging from 1: Strongly Disagree to 5: Strongly agree. The details of the instruments are shown in Table 4 below:

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13th – 14th December 2020

Table 4: Instruments

No	Instruments	Construct	Sub-construct	Original source	No. of items	Total items
1	Achievement	Pre-test			30	30
		Post-test			30	30
2	Questionnaire	Acceptance	Demographic	Self	6	26
			Perceived Ease of Use	Masrom(2007)	4	
			Perceived Usefulness	Masrom(2007)	4	
			Perceived playfulness	Donaldson(2011)	4	
			Attitude toward Technology	Masrom(2007)	4	
			Intention to use Technology	Masrom(2007)	4	

Pilot Study

The purpose of the pilot study is to identify potential problems with the instrument, content, format and procedure. For this research, pilot study has been conducted to confirm the internal reliability. Pilot study of questionnaire has distributed among 30 students. The selected students are not from the study population. The value measured between zero and one by using Cronbach's Alpha. Table 5 indicates the Cronbach alpha's values for the questionnaire instrument (acceptance). The data revealed that these two instruments were reliable.

Table 5: Reliability of Questionnaire

Construct	Cronbach's Alpha Coefficient
Perceived Ease of Use	0.856
Perceived Usefulness	0.861
Perceived playfulness	0.842
Attitude toward Technology	0.877
Intention to use Technology	0.868
Overall	0.860

Research Procedure

While conducting this study, at the initial stage, the researchers identified the sample size or students who will be involved in this study. Next, the researcher explained the learning activities to the students. Next, divide students into two groups, namely the multimedia learning application (MLA) group, and another 35 students from the interactive multimedia learning (IML) group. Then, the researchers conducted a pre-test that consists of 30 objective questions to all students in these two groups within 45 minutes. On the second day, 35 students from the experimental group were placed in lecture room 1 to implement the MLA method while another 35 students from the controlled group were placed in lecture room 2 to undergo the IML method. Researchers and course lecturers will observe both rooms. The content of MLA and IML has five (5) topics of C++ programming. Therefore, the experiment was conducted for five (5) weeks with one (1) hour treatment for each week. After treatment, the researchers performed a post-test on both groups within 45 minutes. Then, the researchers distributed questionnaires to students in both groups to check the level of student acceptance. Once the

eISBN 978-967-2426-22-6
13th – 14th December 2020

experiment is completed, the researchers marked, recorded, and analyzed the marks of pre-test, post-test, and questionnaire.

Research Findings

Research findings are reported according to research questions as follows:

Is there any significant difference in achievement between mobile learning application (MLA) method and interactive multimedia learning (IML) method?

Based on Table 6, the MLA group obtained a higher mean post-test test score than the IML group (mean post-test MLA: 24.29; mean posttest IML: 20.60). The ANCOVA analysis results (Table 7) showed a significant difference in learning achievement between the MLA group and the IML group (F: 967.319; p: 0.00). In specific, the MLA group scored significantly higher than the IML group in the post-test score. This finding indicates that Hypothesis 1 was supported. Hence, the students who experienced MLA treatment have a higher level of C++ programming achievement than those who experienced IML treatment.

Table 6: Pre-Test and Post-Test Mean Score of MLA and IML Group.

	Group	**MLA**	**IML**
	N	**35**	**35**
Pre-test	Mean	6.06	6.19
	Std. Deviation	2.93	2.56
Post-test	Mean	24.29	20.60
	Std. Deviation	2.80	4.670

Table 7: One-Way ANCOVA Analysis of Mean Post-Test Score with MLA and IML by Controlling Mean Pre-Test Score as Covariate.

Dependent Variable: Post-test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Result
Corrected Model	987.012[a]	2	493.506	63.858	.000	
Intercept	3572.685	1	3572.685	462.293	.000	
Pretest	36.098	1	36.098	4.671	.034	
Group	**967.319**	**1**	**967.319**	**125.168**	**.000**	**Significant**
Error	517.788	67	7.728			
Total	31210.000	70				
Corrected Total	1504.800	69				

Is there positive level of student's acceptance towards mobile learning application in C++ programing?

The level of student's acceptance towards mobile learning application was measured using questionnaire. The questionnaire was distributed to 35 students of experimental group (MLA) once they completed the treatment. Students were answered 26 items on the questionnaires including Demographic Profiles, Perceived Ease of Use, Perceived Usefulness, Perceived Playfulness, Attitude towards Technology and the Intention to Use Technology.

Descriptive Statistic

This section presents the descriptive statistics of the dependent and independent variables used in this study:

Demographic Profiles

According to Table 8, the demographic profiles are highlighted based on six items, which include group, gender, race, program track, semester and computer skills.

Table 8: Respondents Demographic Profile

Item	Value	Frequency	Percent
Group	Mobile Learning Application (MLA)	35	50.0
	Interactive Multimedia Learning (IML)	35	50.0
Gender	Male	29	41.0
	Female	41	58.6
Race	Malay	46	65.7
	Chinese	4	5.7
	Indian	20	28.6
Program Track	Software Development	45	64.3
	Networking System	25	35.7
Semester	2	70	100.0
Computer Skill	Yes	70	100.0
	No	0	0.0

Based on Table 9, all of the mean scores of the items are at high levels. Students reported that mobile learning application is very easy to use in their C++ learning. They admit that interaction with mobile learning application was clear and easy to understand and it would be easy for them to find the learning content and activities in mobile learning application.

Table 9: Mean Score for Perceived Ease of Use of MLA Group

No	Perceived Ease of Use (N=35)	Mean	SD
1	I found mobile learning application easy to use.	4.54	0.56
2	Learning C++ programming using mobile learning application would be easier for me.	4.43	0.69
3	My interaction with mobile learning application was clear and easy to understand.	4.14	0.73
4	It would be easy for me to find the learning content and activities in mobile learning application	4.49	0.50

According to Table 10 also shows all of the mean scores of the items are at high levels. Students stated that mobile learning application is very useful to enhance their performance in C++ learning.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 10: Mean Score for Perceived Usefulness of MLA Group

No	Perceived Usefulness (N=35)	Mean	SD
1	Using mobile learning application would increase my effectiveness in learning.	4.40	0.65
2	Using mobile learning application would enhance my course performance.	4.31	0.72
3	Using mobile learning application would increase my productivity in my course work.	4.54	0.56
4	I found mobile learning application is very useful.	4.40	0.60

Based on Table 11, students agreed that when they use mobile learning application, they will not realize the time elapsed. They also able to self-directed learning using this method. Both items recoded high level of mean score, which is 4.34.

Table 11: Mean Score for Perceived Playfulness of MLA Group

No	Perceived playfulness (N=35)	Mean	SD
1	When using mobile learning application, I will not realize the time elapsed.	4.34	0.54
2	Using mobile learning application will give enjoyment to me in learning C++ programming.	4.31	0.63
3	Using mobile learning application will stimulate my curiosity.	4.26	0.61
4	When it comes to learning and studying, I am a self-directed person.	4.34	0.54

According to Table 12, the highest mean score is 4.51. It means, students stated that they like to use mobile learning application as a material to polish the topics in C++ programming.

Table 12: Mean Score for Attitude towards Technology of MLA Group

No	Attitude towards Technology (N=35)	Mean	SD
1	I like to use this mobile learning application	4.20	0.68
2	I will use this mobile learning application inside and outside the classroom	4.29	0.57
3	I believe it is would be a good idea to use this mobile learning application in learning C++ programming.	4.40	0.55
4	I like to use this mobile learning application as a material to polish the topics in C++ programming.	4.51	0.56

Table 13 reported that students would return to mobile learning application often. This item recorded as highest level of mean score. This result reveal that students nowadays prefer learning using technology or mobile application as their learning materials.

Table 13: Mean Score for Intention to Use Technology of MLA Group

No	Intention to use Technology (N=35)	Mean	SD
1	I intend to use mobile learning application throughout semester 2.	4.46	0.66
2	I will return to mobile learning application often.	4.57	0.56
3	I intent to visit mobile learning application frequently for my course work.	4.40	0.65
4	I would recommend my friends to use the this C++ mobile learning application	4.46	0.50

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13th – 14th December 2020

Table 14 shows that overall acceptance level according to average mean is high with the score of 4.39 and the findings indicate that more students agree that mobile learning application is easy to use, very useful, playfulness and they intention to use it often.

Table 14: Descriptive Statistics of Student's Acceptance Level towards MLA Methods

No	Student acceptance level towards MLA (N=35)	Average Mean	Average SD
1	Perceived Ease of Use	4.40	0.62
2	Perceived Usefulness	4.41	0.63
3	Perceived Playfulness	4.31	0.58
4	Attitude towards Technology	4.35	0.59
5	Intention to use Technology	4.47	0.59
	Overall acceptance level	**4.39**	**0.60**

Discussion of Findings

The analyzed data using SPSS version 22 reported the findings of the study include students demographic as well as their achievement and level of student's acceptance towards mobile learning application in C++ programing. The student's achievement result was analyzed using ANCOVA, while the result of the acceptance level was analyzed using descriptive statistics. There are significant different in achievement between mobile learning application (MLA) method and interactive multimedia learning (IML) method. The MLA group scored significantly higher than the IML group in the post-test score. For the acceptance level, there are highly positive level of student's acceptance towards mobile learning application. More students agree that mobile learning application is easy to use, very useful, playfulness and they intention to use it often. The findings of this study are equivalent with Shin and Kang (2015) who found that students have started to accept mobile technology as a new learning tool and consequently the acceptance has influenced their learning achievement. Another researcher Elfeky & Masadeh((2016) revealed that mobile learning had significant effect on both student's academic achievement and recommended to adapt the use of mobile learning in the classes. The summary of the findings are as indicated in Table 15.

Table 15 Summary of the Findings

No.	Research Questions	Result
1	Is there any significant difference in achievement between mobile learning application (MLA) method and interactive multimedia learning (IML) method?	Significant
2	Is there positive level of student's acceptance towards mobile learning application in C++ programing?	Positive

Conclusion

Mobile learning application has proven to have a positive impact on students' achievement and the students showed highly positive acceptance toward mobile learning application in learning C++ programming. This finding has also supported by other studies Demir & Akpinar (2018). They revealed that mobile learning may promote students' academic achievement and had significantly high acceptance scores toward mobile learning. The achievement of students experienced mobile learning application treatment was higher compared to those who do not experienced the treatment. In addition, for the level of student's acceptance towards mobile learning application had a higher mean score. Finally, it can be concluded that this study has successfully fulfilled the objectives set at the beginning of the study. It is hoped that this study

will benefit educators especially those in programming area, researchers and those involved in improving the quality and progress of the educational system.

Limitations and Recommendation for Future Study

The major limitation in this study is the participants of this study consist of only the students in Politeknik Balik Pulau although there are many other Polytechnic in Malaysia. Thus, for futher research could consider larger sample size for more generalized results. This study examine the effect of mobile learning application in C++ programming while there are many courses in learning area. Therefore, these findings is not general to other courses. Other than that, this study examine the effect of mobile learning application on one element, which are student's achievement. Other scope such as motivation, engagement, social interaction, problem solving, etc. are beyond the scope of this study.

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STUDENTS MOTIVATION ON THE USE OF MOBILE LEARNING APPLICATION

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Abstract: *Over the last few years, the increasing use of mobile devices has introduced new ways of providing and accessing content that is not only cost-effective but also customized to the student's needs. The crucial thing in designing mobile learning applications is to provide a personalized experience for each student, based on their areas of interest and preferences. This paper reports on students' motivation towards using a mobile learning application named OOP-Pouch. OOP-Pouch enabled students to view the topics, notes, quizzes, and videos using mobile devices anywhere, anytime, and allowed students to control the lesson according to the needs and level of understanding. This research aims to demonstrate and evaluate the motivation of students when a mobile learning application was used as an aided tool in independent learning. With the purpose to investigate students' motivation, quantitative research was implemented by adapted the questionnaire based on the Instructional Materials Motivation Survey (IMMS). Participants were 136 students, who were enrolled in the DFC30133 Object-Oriented Programming course in June 2020 session. The sampling technique used is simple random sampling. The findings have shown that with the influence of well-designed portable instructional materials, students were motivated to learn Object-Oriented Programming, where they were optimistic at enhancing their perception and motivation towards learning. The result of this research revealed that students' motivation increased after using the application. Therefore, the result can be concluded that the use of mobile learning applications can be an alternative and still relevant in designing and developing effective learning materials for polytechnic students.*

Keywords: *Mobile Learning, Motivation, Programming, IMMS*

Introduction

Mobile learning is an innovation that leads the technology usage in education world nowadays. Mobile learning can be defined generally as a learning process that utilize mobile technology in order to be connected to the information anytime and anywhere (El-Sofany et al.,2020; Crompton et al.,2018). In recent times, the development of the learning method has progressed from day to day in order to find an effective and productive way in the education system. At the same time, it is important to ensure that learning approaches are implemented in line with current growth, including technological advancement.

According to Mohanna(2015) and Kumar et al., (2018), mobile learning transforms assessments items into engaging games, and spell out complex abstract concepts in an easy-to-gasp way. Besides, mobile learning also can improve interaction of educational content in various formats such as lectures, quizzes, tutorials and multimedia. Mobile learning is not only providing the educational content but also provide the good adaptation to adequate visualization on the small screen of mobile devices (El-Sofany et al.,2020). Wong (2011) pointed, mobile learning is flexible and gives freedom feelings to students. Furthermore,

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13th – 14th December 2020

advances in handheld devices have facilitated the use of multimedia in mobile applications, which allows mobile learners to have access to a wide variety of richly diversified learning resources (Huang et al., 2010; Kumar et al.,2018).

Since the COVID-19 is spreading across the world, teaching and learning has been shifted to online learning systems to ensure that the study is not affected by the spread of infectious disease (Naciri et al., 2020). However, students have difficulties in understanding the topics due to limited learning time through online teaching and learning. This causes students to be unable to dominate the subjects taught. The researcher was aware of this issues when conducting summative evaluation during online teaching and learning lessons.

In conditions of confinement caused by coronavirus and to ensure continuity of teaching and learning, the use of mobile learning is an essential component for learning strategy in higher education (Naciri et al., 2020). Previous researchers also found that mobile learning can support teaching and learning. Therefore, many developed countries commonly used mobile learning as one of the effective educational tools (Fuegen, 2012). According to (Tu & Sujo-Montes, 2014), the use of mobile learning allows teachers and students to interact with learning resources. These interactions will stimulate an increase in student motivation and learning satisfaction.

In this circumstances, researcher have taken the initiative by designing and developing mobile learning application as an aided tool for students in learning Object Oriented Programming. The main objective of this research is to evaluate student learning motivation on the use of mobile learning towards Object Oriented Programming course.

OOP-Pouch Mobile Learning Application

OOP-Pouch is developed to enable the students who enrol courses in DFC30133 Object Oriented Programming to view and access learning materials such as notes, course outline, quizzes and videos using mobile devices such as smartphones. They can access it anywhere and at any time according to their time preference. This application was developed using Open Source HTML and CSS codes. Besides, it can be used for Android and iOS operating systems. OOP-Pouch have been designed based on syllabus of DFC30133 Object Oriented Programming.

OOP-Pouch can be used as a teaching aid in the learning process and as reference material for students. OOP-Pouch enabled students to make a revision and quizzes for each topic of the subject. The important of this application, students have the advantages to access the notes, quizzes and lesson videos using mobile devices such as smartphones anywhere and at any time according to their own availability and preferences.

OOP-Pouch contains ELEVEN (11) menu lessons consists of Lesson 1 until Lesson 9, quizzes and lesson videos for each topic, summary of the course, a brief description of apps and online test as a summative evaluation. Students only need to install this mobile learning application on their smartphones using *.apk format for Android or IOS smartphones. Figure 1 shows the example of OOP-Pouch application screenshots from user's point of view using smartphone simulator.

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13th – 14th December 2020

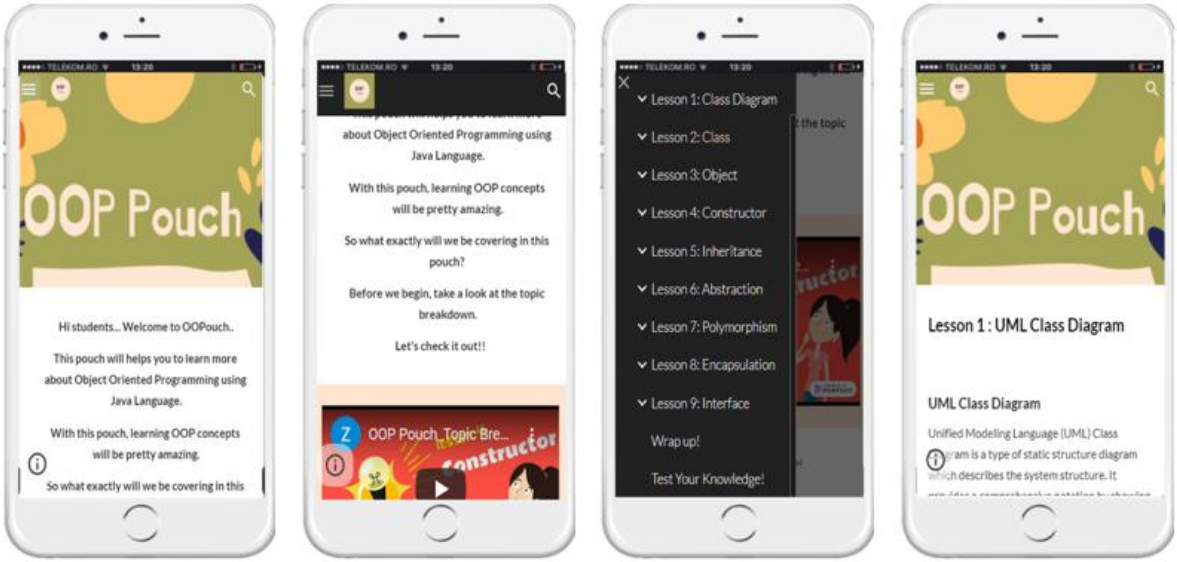

Figure 1: OOP-Pouch Interfaces Sample

Literature Review

Mobile learning is defined as learning across multiple contexts, through social and content interactions, using personal electronic devices (Crompton, 2013). Nowadays, mobile learning has become valuable for both students and teachers. Most of higher education institutions has implemented mobile learning as an important educational technology to enhance the teaching and learning process anytime anywhere in various ways. Generally, mobile learning helps students to develop technological skills, conversational skills, find answers to their questions, develop a sense of collaboration, allow knowledge sharing, and hence leverage their learning outcomes (Al-Emran, Elsherif, & Shaalan, 2016).

According to Matias and Wolf (2013), mobile learning is not only the learning that is based on the use of mobile devices but also the learning that is mediated across multiple contexts using portable mobile devices. Mobile learning devices have the affordance to connect to the internet whenever needed. A travelling distance learner can benefit from that technology without interrupting learner's journey (on the condition that internet is provided). Thus, being able to connect to the internet is crucial while using mobile devices for learning purpose (Sönmez, Göçmez, Uygun, Ataizi, & Learning, 2018).

As reported by the Malaysian Communication and Multimedia Commission (2018) in Figure 2, mobile phones penetration in Malaysia for the past five years kept growing tremendously in most states from 53.4% in 2014 to 78.0% in 2018. Most mobile phones users are ranging from below 20 to 49 years in age and the highest percentage of smartphone users with 93.5 % is below 20 years.

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13th – 14th December 2020

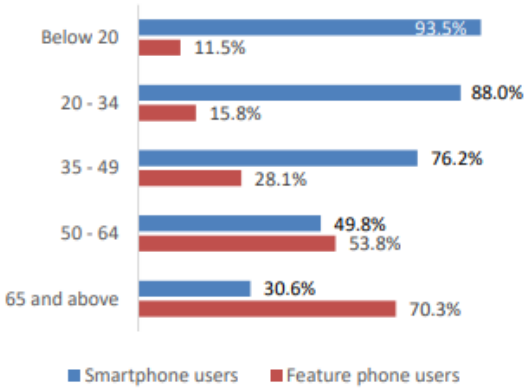

Figure 2: Mobile Phones Penetration in Malaysia

Source: Malaysian Communication and Multimedia Commission (2018)

When the COVID-19 pandemic and the ensuing lockdown disrupted the conventional ways. The education was turned around for online learning (Biswas et al.,2020). During this pandemic, teachers or educators in almost two hundred countries were urgently required to readjust the learning process for online delivery without compromising its efficiency. For this situations, mobile learning was rediscovered and quickly became a staple of remote education. Figure 3 below shows the Statista reports of a visible surge in mobile educational application downloads during the first quarter of 2020 compared to previous years.

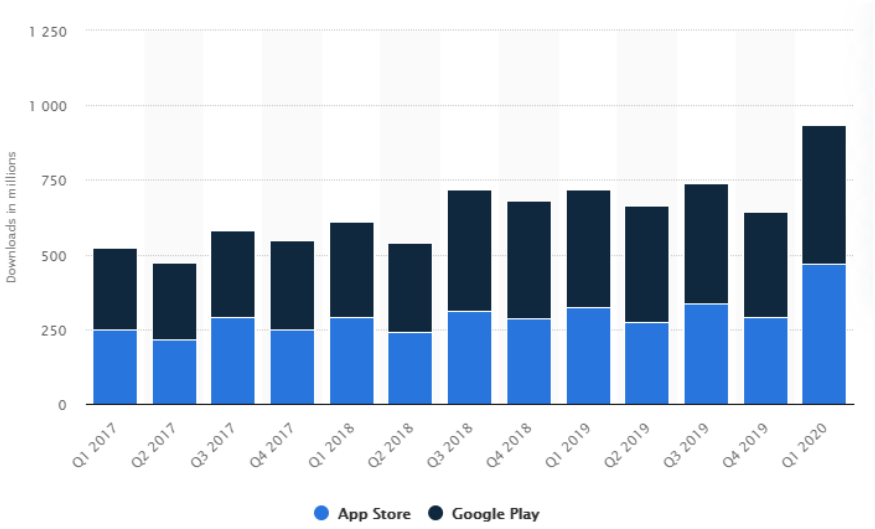

Figure 3: Mobile Education App Download (2017-2020)

Source: statista.com - Worldwide Mobile Education App Downloads, 2017-2020

From the above mentioned studies the researcher finds out that the use of learning using mobile is suitable for higher learning institution because the high percentage of mobile phone usage among teens and adults. Besides, many previous researches were discussed on measuring the effects and perception of mobile learning in learning process.

The ARCS is an instructional model developed by John Keller (1987). There are four (4) constructs of ARCS model. The ARCS stands for Attention, Relevance, Confidence, and Satisfaction. The ARCS model has been used by many researchers in developing instructional materials to evaluate motivational. Instructional Materials Motivation Survey (IMMS) was

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13th – 14th December 2020

firstly used in the literature by Keller in 1987 and it has been widely applied to instructional design processes for bringing the effectiveness of learning outcome.

Cook, Beckman, Thomas, & Thompson (2009) reported that the Instructional Materials Motivation Survey (IMMS) instrument was an effective instrument for collecting learners' motivational information. Furthermore, Huang (2016) reported that The IMMS survey has been used in previous research to evaluate the instructional and examine students' motivation levels.

Research Methods

This research used descriptive statistical analysis as it measures the statistic of mean, percentage and standard deviation to measure the motivation of students by using OOP-Pouch mobile learning.

Population and Sampling

Participants of this research has been selected from the population of third-semester students at Politeknik Balik Pulau who have enrolled in DFC30133 Object Oriented Programming course in June 2020 session. There were 136 students as participants in this research. Simple random sampling was applied to determine the sample size as it is accurate and unbiased approach to gather the responses from a large group.

Instrument

The Instructional Materials Motivation Survey (IMMS) was used in this research. The IMMS was developed by John Keller (John Keller, 1987) based on ARCS Motivational Model. It used four constructs of motivation namely attention, relevance, confidence and satisfaction. In this research, the IMMS was adapted using simple statement to make sure that students are able to understand and gives their feedback.

The survey was measured based on 10 items of questions consist of 4 construct using typical five-level Likert scales item range from 1 to 5 (1: Strongly disagree, 2: Disagree, 3: Neutral, 4: Agree 5: Totally agree).

A pilot study was conducted with 32 students in order to determine if the items in the questionnaire were using appropriate language and understandable

Table 1: Motivation Survey (IMMS) Consistency Estimates Result

Reliability Estimate (Cronbach's alpha)	N of Items
0.81	32

Based on the statistics, the internal consistency was high estimated based on Cronbach's alpha in Table 1. The instrument was adapted after the analysis of the pilot study.

At the beginning of the semester (June 2020 session), OOP-Pouch mobile learning application was given to student through CIDOS platform as an independent learning aid for students to understand the topics for Object Oriented Programming course throughout the semester. Later, at the end of the semester, survey was distributed to students using Google Form. The links were shared through lecturer's WhatsApp group and after that, every lecturer for each class need to make sure all of the students involved and respond to the survey. After all of the data have been collected, the data was recorded and analysed to identify the outcome of the research.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Result and Discussion

For this research, IMMS survey were distributed to students through online. All of the students are requested to fill in a questionnaire survey to evaluate their experiences of using OOP-Pouch mobile learning. Total of 136 sets of questionnaire has been analysed and presented in text and tables in order to make it significant of the research. The questionnaire has two (2) main sections including demographic factors and evaluation factors. The evaluation section consists of 10 questions which are divided into four (4) main construct which are Attention (ATT), Relevance(REL), Confidence(CON) and Satisfaction(SAT). The SPSS statistical program has been used to analyse the data. Students' responses in IMMS survey were illustrated in mean and standard deviation. Descriptive statistics for each section were summarized in Table 2 and Table 3.

Table 2: Result of Demography Factors (Section A)

Data Group	Variable	Frequency	Percentage
Gender	Male	77	56.6
	Female	59	43.4
Model of Mobile Devices (Operating System)	Android	89	65.4
	iPhone (IOS)	43	31.6
	Windows Mobile	4	2.9
Experience using mobile learning	Yes	127	93.4
	No	9	6.6

Table 2 shows demography factors that provides background of the respondents. Based on the background analysis data, there were 136 students participated in this study where female students are 56.6% and male students 43.4%. From the study have been made too, majority of the students use Android smartphone model with 65.4%, followed by iPhone, 31.6% and Windows phone with lowest usage by 2.9%. Besides that, 93.4% of the students have experience using mobile learning application and only 6.6% of students does not have any experience on using mobile learning application. Results for section A (demography factors) can be concluded that majority of the respondents have experiences in mobile learning using Android smartphones. However, the number of females' respondents is approximately equal to males' respondents.

Table 3: Result of IMMS Items (Section B)

Data Group	Item	Instructional Material Motivational Survey	Mean	SD
Attention (ATT)	ATT1	There was something interesting at the beginning of the application that got my attention.	4.15	0.72
	ATT2	The variety of contents and quizzes, in the application, helped keep my attention	4.63	0.68
Relevance (REL)	REL1	There was videos, pictures or examples in the application are useful and could be important to other people	4.82	0.75
	REL2	The content of this learning material is relevant to my interests in learning programming.	4.65	0.71
	REL3	I could relate the content of this application on my previous knowledge in learning programming	4.99	0.63
Confidence (CON)	CON1	Completing the quizzes and online test successfully was important to me	4.27	0.72
	CON2	I was confident that I could learn the content provided by this application.	3.92	0.74
	CON3	Completing the exercises in this lesson gave me a satisfying feeling of accomplishment	4.35	0.71

Satisfaction (SAT)	SAT1	I really enjoyed studying using this application	4.35	0.84
	SAT2	I was pleasure to use this this well-designed application	4.81	0.73

The section B of the survey is to analyse the aspects of motivation in adoption of mobile learning as an aided tool for learning process. Descriptive statistics for each item of the four construct of the IMMS were summarized in Table 3 where students' responses in IMMS were illustrated in mean and standard deviation.

The first construct is Attention. It is the first aspect that learners or students must gain in order to maintain their motivation for the learning (Keller, 1983). ATT1 inquired about the perceptual stimulation aspect on gaining learners' attention (*m =4.15*), and ATT2 asked about various interesting aspects applied in designing the instruction (*m = 4.63*). This result presented that the OOP-Pouch mobile learning application was able to hook students' attention.

The second construct measured was the relevancy of the OOP-Pouch contents, activities and assessments provided in the application. REL1 questions about illustrations, examples or exercises used in designing the instructions (*m = 4.82*). REL2 (*m = 4.65*) and REL3 (*m = 4.99*) put insight on how much the learning instruction was meaningful and relevant to the users.

The next construct is Confidence. It requires learners to preserved their motivation on the learning application. Based on results, CON1 (*m = 4.27*), CON2 (*m = 3.92*) and CON3 (*m = 4.35*) observed learners' confidence level as a way to motivate them in using the application.

The last construct is Satisfaction. It measures learner's satisfaction in completing the learning process. To measure satisfaction, the IMMS included 2 items as SAT1(*m=4.35*) and SAT2(*m=4.81*). Results shows highest range for Satisfaction construct. This can be assumed that the instructional design was assumed successful when students feels satisfied with the learning instructions.

Table 4: Result of IMMS Items According to Gender

Gender		ATT	REL	CON	SAT	Total (Motivation)	(p)
Male (N= 77)	Mean	4.37	4.93	3.95	4.43	4.42	0.104
	SD	0.78	0.64	0.71	0.70	0.71	
Female (N= 59)	Mean	4.43	4.67	4.49	4.77	4.59	
	SD	0.82	0.74	0.83	0.72	0.78	
Overall (N= 136)	Mean	4.39	4.82	4.18	4.58	4.49	
	SD	0.73	0.78	0.63	0.86	0.75	

Table 4 shows the IMMS items plotted according to gender. Results illustrated a difference means values between male and female students in terms of their motivational aspect where the female students (*m = 4.59*) were more motivated to use the mobile learning application compared to the male students (*m = 4.42*).

The result presented that the means values for attention level among female students was greater than male students (*m = 4.43 > 4.37*). Students' confidence and satisfaction of the mobile learning were also higher for females than males (*m = 4.49 > 3.95*) and (*m= 4.77 > 4.43*). However, the male students were indicated that the learning application was more relevant (*m = 4.93*) compared to female students (*m = 4.67*).

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13th – 14th December 2020

Overall, the result suggests that the total motivation was higher for female students (*m = 4.59*) compared to male students (*m = 4.42*). The difference found in means value between male and female students in terms of the gender and total motivation. T-test was run to test the significance difference between male and female by using T-Test for independent groups. Based on Table 4, the two-tail significance indicates that $p = 0.104$, $p<0.05$. The results can be concluded that there is no significant difference in mobile learning motivation between male and female students ($p = 0.104 > 0.05$). The results suggest that male and female students have similar perspectives on the usability of learning using mobile applications (Chang,2017).

For future study, the Instructional Materials Motivation Survey (IMMS) based on ARCS model may be a valuable model for inspiring instructional design in different aspects of education. Besides that, further investigation on the impact of student achievement using different range of methods, participants and courses was highly recommended.

Conclusion

Based on the results of the analysis and discussion above, it can be concluded that the use of mobile learning application can improves students' motivation in learning Object Oriented Programming. Besides that, the result also revealed that the use of mobile learning applications can be an alternative and still relevant in designing and developing learning materials for polytechnic students.

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ASSESSMENT ON SUSTAINABILITY OF COCOYAM FOR HEAVY METAL REMOVAL IN INDUSTRIAL WASTEWATER

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Abstract: *Wastewater treatment is an integral part of any industry. For the pharmaceutical sector, the wastewater contains heavy metal elements such as lead, mercury, cadmium and arsenic. Removals of these elements are usually achieved using existing methods such as precipitation, filtration, ion exchange and adsorption. However, these methods are often either costly, require technical expertise, not environmentally friendly or produce by products that are difficult to dispose of and is of no use. Previous study have proven that cocoyam has the ability to absorb heavy metal elements gradually, until the levels are low enough for ideal conditions of bio indicators such as catfish and koi. It is beneficial to look at the traces of the absorbed heavy metal in the plant itself, as it would mean that the cocoyam can be used for other purposes such as for human consumption. This would mean that using cocoyam as a wastewater treatment method for removing heavy metals is not only cheap and environmentally friendly, but is also sustainable. Samples of leaf and stalk from the ponds were taken. The tuber, corm and cormet could not be tested as it has not reached 1 year old and has not matured. Lab testing on samples were conducted at Central Lab, Universiti Malaysia Pahang. The results were compared to FAO CODEX STAN 193-1995 for safe heavy metal content limit and Provisional Tolerable Weekly Intake (PTWI). It was found that the stalk and leaf can be considered safe for consumption with reservations.*

Keywords: *Wastewater Treatment, Heavy Metal Absorption, Sustainable, Plant Absorption*

Introduction

In water based pharmaceutical products such as drips, hemodialysis concentrates and a peritoneal dialysis solution, a huge amount of water is used. This in turn produces a huge volume of wastewater. It normally contains heavy metal that is hazardous to humans and animals such as lead, mercury and cadmium. The conventional method of treating wastewater is through water treatment plants that mainly use chemical compounds, consume a high amount of energy and also costs a lot to build and maintain. One manufacturer has employed a natural alternative by letting its wastewater flow through 5 retention ponds that are planted with cocoyam. The levels of heavy metals in the wastewater is reduced as it gradually flows through the ponds before reaching safe levels at the last pond and released into the sewerage system. At pond 3, the contamination is low enough to rear catfish which also act as a bio indicator. This study will look into the absorption of heavy metals by the cocoyam around the ponds and determine its suitability for human consumption as a point of argument for a natural, sustainable method of heavy metal removal in industrial wastewater.

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13th – 14th December 2020

Literature Review

Heavy Metals and Its Effects on Humans

Heavy metals are defined as trace elements that have atomic weights between 63.5 and 200.6 (Srivastava & Majumder, 2008). It is not biodegradable, unlike organic contaminants. Heavy metals accumulate in humans and animals through consumption of food or water containing traces of heavy metals. For plants and crops, heavy metals are absorbed through soil and water. Among the heavy metals that need attention during wastewater treatment are zinc, copper, nickel, mercury, cadmium, lead and chromium. It is important to note that low concentrations of heavy metals are harmless. In fact, some are even needed by the body to function optimally. For example, zinc regulates the biochemical processes in the human body, while copper is important for animal metabolism. However, heavy metals tend to accumulate inside its living host. Therefore it is possible that the concentration will exceed safety limits and cause various health complications, even death.

Table 1: Effects of Heavy Metals on Humans

Zinc (Zn)	Stomach cramps, skin irritation, vomiting, nausea, anaemia (Oyaro, et al., 2007)
Copper (Cu)	Vomiting, cramps, convulsions, death (Paulino, et al., 2006)
Nickel (Ni)	Lung and kidney problems, gastrointestinal distress, pulmonary fibrosis, skin dermatitis, cancer (Borba, et al., 2006)
Mercury (Hg)	Damage to central nervous system, impairment of pulmonary and kidney function, chest pain, dyspnoea (Namasivayam & Kadirvelu, 1999)
Cadmium (Cd)	Kidney dysfunction, cancer, death (Hubicki & Kolodynska, 2012)
Lead (Pb)	Damage to central nervous system, kidney, liver, reproductive system, basic cellular process and brain functions (Naseem & Tahir, 2001)
Chromium (Cr)	Affects human physiology, skin irritation, lung carcinoma (Khezami & Capart, 2005)

Conventional Heavy Metal Wastewater Treatment

Chemical Precipitation

Chemical precipitation is arguably the most widely used technique for heavy metal wastewater treatment (Ku & Jung, 2001). It is relatively simple and cheap compared to other treatment techniques. It is highly effective in removing selected heavy metal particles according to the chemicals used. Basically, the chemicals, called precipitant, react with the heavy metal ions in the wastewater and with a suitable level of pH, form insoluble precipitates. These can then be removed by sedimentation or filtration. There are 2 common variations of chemical precipitation, which are hydroxide precipitation and sulphide precipitation. Hydroxide precipitation is usually the most preferred variation. This is due to the low cost involved (Huisman, et al., 2006). Various chemicals can be used as the hydroxide base for this process. However, it is found that the most commonly used hydroxide base is lime (Baltpurvins, et al., 1997). Although considered very efficient in removing heavy metal elements from wastewater, there are limitations related to the treatment. Hydroxide precipitation has a by-product which is a high amount of low density sludge. The sludge can cause problems during dewatering and

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13th – 14th December 2020

is also difficult to dispose (Kongsricharoern & Polprasert, 1995). Some metal hydroxides are amphoteric, meaning that the element can react as an acidic or a base (alkali) element. This makes it difficult to obtain the correct pH environment which will adversely affect the precipitation process.

Table 2: Efficiency of Heavy Metal Removal from Wastewater by Hydroxide Precipitation

Elements	Initial Concentration	Precipitant	Removal Efficiency (%)
Zn^{2+}	32 mg/L	CaO	99-99.3 (Ghosh, et al., 2011)
Cu^{2+}, Zn^{2+}, Cr^{3+}, Pb^{2+}	100 mg/L	CaO	99.37-99.6 (Chen, et al., 2009)
Cu^{2+}, Zn^{2+}, Pb^{2+}	0.018, 1.34, 2.3 mM/L	H_2S	100, 94, 92 (Alvarez, et al., 2007)
Cr^{3+}	5363 mg/L	CaO and MgO	99 (Guo, et al., 2006)
Hg^{2+}	65.6, 188 µg/L	1,3-benzenediamidoethanethiolate	99.9 (Blue, et al., 2008)

Ion Exchange

In this method, resins are used to remove the heavy metal. The resin used can come from either natural or synthetic sources. Most commonly used in the industry are synthetic resins which are in the strongly acidic sulfonic acid group ($-SO_3H$) or the weakly acidic carboxylic acid group (-COOH). The hydrogen ions in the resin will act as exchangeable ions, reacting with the heavy metal cations. The rate of heavy metal removal using the ion exchange method depends on certain parameters such as temperature, pH, initial metal concentration and contact time (Gode & Pehlivan, 2006). The advantages of ion exchange are high treatment capacity, high efficiency of heavy metal removal and fast kinetics (Kang, et al., 2004). The disadvantages are high cost. The resin also needs to be regenerated chemically when exhausted and this causes serious secondary pollution. For natural resins, mainly in the form of zeolites, which are naturally forming silicate minerals, although cheap and abundant, studies are limited to laboratory tests and controlled conditions. It will take more to enable zeolites to be used in industrial applications.

Adsorption

Absorption is the process in which a fluid is dissolved by a liquid or a solid absorbent. Adsorption is the process in which atoms, ions or molecules from a substance, either gas, liquid or dissolved solid adheres to a surface of the adsorbent. It is considered an effective and economical method for the removal of heavy metals in wastewater. This method allows flexibility in terms of design and operation. The results of this method are usually high quality effluents. In some cases, adsorbents can also be regenerated, as the adsorption process is sometimes reversible through desorption. There are 4 types of mediums for adsorption, activated carbon, carbon nanotubes, low cost adsorbents and bio adsorbents. Activated carbons are obtained from processed elements that usually contain medium to high amounts of carbon such as coal. Activated carbon has excellent heavy metal adsorption properties because of its large volume of micro pores and meso pores, creating a high surface area. However, the cost

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13th – 14th December 2020

of obtaining activated carbons has increased due to the depletion of commercial coal based activated carbon.

Figure 1: Activated Carbon Under Scanning Electron Microscope (SEM)
Source: (GAC Sports Bottle Water Filter, 2014)

As an alternative, the possibility of using additives for reducing the activated carbon content without sacrificing the adsorption rate of heavy metals has been studied. It has been proven that alginate (Park, et al., 2007), tannic acid (Üçer, et al., 2006), magnesium (Yanagisawa, et al., 2010) and surfactants (Ahn, et al., 2009) can improve adsorption rates for activated carbon. Using abundant, cheap materials as a source of activated carbon has also been looked into. Among the materials that have been studied are waste materials (Dias, et al., 2007), eucalyptus bark (Kongsuwan, et al., 2009) and poultry litter (Guo, et al., 2010). Interestingly, activated carbon derived from poultry litter was found to remove heavy metal in wastewater at a better rate than activated carbon from bituminous coal and coconut shells. Carbon nanotubes were found during research in 1991 (Iijima, 1991). It has many unique properties for use in industrial and engineering purposes. One of the properties is a potentially good adsorbent of heavy metals in waste water.

Low cost adsorbents have been the focus of many studies as the cost for other methods are comparatively high. Many materials have been found to be effective in removing heavy metal from wastewater. Among them are agricultural wastes (Sud, et al., 2008) and chemically modified plant waste (Wan Ngah & Hanafiah, 2008).

Industrial by products and waste have also been studied for their potential. This includes lignin (Betancur, et al., 2009), aragonite shells (Kohler, et al., 2007) and peat (Liu, et al., 2008). Currently there are 3 sources of bio adsorbents available (Apiratikul & Pavasant, 2008). The first is non-living biomass such as bark, lignin and crab shell. Then there is algal biomass from algae and finally microbial biomass such as bacteria, yeast and fungus. For non-living biomass derived adsorbents, many plant based materials have been studied as possible adsorbents of heavy metal. Potato peels (Aman, et al., 2008), sawdust (Kaczala, et al., 2009) and eggshells (Jai, et al., 2007) have been deemed as having good potential for this purpose.

Algae are one of the elements which are abundantly available and renewable. It is usually used in its natural state for removal of heavy metal. Among the types of algae that have been studied are the green alga *ulva lactuca* for the removal of chromium (El-Sikaily, et al., 2007), the adsorption of lead (II) from wastewater by green alga *cladophora fascicularis* (Deng, et al., 2007) and the use of dried green macro alga *caulerpa lentilifera* for the removal of Cu^{2+}, Cd^{2+}, Pb^{2+} and Zn^{2+} (Pavasant, et al., 2006). Though still in experimental stage, microbial adsorption of heavy metal ions from wastewater has shown to be highly effective. The types of bacteria used are *bacillus cereus* (Pan, et al., 2007), *escherichia coli* (Souiri, et al., 2009) and *pseudomonas aeruginosa* (Gabr, et al., 2008).

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13th – 14th December 2020

Yeast and fungi are organisms that are easy to cultivate, producing high volumes of biomass and can be custom made either by genetic manipulation or morphological manipulation. Examples of fungi that have been proven as useful bio adsorbents are *aspergillus niger* (Amini, et al., 2009), *rhizopus arrhizus* (Aksu & Balibek, 2007) and *saccharomyces cerevisiae* (Chen & Wang, 2008). Although bio adsorbents have been identified as having an advantage in terms of cost and adsorption rate, most are still in the experimental stage. Besides, the bio adsorbents would be rendered unusable after a certain time after the adsorption process.

Membrane Filtration

Membrane filtration is a method where a piece of membrane acts as a filter. This filter will allow water to pass through while trapping other foreign substances and particles. To force a solution to go through the membrane, there are options such as using high pressure, maintaining a concentration gradient on both sides of the membrane or by introducing an electric potential. Membrane filters can be divided into 4 types which are electro dialysis, ultra-filtration, nano filtration and reverse osmosis, also known as hyper filtration. The classification of types is done according to the size of particles that they can separate from a solution.

Ultrafiltration is a membrane filtration method that uses low pressure to remove dissolved materials in aqueous solution. However, the pores of an ultrafiltration membrane are generally larger than heavy metal particles. This causes the particles to easily pass through the membrane, reducing the filtration efficiency. To solve this, micellar enhanced ultrafiltration (MEUF) and polymer enhanced ultrafiltration (PEUF) has been devised. Basically both of these introduce additional solvents and surfactant that bind to the metal particles, causing them to become larger and unable to go through the ultrafiltration membrane pores (Landaburu-Aguirre, et al., 2009) (Kim, et al., 2005).

Reverse osmosis (RO) is a membrane filtration method that uses a semi permeable membrane. This enables the fluid that passes through the membrane while at the same time rejecting any contaminants. Global desalination capacity depends on RO by a rate of 20% (Shahalam, et al., 2002). However, the application of RO in removing heavy metals is still yet to be widely applied. Table 3 shows removal efficiency of select heavy metal using reverse osmosis.

Table 3: Heavy Metal Removal Efficiency By RO

Membrane	Heavy Metal	Initial Metal Concentration	Removal Efficiency (%)	References
RO	Cu^{2+}, Ni^{2+}	500 mg/L	99.5	(Mohsen-Nia, et al., 2007)
RO	Cu^{2+}	20-100 mg/L	70-95	(Zhang, et al., 2009)
RO	Ni^{2+}, Zn^{2+}	Ni^{2+}: 44-169 mg/L Zn^{2+}: 64-170 mg/L	99.3 98.5	(Ipek, 2005)

The Use of Cocoyam as a Natural Heavy Metal Absorbent

Cocoyam is the general name for species of plants and may be referred to the species of *xanthosoma or colocesia*. The leaves of the *xanthosoma*, seen in Figure 2.7, are usually arrow shaped and the upper v-notch of the leaves extend to the point of attachment of the leaf to the blade. The leaves of the *colocesia* are peltate or more rounded. A typical *xanthosoma* cocoyam has a lifecycle of around 12 months. It produces a large stem underground called corm and surrounding the corm are smaller, potato shaped cormets. Both have a high quantity of starch

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13th – 14th December 2020

and are mainly used for food preparations throughout Asia and Africa where the plants thrive. The stalk and young leaves are also known to be a delicacy in certain countries.

Studies have been conducted on heavy metal adsorption from soil and wastewater by cocoyam. Amusan (2005), Okoronkwo (2005), Apau (2014) and Solomon (2014) notes that cocoyam has the ability to adsorb heavy metals from soil and wastewater. Mahmud (2015) previously looked at the traces of heavy metal and conductivity level in wastewater retention ponds at the same pharmaceutical company as in this study. The objective was to compare the values with WHO standards for drinking water. Wastewater samples from all 5 ponds and discharge outlet were taken and sent for heavy metal traces testing and conductivity analysis.

Table 4: Heavy Metal Content And Conductivity In Wastewater (Mahmud, 2015)

No. Sample (Location)	Conductivity (µs/cm)	Lead (µg/l)	Cadmium (µg/l)	Mercury (µg/l)	Arsenic (µg/l)
Sample 1 (RO Pipe)	N/A	53	4.9	1.0	49
Sample 2 (pond 1)	939	50	3.1	0.9	45
Sample 3 (pond 2)	756	42	2.2	0.8	33
Sample 4 (pond 3)	572	31	0.4	0.5	21
Sample 5 (pond 4)	474	22	0.2	0.4	20
Sample 6 (pond 5)	391	19	0.2	0.4	17

Significant reductions in the conductivity and heavy metal reading were observed in Pond 4. It was determined that this was due to the sedimentation process and also adsorption of cocoyam which is planted around Pond 1, Pond 2 and Pond 3. It should be noted that Pond 4 and Pond 5 do not have cocoyam and relies on sedimentation only. The reduction of conductivity and heavy metals from Pond 4 to Pond 5 is not as rapid as from Pond 1 to Pond 2 for example. Therefore, it can be assumed that cocoyam may be one of the hyper accumulator plants, which are able to accumulate high amounts of heavy metal in their biomass (Stottmeister, et al., 2003).

Methodology

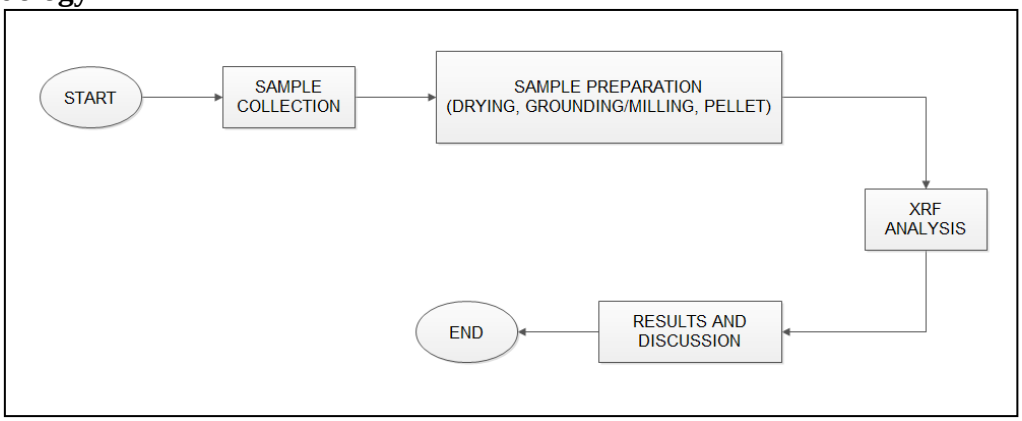

Figure 2: Study Flowchart

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13th – 14th December 2020

Retention Pond Layout

The pharmaceutical company uses 5 retention ponds. The wastewater outlet is located near Pond 1. This causes the concentration of heavy metals and conductivity levels in Pond 1 to be the highest. Pond 1 has cocoyam planted on the edges of the pond to enable adsorption. No aquatic organism can survive in Pond 1.

Pond 2 also has cocoyam planted along its edges. Traces of heavy metal and conductivity are lower than Pond 1 due to adsorption by cocoyam and sedimentation. However, the water conditions are still not viable for aquatic living organisms. Constant monitoring of each pond for heavy metal content and conductivity is done by technicians.

Pond 3 is the last pond to be planted with cocoyam as shown. The traces of heavy metals and the levels of conductivity are much lower compared to Pond 2. This enables the placement of bio indicators in the pond.

Bio indicators are placed in the ponds as a general reference of the suitability of the water for aquatic bio organisms. Pond 3 contains catfish while Pond 5 contains koi fish. Catfish was chosen because of its high resistance towards water pollution including heavy metals and conductivity while koi fish have lower resistance to pollution. Therefore, its ability to thrive in Pond 5 means that the water is clean enough for release into the environment.

Sampling

Out of the 5 retention ponds, only Pond 1, Pond 2 and Pond 3 have cocoyam planted at the edges. Therefore it was decided that cocoyam samples would be taken from Pond 1 and Pond 3. Pond 2 was ignored because of the need to observe the substantial gap between traces of heavy metal in the samples of each pond. From each selected pond, a stalk and leaf of the plant was extracted. This means that for both ponds, a total of 4 samples were collected.

It is observed that the cocoyam plant survives for about 1 year. Hence, it has become a common practice for the pharmaceutical company to dig up the cocoyam plants when it reaches 1 year old, and replacing it with new cocoyam. However, during the course of this study, the cocoyam plants have not reached that age. This means that the corm and roots of the cocoyam were not able to be collected for sampling.

The larger leaves are from Pond 1 and the smaller leaves are from Pond 3. In terms of measurement, the sample from Pond 3 was 45 inches in length, 12 inches in width including the leaf. The sample from Pond 1 was 53 inches in length and 20 inches in width.

Before the samples can be tested using an XRF machine, it must go through a series of processes in order to transform the fresh samples into powder form. This is because an XRF machine can only run tests on plants either in powder or liquid samples. Samples would need to be dried in an oven at temperatures of around 65°C for up to 12 hours. This is to ensure that all the moisture inside the sample has dried up. A dry sample will make it easier for the next phase which is grinding.

Grinding is a process that shreds or grounds the sample into finer almost dust like form. It usually employs the use of mills, mortar and pestle or ball mills. This process will enable the sample to be analysed by the XRF machine which relies on the Bragg's Principle of diffraction. The final process would be pelletizing the samples. The powdered sample will be sieved for uniform particle size. After that it will be combined with a small amount of binder. Then, using hydraulic press, the powdered sample will be pressed into the pellet.

Codex Stan 193-1995

The Codex General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193-1995) is a standard that contains the recommended principles in dealing with contaminants

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13th – 14th December 2020

and natural toxic elements in food and feed. The codex is under the purview of the Food and Agriculture Organization of the United Nations (FAO). The codex lists the maximum allowable levels of contaminants and toxic content, definitions and associated sampling plans of the contaminants. This codex is applicable to all commodities moving in international trade.

In the case of a commodity not stated in the codex, it also states the tolerable weekly intake of the contaminant or toxin by human consumption based on body weight. As such, general conclusions can be made. However, in order to obtain the most precise conclusion, data and further study is needed on the consumption behaviour of consumers.

Result

The results obtained from the sample analysis conducted in the laboratory were displayed. It was also being compared to the allowed limits of heavy metal content set by the Food and Agriculture Organization of the United Nations (FAO), specifically Codex General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193-1995).

Heavy Metal Content

Table 5 contains the results of heavy metal content testing which was done on the leaf sample from Pond 1.

Table 5: Heavy Metal Content from Leaf of Pond 1

Parameter	***Results***	***Unit***
Arsenic (As)	*60*	*ppb*
Cadmium (Cd)	*0.2*	*ppm*
Lead (Pb)	*0.7*	*ppm*
Mercury (Hg)	*Not Detected (Less than 0.5)*	*ppb*

Table 6 shows the results of heavy metal content testing which was done on the leaf sample from Pond 3.

Table 6: Heavy Metal Content from Leaf of Pond 3

Parameter	**Results**	**Unit**
Arsenic (As)	43	ppb
Cadmium (Cd)	24	ppb
Lead (Pb)	1.7	ppm
Mercury (Hg)	Not Detected (Less than 0.5)	ppb

To compare the findings from Pond 1 and Pond 3, Figure 3 combines both data from Table 5 and Table 6.

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13th – 14th December 2020

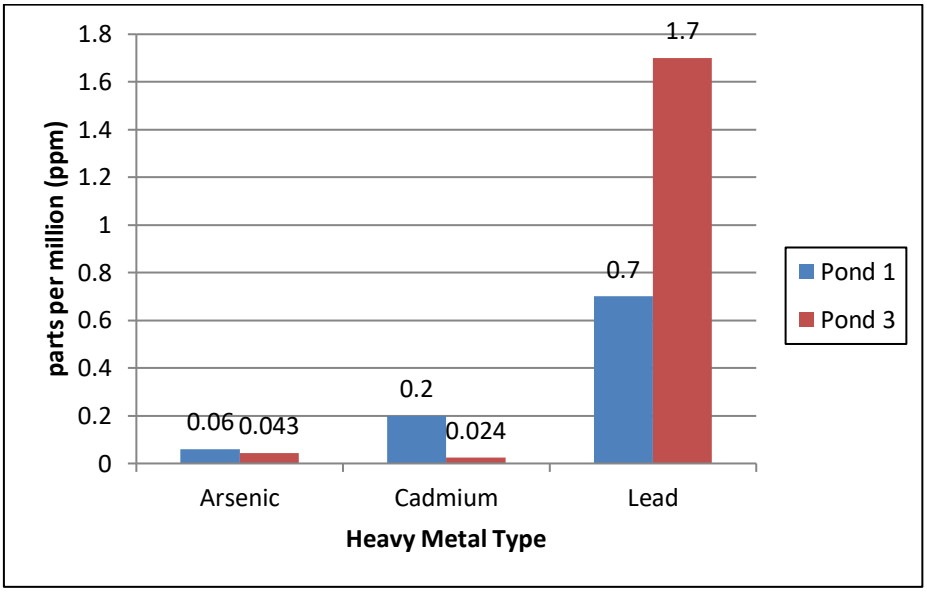

Figure 3: Comparisons between Heavy Metal Content in Leaves of Pond 1 and Pond 3

As seen in Figure 3, the heavy metal content of arsenic and cadmium that are present in the cocoyam leaf from Pond 3 is lower than Pond 1. This is expected as the amount of heavy metal in Pond 1 is higher than Pond 3. However, the lead content in the cocoyam leaf sample from Pond 3 is significantly higher than the cocoyam leaf sample from Pond 1. This is quite surprising. Further study is needed to determine the cause of this spike.

Table 7 contains the heavy metal content found inside the stalks of the cocoyam plant from Pond 1.

Table 7: Heavy Metal Content from Stalk of Pond 1

Parameter	Results	Unit
Arsenic (As)	Not Detected (Less than 0.5)	ppb
Cadmium (Cd)	17.9	ppb
Lead (Pb)	0.6	ppm
Mercury (Hg)	Not Detected (Less than 0.5)	ppb

Table 8 shows the concentration of heavy metal content found in the stalk of the cocoyam taken from Pond 3.

Table 8: Heavy Metal Content from Stalk of Pond 3

Parameter	Results	Unit
Arsenic (As)	Not Detected (Less than 0.5)	ppb
Cadmium (Cd)	20.3	ppb
Lead (Pb)	0.3	ppm
Mercury (Hg)	Not Detected (Less than 0.5)	ppb

For comparison of the concentration of heavy metals in the stalk samples, Figure 4 combines the data obtained from Table 7 and Table 8.

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13th – 14th December 2020

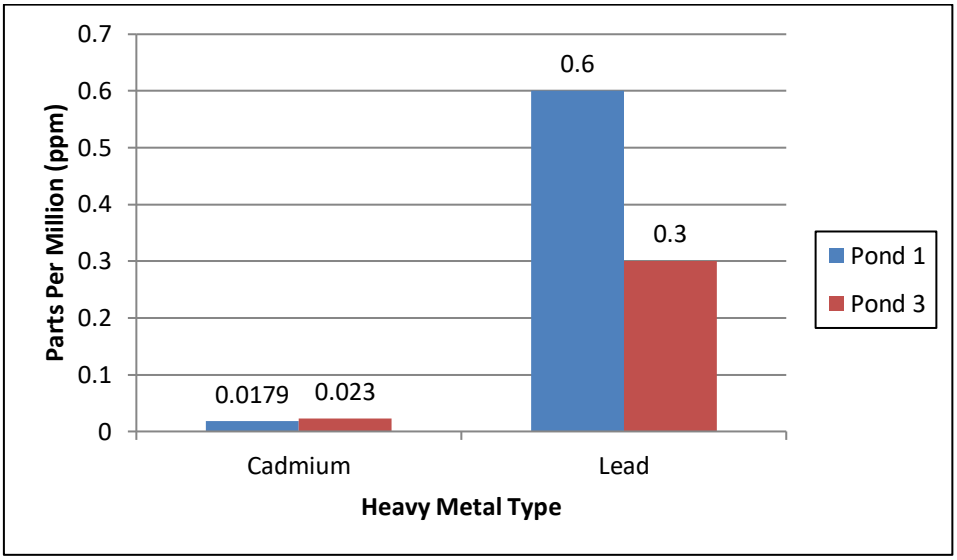

Figure 4: Comparisons between Heavy Metal Content in Stalks of Pond 1 and Pond 3

From Figure 4, it can be seen that the content levels of lead in the cocoyam stalk taken from Pond 3 decreased compared to Pond 1. However, the levels of cadmium between the samples taken from each pond shows an increase, although slightly.

Heavy Metal Content Compared to CODEX STAN 193-1995

In this part, the figures obtained from each sample, for each heavy metal type will be compared to the allowable heavy metal content limits and weekly intake limits that have been stated in FAO's CODEX STAN 193-1995 rev 2009.

In the codex, the safe limits of stalk and stem vegetables and also root and tuber vegetables for cadmium are 0.1 mg/kg, while the provisional tolerable weekly intake (PTWI) is 0.007 mg/kg body weight. For lead, the safety limit in leafy vegetables is 0.3 mg/kg, while the limit in root and tuber vegetables is 0.1 mg/kg. In this study, cocoyam is a root and tuber vegetable. However, since testing was done on the stalk and leaves, it is decided that the value of 0.3 mg/kg is used. The PTWI for lead is 0.025 mg/kg body weight.

For arsenic and mercury, the codex does not specifically list the content safety limits for any type of vegetation. Nevertheless, based on the minutes of the 72nd Joint FAO/WHO Expert Committee on Food Additives in 2010, PTWI for arsenic content in food is 0.003 mg/kg body weight, while for mercury, the PTWI for food sources other than fish and shellfish is 0.004 mg/kg body weight. It is understood that the decision in the minutes will be included in future amendments of CODEX STAN 193-1995.

For the purpose of calculation and comparison, the assumed body weight will be taken as 50 kilograms. When comparing the values with PTWI, the assumptions made are considered general. To confirm, the dietary habits of the consumer should be recorded and further assessment is needed.

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13th – 14th December 2020

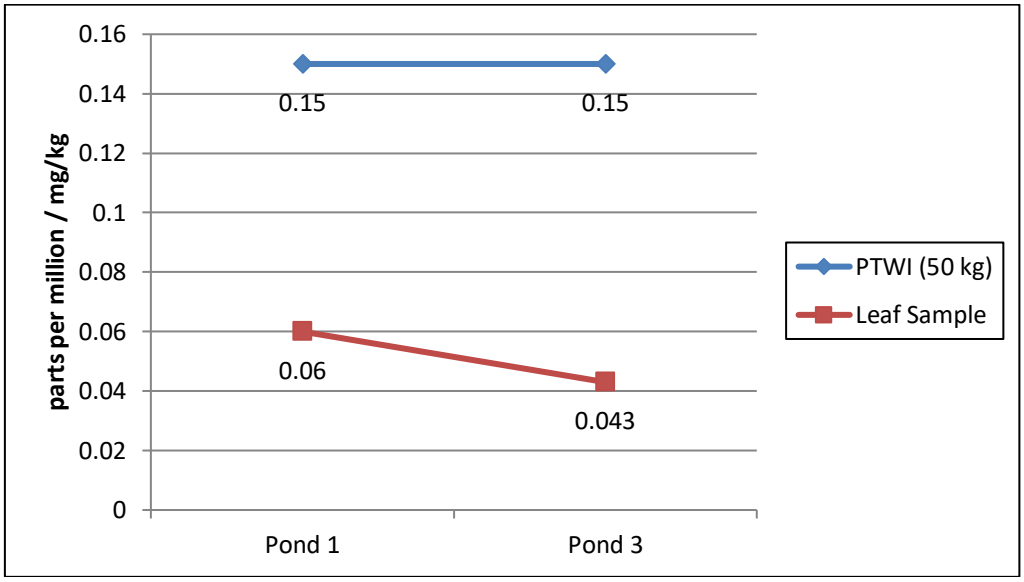

Figure 5: Arsenic Levels in Leaf Sample and PTWI Limit

Figure 5, shows the levels of arsenic obtained from the leaf samples of Pond 1 and Pond 3. The stalk samples did not show any traces of arsenic because that it is non-existent or lower than the 0.0005 ppm detection rate. The levels are compared with the PTWI limit designated by the FAO.

In this case, it can be seen that the arsenic content is far below the safety limit. Therefore it can be said that the leaves of the cocoyam are safe to consume by adults. However, since the body weight assumption is 50 kilograms, the use of the leaves from these retention ponds are hazardous to toddlers and infants weighing 15-20 kilograms.

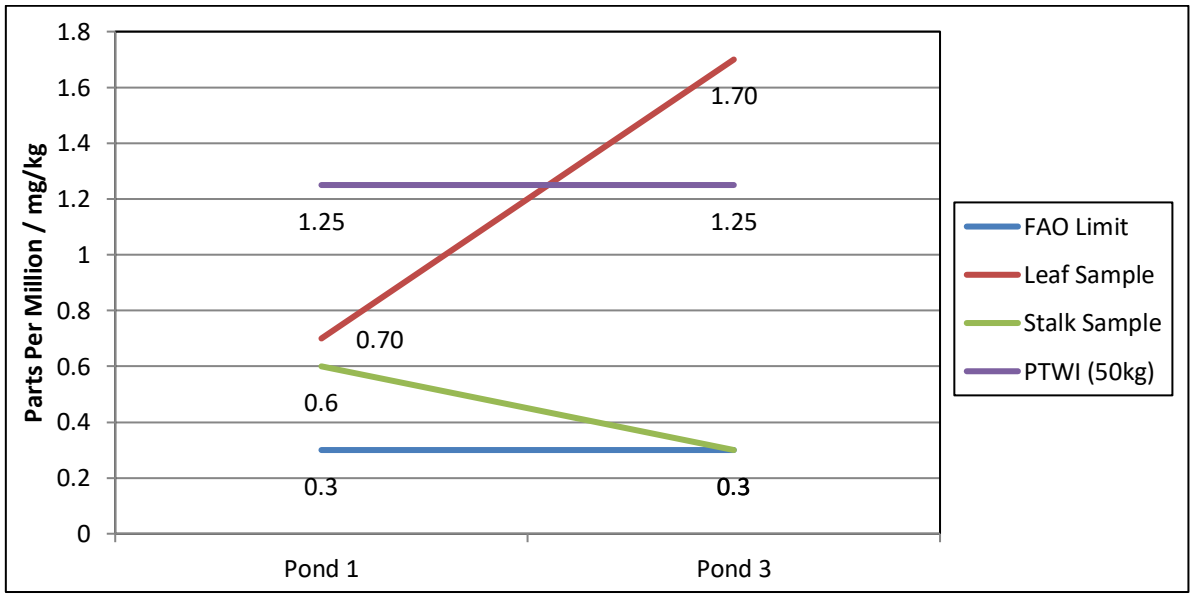

Figure 6: Lead Levels in Leaf and Stalk Sample and FAO Limit with PTWI

Figure 6 displays the lead content present in the leaf and stalk samples of Pond 1 and Pond 3. The FAO safety limit for lead content is also displayed, together with the PTWI for lead. It can be observed that both stalk and leaf samples exceed the FAO lead content safety

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13th – 14th December 2020

limit. When compared to the PTWI for lead, all samples are well below the limit with the exception of the leaf sample from Pond 3. However, as stated with the PTWI of arsenic, further consumer data and assessment is needed to confirm the safety for weekly consumption.

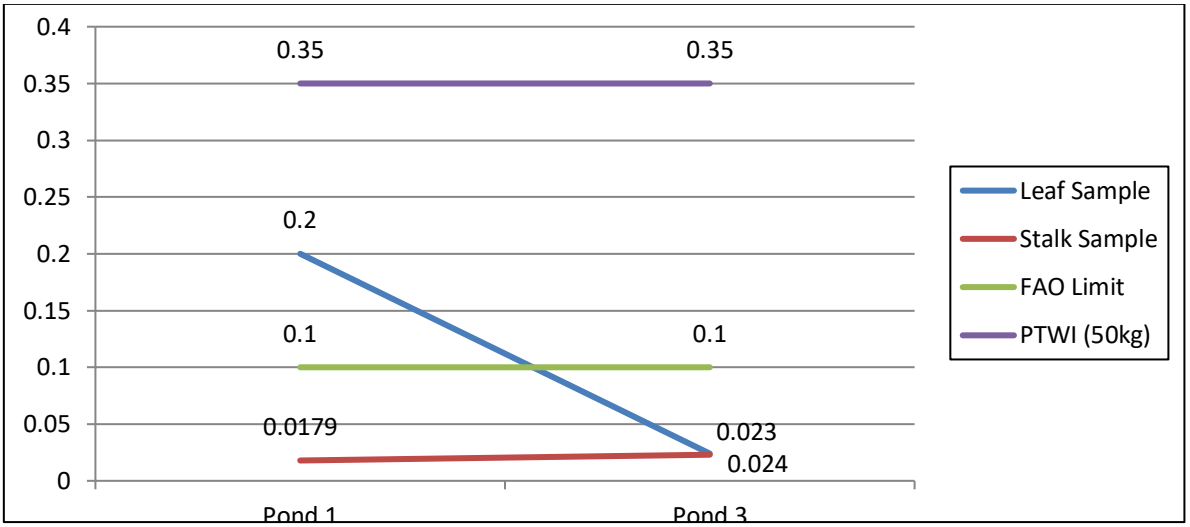

Figure 7: Cadmium Levels in Leaf and Stalk Sample and FAO Limit with PTWI

Figure 7 shows the cadmium levels in leaf and stalk samples from Pond 1 and Pond 3 of the pharmaceutical company. The stalk sample clearly has low cadmium content and the levels are acceptable. However, the leaf sample from Pond 1 exceeds the safety limit for cadmium content. This is expected as the heavy metal contents in the wastewater of Pond 1 is the highest, therefore the adsorption of cadmium is understandably high. All samples do not exceed the PTWI limit.

For mercury, all samples did not contain traces of the heavy metal. Even if it does actually exist in the samples, the level is lower than 0.5 ppb (parts per billion) or 0.0005 mg/kg and is therefore negligible.

Conclusion

The pharmaceutical company that employs the use of cocoyam has proven that it has managed to reduce conductivity and heavy metal levels in the wastewater with continuous monitoring and also with the presence of bio indicators. Therefore, the ability of the plant to adsorb heavy metal in wastewater is not the focus of this study.

The study was set out to determine the sustainability of using cocoyam plants as a pharmaceutical wastewater treatment alternative in adsorbing heavy metal. The sustainability of the method depended on the usability of the plant for other purposes such as for food at the end of its 1-year lifecycle without any harmful effects to users coming from the heavy metal elements that it has adsorbed.

It has been determined by medical studies that heavy metal elements that are consumed can cause health problems if the minimum safety amount is exceeded. Among the health problems that can be caused are nausea, vomiting, damage to the nervous system and death.

Based on previous studies done regarding wastewater treatment, some of the currently existing methods require chemical agents to remove traces of heavy metal. It is cheap and simple compared to other conventional methods. However, by products such as sludge and poisonous fumes from the chemical reaction is a problem. More advanced methods such as

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13th – 14th December 2020

membrane filtration and RO produce good results, but the high cost and the inability of the membrane and filters to be reused causes waste. Activated carbon also has the ability to adsorb heavy metals from wastewater very well but it is also expensive. The source for obtaining the carbon is also becoming scarce. Other adsorbents need extensive preparation, and are in experimental phase.

The laboratory testing on the samples show that traces of arsenic and mercury are well below the safety levels of heavy metal content and PTWI. In the case of mercury, the levels are so low that it is negligible. For lead, both samples contained levels that exceeded the content limit set by the FAO. However, they do not exceed the PTWI except the leaf sample from Pond 3, which shows a sudden spike in lead content. For cadmium, the stalk sample exceeded the content limit; however, it was still below the recommended PTWI level.

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EVALUATION OF MATERIALS WASTAGE AND CONTROL IN SOME SELECTED BUILDING SITES IN KUCHING

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Abstract: *The construction industry in Malaysia specifically in Kuching area, had been rapidly developing during these past few years. It is one of the most prominent industries that generate wealth and develop the social and economic growth of the city. The construction industry generally need a proper construction waste management practice as this is poorly apply in some cases. This study therefore proposed to evaluate the wastage and control of construction materials in some project site in Kuching area. The participants involved in this study is construction professionals from selected construction site. The study conducted by using questionnaire administered via google form and some are distributed manually. Survey responses were analysed using Statistical Package for Social Science (SPSS). From the data obtained, block, insulation and packaging are major sources of construction waste generation at construction site compared to other sources such as steels and timber which remarked the least frequency among the 14 sources listed. The study also reveals that the most significant factor influencing construction waste generation is ordering error compared to other factors. While, the most practiced prevention methods applied by these developers are by storing material correctly on site, hire trained or qualified operators and updating schedules promptly on any design changes. The study also shows that, the least used measures are reusing materials for other projects and recycling waste materials. Most developers prefer construction method that can speed up the project but at the same time minimize the possibility of construction wastage. Recycling construction material is not the best option for the developers as we can see from the result that these developers prefer off site fabrication. This type of construction method reduce the need of some material at site, reduce the time of construction and reduce the construction waste at construction site. Through this study, it helps to enhance a better understanding regarding the construction waste generation and control in some selected building sites in Kuching.*

Keywords: *Construction waste, waste management, project management, construction industry, Kuching*

Introduction

The development of construction industry produced huge volume of construction waste especially in landfill. Construction waste refer to unused material from construction activities during pre-construction, construction and post construction (Rahim, et al., 2017). All construction waste was generated by human activities and may contribute to the environmental

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13th – 14th December 2020

problems (Seow, 2016). The Construction Industry Development Board (CIDB) Malaysia, estimates construction waste makes up 30% of Malaysia rubbish in total (Chen, 2015). This material waste has become a serious environmental concern in many country around the world (Foo, Abdul Rahman, Asmi, Nagapan, & Khalid, 2013). Other researchers also reported that the materials delivered to sites are not totally used for intended purposes and end up as wastes on site (Formoso, Soibelman, De Cesare, & Isatto, 2002). A study reveals more than 175,000 tons of construction wastes generated annually in Kuching Division and more than 100,000 tons were generated in Samarahan Division (Manyin: Recycle wood, construction waste, 2006). The specific objectives of the study are to evaluate the wastage and control of construction materials in some project site in Kuching area. It involves finding the most common sources of construction waste generation and factors that contributing to material wastages in some selected building sites in Kuching city, Sarawak. The current strategies to minimize construction waste and measures taken to handle waste generated also needs to be identified so that, any lacking on the practice could be identified and improved. This study will therefore contribute significantly toward solving and minimizing the common sources and causes of construction waste generation in Kuching area.

Literature Review

Construction waste is defined as waste and surplus building materials that are no longer in used. These wastes came from surplus building materials from construction or excavation. Construction material waste are usually produced directly or indirectly during construction work. Most of the construction waste are consists of brick, steel, wood, cement, and etc. Based on other previous studies, some of the causes of construction waste are due to the changes in design, process and building materials (Osmani, Glass, & Price, 2008).

Construction Material

Construction material is any material that is used for construction purpose. A lot of construction waste are generated due to the rapid development in construction industry and improper implementation of waste management. Demand of house and major infrastructure projects makes the amount of construction waste increased (Nasaruddin, Ramli, & Ravana, 2008). There are five main types of physical wastes that is found at site, which is bricks, steel, timber, concrete and packaging waste (Foo et al., 2013)

Brick is one of the most common materials waste in construction site. For a floor area about 50,000 m^2, 315 tons of brick and block wastes could be generated from construction and demolition activities from 16 project sites in the state of Penang in Malaysia (Faridah, Hasmanie, & Hasnain, 2004).

Concrete is another most used construction material that is being wasted. Concrete is a construction material made out of a mixture of cement, aggregate (sand or stone) and water. The volume of construction waste and debris from demolished structure has increased accordingly, making disposal sites for such waste to be in high demand (C.S.Poon, July 2013). The study found that the material wastage in construction is mainly due to the disparity between the quantity of concrete ordered and required, mostly in the case of ready-mix concrete.

Steel in another most common construction material waste. Steel are alloy of iron and carbon but they always contain other elements. In construction, based on the experience of practising engineers, steel's wastage is around 5% in building construction (Md Akhir, 2015)

eISBN 978-967-2426-22-6
13th – 14th December 2020

Factors of Construction Waste

Increasing quantity of construction waste production in Malaysia considered as a significant factor to look into. It is because there still have a huge amount of construction waste in Malaysia related to activities in site (Nasaruddin, Ramli, & Ravana, 2008). According to Natural Resources and Environmental Board (NREB, 2005), there are 45 existing landfills in Sarawak, in which 40 of them were visited by the NREB regularly. The total area allocated for the dumping of municipal solid waste is around 80 hectares in which about 370,000 metric tonnes of solid waste are disposed at these sites per annum.

Design.

A study reported that more attention should be given in waste reduction during the design phase. Whoever involves in any construction projects should always keep good communication with clients to avoid the last minutes changes (Zhao & Chua, 2003). In addition, the waste generated during design process mainly due to 'poor communication' leading to overlapping of design (Keys, 2000)

Management.

One of the major causes of construction waste is improper waste management. Lack of waste regulations and improper disposal facilities are the sources of unsuccessful waste management (Njoroge, 2012). In this category, wrong material storage and poor materials handling become key factors for physical waste. Apart from this, physical waste does occur due to inappropriate protection strategy used during materials storage. Without proper storage management, the materials too will end up as physical waste (Fung, 2017). Incorrect planning and selection of equipment also cause the work to stop and generation of waste (Nazech, 2008).

Procurement.

Ordering errors factor scores the highest frequency in a study conducted by A. G. Bossink and H. J. H. Brouwers, (1996). The examples of waste generated over ordering materials in construction projects are excessive orders of bricks and concrete mixture that end up as waste. Sometimes, poor ordering of material without specification details and low quality materials also cause physical waste.

Impacts of Construction Waste

Construction waste caused impacts on the environment at every stage of the building process (Begum et al., 2009). Environmental pollution that affects the public health has increased global concern over the last three decades (Hossain et al., 2011). The impacts of construction will stretch into the lives of the current and future generations. It will become an issue if it is handled poorly. According to (Nor, et al., 2013) the impacts of construction waste on the environment are:

i. Unbalanced ecology;
ii. Change of living environment;
iii. Potential sewage;
iv. Depletion of natural sources;
v. Energy consumption; and
vi. Generation waste.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Furthermore, a recent study of impacts of construction waste by (Njoroge, 2012) found that the environmental degradation, destruction of the ecosystem and risks to public health are caused by poor management of waste in terms of disposal and handling of waste.

Nature of Construction Waste Management in Malaysia

Construction waste generation is becoming a pressing issue in Malaysia (Begum et. al, 2007; Begum et. al., 2010). There are a lots of construction waste generated in the country because of rapid development in construction industry. Demand of houses and major infrastructure projects make the amount of construction waste getting increased (Nasaruddin, Ramli, & Ravana, 2008). Therefore, construction waste management is vital for Malaysia in coping with future sustainable development. Current method of waste disposal is not sustainable and the country should try to use waste management hierarchy approach (Nagapan & Rahman, 2012)

Methodology

In this study, close-ended questions were used and it was administered online and face to face. Developer companies that were randomly selected were requested to answer the questionnaire either via google form or fill in the questionnaire manually. The online administration consisted of a web link to the online form, which was google form. The questionnaire required information from respondents regarding the respondents' information, common resources of waste, their cause of waste, and their waste management. For the purpose of confidentiality, the respondents and their organizations can request to remain anonymous when giving answers in the questionnaires. The data gained from the research were analysed using the descriptive statistics, such as frequency and percentages via the Statistics Package for the Social Sciences.

Result and Discussion

Respondents and Organizations

Sample size for this study is nine (9), six respondents among G7 contractors, two respondents are G1 and 1 respondent from G3 contractors are chosen. The contractors selected are undergoing residential project around Kuching area. The respondents consist of Quantity Surveyors, Engineers, Architects and even Site Supervisor. Most of them have five to twenty years of experiences in construction industry. Findings about the demographic information of the respondents are shown in Figures 2a, 2b and 2c.

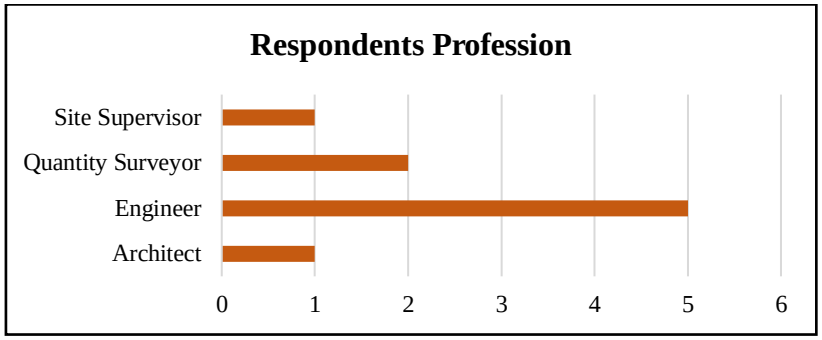

Figure 2a: Respondents Profession

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13th – 14th December 2020

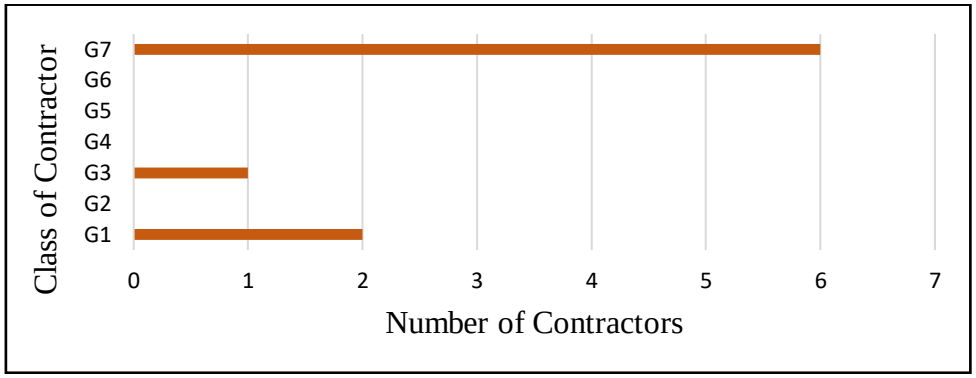

Figure 2b: Class of Contractors

The respondents of this study are mostly from well-established company which has been awarded as a G7 contractor by The Construction Industry Development Board (CIDB) Malaysia. Among the respondents, 5 are engineers, 2 quantity surveyors, 1 architect and 1 site supervisor.

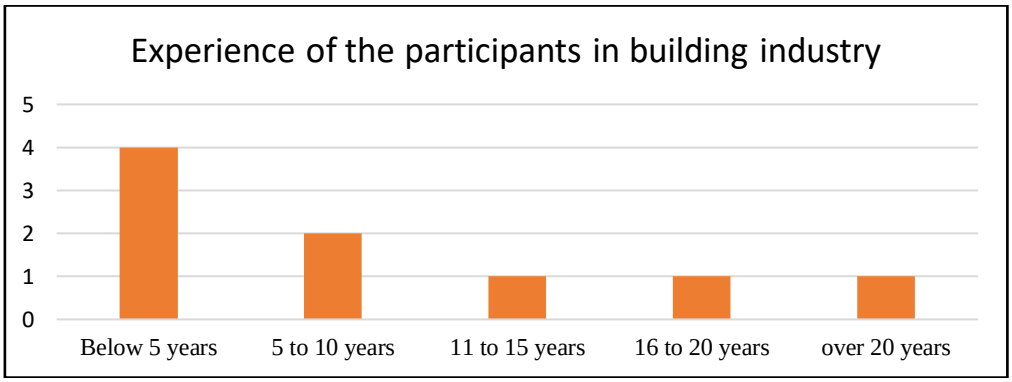

Figure 2c: Experience in the building industry

Regarding their experience in building construction, 44.4% of them have between 1 to 5 years of experience, 22.2% have between 5 to 10 years, experience of 11 to 15 years, 16 to 20 years and over 20 years are 11.1% respectively. This implies that the respondents are qualified both in requisite professions and experience and therefore can supply the required information.

Sources of Construction Waste

The sources of construction waste are shown in Table 2.1. The result reveals that the most common construction waste at site are blocks, packaging and insulation. This is followed closely in descending order by concrete, sand, bricks, tiles, plasterboard, plaster, cardboard, mortar, aggregate timber and steel. The packaging sources includes the cement packaging, ceramic tiles packaging for finishing works and timber pallets. Usually, this packaging waste generated at site during delivery process. The excessive and wasteful cutting off blocks on sites also contributed to the waste generation. This factors also reported in previous studies conducted by (Foo, Abdul Rahman, Asmi, Nagapan, & Khalid, 2013). The highest percentage of waste is also recorded for insulation. This support the study by (The True Cost Of Waste, 2010) that estimators sometimes ordered materials more than needed which can contribute to insulation waste on sites.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 2.1: Sources Construction Waste

Materials	Frequency	Percentage
Concrete	2	18.2
Mortar	1	9.1
Aggregate	1	9.1
Sand	2	18.2
Timber	1	9.1
Steel	1	9.1
Bricks	2	18.2
Blocks	3	27.3
Packaging	3	27.3
Tiles	2	18.2
Plasterboard	2	18.2
Plaster	2	18.2
Cardboard	2	18.2
Insulation	3	27.3

Factors Contributing to Material Wastage

In this study, various factors contributing to materials wastage were investigated and the results are presented in Table 2.2. The results reveal that ordering error remark the most significant factor with 36.4% among 14 factors that had been identified. This including over ordering and under ordering. The example of over ordering such as excessive orders of concrete mixtures and brick or blocks. This was supported in previous studies conducted by Nagapan et al., (2012). About 27.3% of the respondents indicated that the materials are not stored properly and large amount of packaging wastes from delivered materials as the causes of construction waste increases at site. For instance, cement wrongly stored at open space without proper protection which can cause the materials to be exposed to moisture and rain. This is in line with (Fung, 2017), where poor storage of materials will lead to the abundant of waste generated. Another 18.2% of the responses indicated the construction waste generation are due to poor handling of materials during delivery, ordering without specification details, varying in responsibilities of contractors toward wastes and theft of materials at site. Aggressive handling of materials such as bricks and blocks during construction can lead to crack and losses to the company. A study conducted by (Brouwers, 1996) indicated that the ordering error of materials that is not comply with the requirements or specification, can caused construction waste generation and will lead to delay in completion of the project. Lack of tight supervision and monitoring can caused theft of materials at site. Another 9.1% of responses indicated that varying in tender method and poor handling of materials (within the site area only) are the least factors that contributing to construction waste generation.

Table 2.2 Factor influencing construction waste generation

Factors	Frequency	Percentage
Material is delivered damaged to site by supplier	2	18.2
Material is damaged while being transport at site from the storage area	1	9.1
Materials is being inappropriately stored at site	3	27.3
Large amount of packaging waste from delivered materials	3	27.3
Poor handling of materials by operatives	2	18.2
Theft of items / materials	2	18.2
Ordering errors	4	36.4
Materials purchased does not comply with specification / requirement	2	18.2
Tendering method varying in setting the allowable wastage percentage	1	9.1
Varying in contractor's responsibility towards wastes	2	18.2

eISBN 978-967-2426-22-6
13th – 14th December 2020

Strategies Used to Minimize Material Wastage

This study also investigating the strategies practiced by the developer to minimize construction waste and what their actions are towards to limit the amount of construction waste generated. Tables below show the summary of process involved.

Table 2.3 Strategies Used to Minimize Material Wastage

Strategies	Frequency	Percentage
Are materials delivered on date and time	7	63.6
Can small quantities be ordered from supplier	7	63.6
Materials stored correctly on site to prevent damage	8	72.7
There is a waste accounting system in company	4	36.4
Operators trained / qualified to use the correct equipment/ plant for the task	8	72.7
Drawings/ specifications schedules updated promptly on any design changes.	8	72.7
Company insist on high levels of site security.	5	45.5
Company have a selected employee waste controller	4	36.4
Standard/ modular dimensions adhered to	4	36.4
Batched materials accurately measured.	6	54.5
Latest types of materials / methods of construction implemented on projects.	4	36.4
Local suppliers utilised	6	54.5
Digital estimating software used.	7	63.6
Lessons learnt recorded and passed on for future projects.	7	63.6
Company used Building Information Modelling (BIM)	4	36.4

The most practiced prevention methods that is observed from this study is by storing materials correctly on site (72.7%). Most of the companies agree that it is important to provide safe and efficient materials storage. The arrangement of storing management needs a good co-operation and co-ordination between everyone involved including, client, contractors, suppliers and the construction trades. Fails in managing material storage may contribute to the possibility of wastage as the materials can be damaged due to incorrectly stored.

The use of trained or qualified operators to use the correct equipment during a task (72.7%) also voted for the most practiced waste prevention. Most developers in Kuching agree that trained or qualified operators for the equipment or plant help them in preventing the material wastage. The incompetent operators including supervisors, quantity surveyor and project manager may also contribute to material wastage due to misconduct or miscalculation on the materials needed on site.

The third most practice of waste prevention at site by the developer is by updating schedules promptly on any design changes (72.7%). It means, any changes in the design for example changes in drawings or material used, should be updated to the construction team immediately. The changes in design while construction is in progress can contribute to the production of material wastage. As an example, when the construction material have already been purchased and stored based on the original design, waste will occur if the materials cannot be used, resold or returned to the supplier. In some cases, partial demolition of the structure have to be done due to change in the design, thus resulting in material wastage.

The other popular method used by the developers in Kuching to prevent material wastage are delivering materials on time, ordering small quantities from supplier, using digital estimating software and recording and passing the lesson learnt from the current to future project.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Construction waste control

Few measures have been identified which have been applied by the selected companies in Kuching in order to limit the amount of construction material wastage. Data obtained as shown in Table 2.4

Table 2.4 Construction waste control

Most Practiced Measure	Frequency	Percentage
Recycling of waste materials	4	36.4
Trained/skilled operatives used	5	45.5
Frequent reviews understand undertaken of the Works Programme	6	54.5
Re-use of materials on other Projects	4	36.4
Regular Tool Box Talks to operatives on material storage/ handling/ transportation	6	54.5
Appropriate storage of materials on site and at work location	6	54.5
Level of site supervision	6	54.5
Appropriate construction equipment used for the task	6	54.5
Just in time delivery of materials used.	5	45.5
Inspection confirmation of quantities of delivered materials and for any damage	5	45.5
Use of material suppliers that take back product packaging.	5	45.5
Include a clause in the contract to reduce the amount of package requirements t0	6	54.5
Accurate measurements used for batching	6	54.5
Modular dimensions used for design construction works	6	54.5
Use of off-site fabrication i.e. constructed modules delivered to site.	7	63.6

The practice that voted the most is using off site fabrication where there are up to seven companies using it. It is about 63.6% from the total number of companies. The other practice that commonly used are, frequent reviews on the work programme, regular talks on material storage and handling, increase the site supervision, review on the contract clause and accurate measurements for material used at site. The least used measures are reusing materials for other projects and recycling waste materials. Only 36.4% of the selected companies uses this method to limit the amount of construction waste.

Conclusion

The conclusions that can be drawn from this study is that blocks, insulation and packaging remark the most sources of construction waste generation in Kuching, Sarawak. Therefore, this wastes are essential and have to be managed properly. The amount of construction waste generated at construction sites is much depend on various factors. From the results obtained, ordering errors remark the most significant factor to the waste generation. Hence, it is recommended that proper procurement documentation applied at construction site. Construction waste management is also need to be cultivated in every construction sector. These are among the vital approach for a sustainable construction to be achieved.

Among best practice that was applied by these contractors are by storing construction material correctly, hiring trained or qualified equipment operator and updating drawing or specification promptly for design changes to minimize construction waste. Meanwhile, the measures commonly taken to limit construction waste is by using off-site fabrication. Off-site fabrication refers to a process of assembling parts or item at a location away from the site project due to cost, tooling or space restrictions (Business Dictionary, 2020). This process can prevent and limit generation of construction waste at construction site where the parts or items

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13th – 14th December 2020

that fabricated at factory or other location will be installed directly at construction site. It is also observed that not many contractors practice reusing materials for other projects and recycling waste materials. It shows that this practise is not popular among developers in Kuching. These developers prefer proper management at early stage of the project to avoid construction waste during implementation. If the waste management been considered in early design then the construction waste can be reduced. Therefore, there will be nothing much material to be recycled for other purpose when the project is complete.

Construction waste is unavoidable in this industry but it can be reduced. The idea of how the developers process the construction waste generated are not investigated in this study, but it is suggested that future study should include this question to investigate more about the construction waste management in this region. This study is important as it can bring ideas of improvement and practitioner will have better understanding and awareness regarding the issue. Proper construction waste management will help in improving the construction industry performance moreover reduce the environmental problem caused by the construction sector and also promotes a better understanding regarding issues in environment, social and economy.

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DESIGN OF OMNIDIRECTIONAL ROBOT FOR FIRA ROBOSOT

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Abstract: *FIRA RoboSot League competition offers available research to design robots fully autonomous, and this brings many challenges in hardware design, communication, co-operation, intelligence, and sense. This paper describes the design process of building an omnidirectional robot for playing soccer games. The robot design included mechanical design, electronic design, and vision system, are constructed so that the implemented robot can move in any direction, and the environmental information of the robot can be obtained. The testing result showed that the autonomous robot could move omnidirectionally and locate a soccer ball, approach and dribble it, and finally kick it to the goal. The speed response of hardware and software design in real time is reasonable and adequate to compete with other robot teams for the next soccer competition.*

Keywords: *FIRA RoboSot, omnidirectional, soccer games*

Introduction

Robot soccer games have become popular in recent years, specifically the Federation of International Robot-soccer Association (FIRA). The RoboSot middle-sized league is one of the numerous competitions in the FIRA in which autonomous mobile robots perceive the environment, make decisions, and operate independently (Chiang et al., 2014). The RoboSot League consists of a series of challenges as well as the traditional soccer competition. In comparison to the small league, these robots are fully autonomous, and this brings many challenges in the areas of hardware design, communication, cooperation, intelligence, and sense. Compare to the humanoid leagues; the robots have the flexibility to employ non-human like sensing and motion systems. This league creates a much faster platform, and this alone brings challenges in sensing, locating, and planning to the fore. The RoboSot League Challenges are RoboSot Soccer Competition, Localization Challenge, Avoidance Challenge, and Passing Challenge.

RoboSot soccer is a game of robot soccer played between two teams of autonomous intelligent wheeled mobile robots on a field [Kuppuswamy et al., 2007]. Robots can carry onboard vision sensors rather than a globally supervised vision system. The wireless communication system is permitted between the robots and a remote host computer. Any human manipulation on the host computer is forbidden during the game except for a few rules. This possibly presents an exciting challenge by requiring an autonomous robot system in a team without human intervention (Lee et al., 2008).

The last robot designed by PSIS was used for the earlier Robosot FIRA Malaysia competition. However, the primary drawback was its mechanical structure. The ball grabber did not grip the ball properly, and it causes the robot to lose the ball. Besides, the vision system is not clear because we used stainless steel, which acts as a mirror. The stainless-steel dome has a perfect curve to reflect a wide range of field view images, but it produced blurry images.

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This paper describes the design process of building an omnidirectional robot platform and system for FIRA RoboSot. We used omni wheels, omni vision system with a convex mirror, and a web camera to build the robot. An integrated RoboSot system is presented hardware and mechanical design, electronics design and vision system.

Methodology

This section will focus on the design and build of an omnidirectional robot. Its design and build are based on hardware and mechanical features, electronics design, and image processing on the vision system.

Hardware and Mechanical Design

A prerequisite feature desired in the design of a RoboSot player is the ability to maneuver quickly and efficiently to any position regardless of its current posture (Kuppuswamy et al., 2007). The omnidirectional design was used because of its ability of a system to move instantaneously in any direction from any configuration (Doroftei et al., 2007). The robot has three omni-wheels, which are oriented at 120 degrees from each other. The coupler for omni-wheels and DC motor are custom made to suit the size of the DC motor shaft. The reason for using three wheels instead of four is that it makes it much easier for a three-wheel robot to robustly contact with a slightly irregular surface than a four-wheel robot. It requires extra mechanical structure for a four-wheel robot to robustly contact the surface (Lee et al., 2008). The concept of designing is to fix all motors, drive units, and wheels as compact as possible to fit in a limited robot size.

The robot structure is made using 5 tier aluminum plate platform, as shown in Figure 1 and 2. It was cut to the required size based on the FIRA RoboSot rules and regulations. Most of the structural joints are welded and bolted for more rigid strength. A convex mirror is placed on the lower bottom of the top plate to reflex the camera image for a 360° viewing angle for the robot. The ball grabber is made using the padlock hinge latch due to its flexibility. A set of springs is attached to the hinge to create more grip while the ball rotates. A set of low torque DC motors and a small omni-wheel are attached to the end of the padlock hinge latch to rotates the ball as the robot is moving or in stop condition. A set of low PSI pneumatic compressor and cylinder valve is used to create the linear kicking movement for the robot to complete the desired task. The pneumatic cylinder pushes the kicking plate from below, and the plate rotates up, kicking the ball. The total weight of the complete robot is around 20kg. Table 1 shows the hardware specification of the robot.

Figure 1: The front view of omnidirectional robot

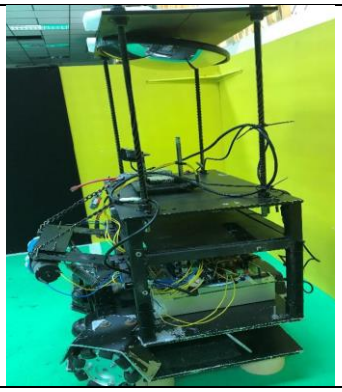

Figure 2: The side view of omnidirectional robot

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13th – 14th December 2020

Table 1: Hardware specification of the robot

Item	Description
Platform	3 wheels omnidirectional
Size (Length x width x height)	45cm x 40cm x 70cm
Max speed	3.5m/s
Kicker	Pneumatic
Weight	20 kg
Laptop	Lenovo ThinkPad T440s
Camera	Logitech C920 HD Pro Webcam
Mirror	Convex mirror
Sensor	GY-521 MPU-6050
Controller	Arduino Mega 2560

Electronics Design

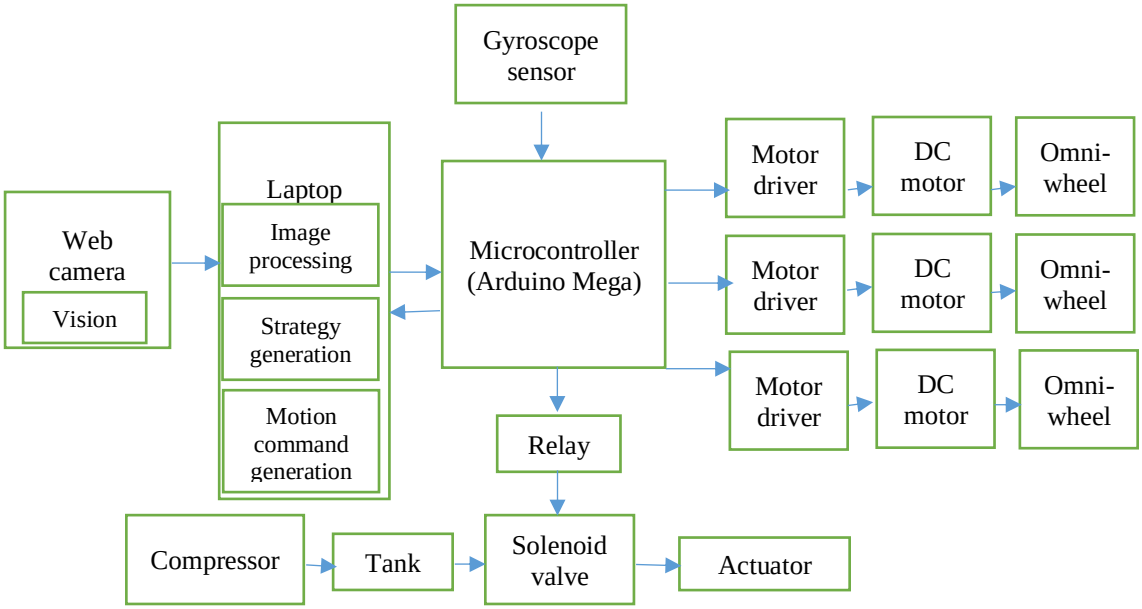

Figure 3: Block diagram for electronic system

The electronics design of the robot includes a web camera, laptop as primary controller, microcontroller, solenoid driving unit, and the motor driving circuit shown in Figure 3. The robot's acquisition system is supported with web camera type Logitech C920 HD Pro Webcam. The web camera is attached to the laptop for sensing the environment. The Lenovo ThinkPad T440s Laptop is used to process the image and the algorithm for generating the strategy and motion command. The Arduino Mega 2560 Controller is used for getting motion command signals from the laptop and making the robot move by controlling three motors. The motor drivers are the EEP2695 manufactured by Cytron Technologies. It is stacked on to the Arduino Mega controller board. The motor driver can support up to 10A continuous and 15 A peak and support voltages from 7 V to 30 V.

The drive mechanism for the robot is a set of three 12V DC motors. These are high power motors chosen to maximize the acceleration and top speed of the robot. Two Lithium Polymer (LiPo) rechargeable batteries, 11.1 V 2200 mAH, were selected to power the whole robot. LiPo battery is a small and compact battery also suitable for space constraints. The GY-

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13th – 14th December 2020

521 MPU 6050 was implemented to get the z-axis of the gyroscope for controlling the rotation of the robot.

The kicking mechanism also controls by Arduino Mega. If the system requires the robot to kick the ball, the Arduino Mega triggered the relay, which is used to drive the solenoid valves for the pneumatic cylinders. It consists of a double-acting cylinder with a diameter cylinder 25 mm, 4/2-way single solenoid with spring return. The pressure switch provides the air pressure (6-8 bars) to the actuator and activates the compressor if the pressure drops to 4 bars. The compressed air will accumulate and be stored in one tank. The function of the tank is to provide consistent air pressure.

Vision System

The vision system hardware comprises a Logitech C920 HD Pro Webcam that stands upwards with a convex mirror above it. This component provides an omnidirectional vision. The output of this system is very reliable and accurate. The software is built on RoboRealm software and runs on Windows 7. RoboRealm is a software application for computer vision, image analysis, and robotic vision systems that rapidly process images to visually detect field elements (Ch et al., 2015).

A few image processing modules of RoboRealm is used to detect the center of gravity (COG) of the ball and the goal image in real-time (30 frame/s) on the laptop computer. The Center of Gravity or Center of Mass statistic calculates where the COG of the image lies. The COG is calculated by:

$$COG_X = COG_X + (I*x)$$
$$COG_Y = COG_Y + (I*y)$$
$$Total = Total + I$$

for each pixel where I = (R+G+B)/3 and x,y is the current pixel location. The resulting COG is then divided by the Total value:

$$COG_X = COG_X/Total$$
$$COG_Y = COG_Y/Total$$

COG-X and COG_Y are variables in the final x, y location of the COG. The COG information is processed to get the position of the ball and goal, which include distance and angle (Figure 4). A gyroscope sensor is also used to calculate the angles of the robot with the ball and goal. The VBScript module provides a way to create custom Visual Basic scripts that can be used to process the robot's information and decision, and the serial module is used to perform communication from RoboRealm to serial-based microcontrollers.

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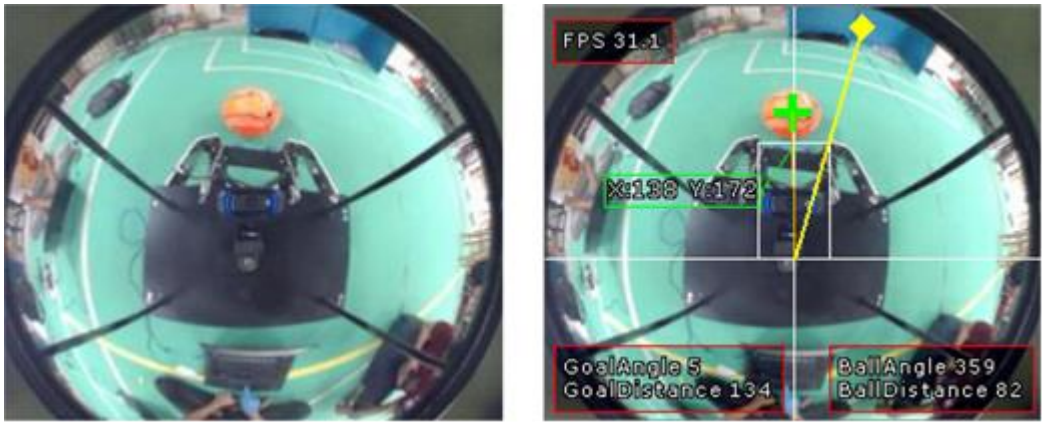
13th – 14th December 2020



(a) (b)

Fig 4: (a) Original image (b) Detection of ball and goal which include distance and angle

Testing Procedure and Result

The last phase of this design process was testing. The design requirement and specification of this project were set as the robot should be capable of moving omnidirectionally and locating a soccer ball, approach and control it and finally kick it to the goal. The soccer ball is coloured in orange, while the goalposts are in blue and yellow. Figure 5 (a-f) shows the movement of the robot when the ball is behind the robot. First, the robot will be searching for the ball by filtering the orange colour and getting its distance and angle. Once the ball angle is determined, the robot rotates and heading towards the ball. When the robot is getting closer to the ball, the robot's speed is reduced, and the robot can efficiently grab it. After the robot grabbing the ball, the robot searches, filters the goalpost's yellow colour, and gets its distance and angle. Then, the robot is heading to the goal post to kick the ball.

Some other requirements were also tested based on specific components involved. The power supply capacity was tested by turning on all three motors and allowing them to run at full speed when the robot moves on the field. After allowing the motors to run for 30 minutes, it was determined, by visual inspection, that the motors' performance was not at all affected after this length of running time. The number of kicks a full tank can provide was also determined through testing. The team ran the experiments three times. The results showed that, on average, three kicks were produced per tank. Besides, horizontal kicking distance in the air was measured as approximately 3 meters.

The overall system performance testing involving the omnidirectional robot showed that the whole system could locate a ball, move towards it, and kick it into the goal.

Fig. 5(a): Robot searching and locate the position of the ball

Fig. 5(b): Robot rotates and heading towards to the ball

Fig. 5(c): Robot grabbing the ball

eISBN 978-967-2426-22-6
13th – 14th December 2020

Fig. 5(d): Robot rotates with the ball and heading to the goal

Fig. 5(e): Robot kicking the ball to the goal

Fig. 5(f): Robot successfully scored the ball into the goal

Conclusion

The paper discussed the complete design process of the autonomous omnidirectional robot based on the rules of the FIRA RoboSot category and proposed a real-time algorithm for the robot. The robot was designed to meet the requirements of moving omnidirectionally and able to locate a ball, move towards it, and kick the ball into the goal. The speed response of hardware design in real-time is reasonable and adequate to serves for RoboSot challenge. As a result, this robot has the potential to compete with other robot teams for the next soccer competition.

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13th – 14th December 2020

UTILIZATION OF WASTE COOKING OIL BY PRODUCING DECORATIVE CENTERPIECE FOR RESTAURANT KRISTAL, POLITEKNIK MERLIMAU, MELAKA

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Abstract: *Many people think nothing is wrong with pouring their leftover waste cooking oil into the sink and washing it away with soapy cleaning water. Waste cooking oil consist of oils and fats that have been used for cooking or frying in the food processing industry, restaurants, fast foods and in household. It does not behave like other liquids. When hot, they can be in a liquid state, but if oils have time to cool and accumulate over time, they can coagulate and solidify especially when they mix with the fats and greases from the meats and other ingredients. This can lead to drain clogging, water pollution and environmental effects. Thus, it is important to know how to manage the waste cooking oil in a proper way. As the waste cooking oil is non-hazardous to health and has potential to be reutilize, a research has been conducted to produce a decorative centerpiece from waste cooking oil. This study was assigned to determine the acceptance level of respondent towards decorative centerpiece made from waste cooking oil. Sample of waste cooking oil was collected from Commercial Kitchen at Restaurant Kristal. 30 staffs and students from Diploma Foodservice Halal Practice were purposely selected as respondents. Descriptive analysis was used to analyse data collected using SPSS version 24. Based on the results, this study indicated that the mean value is at 4.75 for good idea in managing waste cooking oil, mean score 4.85 for attractive look and mean 4.69 for its suitable idea as decoration. The overall acceptance level of respondents towards decorative centerpiece is high with mean value at 4.76. In conclusion, utilizing waste cooking oil as decorative centerpiece is a novel innovation was accepted optimistically by respondents.*

Keywords: *Decorative Centerpiece, Waste Cooking Oil, Environmental Effects*

Introduction

Cooking oil is a glycerol ester consisting of different types of essential fatty acids and is only soluble in organic solvents. The original source of cooking oil is plant-based lipids such as coconut oil, palm oil, olive oil, and canola oil, or lipid-based animals, such as butter and ghee (Jacob et al. 2013). Waste cooking oil is the end-product of frying foods using cooking oil which contains plant or animal fats that have been processed. It is categorized as fat and grease and in liquid shaped at room temperature. This type of waste is produced by food premises, food industry and household resulting from the preparation of food. However, due to its characteristic of not being soluble in water, it becomes a contaminant to the environment.

The disposal of those used oils has large environmental effects if not treated and well dispose off. If the waste cooking oil being thrown away directly in the drain, it will block the drain system especially in the commercial kitchen where food is being prepared in a large amount. The discharge of waste cooking oil into the water system will change the oxygenation process and destroy aquatic life by covering the surface of water and preventing oxygen from dissolving (Kabir et al. 2014). Waste cooking oil has great potential to be commercialized as it

eISBN 978-967-2426-22-6
13th – 14th December 2020

can be used in the production of products such as biodiesel (Kumaran et al. 2011), polyurethane (polyol) and bitumen (Asli et al. 2012) which can reduce the dependency on natural resources.

Improper waste management of cooking oil leads to discharge of waste cooking oil to environment and this will cause environmental pollution particularly land and water pollution. In water, oil layer covers the surface and prevents the dissolution of oxygen, thus causing a mass extinction of marine biota. Besides, the mixture of oil and water increases the chemical oxygen demand (COD) of water and causes it to be poisonous due to the presence of oil degradation by-products. Carcinogenic compounds are absorbed by the sea creatures and returned to human through food chain (Kulkarni and Dalai, 2006; Jafari, 2010; Marjadi and Dharaiya, 2010).

Waste cooking oil has a potential to be reutilize to produce as decorative centerpiece for Restaurant Crystal. A centerpiece is an important item of a display, usually on a table setting in the rstaurant. Centerpiece help set the theme of the decorations and bring extra decorations to the room. A centerpiece also refers to any central or important object in a collection of items.

Decorative centerpiece that had being produced were 60% from waster cooking oil, 10% from orange skin and 30% from paraffin wax. It' s inspired people and offer consumers an option of transforming waste into something they could love. Unlike motor oil, waste cooking oil is not hazardous waste (Krystal Noiseux, 2017). Thus, this product was used as a centerpiece decorations for Commercial Class at Restaurant Crystal, Tourism & Hospitality Department, Politeknik Merlimau.

Problem Statement

Improper Treatment of Waste Cooking Oil

Waste cooking oil has nowadays been reckoned among the liquid waste which are generated daily from various sources comprising households, restaurants, catering establishments, and industrial kitchens [Castellanelli] .Due to the heat that is usually applied in frying processes, the physical and chemical features of the cooking oil change from their original form. Waste cooking oil which is expected to be treated and managed in a manner that could not be detrimental to the human health and/or the environment, is being disposed of by consumers via sinks, waste bins, drainage systems, toilets, or directly to the immediate water bodies and lands. According to Chhetri et al, 2018, a greater quantity of waste cooking oil generated all over the world is being released into the environment.

Waste Cooking Oil Lead to Drain Blockage System

Around 50,000 tons of waste cooking oil generated from vegetable oils and/or animal fats are disposed of to the environment without proper treatment annually in Malaysia only. This act in the long run contributes to water and soil contamination, causes aquatic life distraction, sewer system blockages and overflow, increases water treatment and waste management cost, and consequently generates undesirable impacts to the entire environmental system [Kheang, 2006]

Objective

a. To utilize waste cooking oil by producing decorative centerpiece for Restaurant Kristal.
b. To minimize the problem of drain blockages and pollution incidents relating to fats, oils and greases at Commercial Kitchen.
c. To determine level acceptance of decorative centerpiece from waste cooking oil among staffs and students from Tourism & Hospitality Department, Politeknik Merlimau, Melaka.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Literature Review

Management of Waste Cooking Oil

The current increase in human population and the extent at which consumers employ frying method in food preparations result in generating huge quantities of waste cooking oil worldwide. Management of these quantities of waste cooking oil has recently becomes serious challenge in both developed and developing nations. The residue, which is also termed as Used Cooking Oil (UCO) or Recovered Vegetable Oil (RVO) literally means the remains of cooking oil obtained after using edible oils for food preparation [Azman, Cvengros]. Only a small amount of the used cooking oil is properly collected and recycled, especially in rural areas (Groschen, 2002). Mostly household preferred to place the used cooking oils in a plastic bottle, closed and place them in the garbage. The garbage is separated and the bottles will be opened and leaked in an appropriated place instead of being poured in the sewers. This is an alternative practice because it prevent unnecessary expenses with treatment in the sewer stations.

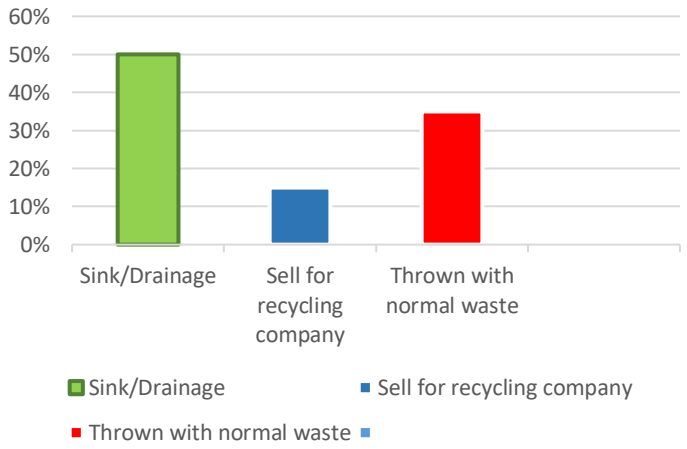

Figure 1: Percentage of Method Disposal Of Waste Cooking Oil

Source: (Noor, N.A.M., & Hua, A.K. (2016). *Cooking Oil Management in Cafeteria Operators*. German: LAP LAMBERT Academic Publishing

Problem Arise from Waste Cooking Oil

It was reported that waste cooking oil is widely produced all over the world (Kulkarni and Dalai, 2005). Improper waste management of cooking oil leads to discharge of waste cooking oil to environment and this will effect environment and danger to human health. The increasing production of waste cooking oil from household or food industrial source is growing problem in Malaysia. The waste cooking oil is regularly poured down directly to sink or drain resulting in problems for wastewater treatment plants. Fat, oil and grease cause major problems to drain and sewers. When they are discarded of down kitchen sinks or drains they cause blockage. Meanwhile they cause pollution in streams and rivers when they enter rainwater pipes. Oils and grease may cause the clogging of the pipes because they stick to the inner walls and reduce the diameter of the sewer pipes. Sewage spills will occur when the layer is thicker. Then worst condition is it will disrupts normal operations if the oil reaches the wastewater treatment plants and both maintenance costs and the rates to be paid for the purification of the water will increase (Payri et al., 2004).

Waste cooking oil causes some serious environmental problems including bad odour. It is said that one litre of oil poured into natural waters may pollute 500,000 L of water. Mainly

eISBN 978-967-2426-22-6
13th – 14th December 2020

it increases the organic load on water bodies and also forms a thin layer over water that reduces required dissolved oxygen concentration for underwater living creatures [Carlos et al].

The higher the amounts of cooking oil used in food preparation, the more the chances of generating huge quantities of waste cooking oil [Phan, A.N]. Countries like China, Thailand and Singapore are also engaged into waste collection and recycling for biodiesel [Jaruyon]. Malaysia, as the world second largest producer and first exporter of palm oil generates around 0.5 million tonnes of waste cooking oil annually [Yaakob et al]. Hence, the country has the potential to sustain its recently established waste cooking oil collection and recycling centres at strategic places in various cities and towns

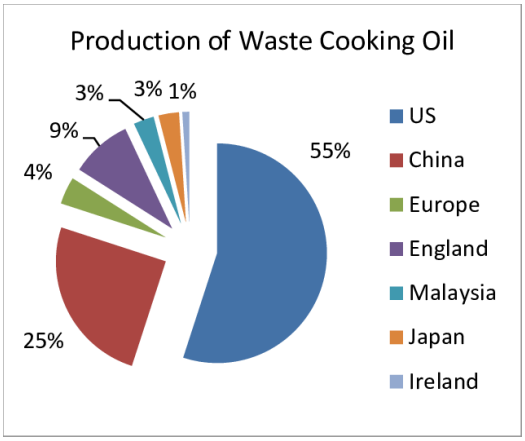

Figure 2 : Production Of Waste Cooking Oil

Source: (Noor, N.A.M., & Hua, A.K. (2016). *Cooking Oil Management in Cafeteria Operators.* German: LAP LAMBERT Academic Publishing

Importance of Restaurant Decoration

Decorations aren't just simple tools for adorning the restaurant, but are really instruments for having an impact to the customers. The properly chosen restaurant decor can help to attract more customers to restaurant business, influence their appetite and, as a result, increase profits. The right decorations are vital for the restaurant design theme. They help to create the atmosphere, which will be help your restaurant become unique. Undoubtedly, the choice of decorations depends on your restaurant style and theme. All the accessories must be carefully planned, including wall décor, centerpiece, silverware and dishware, napkins etc.[Ann Brown, Oct 2018]

Centerpiece As Critical Part Or Restaurant Decorations

As the name suggests, centerpiece are the accent pieces that appear at the middle of the tables in weddings, anniversaries, birthdays, parties, and even commercial events. Besides being a spectacle to behold, a centerpiece can help serve as an ice breaker for guests who have been assigned to sit together. With intriguing and creative unique centerpiece on the table, guests will find it enjoyable to engage in an effortless conversation discussing different designing and thematic aspects of **table** centerpiece.[www.efavormart.com]

Methodology

Study Design

The survey was distributed to 30 staffs and students from Diploma Foodservice Halal Practice that were selected as respondent. The data were collected, evaluated, analysed and depicted in

eISBN 978-967-2426-22-6
13th – 14th December 2020

the form of table. Likert scale was used in the questionnaire to measure the findings. It is to sum the values of each selected option and create a score for each respondent. Waste cooking oils were collected from Commercial Kitchen at Restaurant Crystal, Politeknik Merlimau.

Findings & Conclusion

Findings

The main questions such as good idea for managing waste cooking oil, decorated centerpiece has an attractive look, suitable idea as decoration and the method disposal of used cooking oil were asked to all respondents. Personal information like race, age, gender of participants were recorded as supplementary information.

The mean values for respondents think it is a good idea by producing decorative centerpiece from waste cooking oil is 4.75, has an attractive look & design mean value is 4.85 and suitable idea as decoration is 4.69. These three mean values shows that the utilizing waste cooking oil as decorative centerpiece is a novel innovation was accepted optimistically by respondents. This value is able to increase the confidence of manufacturers to market these products in the wider market.

Table 1: Overall Min Value for Decorative Centerpiece From Waste Cooking Oil

Item	Mean	Interpretation	Level
Good idea in managing waste cooking oil	4.75	Strongly agree	Very high
Has an attractive look&design	4.85	Strongly agree	Very High
Suitable idea as deco	4.69	Strongly agree	Very high
Overall Mean	4.76	Strongly agree	Very high

As for the frequency for it is a good idea in managing waste cooking oil, 23 respondents or 76% is strongly agree while only 7 respondents or 24% choose agree. This shows that idea had been accepted as respondent find the method of producing decorative centerpiece from waste cooking oil is very easy. This is compared to other option to manage waste cooking oil such as producing biodiesel which required a person to have a great knowledge in chemistry and the process need to be done in the lab. Biodiesel is produced from triglycerides in the presence of alcohol with catalyst through transesterification reaction. The biodiesel production from waste cooking oil with methanol in the presence of nano-sized calcium oxide nano-catalyst was done at a laboratory. (Tadesse Anbessie, 2019). According to Jon Van Gerpen, the process to make biodiesel involves a chemical reaction. This means that the biodiesel industry is a chemical industry. Those involved in making biodiesel must have a good understanding of the underlying chemistry to ensure they are making quality fuel in a safe manner.

Table 2: Mean Value for Good Idea In Managing Waste Cooking Oil

	Frequency	Percentage
Agree	7	24
Strongly Agree	23	76
Total	30	100.0

There are only 16.7% or 5 respondents agree with the centerpiece looks but they thinks that the design can be improve. Meanwhile, 83.3% or 25 respondents strongly agreed that decorative centerpiece made from waste cooking oil has an attractive look and design that

eISBN 978-967-2426-22-6
13th – 14th December 2020

meets the characteristics for good centerpiece. The general rule for centerpiece height is that it should never be so tall that your guests cannot see each other across the table and carry on a conversation. The highest point of the centerpiece should be well below eye level; the maximum height should be 12 inches (Bumper Pool Table Guide,2014)

Table 3: Mean Value for Attractive Look & Design

	Frequency	Percentage
Agree	5	16.7
Strongly Agree	25	83.3
Total	30	100.0

As for the product is suitable as a decorative centerpiece in Restaurant Kristal, 23 respondents or 76.7% strongly agree , 5 respondents equals to 16.7% agree and only 2 respondents or 6.6% were not sure whether it is suitable or not. This is because they thought only flowers can be as centerpiece. When grooms say that all wedding centerpieces look the same, we can see where they are coming from. After all, many centerpieces use the same flowers to create arrangements for vastly different themes. (Sarah Pierce, 2020)

Table 4: Mean Value for Product Is Suitable As Decorative Centerpiece

	Frequency	Percentage
Not sure	2	6.6
Agree	5	16.7
Strongly Agree	23	76.7
Total	30	100.0

The decorative centrepiece from waste cooking oils has a huge potential to be marketed. This is proven as 100% of respondent strongly agree there will be a high demand if this product being commercialize in current market. Centrepiece has become popular nowadays especially for those who runs a foodservice outlet such as Restaurant Crystal. The right centerpiece are vital for the restaurant design theme. They help to create the atmosphere, which will be help your restaurant become unique. Undoubtedly, the choice of centerpiece depends on your restaurant style and theme. All the accessories must be carefully planned. (Ann Brown, 2018)

Table 5: Potential to Be In The Market

	Frequency	Percentage
Disagree	0	0
Strongly Agree	30	100
Total	30	100.0

The pie chart displays the percentage for level of knowledge regarding the effect by pouring waste cooking oil into drain. 50% of the respondents acknowledge that they not sure the effects to the environment, 10% of the respondents said no while 40% of the respondents said yes. This is because lack of attempt and campaign to raise awareness about the management of waste cooking oil. According to Ibrahim Kabir et al (2014), the awareness campaign should put more emphasis on the direct and indirect effects of improper disposal and continuing reuse of waste cooking in food preparation after usage of two or more times .To ensure the successful implementation of waste cooking oil recycling, government should widen the programmes not to cover only industries, restaurants, hotels and/or other lion's share users, but also every single household and individual person in the country would be required to play a role.

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13th – 14th December 2020

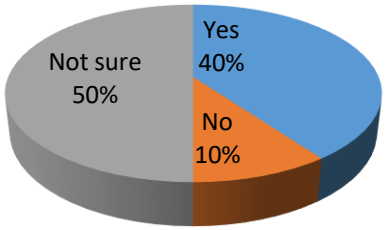

Figure 3: Level Of Knowledge Of The Effect By Pouring Waste Cooking Oil Into Drain

Conclusion

From this survey, it is proved that managing waste cooking oil by producing decorative centerpiece for Restaurant Crystal is highly accepted by the respondent and has a huge potential to be marketed. Often we heard, most of waste cooking oil were being manage by producing biodiesel which not all people have the ability to do the process that involves depth chemical knowledge. As the method to produce decorative centerpiece from waste cooking oil is similar to candle making, everyone can fully utilize their waste cooking oil by transform them to something beneficial. Previously, students have to buy various kinds of items to make it as centerpiece for their Commercial Foodservice Operation Class. This involves a lot of cost. So, with some simple tools and materials students can produce their own centerpiece with minimum cost as it is suitable for decoration. For the design of the decorative centerpiece, further research should be done on how to make it more attractive. Adding more colors and create more shapes is believe to be one of the way. So, it is clear, that waste cooking doesn't have to go down the drain. By utilizing the waste cooking oil to the max, it can make a better change for the environment, aquatic ecosystem and minimize the problem of drain blockages.

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13th – 14th December 2020

STUDENT READINESS TOWARDS ONLINE LEARNING

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Abstract: *Technology played an important role in our life and has changed the way we live. The changes in technology give an impact in every aspect of our life including education system. Through technology, it shaped the method we used in delivering our lectures. It changed from traditional class to online class. Students in higher institutions are slowly trained to use technology or application in their online learning and with the COVID19 epidemic, the students are now forced to involve fully online class. With them being exposed to online learning before, they are expected to be ready with fully online class. The question is how ready are they? The purpose of this study is to investigate polytechnic students towards online learning. Data were collected from a total of 165 students in Politeknik Ungku Omar. Instruments measuring variables used in this study were adapted from the existing instruments. The findings revealed that the students are slightly moderate in readiness towards online learning. The study also found that poor internet connectivity was the biggest challenge faced by students. The implications of this study and direction for future studies were also discussed.*

Keywords: *online learning, readiness, education*

Introduction

Nowadays the changes in the technology were affects every aspect of daily life. It changes the way we interact with another; it may change how business is done and also in education. In education area, the technology was affecting the way we deliver lectures. From traditional method which is face to face session, changed to online learning where the usages of technology as a tool to give lectures. As this technology of learning keep on develops over the time, it requires a new perspective to remain relevant to the educational system. Therefore, the development of e-learning in Malaysia has started back in 1972. This is during the pre e-learning era when the Educational Technology Division was set up by the Ministry of Education (Asirvatham, Kaur, & Abas, 2005). Since then, various effort has been done to improve the implementation of e-learning in higher institution.

As we known, the 1st case of corona virus in Malaysia was detected back in January 2020 and since then, Malaysia is struggling with the COVID-19 epidemic. The Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus and most people who fall sick with COVID-19 will experience mild to moderate symptoms and recover without special treatment. Peoples who are suspected with corona virus is required to take 14 days of quarantine. To curb the outbreak, many countries including Malaysia had taken drastic measures and one of the most drastic measures taken by Malaysia government is to enforce the Movement Control Order (MCO) starting on 18 March 2020. Due to this, many sectors in Malaysia is affected including education sector whereby all schools and institutions of higher learning (IPT) is closed. Following this, the government instructed the school ad IPT management to implement the teaching and learning process through online. The government also announced that this method will be used until the end of 2020 except for certain academic programs and subjects. Because of this sudden COVID-19 epidemic, online learning become

eISBN 978-967-2426-22-6
13th – 14th December 2020

crucial and its implementation must be control by all relevant parties in the education sector which include teachers, lectures as well as their student. The management of public and private universities makes a quick adaptation and proper change in overcoming the challenges presented by MCO. All lessons, projects, group work, presentation and assessment were carried out with the aid of technology, which is through online.

In Polytechnic, the online learning has been implemented with the use of Curriculum Information Document Online System (CIDOS) e-learning. This CIDOS platform has been used since 2010. Guidance and instruction are provided earlier in the process and will be used more sparingly as learners gain expertise in applying the system in the courses offered (Ministry of Education Malaysia, 2008). Other than CIDOS platform, lectures may use various digital platform to conduct online class namely Zoom, Google Meet, Microsoft Teams, Webex and etc. They also can use other social media such as WhatsApp, Telegram and YouTube.

At this moment, online learning is considered the best solution to ensure continuity in learning and we must adapt to this "new norm". However, there are some setbacks to this online learning such as lack of human touch as we did not know level of understanding among students, we cannot see their facial expression during lectures, as well as student engagement and participation during class. It is also difficult to share opinions during online discussion as one topic can move swiftly to another and the inability to meet lecturers in person can prevent students from fully understanding the subject. President of the National Council of Professors, Professor Datuk Dr Raduan Che Rose also said that continuous online learning is expected to affect the quality of learning and in one the survey done found that more than 30% of students do not have access to the facilities needed for online learning (Muhammad A. H., 2020). Apart from this, other factors that may affect online earning is student unable to focus or feel guilty for choosing class over family obligations.

In view of these new norm, Ministry of Higher Education and the institution of higher learning (IPT) had provided policies as well as SOP enhance implementation of online learning. Lecturer also trying their best to deliver their lectures. Despite all this, the question of whether university students in Malaysia are ready for online learning remains. Hence, the objectives of this study are to investigate student readiness towards online learning.

Literature Review

Due to pandemic COVID19, all universities and school in Malaysia has been shut down and the classes are now being conducted through online. In Polytechnic, we already introduce to our students and lectures on Curriculum Information Document Online System (CIDOS) platform. This is to enhance the traditional way of teaching and learning where we incorporated technology in the process of it. However, the use of CIDOS never been put as a main method of teaching and learning as we still have traditional face to face class. Because of the new norm, all classes now are been conducted through online and this is including all the assessment. This is totally new to the students and it comes with many challenges.

Online Learning

Online learning can be defined as a form of education in which the method of teaching and learning of the subject as well as coursework is conducted via the use of the internet. According to Vanides (2018), online learning comes with various advantages, including synchronous and asynchronous participation with adjustable learning speed, the potential for access to a wide range of participants at once (enrolment size), discussion opportunities, different types of feedbacks (instructor, peer to peer, adaptive system feedback), use for different teaching practices (formal, informal, certification, just for fun), and cost. Apart from it benefit, it also

eISBN 978-967-2426-22-6
13th – 14th December 2020

comes with critical challenges faced by lectures as well as students. These challenges include the need for technology literacy, e-learning readiness, experience, communication skills, isolation in the classroom environment (Wojciechowski & Palmer, 2005).

Since this is still new, it caught the interest of many researcher to study on the online readiness among university students for example Atkinson & Blenakenship (2009), Coates, (2006), Chung, E., Norlina, M., & Mathew, V, (2020); Hung, Chou, Chen & Own, (2010), McVay, (2000) and others. Engin M. (2017) states that readiness is important in the education process and this a significant input for learning-teaching system. Behaviour of the learner is highly depending on the readiness of the students. This online setting is different from the face to face class and it give impact to both students and lecturers. The factor of readiness to teach for the teacher and to learn for the students must take into account when we implement online learning class. Readiness for online learning is expressed as time management, self-guidance skill, which is in the nature of online learning, adopting the internal resources of motivation, recognition of personal learning style, and experiences (Smith, Murphy, & Mahoney, 2003). If students want to benefit from online learning, they should possess online readiness. In research done by Borotis and Poulymenakou, (2004), they defined online readiness as "being mentally and physically ready for certain online learning experience and actions," while it was defined as the capacity to follow up the opportunities that facilitate the use of e-resources such as Internet by (Choucri,2003). Based on past studies done by other researchers, Hung et al (2010) presented and validated a conceptual framework that online learning readiness can be gauged in five dimensions: self-directed learning (SDL), learner control, computer & internet efficacy, online communication self-efficacy and motivation for learning.

Computer/Internet Self-efficacy

Because the teaching and learning process now is conducted via internet with the use of laptop or mobile handphones or a desktop, it is extremely important for the students to be competent in using it. In one of the studies by Lee,Yeung &Ip (2016) they found some of the major factors that affected technology use for learning were students' own computer technology skills, their attitudes towards it, learners' learning styles as well as peer and teacher support. To examine this factor of computer and internet self-efficacy, Hung et al (2010) combine computer self-efficacy (Compeau & Higgins, 1995) and internet self-efficacy (Eastin & LaRose, 2000). Here, we will look into students' technology-related knowledge, skills, attitudes, and competencies in utilising technologies to meet educational aims and expectations in higher education.

Learner Control

As we know online learning is totally different with traditional face to face class. Students or learner is required to direct their own learning without their lectures presented in front of them. The successful of this online learning depends on how the students can control themselves during learning time. In research done by Means, Toyama, Murphy, Bakia, and Jones (2009) found that online learning can be enhanced by giving learners control of their interactions. Learner control encompasses the extent to which learners can choose what, where, when, and how to learn (Kraiger & Jerden, 2007). In this study, we will focus on concept of learner control which includes student able to direct own learning progress, able to maintain learning without being distracted by the other online activities, and repeating online material based on their learning needs.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Communication Self-efficacy

During traditional class, we often end the class by asking questions to students. This is to check whether the students truly understand the topic. We always encourage students to ask, as this is one of the ways where they can gain a deeper understanding. The same thing applies during online learning, it just the medium that we use is different as we are using online communication. We encourage students to post questions online whether during online class or in class forum or in the course chat group. Kim & Glassman (2013) and Paul & Glassman (2017) in their studies of internet self-efficacy and anxiety, suggested that online communication self-efficacy is part of wider concept of internet self-efficacy, together with search self-efficacy, organisation efficacy, differentiation self-efficacy and reactive/ generative self-efficacy. Based on Hung et al, (2010), online communication self-efficacy is considered to be crucial to be included as part of students' assessment for online learning readiness. Hence, in this study we will look into the linkage between online communication self-efficacy with online readiness.

Self-Directed Learning

According to Benson (2011) and Holec. H. (1996), Self-Directed Learning (SDL), as a learning model, promotes self-control in the learning process and provides space and opportunities for the learner to interact with people outside the classroom to reach the learning goal. SDL also refers to the psychological processes of learners that purposively direct themselves to gain knowledge and understand how to solve problems (Long, 1994). Knowles (1975) reveal that SDL is a learning strategy which allows learners to take control of their own learning process through the diagnosis of learning needs, learning goals, learning strategies and evaluate learning performance and outcomes. In this online learning method, SDL is important to ensure students are success in the subject. These self-directed students are usually more active during class, make extra effort before the class start such as reading online material, planning and evaluate performance in learning as well as completing classroom tasks. For the purpose of this study, we will focus on student's ability to carry our own study plan, seeking assistance when faced with problems, time management, set up learning goals and having expectations for learning performance.

Motivation for Learning

Learning is a lifelong process and sometimes we lost motivation to learn. Motivation to learn is essential as this will ensure that a learner is able to remember, understand, recall, analyse and apply the knowledge. Motivation for learning can be divided into intrinsic and extrinsic motivation and according to (Ryan &Deci,200) intrinsic motivation refers to the mental, social and physical development of a person that affects a person's interests that thrust towards certain choices in life while extrinsic motivation on the other hand refers to the inclination to achieve goals based on external rewards. Motivation can also influence what we learn, how we learn, and when we choose to learn (Schunk, 1995). Past research also shows that motivated learners are more likely to adopt a deep approach to learning, undertake challenging activities, to be actively engaged, to enjoy and, and to exhibit enhanced performance, persistence, and creativity (Schunk et al., 2008). Saade, He, and Kira (2007) found evidence that intrinsic and extrinsic motivation played an important role in the success or failure of online learning. In this study, motivation to for online learning focused on finding out if students are open to new ideas, motivated to learn, improve from past mistakes and sharing ideas with others.

For the purpose of this study, we will adopt the five dimensions proposed by Hung et al. (2010) which are computer and internet self-efficacy, learner control, self-directed learning,

eISBN 978-967-2426-22-6
13th – 14th December 2020

online communication self-efficacy and motivation for online learning. This study aims to understand the polytechnic students' readiness towards online, level of readiness as well as challenges faced during online learning.

Research Methodology

Instrument that been used in this study, is the Online Learning Readiness Scale (OLRS) by Hung, Chou, Chen and Own (2010). OLRS has 18 items in five different dimensions, namely computer/internet self-efficacy (3 items), self-directed learning (5 items), learner control (6 items), motivation for learning (3 items) and online communication self-efficacy (3 items). These 20 items survey was put in a Google Form, together with other questions on respondent's demographic, online learning readiness, and online learning challenges. This Google Form was then sent though Instant Messenger WhatsApp in November 2020 to the students. The choice of respondent is randomly chosen from semester 1 – 5 among Commerce Department students.

Data Analysis and Findings

Demographic Information

Respondents' profile was summarized in Table 1. Majority of respondents are female (68.8%), while male is 40%. All respondents are from Commerce Department. 64.8% of respondents were from Diploma in Business Management (DPM), 12.7% from Diploma in Banking and Finance (DKB), 9.7% were from Diploma in Islamic Banking and Finance (DIB), 9.1% from Diploma in Accountancy (DAT), 2.4% from Diploma in Retailing Management (DRM) and 1.2% from Diploma in Insurance (DIP). Most of the respondents are semester 1 students (37.0%), followed by semester 5 (32.7%), 20.0% are semester 3, 7.3% from semester 5 and only 3.0% student from semester 2.

Table 1: Respondent's profile

Item		Number	%
Gender	Male	52	31.5
	Female	113	68.5
Program	DPM	107	64.8
	DAT	15	9.1
	DKB	21	12.7
	DIB	16	9.7
	DRM	4	2.4
	DIP	2	1.2
Semester	Sem 1	61	37.0
	Sem 2	5	3.0
	Sem 3	33	20.0
	Sem 4	54	32.7
	Sem 5	12	7.3

According to the analysis on the first section on respondent profile, was asking the respondents device used during online learning class. The clearly showed that 144 (49.6%) of the respondents are using smartphone during online class and followed by 128 (45.4%) respondents are using laptop. Other than that, they are 5 (1.8%) respondents used tablet, desktop computer is 5 respondents (1.8%) and only 4(1.4%) of respondents are used an iPad.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 2: Device used during online learning

Type of device	Frequency	%
iPad	4	1.4%
Smartphone	140	49.6%
Laptop	128	45.4%
Tablet	5	1.8%
Desktop computer	5	1.8%

The second section was asking about types of internet connection that respondents used. According to Table 3, the result disclosed that majority of the respondents access the internet through mobile data with the percentage of 62.8% (142 respondents). It was followed by 35% (79) of respondents were used Wi-Fi and the rest, 2.2% (5) of respondents were used wired cable to access the internet. Next section was asking the respondents about the type of online learning adopted. Most of the respondents were used CIDOS and Ms. Team as their medium. Both of the types share the same percentage which is 34.8% (164 respondents), followed by adopted Google Meet with the percentage 29.5% (139 respondents). There were only 0.8% (4) of the respondent used ZOOM as their medium during online learning session.

Table 3: Internet connection and online learning adopted

Category		Frequency	%
Internet connection	Wired cable	5	2.2%
	Wi-Fi	79	35.0%
	Mobile data	142	62.8%
Online learning adopted	CIDOS	164	34.8%
	MS Team	164	34.8%
	Google Meet	139	29.5%
	ZOOM	4	0.8%

Reliability Analysis

Table 4: Cronbach's Alpha Coefficients

Variable	Cronbach Alpha
Online learning readiness	0.830
Computer/internet self-efficacy	0.828
Online communication self-efficacy	0.810
Self-directed learning	0.779
Learner control	0.726
Motivation for learning	0.700

Table 4 shows the results of reliability analysis for six variable which are online learning readiness, computer/internet self-efficacy, online communication self-efficacy, self-directed learning, learner control and motivation for learning. As stated by Nunnally (1978), the value of 0.7 is an acceptable for a reliable construct. Therefore, from the result, the value of each Cronbach Alpha is ranged from 0.700 to 0.830 and it were reliable.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Level of Readiness on Online Learning

Table 5: Result of factor for readiness on online learning

Dimensions		Mean	Interpretation
Dependent variable	**Online learning readiness**	3.9818	High
Independent variable	**Computer/internet self-efficacy**	3.7333	High
	Self-directed learning	3.5758	High
	Motivation for learning	3.8364	High
	Online communication self-efficacy	3.6121	High
	Learner control	3.4667	High

From this study, the first question is to determine the level of readiness on online learning. In this study, the four-point Likert scale range from 1 (strongly disagree) to 4 (strongly agree). According to Siti Nurshahidah, Mohd Sufien, Rosilawati, Aini Faezah, & Rusydi (2020), calculate the mean difference to obtain the mean divided into three categories namely low, moderate and high; 4 is subtracted by 1 and divided by 3. Thus, the interval for each mean is between 1. In spite of this, the low mean levels are 1.0 to 2.0, the moderate mean levels range are between 2.1 and 3.1 while the high levels of mean are 3.2 until 4.0. Descriptive analysis was used to study readiness level on online learning. As mention, this study consists of five dimensions which are computer/internet self-efficacy, self-directed learning, motivation for learning, online communication self-efficacy and learner control. Based on descriptive analysis on Table 5, all variables mean score is high. Motivation for learning dimension is the higher mean with 3.84, followed by computer/internet self-efficacy dimension 3.73. While online communication self-efficacy dimension mean score was 3.61, self-directed learning mean score was 3.58 and the lowest mean score is 3.47 for learner control dimension. This result is consistent with the previous findings from Hung, et. al (2010), Engin (2017), Chung, Norlina, & Mathew (2020) and Chung, Subramaniam, & Laura Christ Dass (2020) which released that learner control dimension mean score is the lowest rather than other dimension mean score.

The second question of this study is to examine the relationship between five independent variables towards online learning readiness among students.

Table 6: Correlation among the readiness on online learning dimensions

		Online learning readiness	Computer/internet self-efficacy	Self-directed learning	Motivation for learning	Online communication self-efficacy	Learner control
Online learning readiness	Pearson Correlation	1	.374**	.374**	.332**	.336**	.653**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	165	165	165	165	165	165
Computer/ internet self-efficacy	Pearson Correlation	.374**	1	.560**	.524**	.702**	.616**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	165	165	165	165	165	165
Self-directed learning	Pearson Correlation	.374**	.560**	1	.488**	.538**	.664**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	165	165	165	165	165	165
Motivation for learning	Pearson Correlation	.332**	.524**	.488**	1	.658**	.455**

eISBN 978-967-2426-22-6
13th – 14th December 2020

	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	165	165	165	165	165	165
	Pearson Correlation	.336**	.702**	.538**	.658**	1	.611**
Online communication self-efficacy	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	165	165	165	165	165	165
	Pearson Correlation	.653**	.616**	.664**	.455**	.611**	1
Learner control	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	165	165	165	165	165	165

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6 shows the result of correlations analysis among different dimensions. Pearson correlation analysis were used to study whether there is correlation between respondents' online learning readiness with the computer/internet self-efficacy, self-directed learning, motivation for learning, online communication self-efficacy and learner control. The result revealed that all the independent variables were positive relationship and significantly correlated to each other with the p value > 0.01. Even though all dimensions recorded a positive relationship, only learner control dimension had moderate correlations strength; r =0.653, n = 165 p =0.000 < 0.01. Other dimensions indicate weak correlation strength which range value of r is between 0.333 to 0.374, n = 165, p = 0.000 < 0.01.

Challenges on Online Learning

Next section of this study was asking the respondents' challenges faced during online learning. Six choices were given and the respondents are allowed to choose more than one challenge. These challenges were prepared based on the percentage. According to Table 7, the result revealed that majority of the respondents faced limited of internet data during online learning (99.4%), followed by poor internet connectivity at their hometown or in campus (79.4%). During to the Movement Control Order (MCO), the high usage of internet was increase and thus increasing the higher internet traffic. As a consequence, the more data consumption was creating congestion causing speed to fall and affected the user experience whereby loading time was longer. Next, it followed by lack of motivation due to absence of face-to-face contacts (79.4%) and difficulty to understanding the content of the subject (72.1%). Certain subject contents are not effective when delivered through online learning. It is true because certain subject's content preferred to personal consultation, for example Accounting subjects and Economic subjects and it was hard for students to learn these subjects via online earning. Next is lack of knowledge and technical skills in conducting online learning (2.4%) and lastly is different online learning methods used contribute 1.8%. From this finding, it is proved that the major challenge faced by respondents limited of internet data. Most of the respondents are used their mobile data during online class. Thus, the mobile data was not enough for them to participate in online class if the class were delivered via live streaming platforms such as Google Meet, Zoom, Webex or Big Blue Button.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 7: Challenges faced during online learning

Challenges	1st year	2nd year	3rd year	Total	%
Poor connectivity	54	65	12	131	79.4
Limited internet data	66	86	12	164	99.4
Different online learning method	0	0	3	3	1.8
Lack of knowledge & technical skills	0	0	4	4	2.4
Lack of motivation due to absence of F2F contacts	54	65	12	131	79.4
Difficulty in understanding the content	52	56	11	119	72.1

Respondents Intention to Continue Online Learning

Last section of this study was asking the respondents about their intention to continue online learning for the next semester.

Table 8: Intention to continue online learning

Item	1st year	2nd year	3rd year	Total	%
Strongly disagree	2	5	1	8	4.8
Disagree	28	42	3	73	44.2
Agree	35	32	5	72	43.6
Strongly agree	1	8	3	12	7.3

According to Table 8, the result released that 50.9% of the respondents are agree if the online learning will continue for the next semester. However, the percentage of disagree respondents also nearest to percentage of agree which is 49%. Thus, it can be concluded that half of the students are prefer to continue with online learning and another half of them are not prefer to continue.

Implications and Suggestion

Based on the findings, to enhance the readiness among students for online learning, learner control and online communication self-efficacy need to address first. To encourage student's participation during class, this is in terms of asking questions and giving their opinion, lectures need to make the lectures active and more exciting. Lectures can start some sort of rewards system for every correct answer or positive feedback every time students give their opinion. Lectures also can initiate discussion forum where students can post questions and give their opinion. This is to encourage students to have online discussion among them and make themselves mora familiar with the online discussions. If we continuous do this, student will be more confident and the learning process will be more effective. Since we start implement online learning, students need to be able to control and plan his/her learning progress. Students needs to resists from any other activities and should be able to make effort to learn on their own for example reading additional learning material outside online session. As for learner control, to lessen the distraction during online class, lectures are advising to do a shorter online session or give short break in between long lectures. Lectures can also give short exercise at the end of online sessions to ensure that student really understand the topic or lectures can give questions that students need to discuss in next online learning sessions. This will ensure continuous learning even though class already ended. This activity can help students be more focused and better control in their studies. Apart from this, other challenges in online learning would be poor internet connectivity. Students at rural area have difficulty in getting internet line during online classes. Some students have to go to hill top just to get the internet connection. With

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13th – 14th December 2020

online classes has been fully implemented for this year, it will lecturer's consideration to identify students that have internet connectivity issues and give more assist to them to ensure that they are not left behind. Other than that, is the initiative telecommunication companies to provide free and unlimited mobile internet data during this period of MCO. There also some NGO who take initiative by giving free laptop to those students that did not have device to take part in online class.

Therefore, this responsibility falls heavily on the lecturers' shoulder to identify students who have internet connectivity issues, and provide suggestions and guidance to assist them as much as possible. Another initiative telecommunication companies can provide is free and unlimited mobile internet data to all students during this period of MCO.

Limitations and Recommendations for Future Research

This study has several limitations which could be explored further in future research. Firstly, this study involves less than 200 students from variety of programs under Commerce Department. This study also only focus on Politeknik Ungku Omar students. With the limited number of respondents, it did not portray real situation of polytechnic student. Future research could look into seeking more respondents so that the findings are results can be generalized to the wider community of Polytechnic Malaysia student. Other than this, researcher can also look into possibility of collecting data from other public universities in Malaysia. It is also recommended that future studies to look into students' academic achievement while using online learning compare to the traditional face to face learning to see whether there are major differences in terms of their academic achievement. Finally, future research can also look into readiness among lecturers in providing online classes. This in terms of their knowledge in latest application or facilities that they can use to enhance their delivering lectures online. The questions whether the lectures are truly ready to conduct online class are still left for discussion.

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ANALYSIS OF THE ESTABLISHMENT OF VILLAGE-OWNED ENTERPRISES (BUMDES) DISTRICTS IN NORTH SUMATRA

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Abstract: *This research aims to find out and analyze the model of establishment of BUMDes Regency in North Sumatra and find an applicator model that can be applied in the establishment of district level as a container of all BUMDes that exist so far. The institutional establishment of BUMDes is deliberately in the form to be a procedure in the use and management of the allocation of funds provided by villages. The type of research conducted in this study is exploratory research, where researchers in-depth study and look for the establishment model of Institutional BUMDes Regency Level in North Sumatra. The institution of BUMDes at the regency level itself does not actually exist and is still just a discourse in its formation so that the basis of the research method approach is used to dig and explore in depth how exactly the urgency of the existence of BUMDes at this district level if it stands in North Sumatra. The results of interim research and analysis show that the institutional development of Jointed Regency BUMDes initiated since the end of 2019 aims to develop the existence of BUMDes more professional and oriented to greater business development. The founder of Jointed Regency BUMDes who joined BKAD in Serdang Bedagai Regency continues to make improvement in all aspects. Among others, the development of capital investment among members through Jointed Regency BUMDes in 119 villages*

Keywords: *Establishment, Institutional, BUMDes Regency*

Introduction

The development of basis economy in rural through Village Owned Enterprises has been long run by the government. BUMDes is a new economic power born from the village. This business entity will be established in 74,910 villages from Sabang to Merauke, from Miangas to Rote Island. Currently, it is not felt the impact caused by the growth of BUMDes. According to estimates since the enactment of Law No. 6 of 2014 on Villages it takes at least about 3 to 4 years for BUMDes to be felt nationally. The development of BUMDes today can be an optimized instrument of its role as a legal local economic institution located at the village level to improve the welfare of the community and village income. Village Owned Enterprises are designed by prioritizing the role of the Village Government and its communities in a more proportional manner. If it reflects on the role of the Village Government in the implementation of community empowerment programs so far, then through the BUMDes model, it is expected that there will be revitalization of the role of the Village Government in local economic development/community empowerment. So that in this case the role and participation of the community is needed so that the BUMDes program is appropriate and on target. To optimize community economic empowerment, there are several ideas and initiatives to unite all Village Owned Enterprises (BUMDes) in one container. It is intended that coordinated and professional financial management so as toproduce maximum benefits for the community, it is based on the

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13th – 14th December 2020

argument that so far the economic development of the community through BUMDES is not running optimally. In addition, with BUMDes together at the districtlevel, the capital raised can be greater. In addition, in capital investment can involve many parties, namely BUMD, BUMN and even private sector.

Literature Studies

Village Institutional Development Concept

The concept of development is a must that must be applied in life, The concept word means idea, design or understanding that is abstracted from concrete events (Dictionary of The Indonesian Language, 2002: 589). While the development means process, way, action develop (Dictionary Of Indonesian Language, 2002:538). Thus, the, of development is the design of developing something that already exists in order to improve the quality more advanced.

Kotler (1997) development strategy analysis includes external analysis of the company and the company's internal. External analysis of the company is factors outside the company that can influence the choice of direction and actions of a company to achieve the desired goals. External analysis of the company includes factors outside the company that can pose opportunities and threats to the company. External factors of the company can be distinguished into (1) microen environment, (2) industrial environment, and (3) microen environment.

Institution is an organization or methods both formal and informal that regulate the behavior and actions of certain community members both in daily routine activitiesand in their efforts to achieve certain goals. The institutional role is very important in regulating resources and distribution of benefits, therefore institutional elements need to be considered in efforts to increase the potential of villages to support village development. With the institutional farmers and village economy is greatly helped in terms of cross-regulating the relationship between input owners in producing village economic output and in regulating the distribution of such outputs

Institutionalization of Village Owned Enterprises (BUMDes)

The establishment of Village Owned Enterprises (hereinafter referred to as BUMDes) aims as a locomotive of local economic development at the village level. The local economic development of this village is based on the needs, potentials, capacity of the village, and the inclusion of capital from the village government in the form of financing and wealth of the village with the ultimate goal is to improve the economic level of the village community. The basis of BUMDes formation as a development locomotive in the village is more motivated by government initiatives and village communities based on cooperative, participatory, and emancipative principles of the village community.

In the BUMDes Handbook published by the Ministry of National Education in 2007, it is explained in detail that there are several stages in the process of establishing BUMDes. In addition, it is also explained about the ways and conditions of the establishment of BUMDes consisting of:

1. Establishment of BUMDes based on District Regulation
2. Regulated by Village
3. One village, there is only one BUMDes
4. The District Government facilitates the establishment of BUMDes
5. BUMDes can be established in the form of Joint Ventures (UB) or other forms, but not Cooperatives, PT, Regional Owned Enterprises, CV, UD or financial institutions (BPR)

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13th – 14th December 2020

In the Regulation of the Minister of Villages No. 4 of 2015 article 5 also explains the process of establishing BUMDes which reads "The*establishment of BUM Desa as referred to in Article 4 is agreed through Village Deliberation, as stipulated in the Regulation of the Minister of Villages, Development of Disadvantaged Regions, and Transmigration on Guidelines for Rules and Mechanisms for Decision Making of Village Deliberations".* The village deliberation referred to in the article discusses several matters related to the process of establishing the village. The main points are:

1. establishment of BUM Desa in accordance with the economic and socio-cultural conditions of the community;
2. BUM Desa management organization;
3. BUM Desa's business capital;
4. Articles of Association and Bylaws of BUM Desa

Research Methods

The type of research carried out in this study is exploratory research. Exploratory Research is a study by conducting a search, especially in the strengthening of the concept to be used in a broader scope of research with a larger conceptual range (Yusuf, 2017). In exploring, mature concepts become goals in research and broader conceptual activities. Exploratory research is a preliminary study that aims to get an overview of a research topic that will be researched further (Morissan, 2017). The purpose of exploratory research was conveyed in more detail by Yusuf (2004) that the general purpose of research from exploration is to get ideas on the main problem in more detail and to develop existing hypotheses. The results of exploratory research will answer whether the research will continue or not. So exploratory research is a type of initial research of a research that is very broad in nature. For the research of certain subjects, exploratory research becomes very important because it will produce a strong foundation for further research. Exploratory research is a combination of descriptive research and testing research, but it cannot have a standalone meaning. In exploratory studies researchers do not want to explore a particular field or record symptoms, but rather try to explain them and when possible as a continuation on that basis develop certain hypotheses (Heitink, 1999).

In the context of this research, researchers in-depth study and look for institutional model of BUMDes Institutional District Level in North Sumatra. BUMDes institutional district level itself actually does not exist and is still just a discourse in its formation so that the basis of the approach of the research method is used to explore and explore again how exactly the urgency of the existence of BUMDes at the district level if it stands in North Sumatra.

Research Results

Institutional Management of BUMDes Regency

In the framework of institutional management of the District, the various parties that manage BUMDes all district through the Inter-Village Cooperation Agency (BKAD) sub-districts in Serdang Bedagei regency through inter-village deliberations (MAD) have agreed to develop BUMDes Regency with the inclusion of capital from each village which is then used as the initial capital for the establishment of BUMDes Regency and business expansion to be carried out. BKAD is an institution that is expected to become a temporary institution in running BUMDes this district. It is expected that this BKAD institution will be the forerunner of an organization that has competence in the management of BUMDes Regency Institutional with administrators or officials who are trained to control BUMDes business wheels. Therefore, BKAD in carrying out its duties, forming work units as operational executors of the areas of cooperation between villages in supporting the governance of the scope of activities in

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13th – 14th December 2020

cooperation. The work units were determined by deliberation by the village chiefs with BKAD through the process of inter-village deliberation (MAD).
BKAD work units obtained from the results of deliberation include:

1. Going to have to BUMDes Regency Activity Management Unit
2. Supervisory Board
3. Funding Team, and;
4. Verification Team.

In its implementation, BKAD as the implementing organization is an institution or body appointed as the executor of a policy and is also an institution that has full responsibility for the implementation of the policy that has been determined.

With Law No. 6 of 2014, the governance of BKAD institutions is adjusted to the Village Law so that it is expected to provide legal certainty in the rebirth of villages and BKAD from an impartial perspective to the community. The establishment of BUMDes, BUMDes Bersama and BUMDes Regency institutions is seen as an opportunity or opportunity for the Village Government to be one of the sources of financing for Village Development and as one of the Pillars of Village Development. To realize the Independent Village mandated in the Law on Villages, it must be taken with continuous efforts to increase The Village's Original Income as a Village Autonomy Right in the management of financing sources for Village Development.

The increase in village native income can be done by strengthening the institutional cooperation agency (BKD) or Village Owned Enterprises (BUM Desa) and BUMDes Bersama in the container of Inter-Village Cooperation Agency (BKAD) at the sub-district level, as well as BUMDes Bersama at the district level. Therefore, it is necessary to transform BKAD to the district level in realizing the establishment of BUMDes Bersama Regency institutions. Transformation in the form of institutional arrangement of BKAD regency, aims to revolutionize the BUMDes program from the juridical aspect, thereby ensuring legal certainty and the principle of legality of BUMDes management together with the district. The arrangement of BKAD at the district level not only brings the interests of the organization but also the interests of the community, especially related to efforts to develop larger BUMDes.

BUMDes development at the district level embraces the larger institutional arrangement of BKAD not only at the sub-district level, the right transformation for BKAD in managing BUMDes district is to form BUM Desa with regency in bkad regency container. In general, the results of the research carried out and from empirical facts obtained that in the plan to form BUM Desa with regency have been integrated in an institution with BKAD between sub-districts, but still hit by regulations and political policies at the district government level in addition again at the same time the process of regional elections in 2020 when this research took place influenced the process of establishing BUMDes with at the district level ,

BUMDes Regency Sustainability Analysis

The entire environment within the policy scope really greatly influences the smooth implementation and achievement of the objectives of the establishment of bumdes this district. Some of the environmental factors that influenced the success of the establishment of bumdes districts that researchers saw were the village economic environment, political environment, social and cultural environment. To see whether or not there is an environmental influence that supports the establishment of BUMDes district from the results of FD and in-depth interviews with informants, it is established that environmental factors influence the spirit of village actors to realize a better village economy by forming a larger institutional in a business entity that can contribute to the village economy. However, this environmental factor is not in line with

political factors that slightly hinder efforts to develop BUMDes into a larger business entity up to the district level. Meanwhile, when viewed from socio-cultural factors of the community shows that there is a concern for the progress of the village, strong ties between fellow BUMDes and village governments make efforts to establish BUMDes at the district level become a strong mutual desire. There is a moral responsibility from the stakeholders in the village that is formed in the BKAD container to run the BUMDes with regency program in earnest and responsibly. From the economic side, it shows that the economic boost of the village is the main motivation of the stakeholders in the village to join the program of forming a larger village business entity to the district level.

Based on the analysis above, environmental variables, namely economic, social, and cultural environments influence the spirit to develop the village economy through greater village business institutions and business management that can contribute to the village economy and community welfare. while political environment, a little inhibiting because it is based on the policies and regulations of the formal juridical aspect as the basis and consideration of BUMDes establishment at the district level. Some studies conducted related to the development and establishment model of BUMDes at the district level is not yet developed in Indonesia. Especially in North Sumatra Province, until this research was conducted only new Serdang Bedagei Regency that had a desire to develop BUMDes into a business business that is at the regency level.

Conclusion

From the results of the research that has been done can be concluded that:

1. Sustainability of BUMDes Establishment at the District level in an effort to improve the village economy needs to be continuously pursued so that this implementation can run well and supported by the District Government
2. The institutional status of BUMDes regency managers while still under management and responsibility of inter-village cooperation bodies (BKAD) formed based on the Village SAntar Deliberation, and after the BUMDes regency is formed and running, the BKAD will transform into a legal entity form such as limited liability companies, cooperatives or financial institutions so that business and business development carried out by BUMDes Regency can run optimally.

Recommendations

In order for the BKAD that has been formed and mandated for the sustainability of BUMDes establishment can have a permanent legal entity so that it has a strong justification to become the basis of political development for its future establishment

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13th – 14th December 2020

DEVELOPMENT OF IOT-BASED DATA COMMUNICATION TRAINERS USING ESP32 AND OTA

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Abstract: *The Covid-19 pandemic has an impact on various aspects of life, including the education sector. All activities are directed to be carried out from home, including teaching and learning activities that should be done in schools. This can affect the learning process, especially in practicum subjects. One solution to make practicum activities keep going is by creating training modules that compatible with the current situation by teachers which are IoT training modules and data communication. The purpose of making the training module is to create a training module that can be accessed everywhere. The method is the waterfall method which includes the stages of requirements analysis, design, development, testing, and maintenance. The main component of this training module is the ESP32 which is connected to various sensors that have been designed. These sensors include ultrasonic, LDR, DHT 22. The process of uploading programs remotely using the over the air (OTA) technology available on the ESP32 module. Meanwhile, complementary features are provided in the form of a camera, Lo-Ra, and servo motor. Some of the main parameters for making the training module are entered sequentially which include schematic creation, PCB, casing, wiring, website creation to access tutorials. In addition to the tutorial, the video also includes basic theories regarding IoT learning and data communication as well as a user manual. With the existence of training modules, manuals, and making tutorials, the teacher is expected to create appropriate practicum training modules and students can understand and make it easier for students to do practicum during the pandemic situation.*

Keywords: *Data Communication Trainer, ESP32, Laboratorium Hybrid*

Introduction

Technology developments nowadays affect real life, including the education sector [1]. Human life can be optimized and easier with smart sensors and internet-based smart devices [2]. The development of Internet of Things (IoT) technology has become a topic that is often discussed in recent years, where the internet is one of the important components in running equipment that cannot be separated from the data communication process [3].

This underlines the importance of data communication topics in the learning process at the secondary school level [4]. But in fact, there are only a few schools that have supporting equipment to carry out IoT practicum and data communication. Besides, during the covid-19 pandemic students are not allowed to come to the school and are directed to do the learning process through online media or long-distance learning media [5]. It affects the learning

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13th – 14th December 2020

process, especially practicum which requires access to lab equipment [6]. Based on this problem, and IoT training module and data communication that can be accessed remotely are needed. Not only by making training modules, but this problem must also be resolved with video tutorials for making user guide video tutorial, and manual book that makes students and teachers easier to understand [7].

Methods

The design of this tool uses the waterfall method which includes the requirements analysis, design, development, testing, and maintenance stages as shown in Figure 1.

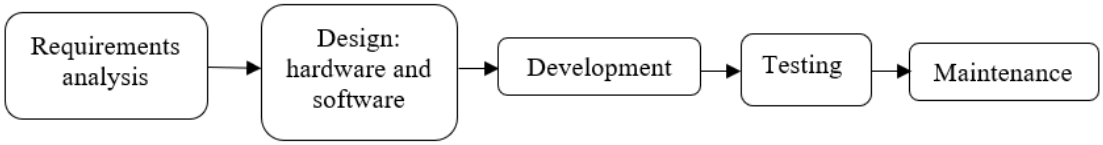

Figure 1: Research Methods

The first step in this research is to the analyst by opening several scientific journals related to the IoT training module and data communication. Furthermore, the design step begins with making a hardware design consisting of making a circuit, PCB design, and box. Next, it is continued with the development step where we combined the previously hardware tools, create the OTA Thingsboard program, creating website programs, user guide video tutorial, and manual book. We use ESP IDF, Eagle, Blender, and Filmora for this step. After that, there is a testing step. At this stage we experimented on all the features according to the manual book do an experiment in one of the vocational high schools. The last step is the maintenance step where we evaluate the results of the experiments that have been done. The process of making the system refers to the diagram that has been made where there are features of log in, upload program, and compatibility check as shown in Figure 2.

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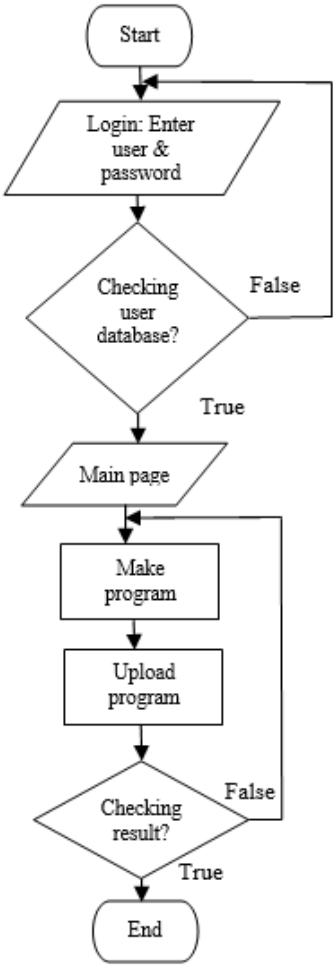

Figure 2: Access Algorithm

Result and Discussion

Module Training Kit

The IoT and data communication training module uses ESP 32 as the main component which is connected to other components which include an ultrasonic sensor, DHT 22, ESP 32 CAM, servo motor, LoRA, and LDR sensor [8]. The supporting components are classified into several parts consisting of sensor input, digital output, PWM, communication, and monitoring. The sensor input section consists of ultrasonic to detect distance, DHT 22 to read the temperature value, and LDR as a light sensor [9]. The PWM section is represented by a servo motor, the digital output section includes LED strips and LCDs, while the communications section is represented by LoRa [10]. The system is as shown in Figure 3.

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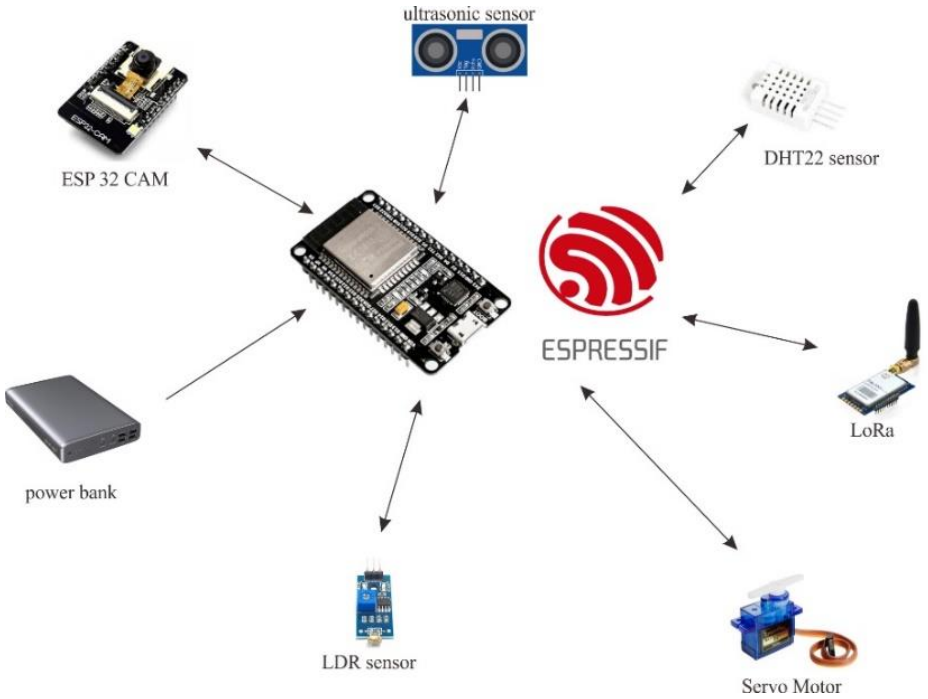

Figure 3: The Main Features of the IoT Training Module and Data Communication

The training module uses a 5V 2A power bank for the power supply so that it can be charged. Also, this training module is also assembled in a portable box so that it can be taken anywhere as shown in Figure 4.

Figure 4: Trainer Kit for IoT and Data Communication Training Modules

The Whole System

The whole system consists of three main parts which include the user, the IoT platform, and the trainer. In the user section, you can use the Arduino IDE or ESP IDF, this section function is to create a program that will later be uploaded via OTA. The system is as shown in Figure 5. When creating a program line, there will be a mandatory program line that must be uploaded [11]. This program line is an Over The Air (OTA) configuration so that the ESP32 program can be updated continuously while still inserting the mandatory program line. The mandatory program line will be available in the manual access book [7].

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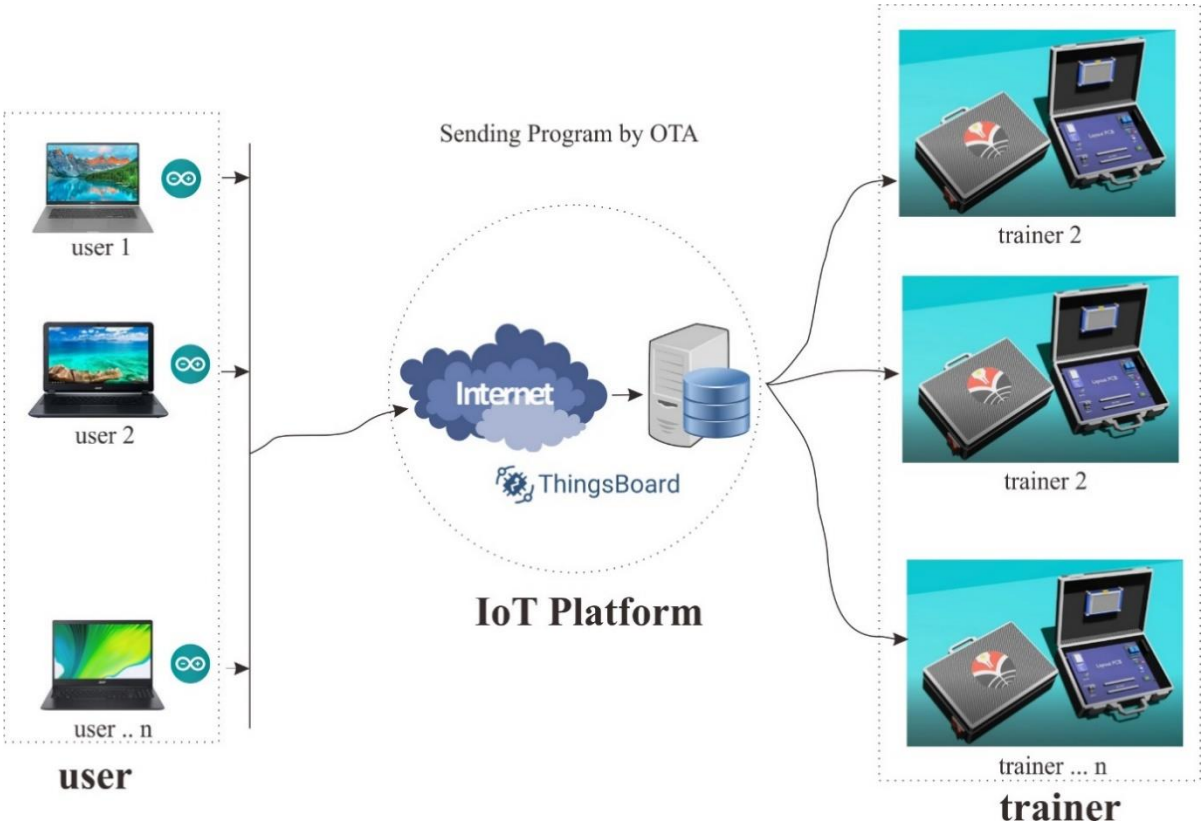

Figure 5: The Entire IoT and Data Communication Training Module System

The second part is the IoT platform (thingsboard) which is installed on the server. The platform is used to display widgets with several features such as OTA and monitoring. In the OTA feature, it will send the program that has been created and uploaded on the server to the trainer kit [11]. While the monitoring feature will display PWM data, sensors, and cameras on the trainer. The third part is the trainer kit which uses the ESP32 and connects to additional features. The program on the ESP32 can be updated remotely because it uses the OTA feature and is monitored on thingsboard. However, this system has not been accompanied by a schedule booking feature so if students are going to do practicum they still have to coordinate with the teacher. This system is also accompanied by a user account security system that has been encrypted on the provided website [9].

Testing

The testing step is carried out by uploading the program remotely using the OTA feature and testing all parts of the trainer kit [8]. On remote testing, the program will be sent and enter the ESP32 but still have to insert the mandatory program line for OTA configuration. If the mandatory program is not included, then the ESP32 program cannot be renewed [10]. The process of sending the program to ESP32 depends on the speed of the internet connection and the size of the program file that is needed to be sent [12]. This process can be seen in Fig. 6. In the additional feature testing phase, everything went well and could be monitored on thingsboard [9].

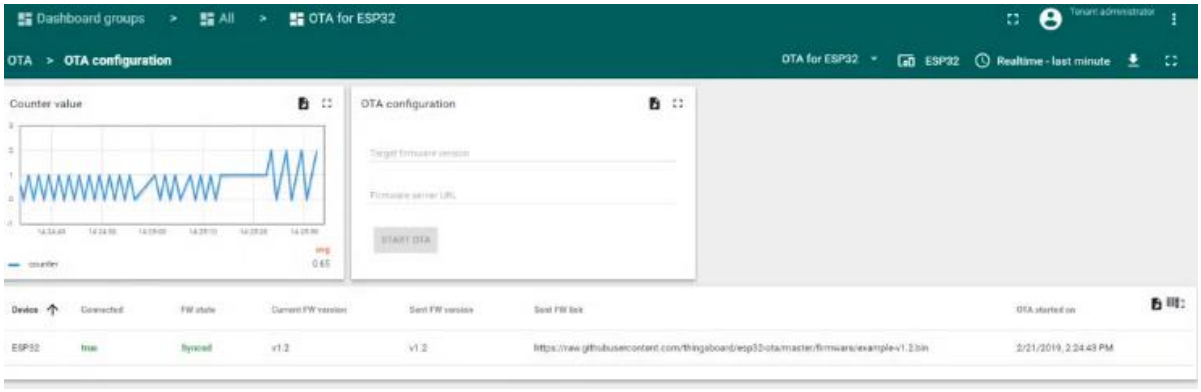

Figure 6: The Process of Uploading the OTA Program on Thingsboard

Conclusion

Based on the results and discussion, it can be concluded that the design of the IoT training module and ESP32 and OTA-based data communication has been successfully made according to planning. This can be seen from each component that can run well, such as the process of uploading programs that can be done remotely as well as monitoring on thingsboard running according to planning. Besides, guidelines, user guide video tutorials, and worksheets also make the module more comprehensive so visualization of data communication becomes easier to be understood.

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THE SPREAD OF COVID-19 FAKE NEWS ON SOCIAL MEDIA AND ITS IMPACT AMONG MALAYSIANS

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Abstract: *The problem of spreading fake news is not something new in this globalized era. However, nowadays, it has become a common trend among our Malaysians. In the current situation of our country Malaysia, the platform of social media is portrayed as the most suitable platform to spread rumors and fake news all over. Since the country is plagued by the Covid-19 pandemic, a variety of news and stories are served before our eyes on various social media such as WhatsApp, Facebook, Twitter, Telegram or Instagram. These deleterious actions can actually have a detrimental effect on social, economic growth, national security as well as psychosocial impact. Findings show that information easily to abtain; easily believe in whatever they read and self-satisfaction are the main reasons for an individual who tends to have the tendency to spread fake news.*

Keywords: *Fake news, Covid-19, social media, society*

Introduction

The media plays an important role in conveying information to the community. In today's era of globalization, through the internet, the role of the media is getting easier, but more challenging. The existence of the internet helps to speed up the process of delivering news and all sorts of information. Additionally, social media also plays a role in making the Malaysian society more sensitive to the surrounding situation and strengthen the relationships among individuals, but the community should be more careful because there is fake news designed solely to attract the attention of netizens and become a hot or trending issue. Thus, this situation is very perturbing because there are news whose truth is uncertain and can create hatred and provocation among multiracial society. This situation is increasingly worrying when some Malaysians tend to spread fake news without checking the truth (Farris Shahiran, 2019). The information or news disseminated individually or in groups may not be as accurate as it seems to or better known as hoaxes. This term means information or news that are uncertain (Juditha, C., 2018). As the world faces the devastation of Covid-19, the chain of fake news spreading rapidly are causing many adverse effects on society and the country. Therefore, this study aims to look at the causes of the spread of fake news and its impact on society.

Literature Review

The random transmission of fake news has brought problems to individuals, communities and nations. The fake news spread by irresponsible parties can result to big and serious probems later on. Various warnings have been issued by the government, but the spread of fake news is becoming more and more common. A study conducted by the Institute of Strategic and

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13th – 14th December 2020

International Studies Malaysia (ISIS) shows that 70 percent of the 363 fake news related to government action is in dealing with Covid-19 and the spread of viruses in the community (Wan Mohd Nor, 2020).

As have been stated in MyMetro website, an article written by Nurul Hidayah (2020), the Communications and Multimedia Commission (MCMC) has identified 18 suspects out of 43 cases of spreading false news about Covid-19. SKMM in its statement informed that there are six suspects already charged in court. The statement informed that MCMC and the Royal Malaysian Police (PDRM) are working together through the Cyber Crime Committee to deal with the continuous spread of fake news, especially about Covid-19 which can be confusing and create an conflicts among the netizens.

The World Economic Forum lists the dissemination of false information and false news as one of the world's major global risks (M. Saraswathi, 2020). According to a research conducted by Prof. Roberto Cavazos (2019) and artificial intelligence and cyber security company CHEQ, fake news has caused losses to the global economy amounting to about US $ 78 billion (RM322 billion) a year. It affects everything from public health to the economy. Their report, entitled The Economic Cost of Bad Actors on the Internet, mentions the high cost of health epidemics due to fake news. It cites an analysis of 14 million Twitter chats conducted by the Nature Researh Journal that found fake accounts responsible for playing an unbalanced role in disseminating articles from unreliable sources. It affects everything from public health to the economy.

According to Giselle, R. & Turkey A., (2020) there are several factors that influence an individual to accept or decline a hoax news. The first factor is age. This has been researched by Hartzel et al., 2016 which shows that 83% of adults who use social media are in the age range of 18-29 years. The second factor is gender, where there are several studies stating that women are less likely to explore new technologies (Allyn, 2003; Li, Records, & Fougere, 2004; Shashaani & Khalili, 2001). The third factor is education where there are studies showing that the less educated are more likely to believe in the acceptance of fake news (Allcott & Gentzkow, 2017). The fourth factor is culture. For example, Saudi Arabia has a culture with a high level of power, maturity, morality and morality (Al-Sukkar, 2005; Karim, 2017).

The spread of fake news made by irresponsible parties is very inappropriate because the matter has a negative impact on society. The attitude of some who like to make and spread their assumptions will cause more complicated problems.

Statement of Problem

Recently, the country has not only been threatened with the spread of the Covid-19 epidemic, but has also worsened the situation when the ‘epidemic’ of fake news has become increasingly difficult to control, causing chaos among the community. This activity with the intention of 'fun' or evil clearly exposes society to fear, including triggering panic and insecurity.

The effect of spreading this fake news can lead to loss of life and make a huge impact in a society. As a result of believing rumors that drinking alcohol can help cure coronavirus infection, a total of 44 Iranian individuals died. According to a report by the Islamic Republic News Agency (IRNA), the deaths were due to the spread of news that alcohol could cure corona outbreaks. But unfortunately the illegally processed alcoholic beverages cause poisoning. Many victims are desperate to protect themselves from infection. It also encourages them to take the drink that is made illegally (Asyikin, 2020).

Next, Sarfarizmal, (2020) in his article wrote about the spread of fake news claiming 13 Cabinet Ministers confirmed positive Covid-19. The news that spread through social media can not only add to the people's anxiety, but also give a bad image to the entire national

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13th – 14th December 2020

leadership. Not only that, there are also irresponsible parties who deliberately spread graphic images of certain leaders on social media accompanied by controversial words that allegedly came out of the leader's mouth. The impact of this act is enormous. These false news are spread with the intention of confusing, manipulating, and inflaming the feelings of the people. Thus, false perceptions of an individual or his organization arise (Li & Fougere, 2004).

Research questions

What is the cause of the spread of Covid-19 fake news on social media and its impact among the Malaysian community?

Research objective

Identify the cause of the spread of Covid-19 fake news on social media and its impact among the Malaysian community.

Purpose of the Study

The purpose of this study is to see the spread of fake news Covid-19 on social media and its impact among Malaysian society. After identifying the cause of the spread of the fake news, the researcher will give a look at its impact on society.

Research Methodology

This study is a survey in the form of a survey that uses a questionnaire. The use of the questionnaire aims to obtain a lot of important and more accurate information from the respondents, then more respondents can be collected. The focus of this study is on the community that has, browsing and following the development of social media in Malaysia.

The questionnaire of this study was formed and divided into four main sections, namely sections A, B and C. Section A explains the background of the respondents. Part B explains the form of hoax (fake news) posted on social media and Part C the effect of fake news shared on social media. All these instruments are designed so that the research questions studied can meet the objectives of the study. The questions are based on the objectives of this study and are in the form of a likert scale which is measured based on the scale of (1) strongly disagree, (2) disagree, (3) uncertain, (4) agree, and (5) strongly agree.

Findings

Based on the issues that have been explained in this article, the researcher has made the findings of the study that need to be discussed. Among them are the factors that contribute to the spread of fake news among the Malaysian community and its impact on society.

The tests were done for 100 respondent that were chosen randomly from three different universities, namely University Kebangsaan Malaysia, University Putra Malaysia dan University Malaya. The researcher obtained data from the objective test which was in the form of multiple choices questions.

Table 1: Summary of respondents

Universiti	Number of respondents	Age	Survey Method
Universiti Malaya	33	20 – 30 years old	Online
Universiti Putra Malaysia	34	20 – 30 years old	Online
Universiti Kebangsaan Malaysia	33	20 – 30 years old	Online
Total	**100**		

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 2: Mean and percentages cause of the Covid-19 fake news

No.	Item	Mean	SD
1.	To fill free time	3.61	1.228
2.	Self satisfaction	4.01	0.891
3.	Easy to believe	4.06	0.817
4.	To release stress	3.79	0.986
5.	Information that easily available	4.09	0.826
	Total	**3.92**	**0.561**

Cause of Spread Fake News

Analysis from this study showed that the factors that contribute to the spread of fake news among the Malaysian community in this digital age are information that is easily available. This can be proved by looking at the respondents response to the research item. Table 2 stated highest mean 4.09. With the dumping of information circulating on the Internet has resulted in a lot of fake news being spread. To make matters worse, the attitude of Internet users who are itchy and quick to share the news even though the source has not been confirmed or doubted is worrying. Whether you want to be an unqualified journalist on the internet or the type who always wants to be the first to spread the news causes the spread of fake news to spread so much that it drowns out the real news. The community is now more interacting in the virtual world that accumulates in it the overflow of news obtained through various channels such as newspapers, magazines, mass media (WhatsApp, Facebook, Instagram, YouTube) and so on. By typing a keyword into an internet search engine, every detail of the required information will be displayed. The issue is, is this information easy to obtain, able to be filtered and verified its authenticity. But if the news is an authentic thing, then it is good for those who receive it, but if it is the opposite then surely it will invite hostility and discord between communities (Björn Ross, 2018).

People in this country are seen to be less sensitive to the dangers of fake news in their daily lives and enjoy sharing without a motion to check. One of the reasons is they easily believe in whatever they read (mean 4.06). This happen when the minds of people who are increasingly shallow in knowledge and no longer practice the culture of reading material that is not from the internet. The internet should be the depth of knowledge but that knowledge comes from the understanding and intellect that is driven by the intelligent mind and can separate logic or not with the strength of content in the human brain itself. At the same time making the reader too lazy with anything that is bribed and quickly deceived by short news and sensations. According to Björn Ross (2018), in the era of advanced globalization and in line with the sophistication of global technology, it is not an impossible and difficult thing for a person to disseminate information presented to society.

The habit of spreading the earliest news or breaking news syndrome by unqualified ‘journalists’ on social media platforms such as Facebook, Twitter, WhatsApp and Telegram is very worrying. The information disseminated by these groups is questionable, as the majority only tend self-satisfaction and want attention (mean 4.01). According to the Senior Lecturer of the Clinical Psychology and Behavioral Health Program, Faculty of Health Sciences, Universiti Kebangsaan Malaysia (UKM), Dr Shazli Ezzat Ghazali revealed that the syndrome can be associated with mental and emotional problems. Most individuals who commit such acts have low self-esteem issues and feel insecure. The habit of spreading this false news exists in a person due to the urge to gain self-satisfaction (HM, 2020).

eISBN 978-967-2426-22-6
13th – 14th December 2020

The Effect of Spreading Fake News

The spread of fake news about Covid-19 is seen to have a huge impact from a psychosocial aspect. David DeSteno (2020) a psychologist from Northeastern University, states the high number of deaths has led to anxiety and fear. According to him, there is an extreme and unbalanced psychological fear or psychological fear. This psychological fear is due to a combination of emotional factors and limited knowledge of Covid-19. Various false information adds to the concern. This is compounded by the fear through irrational thinking that the people around are all carriers of the Covid-19 virus. For example, as faced by stall traders at the Kempas Community Center, Johor Bahru who were slandered for allegedly being in the Covid-19 Red Zone. The actions of some irresponsible parties to spread the fake news caused the visitors of the Community Center to be afraid to set foot in the area. At the same time, it affects the income of traders there up to 30 percent. The spread of such untrue news seems to 'pour sand into the rice cooker' of their innocent (Sarfarizmal, 2020).

In a time when the world is struggling with this epidemic, many are plagued with the attitude of easily believing false information. The effects of uncertainty about information cause oneself to be easily influenced by unauthentic news. According to Adam Kucharski (2020), many individuals are unwise to identify misleading information especially on social media. Among the reasons is not knowing how to filter the true information and the impact of society will be too hasty in receiving and disseminating information. For example, in a panic-buying situation, consumers flock to shops and supermarkets to buy goods in large quantities and outside daily necessities following the government's implementation of the Movement Control Order (PKP). If the state of panic is not curbed, it can inevitably lead to worse conditions that can lead to rejection, misunderstanding, conflict and strife. Following that, the state Ministry of Domestic Trade and Consumer Affairs (KPDNHEP) advised the public not to rush to purchase daily necessities because there is sufficient stock of goods (Amir Mamat, 2020).

Another effect that can be seen is that there is a society that is prejudiced and likes to blame others. According to Sapora Sipon (2020), as Covid-19 originated from Wuhan, China, anti-Asian sentiment increased drastically. When individuals behave in confused and confused emotions, they can make irrational choices. There are people who are already prejudiced and such a situation will add to the stereotypical attitude that is in them. This can lead to the use of hate speech, incitement or use of violence against any group that is considered the 'carrier' of the epidemic such as blaming Chinese, Tabligh groups, migrants and refugees. This situation can lead to the destruction of unity between multiracial and religious communities. Unbeknownst to them, the act of transmitting fake news and acting on the fake news can lead to tyranny (Wan Mohd Nor, 2020).

The effects can be overcome by not trusting too much information from social media. To date, the Communications and Multimedia Commission (MCMC) has identified more than 1,000 fake news spreads in the country. Fake news is not only misleading, but can even threaten the safety of the people and the country. It does not only occur in Malaysia, but also in the United States, Indonesia and European countries (Ismail Sualman, 2020).

Conclusion

Spreading fake news is like spreading COVID-19 virus. The effects and consequences of this act are serious enough to affect public order. In this regard, it is important for the Malaysian Communications and Multimedia Commission (MCMC) to find the best mechanism in monitoring fake news so that this 'epidemic' does not spread and continue to affect national security. In receiving or conveying information, the truth and authenticity of a news must go

through several processes in order to study and examine the news. Therefore, some factors that should be taken into account include being careful in conveying the news obtained before disseminating it so that there is no misunderstanding and error of facts in a news. The struggle to stop fake news is far from over and the community needs to be educated every day through various platforms including social media and mainstream media in the country. People are very happy to share whatever they receive, but the community should first check the information received, think and see if it is true or otherwise.

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ENHANCING VITAMIN C CONTENT IN SOAP PRODUCTION VIA SUBSEQUENT AMOUNT OF EXTRACT FROM PHYLLANTHUS AMBLICA AND COSNICIUM BLUEMEANUM

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***Abstract**: The demand of cosmetic product is rapidly growing, despite majority of them is high in chemical substance and may harm to the skin. Nowadays, there are other alternatives that may help to prevent the use of chemical substances in cosmetic product. For example fruit contains their own nutrient. Furthermore, there are some fruits that contains high in vitamins and also good for skin. Researcher noticed that Phyllantus amblica (Melaka fruits) has unpleasant odor but it higher with contains 30 times more vitamin C compared to orange while Cosnicium blumeanem (mengkunyit) helps raise level of vitamins C in the body. Therefore, looking at potential and benefits, a research has been conducted to produce a bar soap (Amblica Soap) from Phyllantus amblica and Cosnicium blumeanem. Analyze has been done to determine the vitamin C, antioxidant level and perception level of respondents towards Amblica Soap. Likert Scale and High Performance Liquid Chromatography (HPLC) was used as the quantitative instrument. A number of 30 respondents were selected based on their locality. Descriptive analysis was used to analyses collected using SPSS version 25.0. Resulting confirming that is Amblica Soap not contain in vitamin C and shows the perception level of respondents towards Amblica Soap is highly positive. In conclusion, Amblica Soap accepted optimistically.*

***Keywords:** Phyllantus amblica, Cosnicium blumeanem, Vitamin C.*

Introduction

The cosmetic industry is dominated by a small number of multinational corporations that originated in the early 20th century, but the distribution and sale of cosmetic is spread among a wide range of different businesses. Even though the demand of cosmetic products is rapidly growing, despite majority of the cosmetic product is high in chemical substances and may harm the skin (Moyad, 2017).

Nowadays, there are other alternatives that may help to prevent the use of chemical substances in cosmetic products. For example fruits contain their own nutrient. Furthermore, there are some fruits that contains high in vitamins and also good for skin. The goodness of the fruits may help to get rid of the uses of chemical substances and may provide the good chance to spread the natural substances in cosmetic products. Thus, vitamin C is also good for skin.

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13th – 14th December 2020

Based on research, Melaka fruit contains more than 30 times vitamin C compared to oranges. Therefore, Melaka fruit also can be innovated into soap (Moyad, 2017).

In Malaysia, the Melaka tree is planted for landscaping purposes. This happens because the locals did not know that *Phyllanthus amblica (*Melaka fruit*)* contains a lot of vitamin C and has benefits to health (Singh et.al, 2011). This fruit contains 720mg vitamin C in every 100g fresh Melaka fruit (Singh et.al, 2011) and has antioxidant value. Vitamin C content in fruits as Table 1.

Table I: Vitamin C Content in Fruits

Fruit	Vitamin C (mg/100g)
Melaka fruit	700
Guava	100
Kiwi	90
Lychee	70
Starberry	60
Papaya	60
Orange	50
Lemon	40
Mango	28
Honeydew	20
Grape	10
Apricot	10
Banana	9
Avocado	8
Apple	6
Pear	4

(Ehrlich, 2011 and Gloryfrench, 2006)

Looking for its potential and benefit, a research has been conducted to produce a bar soap named Amblica Soap from Phyllantus amblica (Melaka fruit) and Cosnicium blumeanem (mengkunyit). Other than that, researcher want to determine the vitamin C content and also to know the level of acceptance toward Amblica Soap.

Literature Review

Phyllantus amblica (Melaka fruit)

Aging problem is common with the increase in age. But the process of aging is totally changed. Skin starts to show sign of aging at an early age. These early signs of aging are due to unhealthy diet, pollution, stress and much more. Luckily, Melaka fruit helps to fight the problem of aging due to its high antioxidants content. Oxidative Radiance Activity Capacity (ORAC) value is 3387 micromole per 100 g. Free radicals are known to damage healthy cells. They damage the healthy skin and accelerate the process of aging. But antioxidants fight these free radicals and slow down the process of aging. (Moyad, 2017).

Malacca fruit is very rich in Vitamin C, and contains many minerals and vitamins like Calcium, Phosphorus, Iron, Carotene and Vitamin B Complex. Many health problems are caused by oxidative damage (when body cells use oxygen, they produce by-products called free radicals that can cause damage). Antioxidant agents prevent and repair these damages. Vitamin C is a good antioxidant agent, which makes gooseberries a powerful tool against a variety of conditions, including various types of cancer. (Harshanjit Singh,2002)

eISBN 978-967-2426-22-6
13th – 14th December 2020

Picture 1: Phyllantus amblica (Melaka fruit)

Coscinium blumeanum (mengkunyit)

Coscinium blumeanum (mengkunyit) used as an effective sinus medication in Malay traditional medicine. This herb can relieve itching on the face, scalp and nose, frequent sneezing and a runny nose, acne on the face, itching in the toenails and hands. It also contains an antibiotic effect against some types of bacteria and fungi. The high content of flavonoids in the plant causes the function to act as anti-oxidants that can produce substances histamine and other allergies. Another advantage of this herb is to help raise levels of vitamin C in the body that protect against free radical damage and strengthens the joints. (datatanamanherba, 2011)

Picture 2: Coscinium blumeanum (mengkunyit)

Coscinium blumeanum (mengkunyit) is a wild plant that is commonly found in the forest, it is a climbing plant that can grow up to a height of ten feet (to climb on other plants or support) leaf width and length measures 7 x 20cm. There are two types of *Coscinium blumeanum (mengkunyit) that are mengkunyit* gold and mengkunyit silver in contrast to the color of leaves. (datatanamanherba, 2011)

Glycerin

Glycerine is a humectant. It absorbs water from the air and thus attracts moisture to the skin. Glycerine is a natural by-product of the soap making process (chargrinvalleysoapandslave, 2017). Glycerine is an organic compound composed of carbon, oxygen and hydrogen (Axe, 2017). This thick, colourless and odourless liquid is used extensively in the beauty industry for

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13th – 14th December 2020

making soap, antiaging gels and moisturizers. It was first discovered in 1779 by Swedish chemist, *Karl Wihelm Scheele*, who named it "sweet principle of fat" in 1811, *Michel Chevreul's*, a Frenchman, named it glycerine, which comes from the Greek word *glyks* meaning sweet. Glycerine was mainly utilized for medical used and personal care until the late 1800's (chargrinvalleysoapandsalve, 2017). As a humectant, this ingredient is often found as an ingredient in cosmetic products such as face washes, skin cream and lotion, soap and mouth washes.

Picture 3: Glycerine

Peppermint Oil Essence

Pleasantly suitable for an abundance of oral and topical uses and antimicrobial properties, peppermint may be the most versatile essential oil in the world along with lavender. Literally, there are few body, health and mind issues that it cannot help. Peppermint essential oil gives a cooling sensation and has a calming effect on the body, which can relieve sore muscles when used topically. It also has antimicrobial properties so it can help freshen bad breath and soothe digestive issues. Clinically speaking, peppermint oil is recommended for its anti-nausea benefits and soothing effects on the gastric lining and colon because of its ability to reduce muscle spasms. Not only is peppermint one of the oldest European herbs used for medical purposes, other historical accounts date its used to ancient Chinese and Japanese folk medicine. Peppermint oil benefit soothe digestive issues, relieves headache, improve mental focus, boosts energy, releases tight muscle, sinus care, allergy relief, skin health, acne treatment and sunburn relief.(Axe,2017)

Picture 4: Peppermint Oil Essence

Research Methodology

Producing Amblica Soap

There are four main ingredients required in the production of Amblica Soap. They are extraction of Melaka fruit and also mengkunyit, glycerin, and *peppermint essential oil*. These then put it into a soap mold with room temperature to harden and become a soap bar. The process flow of producing the Amblica Soap is illustrated as in Figure 1.

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13th – 14th December 2020

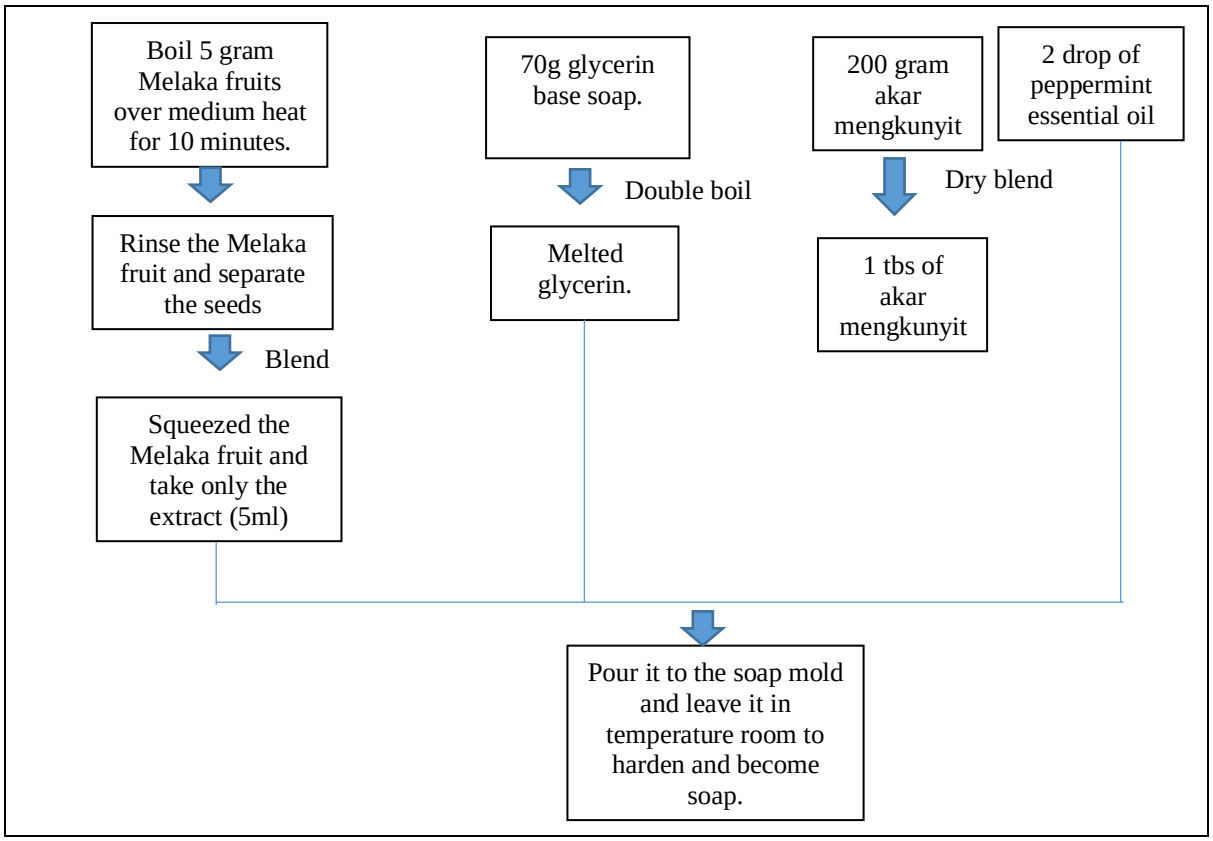

Figure 1: Process of Making Amblica Soap

Research Design

Researchers has used quantitative research design. A set of questionnaire using Likert Scale was used to determine the acceptance level of respondents towards Amblica Soap as in Figure 2.

Item Evaluated	Very Dislike (1)	Dislike (2)	Not sure (3)	Like (4)	Really Like (5)
I like the colour of soap					
I like the texture of this soap					
I like the smell of this soap					
The soap is not slimy					
This soap makes my skin softer					

Figure 2: Questionnaire to Determine Respondent Acceptance Level towards Amblica Soap

Research was done to determine respondent acceptance level towards Amblica Soap which are its colour, texture, smell, in term of the soap is not slimy and skin smoothness, moistness, fairness after application.

Research Respondent

Respondent from ages from 18 to 50 years old were selected. This is because aging problem is common with the increase in age. Skin starts to show sign of aging at an early age. These early signs of aging are due to unhealthy diet, pollution, stress and much more (Harshanjitsingh,

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13th – 14th December 2020

2002). 30 respondents were given Amblica Soap sample. They applied the sample onto the skin prior answering the questionnaires.

Vitamin C Analysis

The High Performance Liquid Chromatography (HPLC) at the Department of Chemistry Malaysia, Ministry of Science, Technology and Innovation was used to determine the amount of Vitamin C, while pH value was determined using the pH meter.

Data Analysis Method

Data collected from the questionnaires were analysed using Statistical Package for Social Science (SPSS) version 25.0 and interpreted using mean score. The mean value range interpretation are in Table 2.

Table 2: Interpretations of the Range Of Value Mean

Score Mean	Interpretation	Level
1.00 to 2.33	Low	Weak
2.34 to 3.66	Middle	Middle
3.67 to 5.00	High	Good

(Mohd Najib Abd Ghafar, 2003)

Data Analysis

Producing a Soap Bar by Using Extract from Melaka Fruit and Mengkunyit

Analysis showed that the respondents highly accepted the Amblica Soap after application with mean value 4.00. Table 3 indicates the mean score for attribute evaluated.

Table 3: Interpretations of Mean Score of Amblica Soap

Item Evaluated	Score Mean	Interpretation	Level
Acceptance	4.00	High	Good

To Determined Vitamin C Content in Amblica Soap

Result indicated that the pH value is 9.5. It is also confirmed that vitamin C is not detected in Amblica Soap with amount of ND <0.1 as indicated in Table 4.

Table 4: Interpretations of Vitamin C Content in Amblica Soap

Test Parameter	Test Method	Unit	Result
pH	pH meter	-	9.5
Vitamin C	HPLC	mg/100g	ND<0.1

(Malacca Institute of Biotechnology, 2012)

To Determine the Perception Level of Acceptance towards Amblica Soap

Respondents moderately agree that the color of Amblica Soap with mean value 3.47, the pleasurably texture and refreshing smell is strongly accepted with mean value 3.80 and 4.37 respectively. They also strongly agree that Amblica Soap possess good slimmy giving mean score 3.67, and also Amblica Soap giving them soft skin with mean value 4.10. Table 4 indicates the mean score for each attribute evaluated.

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13th – 14th December 2020

Table 5: Interpretations of perception Level of Amblica Soap

Item Evaluated	Score Mean	Interpretation	Level
Color	3.47	Middle	Middle
Texture	3.80	High	Good
Smell	4.37	High	Good
Slimy	3.67	High	Good
Soft skin	4.10	High	Good

Results and Discussion

Overall, respondent's acceptance of this product is high. Nutritional analysis showed that the Amblica Soap is not contains in vitamin C. The majority of people who consumed Amblica Soap like the soap very much and smells fragrant and fresh.

Each of which types of fruit has its own privileges, as well as the fruit of Malacca. The results of the study, many who still do not know what the Melaka fruit, efficacy and benefits.

Malacca fruit is very rich in vitamin C, and contains many minerals and vitamins like Calcium, Phosphorus, Iron, Carotene and Vitamin B Complex. Many health problems are caused by oxidative damage (when body cells use oxygen, they produce by-products called free radicals that can cause damage). Antioxidant agents prevent and repair these damages. Vitamin

C is a good antioxidant agent, which makes gooseberries a powerful tool against a variety of conditions, including various types of cancer. (Harshanjit singh, 2002).It is also stated that by The Melaka Fruit is rich in Vitamin C (Lim T.K,2012)

Mengkunyit also have properties to help problem sinus and have high nutrition. *Coscinium Blumeanum (Mengkunyit)* used as an effective sinus medication in Malay traditional medicine. This herb can relieve itching on the face, scalp and nose, frequent sneezing and a runny nose, acne on the face, itching in the toenails and hands. It also contains an antibiotic effect against some types of bacteria and fungi. The high content of flavonoids in the plant causes the function to act as anti-oxidants that can produce substances histemin and other allergies. Another advantage of this herb is to help raise levels of vitamin C in the body that protect against free radical damage and strengthens the joints. (datatanamanherba,2011)

In this research also, it is proven that the Amblica Soap is not contain in vitamin C reported by Melaka Biotechnology Corporation and the acceptance level for Amblica Soap is 4.00 which is high and in a good level of acceptance of Amblica Soap.

Recommendation

For recommendation, researcher suggested that the Amblica fruit and mengkunyit is added after the Glycerin base soap cool down. It is for enhance the more vitamin C in the Amblica Soap.

Summary

In conclusion, the results of the discussions can be concluded that the Amblica Soap is highly accepted.

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THE USING OF DATA MODELER FOR CREATING ERD IN DATABASE DESIGN COURSE

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Abstract: *This study aims to look at the use of Oracle Data Modeler, as a tools used for development of an ERD. Methods and procedures to use Oracle Data Modeler in order to create logical model (ERD) are also refined in this study. This data modelling, developed by Oracle Corporation provide practical explanations and references that can change the way data modelling is taught in the classroom. The tools provided by Oracle Data Modeler are better and easier to use in order to produce the logical and physical structure of a database. This tool was shared among lecturers and students through sharing and transfer knowledge course and the respondent gave reflections on this tool. Most respondents gave positive responses to the using of Data Modeler in terms of reactions of teaching and learning and impact to the skills. By using Oracle Data Modeler, students were able to implement correctly the creation of logical and physical model in the database design.*

Keywords: *Oracle Data Modeler, ERD, modelling, tools.*

Introduction

Database Design is a compulsory course taken by students majoring in Diploma in Information Technology (Digital Technology), Polytechnic Malaysia. This course engages students to analyze business scenarios and create a data model as a conceptual representation of an organization's information. Students implement their database design by creating a logical database design using ERD (Entity Relationship Diagram) and physical database using SQL (Structured Query Language). Basic SQL syntax and the rules for constructing valid SQL statements are reviewed in this course. This course culminates with a case study and project that challenges students to design, implement, and demonstrate a database solution for a business or organization. It emphasizes the specific concepts that need to be adhered to in order to develop a database. Students will be exposed to the basic concept of database development which is data modelling before developing a database, so student might have a great basic on data modelling concept, techniques and tools used. Database technology nowadays has transforms into most popular technology area, which serve to a better ways on how data is managed in the organization worldwide. The rapid changes and the increased ways that data is managed creates an opportunities for database developer and company to produce current technology related with database. Database technology make a bigger move and transition from hierarchical databases to a network database and also relational database technologies. Database technologies are core component that exists in many computing systems nowadays. The technology allow data to be stored and shared electronically and the amount of data contained in these systems continues to grow and increased dramatically.

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13th – 14th December 2020

Literature Review

Database & Database Management System (DBMS)

A database is a collection of organized data, to make data be easily accessed and managed. It is a shared collection of logically related data and designed to meet the information needs of an organisation or purposes. A database is a system used to manage data on a computer system (Simanjuntak, 2013). The database is a single, large repository of data, which is defined once in a computer system and used simultaneously by several users. The database consists of tables containing records. For example, a XYZ college database would have a Student table with a record for each student enrolled. Database architecture is a graphical and suggestive representation of the system elements and of the links between them. In the specialty literature are presented various database architecture types (J.Date, 2004). Database design is part of the database development process that involves analysis of problem specifications and requirements and provides all necessary findings for creating a logical data structure. The logical structure of data may initially be expressed and transformed into a more expressive data model. Such a model comes close to what one considers a conceptual level or view (Date, 2004).

Database Management System (DBMS) is a software that manages and controls access to the database. It enables users to define, create and maintain the database and provides controlled access to this database. In the database model, the DBMS is the software that supports and controls access to a database for every user process (Sudirman, 2009). It can manages the storage and retrieval of data in the database and processes data according to the database schema. Some examples of DBMS are ORACLE, MariaDB, SQL Server, DB2, and MSAccess. Different types of DBMS serve different requirements. These requirements refer to the size, the local expansion of data, and the analytical requirements of businesses. A database management system (DBMS) provides the tools and other facilities to create database files, each which is a compilation of organized data (Stair & Reynolds, 2018). Database design is the process of designing the logical and physical structure of one or more databases to accommodate the information needs of the users in an organization for a defined set of applications. Many of the database technologies nowadays have reduced their coverage on the traditional ERD and now focus more on UML (Gravino, 2010). With the growing popularity of Unified Modeling Language (UML), Entity Relationships Diagrams (ERD) seems to have lost some luster. In the Relational Database model, data is compiled using queries, tables, schemas, and various other methods which, when implemented, will allow user to quickly access database records in order to update, delete, or modify the data stored within the database.

Data Modeling

The data model is one part of the conceptual design process. It focuses on what data should be stored in the database and to put this in the context of the relational database, the data model is used to design the relational tables. Data modeling involves building an entity relationship diagram (ERD), Unified Modelling Language (UML) and others that describes the entire data and the relationship between the data before developing the database in any RDBMS. It is also known as a technique or tools used to model logical data before being converted to physical data that is program codes (normally using SQL language). The data model is one part of the conceptual design process. The modeler, works with the end users of an organization to determine the data requirements of the database. The requirements analysis is usually done at the same time as the data modeling. As information is collected, data objects are identified and classified as entities, attributes, or relationship; assigned names and, defined using terms familiar to the end-users. Then, all the data and information will be summarize in one diagram

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13th – 14th December 2020

to represent the flows at data and relationship among data. The objects are then modeled and analyzed using an Entity Relationship (ER) diagram (Bagui, Sikha, 2011). The diagram can be reviewed by the modeler and the end-users to determine its completeness and accuracy. If the model is not correct, it is modified, which sometimes requires additional information to be collected. The review and edit cycle continues until the model is certified as correct. Data modeling is probably the most labor intensive and time consuming part of the development process. The goal of the data model is to make sure that the all data objects required by the database are completely and accurately represented. Because the data model uses easily understood notations and natural language, it can be reviewed and verified as correct by the end-users.

Entity Relationship Diagram (ERD) is a conceptual data model that views and represent the real world as entities and relationships. A basic function of ERD is used to visually represent data objects. A relational database that contains the classes of an application will be highly application-specific while a relational database can be used by many more applications (Hitchman, 2002). A logical data model is expected to capture entity types, attributes, relationships, and constraints. The basic object of the ER model represents an entity, which is a "thing" in the real world with an independent existence (Elmasri, 2004).

Oracle Data Modeler

Oracle SQL Developer Data Modeler is a new, graphical data modeling tool that facilitates and enhances communication between data architects, database administrators, application developers and users, and simplifies the data modeling development process itself. Using SQL Developer Data Modeler users can create, browse and edit, logical, relational, physical, multi-dimensional, and data type models. Oracle, which controls over 48% of the relational database management software, has recently introduced a stand- alone database modeling and design tool called SQL Developer Data Modeler (Oracle, 2011). This tool provides a full spectrum of data and database modeling tools and utilities, including modeling for Entity Relationship Diagrams (ERD), Relational (database design), and Data Type with forward and reverse engineering and DDL. The generation of DDL scripts in Oracle Data Modeler improves productivity and promotes the use of standards in coding. The introduction of this tool illustrates Oracle's commitment to improve developer productivity and to facilitate the improved quality done by the database developer community and their users. The role of SQL Developer Data Modeler is to simplify data modeling development tasks and serves as a powerful communication tool between developers and business users. (Hitchman, 2002).

Methodology

This research focus on developing the Entity Relationship Diagram (ERD) by using Oracle Data Modeler. The current method used in teaching ERD is to use Microsoft Word or Microsoft Access which is not standardize in terms of formatting and notation. Students will be taught about ERD construction techniques and asked to draw ERDs involving entities, attributes, keys, relationships and even participation. Oracle SQL Developer Data Modeler is a standalone, independent product, available for download from the Oracle Technology Network (OTN). By introducing Oracle Data Modeler, students are taught to develop ERD using the tools provided by this Data Modeler. The logical model in SQL Developer Data Modeler includes standard logical modeling facilities, such as drawing entities and relationships. Figure 1 shows the steps to develop a database which involves data modelling process.

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13th – 14th December 2020

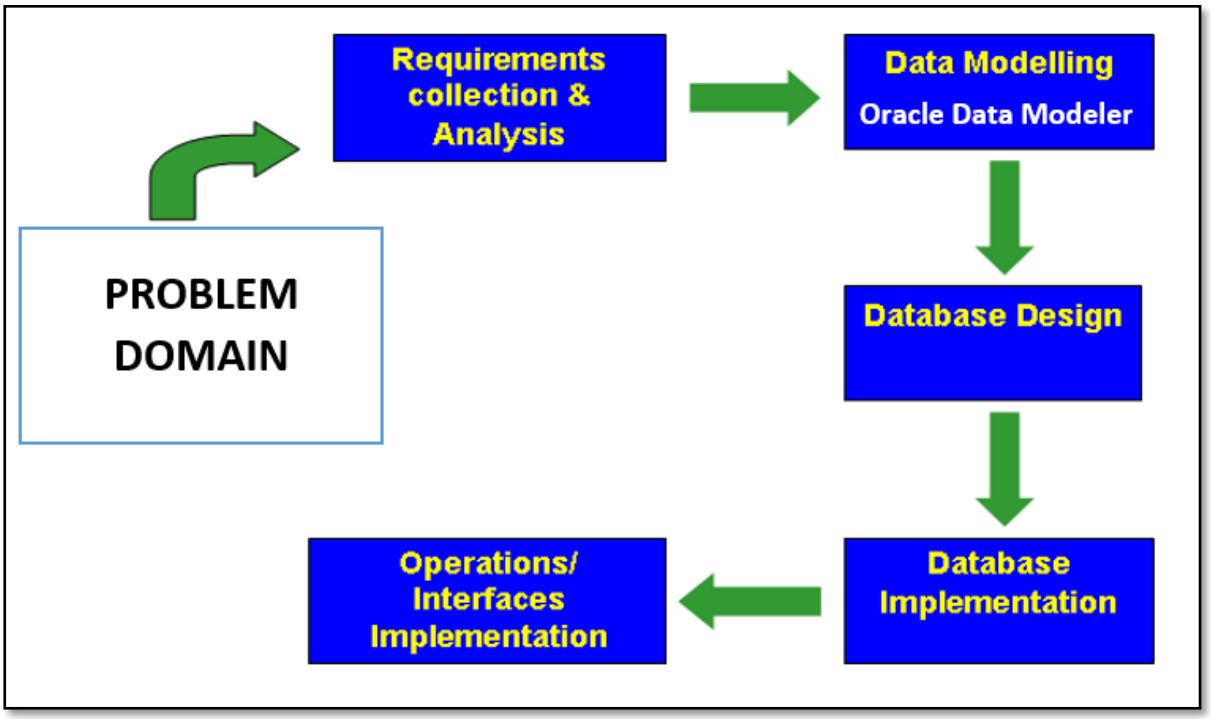

Figure 1: Steps involved in database development

Use Data Modeler to create Logical Model

A logical data model is a model that is not specific to a database that describes things about which an organization wants to collect data, and the relationships among these things. It include the process of creating entities, define attributes for entities, set the domain and keys of the attributes and set the relationship and cardinalities between entities. The logical model in SQL Developer Data Modeler includes standard logical modeling facilities, such as drawing entities and relationships, plus the following key features:

- Box-in-box presentation for the super-type and sub-type hierarchy of entities
- Support for exclusive relationships.
- Barker or Bachman notation (the Barker notations are the default)

However, before create the entities, students had an explanation about the use of domains for attributes. Students are able to relate the concept of domains learned theoretically in the classroom into practical activity through Data Modeler.

Creating Domains

In planning for data needs, we determined that several kinds of fields will occur in multiple kinds of records, and many fields can share a definition. For example, we have decided that several settings such as:

- The first and last names of persons can be up to 25 characters each.
- Titles (books, articles, and so on) can be up to 50 characters.

The creating domain for attributes involved several steps as shown in Figure 2 below. All the domain setting can be use later, to specify data types for attributes when create the entities. These added domains will also be available after exit Data Modeler and restart it later.

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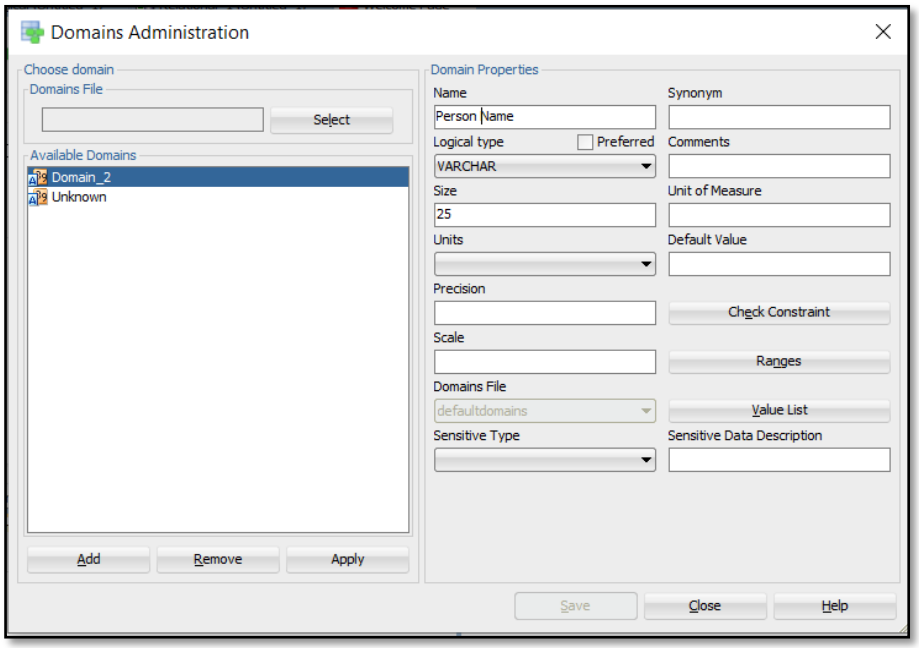

Figure 2: Create Domain

Creating Entities

Entities are the principal data object about which information is to be collected. Entities are usually recognizable concepts, either concrete or abstract, such as person, places, things, or events which have relevance to the database. The logical model for the database includes entities: For example used here are Books (describes each book in the library), Patrons (describes each person who has a library card), and Transactions (describes each transaction involving a patron and a book). The steps involved in creating entity and attributes are as shown in Figure 3 and Figure 4 below.

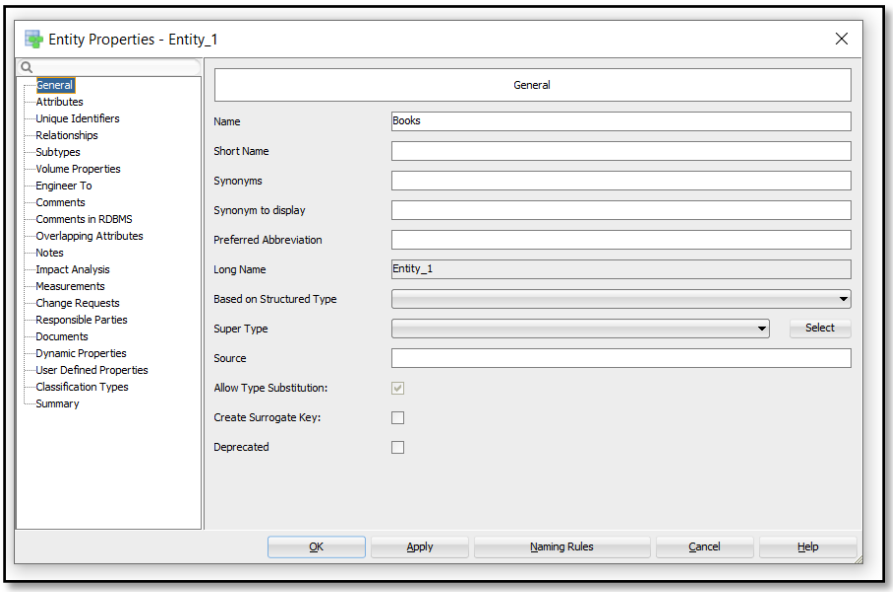

Figure 3: Create Entity

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13th – 14th December 2020

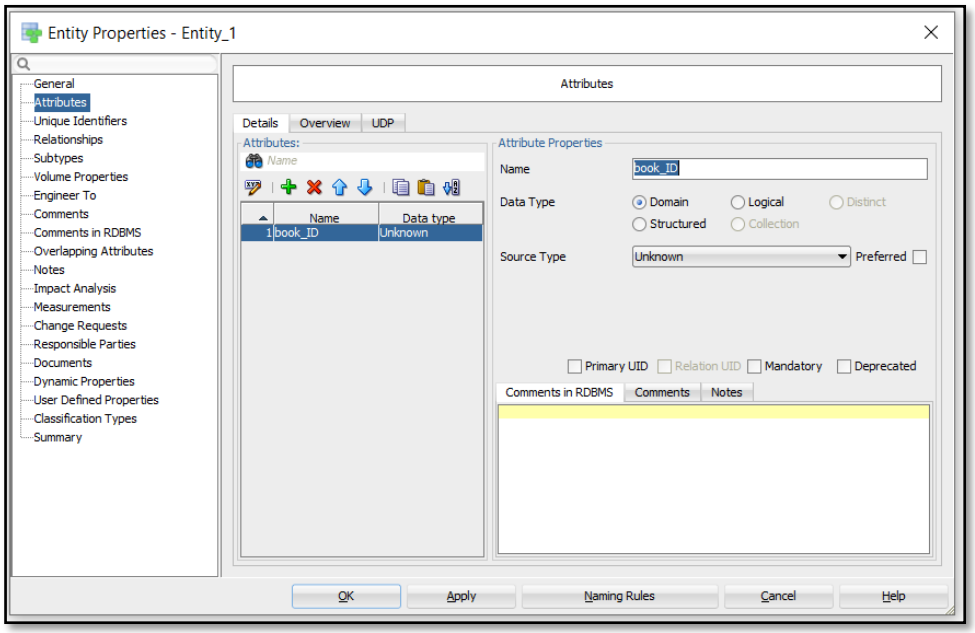

Figure 4: Create Attributes for Entity

Creating Relationship

Relations show the relationships between entities whether ono-to-one, one-to-many, many-to-one, or many-to-many relationship. The following steps to setting the relationships exist between the entities are as shown in Figure 5. The logical model pane in the main area should look like the following in Figure 6. Note that for this figure, Bachman Notation is used and can change it into Barker Notation.

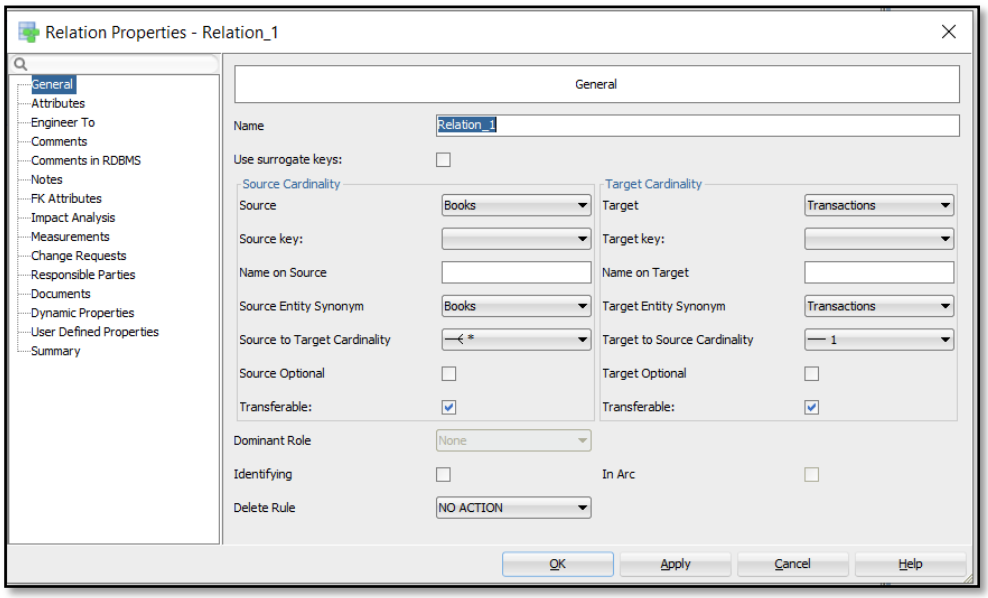

Figure 5: Create Relationship among Entities

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13th – 14th December 2020

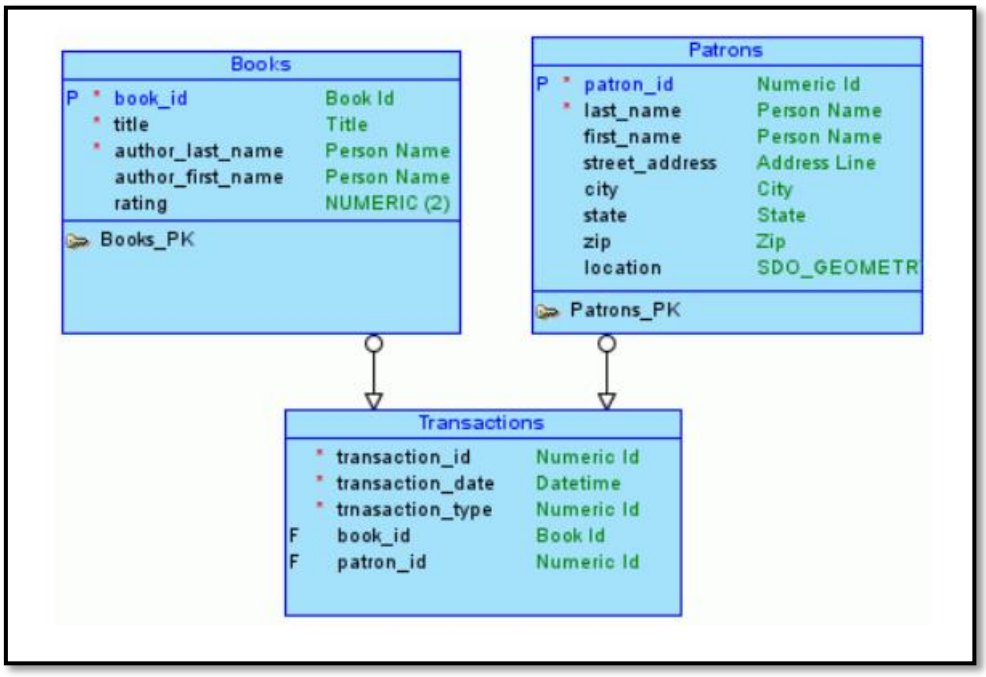

Figure 6: Entities with complete relationship

Relational Model

The relational model for the library tutorial database consists of tables that reflect the entities of the logical model (Books, Patrons, and Transactions) and all attributes of each entity. In the simplified data model that involved steps as shown in Figure 7, a single relational model reflects the entire logical model; however, for other data models you can create one or more relational models, as shown in Figure 8.

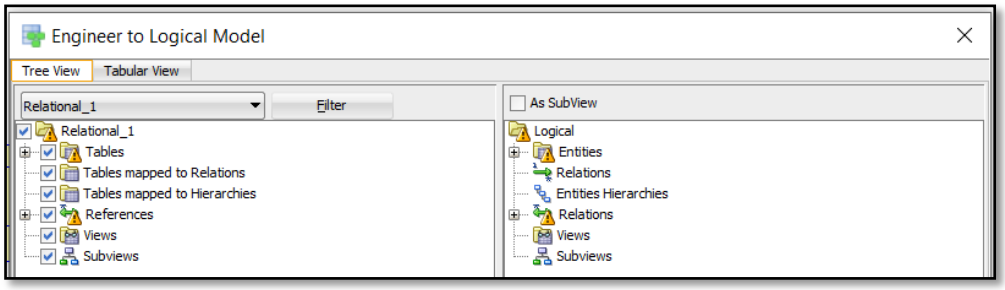

Figure 7: Engineer to Relational Model

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13th – 14th December 2020

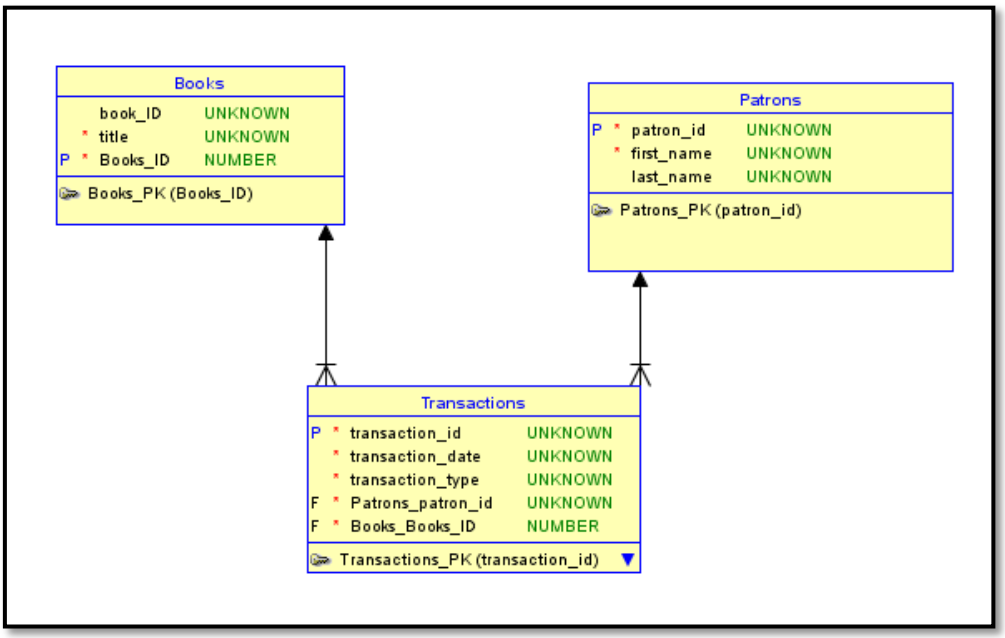

Figure 8: Relational Model

Use Data Modeler to create Physical Model

A physical data model is a database specific model that represents relational data objects (for example, tables, columns, primary and foreign keys) and their relationships. A physical data model can be used to generate DDL statements which can then be deployed to a database server, as shown in Figure 9 and Figure 10 below. Using Data Modeler, Data Definition Language (DDL) statements generated and be used to create database objects in order to reflect the models that have designed. The DDL statements will implement the physical model (type of database, such as Oracle Database 12c) that specify earlier.

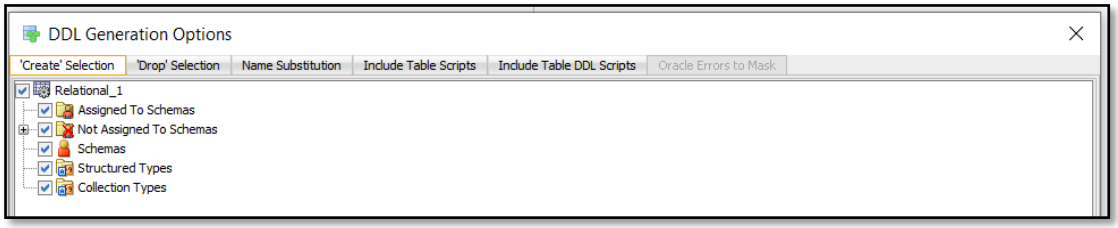

Figure 9: Generate DDL Files

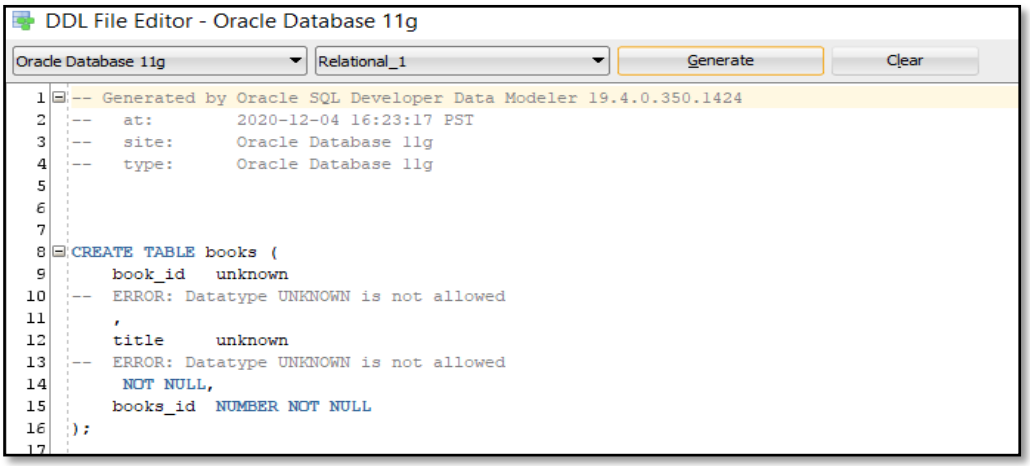

Figure 10: DDL Files

Method for Reflections

Partipants

In total, there are 118 participants involved in this study. From the 118 participants, 10 are lecturers and the rest are the students from programme Diploma in Information Technology (Digital Technology) Ungku Omar Polytechnic, Perak Malaysia. The students are currently study in Semester 2 and enrol for Database Design (DFC20123) course. DFC20123 is a common core subject which is student must take and pass this subject, as it is a prerequisite to other subject.

Procedures

A short course to explain the use of ERD construction tools and techniques using Data Modeler was implemented for course lecturers. A questionnaire was distributed to assess the level of understanding, improvement of skills competencies and the level of confidence to share knowledge with their respective students. A total of 10 lecturers answered the questionnaire by giving a 5-points scale to answer the research questions. Each of lecturers sharing the knowledge on ERD development using Data Modeler to their respective class students. This knowledge dissemination process involves semester 2 students who take the Database Design course (DFC20123). Figure 11 shows summarize of method used to study the refections from the respondents.

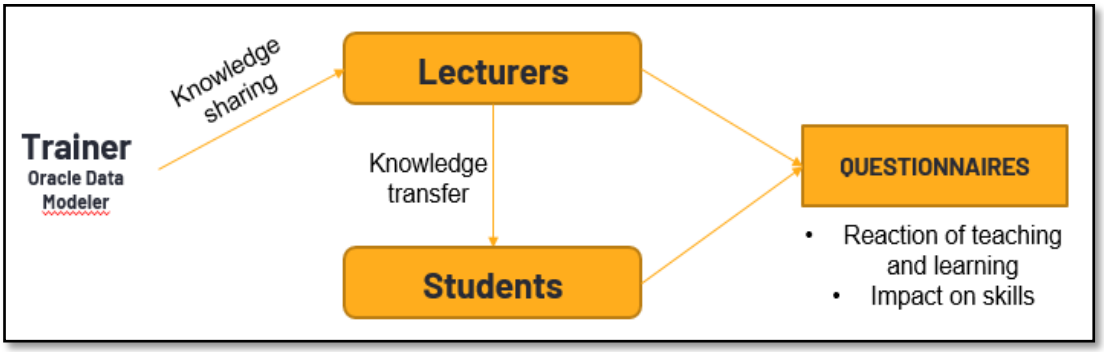

Figure 11: Procedures for reflections

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Instruments

A set of questionnaires was given to 10 lecturers and 108 students from 3 classes to assess the level of understanding in teaching/ learning and skills improvement acquired from this Oracle Data Modeler tool. Figure 12 shows the set of questionnaires given to the participants.

Score	1	2	3	4	5	RESPONSE				
Explanation	Strongly disagree	Disagree	Not Sure	Agree	Strongly Agree					
						1	2	3	4	5
Learning Reaction										
1. The lessons learned from this course are important.										
2. The lessons helps in learning necessary knowledge										
3. The course provides the necessary knowledge										
4. The knowledge gained can be relate to the theory concept										
5. The knowledge gained improve confidence to teach/ learn										
Impact in terms of Skills										
6. The course provides the necessary skills										
7. The tools are easy to use										
8. The tools helps in modelling skills										
9. The skills acquired help in solving problems										
10. The skills acquired help in project development										

Figure 12: Questionnaires

Results

Lecturer's performance

Area 1: Learning Reaction

On average, 100.0% lecturers agree and strongly agree that the lessons learned from the course are important and provide the necessary knowledge while carrying out these tasks and courses as well can increase existing knowledge while contributing to improvement quality of work output.

Area 2: Impact in terms of skills

On average, 100.0% lecturers agree and strongly agree that this course provides the necessary skills and the skills obtained can help in solving problem while working. The skills obtained also contributes to the increase in work output.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Learning Reaction			*Agree & Strongly Agree*		Average score 4&5
	4	5	(Score 4 and 5)		
1. The lessons learned from this course are important.	1	9	10	100.0	100.0
2. The lessons helps in learning necessary knowledge	2	8	10	100.0	
3. The course provides the necessary knowledge	2	8	10	100.0	
4. The knowledge gained can be relate to the theory concept	0	10	10	100.0	
5. The knowledge gained improve confidence to teach/ learn	3	7	10	100.0	
Impact in terms of Skills			*Agree & Strongly Agree*		Average score 4&5
	4	5	(Score 4 and 5)		
6. The course provides the necessary skills	0	10	10	100.0	100.0
7. The tools are easy to use	0	10	10	100.0	
8. The tools helps in modelling skills	2	8	10	100.0	
9. The skills acquired help in solving problems	4	6	10	100.0	
10. The skills acquired help in project development	3	7	10	100.0	

Figure 13: Result for Lecture's Performance

Student's performance

Area 1: Learning Reaction

On average, 89.8% students agree and strongly agree that the lessons learned from the course are important and provide the necessary knowledge while carrying out these tasks. This tools can increase existing knowledge while contributing to the quality improvement in learning process.

Area 2: Impact in terms of Skills

On average, 94.4% students agree and strongly agree that this course provides the necessary skills and the skills obtained can help in problem solving, project development and performance in learning.

Learning Reaction			*Agree & Strongly Agree*		Average score 4&5
	4	5	(Score 4 and 5)		
1. The lessons learned from this course are important.	7	90	97	89.8	88.9
2. The lessons helps in learning necessary knowledge	2	93	95	88.0	
3. The course provides the necessary knowledge	8	89	97	89.8	
4. The knowledge gained can be relate to the theory concept	4	95	99	91.7	
5. The knowledge gained improve confidence to teach/ learn	7	85	92	85.2	
Impact in terms of Skills			*Agree & Strongly Agree*		Average score 4&5
	4	5	(Score 4 and 5)		
6. The course provides the necessary skills	3	95	98	90.7	90.4
7. The tools are easy to use	2	90	92	85.2	
8. The tools helps in modelling skills	8	97	105	97.2	
9. The skills acquired help in solving problems	8	90	98	90.7	
10. The skills acquired help in project development	7	88	95	88.0	

Figure 14: Result for Student's Performance

Conclusion

A data model is a plan for creating and building a database. To be effective, it must be simple enough to communicate to the end user. The Entity-Relation Model (ER) is the most common method used to build data models for relational databases. Oracle Data Modeler is one of the powerful tools produced by Oracle Corporation to develop the logical model and physical model of a database. It provides services and tools that are easy to use and very helpful to students in improving their understanding and skills to develop ERD. ERD and Relational

Model are developed automatically by completing the variables or data required through the form-fills interface method. This method helps students to develop ERD quickly, easily and accurately. Most of the lecturers and students gave a positive reaction to the use of Data Modeler in teaching and learning process through Database Design course. On average, 100% lecturers and 88.9% students agree and strongly agree that Oracle Data Modeler gave a positive reaction to the use in teaching and learning process. For the impact on skills using this tools, on average 100% lecturers and 90.4% students agree and strongly agree that Oracle Data Modeler provides the necessary skills for them. Data Modeler gave positive impact on reaction of teaching and learning, improve lecturer and student's skills and help organization to involve in a new technologies in teaching and learning activities. This study can be improved for future field studies by looking at the use of Oracle SQL Developer in the development of database physical models and comparison with any other data modellers for database design.

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FACTORS THAT AFFECT THE USAGE OF E-WALLET AMONG YOUTH: A STUDY AT A PUBLIC INSTITUTION OF HIGHER LEARNING IN SOUTH SARAWAK.

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Abstract: *The advancement of finance technology in global marketing has given a big impact towards the business ecosystem in this day of age. In the year 2003, around 25 million cell phone users had used their mobile devices to make purchase. In 2011, an online wallet was launched by a major company which is Google. The usage of e-Wallet such as GrabPay, Touch 'n Go, Boost, WeChat Pay MY and BigPay are the most active forms of e-wallet that is used in Malaysia since the year 2017. However, the usage of e-Wallet still has not gained the much interest by Malaysians during business. In the first term of 2020, the world was hit by the Covid-19 pandemic that had changed the scenario of the global business ecosystem. The usage of e-Wallet has been the medium of transaction when purchasing items for the society since the start of the outbreak. This is due to the effort in avoiding close contact due to the nature of the virus being highly contagious. e-Wallet is now used by people from all sorts of age groups including youth. The usage of e-Wallet is very popular among youth. Hence, a study has been conducted at a public institution of higher learning in south Sarawak to find out the factors that affects usage of e-wallet among youth. The variables of this study are speed, security, social influence and convenience. In total, 169 youth in the age range of 20-22 years old had participated in this study that was conducted online. The correlation have been analyzed using Statistical Package for Social Science (SPSS) and Data Analysis for Excel. The finding shows that e-Wallet usage is high among youth due to its convenience.*

Keywords*: Youth, Usage Of E-Wallet, Cashless, Covid-19*

Introduction

Turner & Akinremi (2020) agreed that Covid-19 pandemic has effect not only humans but it also effects business. It effects the economic and finance activities (Goodell, 2020) even involved within primary, secondary and tertiary sector (Nicola et al., 2020). The Covid-19 pandemic has greatly impacted habits and attitudes. World Health Organization (WHO) in March 2020 have suggested that people should think about the option to use cashless transaction in order to avoid tarnished cash notes. When the nationwide lockdown, which has influenced in online shopping , physical cash was seldomly used and our society move towards a cashless society . Cashless society is not a society where cash is illegal but it is where cash is irrelevant. Oxford Language define cashless as characterized by the exchange of funds by cheque, debit or credit card or electronic methods rather than the use of cash. Bank Negara Malaysia (BNM) reported that mobile banking activities has increase from RM 588.2 million in 2017 to RM 833.9 million in 2018 and the number of cash withdrawal from Automatic Teller Machine (ATM) dropped from RM 761.2 million in 2017 to RM 718.3 million in 2020. Kaur (2020) wrote that the government should encourage people to engage in e-Wallet payment as it is helpful to flatten the Covid-19 curve. e-Wallet is one of the emerging trends in digital and payments arena. According to statistics from BNM, the e-Wallet transaction registered RM 4.4 billion in value and 382.3 million in volume from January – February 2020. A digital wallet or

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13th – 14th December 2020

e-Wallet can be differentiated by 2 types which is network based (store digital money in the cloud) and card based (rides on existing card network). e-Wallet in Malaysia started in 2017 and has grown exponentially as more and more brands have pick to adopt the technology. The Mastercard Impact Study 2020 found that Malaysia leads other countries in Southeast Asia when it comes to mobile or digital wallet usage. Malaysia has a mobile wallet usage of 40% ahead of countries like Philippines at 36% , Thailand at 27% and Singapore at 25%. The adoption of e-Wallet amongst Malaysian (aged 18 and above) show the positive growth and usage almost double on 11.11 and 12.12 sales and also year-end holiday. BNM aims for Malaysia to be a cashless nation by 2020 and e-Wallet has begun attract more youngster to carry out transactions as they are the active users of digital wallets. This study is aim to see the factors that will affect the use of e-Wallet among youth as they are the spur to the use of e-Wallet.

Literature Review

Use of e-wallet

Cashless is characterized by the exchange of funds by cheque, debit or credit card or electronic methods rather that the use of cash. While e-Wallet refers to an electronic devices, online service or software program that allows one party to make electronic transactions with another party bartering digital currency units for goods and services. Yi and Hwang (2003) agreed that the use of web-based information system will be largely affected by self-efficiency, enjoyment, learning goals and on the acceptance of the technology. Churchill (1991) suggested that it is always easy and desirable to undertake activities which requires less time to be implemented since people sort out activities in chronological order as per their preference.

Convenience

Cambridge Dictionary define convenience as the fact that something is suitable for your purposes and causes no difficulty for your schedule or plans. Convenience is also anything that is easy to use and makes life comfortable. Sharma and Gutierrez (2010) suggested that convenience is the ease and the comfort of use and give benefits through the use driven from portability and immediate accessibility. Compared to traditional payment services, e-Wallet allows managing money anywhere, everywhere and at any time. Just enter either credit card or debit card information into an application ahead of time and then at a store launch the application and have the cashier scan it or tap phone on the pad. This situation eliminates the problem of having to count cash before, during or after paying. Besides that, e-Wallet services can help small transaction and eliminates the inconvenience to customers who make transactions with the small amount of money (Luarn & Lin, 2005)

Social Influence

Social influence is any process whereby a person's attitudes, opinion, beliefs or behaviour are altered by some form of social communication (A Dictionary of Psychology, 3 ed., 2008). Venkatesh (2000) in his studies trust that adopting new technologies for day to day activities is affected by social influence and Sudeep (2007) also agrees that incorporation of advance technology has a social impact on the users as they feel connected with the modern society.

Security

Security refers as a set of programs and procedures to verify information's sources and make sure the privacy and integrity to avoid network and data problems. Digital transactions are generally safer and can be tracked more reliably, which reduces potential instances of fraud.

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13th – 14th December 2020

The common man is very sensitive about household and official activities which calls for safety and privacy (Parasuraman and Colby, 2005). Most researchers also agreed that security is a positive significant component to influence the uses of e-Wallet (Kabir et al., 2017; Batra and Kalra, 2016).

Speed

Speed define as the overall time something takes to complete. Tella and Olasina (2012) reported that speed is one of the factor that affects the predicting user's continuance intention towards e-payment. Speed also define as time one single transaction takes and by how many transaction can be done in a certain time.

Conceptual Framework

The conceptual framework in figure 1 was explained by choosing a few factors that were significant and had relationship on the use of e-wallet based on previous study done. This study aims to find the influence of variables of the study such as convenience, social influence, security and speed on the uses of e-Wallet.

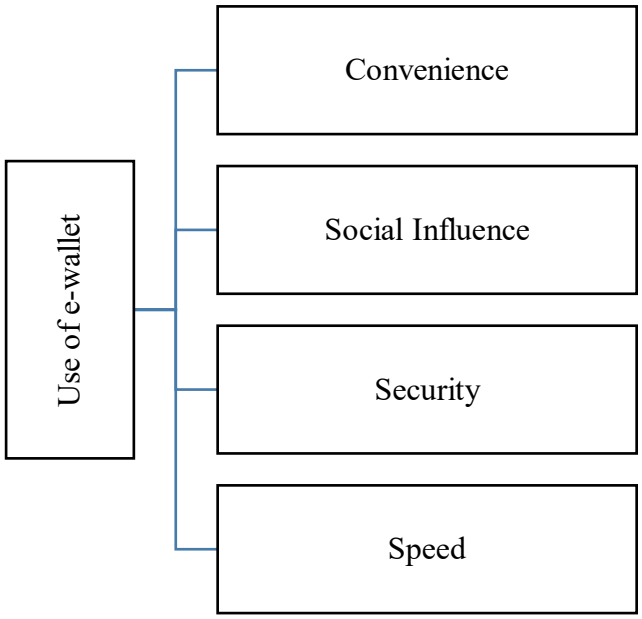

Figure 1: The Conseptual Framework

Research Objective

The objective of this study is to find out the several factors that affects youth to use e-Wallet. The study will focus on convenience, social influence, security and speed. Therefore the specific objective is as follows:

1. To analyze the relationship between the convenience to use of e-wallet.
2. To analyze the relationship between the social influence to use of e-wallet.
3. To analyze the relationship between the security to use of e-wallet.
4. To analyze the relationship between the speed to use of e-wallet.

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13th – 14th December 2020

Hypothesis

Hypothesis 1	$H1_0$	Convenience has no significant relationship to use of e-Wallet
	$H1_a$	Convenience has a significant relationship to use of e-Wallet
Hypothesis 2	$H2_0$	Social influence has no significant relationship to use of e-Wallet
	$H2_a$	Social influence has a significant relationship to use of e-Wallet
Hypothesis 3	$H3_0$	Security has no significant relationship to use of e-Wallet
	$H3_a$	Security has a significant relationship to use of e-Wallet
Hypothesis 4	$H4_0$	Speed has no significant relationship to use of e-Wallet
	$H4_a$	Speed has a significant relationship to use of e-Wallet

Methodology

The questionnaire uses the five-point Likert Scale (1 = strongly disagree to 5 = strongly agree) and it constituted by 25 item statements that represent 5 variables which is the use of e-wallet, convenience, social influence, security and speed. Data was collected by applying online survey (sending Google form link to WhatsApp and telegram). Online surveys or web-based surveys have become important because of lesser cost in administration question. Narayanas (2016) in his study agrees that google form is one of the medium for online survey because of the unlimited surveys, unlimited respondents, survey answers and data are automatically collected in google spreadsheets and 100% free. These data were collected by utilizing throughout the month of September,2020. The population were undergraduate students in a campus of a public higher learning in the south of Sarawak. The target population was semester 5 students and at least installed one e-wallet app in their mobile phone. The respondent consist of Gen Z and Gen Y youngster aged between 20 – 22 years old and are the active users of digital wallets. The sample size of 306 respondents was used based on the sample size table of Krejcie and Morgan (1970). 200 questionnaires were answered. Survey that were answered in complete and duplicate were discarded, leaving a total of 167 usable questionnaires, a 54.6% response.

Cronbach's Alpha test was applied to test the reliability of the questionnaire by doing the pilot test with 20 samples and run into SPSS software version 20. This test is to ensure that each survey question used is reliable and understood by the respondents to answer (Fullan, 1991). The method used is through internal consistency-alpha Cronbach. According to Sekaran (2005) acceptable and good Cronbach's alpha values range is from 0.6 - 0.9. The results of the reliability test that has been made for this study are as in Table 1.

Table 1: Reliability Statistics

Cronbach's Alpha	Number of Question (N of items)
.958	25

Next, descriptive analysis was used to collect and analyze the demographic information. Then, data analysis was done using descriptive statistics. Descriptive statistics was used to describe the basic features on the data such as mean. Mean is used to describe the central tendency of the collected data in this study. The minimum range is used to describe the factor affect the use of e-wallet among youth. Table 2 is the interpretation of mean score and level of assessment of mean score.

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13th – 14th December 2020

Table 2: Mean Interpretation

Range	Interpretasi
1.00 – 2.33	Low
2.34 – 3.67	Moderate
3.68 – 5.00	High

Source: Pallant.J (2007)

Finally, for inferential analysis, Pearson correlation coefficient was used to test the level of relationship between independent variables and dependent variables that indicated the strength and direction of the linear relationship.

Data Analysis and Discussion

Demographic Profile

Table 3 shows that total number of female respondents were 102 which represent 61% of the sample while male represent only 39% or 65 respondents. Moreover, most of the respondent is Commerce Students represent by 67.7%, 18% is Mechanical Engineering Students, 3.6% is Electrical Engineering Students, 7.8% students from Civil Engineering Department, 1.2% JKPK and JTMK students represent 1.8%. Majority of the students have one eWallet app (63%) and the rest have more than one e-Wallet apps. The most popular e-Wallet among the respondents are Boost, GrabPay and Sarawak Pay.

Table 3: Demographic Profile

Measure	Items	Frequency	Percentage(%)
Gender	Male	65	39
	Female	102	61
Department	Commerce	113	67.7
	Mechanical Engineering	30	18
	Electrical Engineering	6	3.6
	Civil Engineering	13	7.8
	Petrochemist Engineering	2	1.2
	IT	3	1.8
Install e-wallet	1 e-wallet	105	62.9
	More than 1 e-wallet	62	37.1
Which e-wallet do you use most	Boost	53	31.7
	GrabPay	67	40.1
	Sarawak Pay	20	12.0
	Others	27	16.2

Descriptive Statistic Analysis

Table 4 shows the mean score for all independent variables towards the use of e-Wallet. Overall the mean is high. It means that all respondents agreed that all independent variable tested are the factor that will affect the use of e-wallet among youth.

Table 4: Mean score

No	Item	Mean	Interpretation
1	Convenience	4.05	High
2	Social Influence	3.71	High
3	Security	3.89	High
4	Speed	4.00	High
	Overall Mean	3.91	High

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13th – 14th December 2020

Correlation Analysis

Correlation coefficients vary between -1 and 1. Negative values indicate negative correlation and positive values indicate positive correlations. Values close to zero reflect the absence of correlation. The correlations between convenience, security and the speed to use of e-wallet is said to be positive moderate correlation while the correlation between social influence with the use of e-wallet is positive weak correlation as the values lies between ±0.30 and ±0.50.

Hypothesis 1

$H1_0$ Convenience has no significant relationship to use of e-wallet

$H1_a$ Convenience has a significant relationship to use of e-wallet

The result from the Pearson correlation analysis in table 5 showed that the level of significance is equal to .000 which is less than .01 (.000 < .01). It means that null hypothesis was rejected. Then, there is a significant relationship between convenience and use of e-wallet at the .01 significant level. The correlation coefficient (r) is .566, which means that there is moderate relationship between coefficient and use of e-wallet and both variables move in the same direction. The strength of associate (R^2) is $(.566)^2$ which is equal to 0.32. it means that if convenience increase, it will affect the youth to use e-wallet to increase to 32%.

Table 5: The Analysis of relationship between social influence and use of e-wallet

		Convenience	Use of e-wallet
Convenience	Pearson Correlation	1	.566
	Sig. (2 -tailed)		.000
	N	167	167
Use of e-wallet	Pearson Correlation	.566	1
	Sig. (2-tailed)	.000	
	N	167	167

** Correlation is significant at the 0.01 level (2-tailed)

Hypothesis 2

$H2_0$ Social influence has no significant relationship to use of e-wallet

$H2_a$ Social influence has a significant relationship to use of e-wallet

The result from the Pearson correlation analysis in table 6 shows that the level of significance is equal to .000 which is less than .01 (.000 < .01). It means that null hypothesis was rejected. Then, there is a significant relationship between social influence and the use of e-wallet at the .01 significant level. The correlation coefficient (r) is .458, which means that there is weak positive relationship between coefficient and use of e-wallet. The strength of associate (R^2) is $(.458)^2$ which is equal to 0.210. it means that if social influence increase, it will affect the youth to use e-wallet to increase to 21%.

Table 6: The Analysis of relationship between social influence and use of e-wallet

		Social Influence	Use of e-wallet
Social Influence	Pearson Correlation	1	.458
	Sig. (2 -tailed)		.000
	N	167	167
Use of e-wallet	Pearson Correlation	.458	1
	Sig. (2-tailed)	.000	
	N	167	167

** Correlation is significant at the 0.01 level (2-tailed)

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13th – 14th December 2020

Hypothesis 3

$H3_0$ Security has no significant relationship to use of e-wallet
$H3_a$ Security has a significant relationship to use of e-wallet

The result from the Pearson correlation analysis in table 7 showed that the level of significance is equal to .000 which is less than .01 (.000 < .01). It means that null hypothesis was rejected. Then, there is a significant relationship between security and use of e-wallet at the .01 significant level. The correlation coefficient (r) is .521, which means that there is moderate relationship between coefficient and use of e-wallet and both variables move in the same direction. The strength of associate (R^2) is $(.521)^2$ which is equal to 0.271. it means that if security increase, it will affect the youth to use e-wallet to increase to 27.1%.

Table 7: The Analysis of relationship between security and use of e-wallet

		Security	Use of e-wallet
Security	Pearson Correlation	1	.521
	Sig. (2 -tailed)		.000
	N	167	167
Use of e-wallet	Pearson Correlation	.521	1
	Sig. (2-tailed)	.000	
	N	167	167

** Correlation is significant at the 0.01 level (2-tailed)

Hypothesis 4

$H4_0$ Speed has no significant relationship to use of ee0lambitan
$H4_a$ Speed has a significant relationship to use of e-Wallet

The result from the Pearson correlation analysis in table 8 showed that the level of significance is equal to .000 which is less than .01 (.000 < .01). It means that null hypothesis was rejected. Then, there is a significant relationship between speed and use of e-wallet at the .01 significant level. The correlation coefficient (r) is .532, which means that there is moderate positive relationship between coefficient and use of e-Wallet. The strength of associate (R^2) is $(.532)^2$ which is equal to 0.283. it means that if speed increase, it will affect the youth to use e-Wallet to increase to 28.3%.

Table 8: The Analysis of relationship between speed and use of e-wallet

		Speed	Use of e-Wallet
Speed	Pearson Correlation	1	.532
	Sig. (2 -tailed)		.000
	N	167	167
Use of e-wallet	Pearson Correlation	.532	1
	Sig. (2-tailed)	.000	
	N	167	167

** Correlation is significant at the 0.01 level (2-tailed)

Table 9 show that all factors (convenience, social influence, security and speed) tested have the moderate relationship with the use of e-wallet all variables move into the same direction.

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Table 9: Summary from hypothesis testing

Hyphotesis	Results
Hypothesis 1	Reject $H1_0$: There is moderate relationship between convenience and use of e-wallet.
Hypothesis 2	Reject $H2_0$: There is moderate relationship between social influence and use of e-wallet.
Hypothesis 3	Reject $H3_0$: There is moderate relationship between security and use of e-wallet.
Hypothesis 4	Reject $H4_0$: There is weak relationship between speed and use of e-wallet.

Conclusion

This analysis has a few limitation. Due to Covid-19 pandemic, this study is more focused on semester 5 students in a public institution of higher learning which may not be able to reflect the actual findings to represent youth in Sarawak. As Sarawak's e-Wallet application (Sarawak Pay was introduced in November 2017 and as of January 2020 it has recorded 190400 users and 11600 registered trades. The usage of this application is not only limited in Sarawak but can also be used in several business premises in Peninsular Malaysia) is set to go international, it is further suggested that the study should be implement throughout Sarawak. Youths (In Malaysia, the age for youth is defined as those between 15 and 40 years old but the main focus of development programs in the country are for those aged between 18 to 25 years old) are not only those who studying but also include who are employed or unemployed. The decision of using e-wallet may vary based on other reasons.

This study was conducted to identify the behavior among youth regarding the use of e-Wallet. Convenience becomes a major concern among youth because youths likes something that is easy to use and can be used wherever they are.

Further study can include a few more independent variable to examine the use of e-Wallet. Trust, cost, compatibility or reliability are recommended variables to apply for further study. The variable used must be able to describe the e-Wallet as a medium of exchange, measure as unit of account, as a store value or as standard of deffered payment.

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STUDENTS READINESS FOR ONLINE LEARNING: CASE STUDY ON COMMERCE DEPARTMENT'S STUDENTS POLITEKNIK KUCHING SARAWAK

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Abstract: *The Covid-19 pandemic has had a profound effect on the country's education system. Regardless of the administrator and the teaching staff, the students are also affected by this situation. The Ministry of Higher Education has decided that the Online Teaching and Learning method (Pengajaran dan Pembelajaran Dalam Talian, PdPDT) will be implemented at the Polytechnic level especially for the June 2020 session. The main purpose of this study is to identify the level of readiness and motivation of students of the Commerce Department Polytechnic Kuching Sarawak on the implementation of PdPDT. The study also examined the relationship between motivation and level of readiness of students to follow online learning. Quantitative data is collected through a questionnaire distributed online to all active students of the Commerce Department who will attend lectures in the June 2020 session (excluding students who are undergoing Industrial Training and semester 1 students intake June 2020). A pilot study conducted found that the Cronbach's alpha value was 0.970 and it showed a high level of reliability for the items tested. The scope of this study leads to the level of readiness and level of motivation of students only. The data obtained were analyzed using Statistical Package for Social Science (SPSS) version 20. Overall, the level of readiness (mean score: 3.40) and level of motivation (mean score: 3.32) of students of the Commerce Department on the implementation of online learning is at a moderate level. Respondents responded positively to PdPDT in assisting the new normal teaching and learning process.*

Keywords: *Online learning, e-learning, readiness, motivation, PdPDT*

Introduction

The world is shocked by the spread of the Covid-19 pandemic that causes various things to change in the daily routine. Starting with the emphasis on hygiene up to the Movement Control Order (MCO) which is enforced by most countries in the world including Malaysia. The Malaysian Government has implemented MCO from March 18 to March 31, 2020 for PKP Phase 1, PKP Phase 2 from 1 to 14 April 2020, extended to PKP Phase 3 from 15 to 28 April and then PKP Phase 4 from 29 April until May 12.

On May 1, Tan Sri Muhyiddin Yassin in his special speech in conjunction with Labor Day introduced the Conditional Movement Control Order (CMCO), which is the relaxation of certain PKP conditions to reopen the country's economy in a controlled manner scheduled from May 4. On 7 June 2020, the Prime Minister, Tan Sri Muhyiddin Yasin has announced that on 10 June, the Conditional Movement Control Order (CMCO) will be replaced with the Restoration Movement Control Order (RMCO) which is the recovery phase from the implementation of PKP and PKPB starting on 10 June until 31 August 2020.

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13th – 14th December 2020

Table 1: Phases of Preventive Measure in Malaysia

PHASE 1	MCO: 18th March – 31st March 2020
PHASE 2	MCO: 1st April – 14th April 2020
PHASE 3	MCO: 15th April – 28th April 2020
PHASE 4	MCO: 29th May – 3rd May 2020
PHASE 5	CMCO: 4th May – 11th May 2020
PHASE 6	CMCO: 12th May – 9th June 2020
PHASE 7	RMCO: 10th June – 31st August 2020

The education sector is also no exception when all schools and higher learning institutions are in the process of closing and implementing the teaching and learning process online. As a result, the conventional face-to-face teaching and learning process had to be stopped during the Movement Control Order (MCO) period. The question now is about the implementation of current and post-Covid-19 towards national education. The community will definitely need to be prepared for the new norms of different educational practices. Students of higher education institutions are instructed not to attend campus; the authorities need to think of other approaches to ensure learning sessions can be implemented during this MCO period. Not only the practice of education, but the direction of education as a whole and needs to be revisited, so as not to stray from the National Philosophy of Education which aims for holistic student development. The Ministry of Higher Education has decided that the methods of online teaching and learning will be implemented at the Polytechnic level especially for the June 2020 session.

There are several issues that arise when trying to implement online learning method. Among it how is the readiness of students to face this new learning norm. This is because there are some students that do not have gadgets or personal smartphones and some do not have enough internet data while others do not have direct internet access. For educators, there is doubt as to which platform is suitable for online learning and most of them use the method of trial and error, to see and find the perfect platform that is suitable for online learning

Internet accessibility is one of the important things in conducting online classes (Ehwan, 2020). Efforts to identify the level of internet accessibility for each student can help teachers to determine the appropriate method to enable online classes to be conducted well. However, some constraints exist, especially for students living in areas with less internet coverage. Therefore, these students need to be reached by contacting them through more suitable platforms such as WhatsApp, Telegram or Messenger applications. If these students can’t be contacted through these applications, then the conventional method is the last option by posting or sending teaching materials to students. This is very important to prevent students from missing out on learning sessions, and at the same time be able to stimulate students' cognitive system continuously.

However, the General Director of Ministry of Education, Dr Habibah Abdul Rahim said face-to-face learning is more effective because teachers can provide assistance directly to students. This is because the results of a survey conducted by the Ministry of Education Malaysia, between 3% to 10% of students only have equipment such as computers, notebooks or tablets.

"On average, they have access to mobile phones which is 34% to 48% but it all depends on the urban or rural areas", he said in the Mind Talk session, Sinar Harian Online, July 6, 2020. In this regard, Dr Habibah explained online learning at home has disadvantages and it is difficult to see the effectiveness on students.

eISBN 978-967-2426-22-6
13th – 14th December 2020

How effective is online learning for students of higher learning institutions especially to polytechnic students? Student readiness is something that needs to be considered because students are the main subject of knowledge to be conveyed. Referring to the Guidelines for the Management of Operations of Polytechnics and Community Colleges during and after the Movement Control Order (MCO). Due to the Covid-19 pandemic, dated 30 June 2020, that the Implementation of Online Teaching and Learning @ Pengajaran dan Pembelajaran Dalam Talian (PdPDT) refers to a Synchronous (Sync - Realtime) or Asynchronous (Non-Sync - Non-Real time).

Research Objective

The objectives of this study are to:
i. Identify the level of readiness of students to follow PdPDT
ii. Identify the level of motivation of students to follow PdPDT.
iii. Identify the relationship between motivation and the level of readiness of students to follow PdPDT

Research Questions

The research questions are as follows:
i. To what extent are students' readiness to follow PdPDT?
ii. To what extent are students motivated to follow PdPDT?
iii. Does the level of readiness of students have a relationship with the level of motivation of students to follow PdPDT?

Significance of the Study

This study is able to help lecturers to formulate appropriate strategies and methods to implement PdPDT more smoothly.

Literature Review

Online learning is a form of teaching and learning delivered through the use of digital technology. The material presented has visual graphics, words, animation, video or audio. This learning process allows it to be implemented regardless of the distance and number of members who browse it. Online learning is also interpreted as an interpretation according to the mold of the organization and the institution itself and is an innovation in the Education system (Omar & Ahmad, 2010). However, Amin (2010) defines online learning as a complement to teaching and learning that is implemented face-to-face or conventionally.

Students' self-esteem is seen to play an important role in the effectiveness of the implementation of online learning (Hazwan et all, 2017). Students need to have a high level of readiness to ensure that learning can run smoothly. Willingness is an adjective that describes readiness, preparedness, disposition, inclination, will, wish or desire. So, student readiness here means the internal state of the individual who is always ready and able to learn online with the aim of acquiring a new learning experience.

In addition, the level of motivation can also affect the effectiveness of online learning. Oxford Learner's Dictionaries (2020) define motivation as the reason why somebody does something or behave in a particular way. Online learning requires students to learn more effectively and this is able to motivate students to learn. Student motivation both regularly and naturally has to do with the student's desire to participate in the learning process. Motivation reflects the reasons or aim that sustain their involvement or non- involvement in academic

eISBN 978-967-2426-22-6
13th – 14th December 2020

activities (Lumsden, 1994). Greater initiative, tenacity, and self-discipline are needed to take courses in the online environment than in the traditional classroom (Mandernach, et al., 2006)

Research Methodology

This study is a survey study conducted using quantitative methods. The research technique is through surveys through the use of questionnaires. Survey studies are very suitable to measure opinions, attitudes and behaviors (Fullan, 1991). Majid (2000) agreed that the use of questionnaires is a measuring tool used to obtain accurate information about facts, beliefs, feelings, desires and so on. The questionnaire was distributed online. Vasantha & Harinarayana (2016) in their study wrote that online survey has become more important as the cost is lesser, reaching unique population easily, free availability of the tools and automatic recording of user response. This research instrument was developed based on the findings of previous studies. In this study, the questionnaire used includes the following aspects: (1) Part A: Demographic information, (2) Part B: Students' willingness to participate in e-learning and (3) Part C: Level of student motivation towards the use of e-learning

The questionnaire used consisted of a 5 scale Likert type format (1 = strongly disagree to 5 = strongly agree). To test the level of reliability of the reliability test instrument (reliability test) first held. This test is to ensure that each survey question used is reliable and understood by the respondents to answer (Fullan, 1991). The method used is through internal consistency-alpha Cronbach. According to Sekaran (2005) acceptable and good Cronbach's alpha values range is from 0.6 - 0.9. The results of the reliability test that has been made for this study are as in Table 1.

Table 1: Reliability Statistics

Cronbach's Alpha	Number of Question (N of items)
.970	21

The study population consists of all active students of the Department of Commerce who will register in the June 2020 session which is a total of 769 people (excluding industrial Training students and semester 1 students June 2020). Of the total, only 79.6% or 612 students answered the questionnaire.

Data analysis was done using descriptive statistics as well as inferential statistics using Statistical Packages for Social Science (SPSS) software. Descriptive statistics i.e. the minimum range is used to describe the level of readiness and level of motivation of students to follow online learning. Table 2 is the interpretation of mean score and level of assessment of mean score.

Table 2: Mean Interpretation

Range	Interprets
1.00 – 2.33	Low
2.34 – 3.67	Moderate
3.68 – 5.00	High

Source: Pallant.J (2007)

The data analysis method used is the Pearson's Correlation method. Pearson correlation is used to measure strength and direction of a liner relationship between two variables. Sekaran (2005) in his book said, theoretically the correlation between the two variables could be a

eISBN 978-967-2426-22-6
13th – 14th December 2020

positive or negative correlation. Correlation also consists of three types of relationships that may exist between variables whether positive linear correlation, negative linear correlation or no correlation (Yoon & Chwee,2009). Table 3 demonstrates how to interpret the strength of the correlation coefficient

Table 3: Strength of the Relationship Between Two Variables

Pearson's Correlation Coefficient	Interpretation
0.00 to 0.30 (0.00 to -0.30)	Negligible Relationship
0.30 to 0.50 (-0.30 to – 0.50)	Weak Positive (negative)Relationship
0.50 to 0.70 (-0.50 to -0.70)	Moderate Positive (negative) Relationship
0.70 to 0.90 (-0.70 to -0.90)	Strong Positive (negative) Relationship
0.90 to 1.00 (-0.90 to -1.00)	Very Strong Positive (negative) Relationship

Source: Parvez Ahammad

Findings and Discussion

The overall data obtained was analyzed to obtain the results of the study. The results of the study were divided into 3 parts, namely the demographics of the respondents, the results of descriptive studies and the results of correlation analysis.

Demographics of Respondents

A total of 117 male students and 495 female students provided feedback for this study. There are 2 programs offered at the Commerce Department Politeknik Kuching Sarawak, namely Diploma in Accountancy (DAT) and Diploma in Business Studies (DPM). For this study, a total of 251 respondents are DAT students and 373 respondents are DPM students.

Table 4: Demographics of Respondents

Item	Category	Frequency	Percent
1	Gender:		
	Male	117	19.1%
	Female	495	80.9%
2	Course Programme:		
	Diploma in Accountancy	251	41%
	Diploma in Business Studies	361	59%

Descriptive Study Results

Level of Readiness of Students to Follow Learning and Teaching Online (PdPDT)

Table 5 shows the minimum score for the level of readiness of students to follow PdPDT in the next semester of study (June 2020). From the table it is found that 10 out of 12 items are at a moderate level and 2 items are at a high level. The overall mean value of the level of readiness of students to follow PdPDT is 3.40 which is at a moderate level. Items QA2 and QA12 were at high levels with mean scores of 3.78 and 3.86. Item QA4 is the lowest mean value of 2.99 but still at a moderate level. Overall the level of readiness of students to follow PdPDT is moderate. However, students are seen to understand what e-learning is and students believe that self-discipline is important to ensure the effectiveness of e-learning. The level of readiness of students shows that all items get a moderate response. Students are seen ready to follow online learning but the level of readiness of students is still moderate. Based on the questionnaire made for the question "are you ready to take classes online?", Only 59.7% of students agreed that they were ready and the remaining 34.1% said they were not ready.

eISBN 978-967-2426-22-6
13th – 14th December 2020

This contradicts the findings in a study by Sumarni Lapammu & Zamri (2018), stated that students' level of readiness for virtual learning is very positive and at a high level. The findings of this study may be different because some students inform that they prefer face-to-face learning, internet line factor, lack of facilities to learn online and face financial problems.

Table 5: Mean Score of the Level of Student's Readiness Towards Online Teaching and Learning (PdPDT)

No.	Item	Mean	Mean Interpretation
QA1	I intend to implement PdPDT at any time	3.41	Moderate
QA2	I understand what is PdPDT	3.78	High
QA3	I always learned how to using PdPDT	3.47	Moderate
QA4	A can learned well when the lecturer teaches using The PdPDT	2.99	Moderate
QA5	I am good at using the application used during the implementation of PdPDT	3.29	Moderate
QA6	I am ready to face challenges in the use of PdPDT	3.29	Moderate
QA7	I often encourage friends to use PdPDT	3.11	Moderate
QA8	Lecturer and I can communicate well through PdPDT	3.15	Moderate
QA9	I often use PdPDT to get reference for learning material	3.65	Moderate
QA10	I have good physical disability (smartphone/personal computer/gadget) for following PdPDT	3.65	Moderate
QA11	I have a good internet network (within and outside) to follow PdPDT	3.13	Moderate
QA12	I believe self-discipline is important to ensure the effectiveness of PdPDT	3.86	High
	Overall Mean	**3.40**	**Moderate**

Level of Student Motivation Towards the Implementation of Online Teaching and Learning (PdPDT)

Table 6 shows the mean scores for the level of students' motivation towards the implementation of Online Teaching and Learning (PdPDT). The overall mean is at a moderate level with a score of 3.32. The highest mean score was on item QB5 with a score of 3.66 and the lowest mean score was 3.10 on items QB2 and QB3. Based on the overall mean, it is found that students think they will be left behind if they do not follow online learning and they also know that knowledge is very easy to obtain with PdPDT.

Table 6: Mean Score of Level of Motivation Towards the Implementing of PdPDT

No	Item	Mean	Mean Interpretation
QB1	PdPDT increased my understanding of the course	3.33	Moderate
QB2	PdPDT increased my readiness to attend lecture	3.10	Moderate
QB3	PdPDT increased my focus while attending lecture	3.10	Moderate
QB4	PdPDT increase my self-confidence	3.21	Moderate
QB5	I understand that if I do not use PdPDTI will lag	3.66	Moderate
QB6	I know if using PdPDT learning material can be obtained easily	3.58	Moderate
QB7	I can use PdPDT for all courses I take	3.30	Moderate
QB8	I am confident while using PdPDT	3.20	Moderate
QB9	PdPDT gives me the freedom to manage my learning	3.42	Moderate
	Overall Mean	**3.32**	**Moderate**

eISBN 978-967-2426-22-6
13th – 14th December 2020

Correlation Test Analysis

Table 7 shows the correlation coefficient between level of student readiness and level of student motivation. Findings show that student readiness and motivation level have high positive correlation (0.802). This positive correlation relationship means that if the level of student motivation for the implementation of PdPDT is high, then the level of student readiness for the implementation of PdPDT is also high and both variables move in the same direction. This is supported by studies done from Noraini (2010) that state that a positive correlation relationship means that if one variable has a high value, then the other variable is also high and vice versa for a negative correlation relationship, if one variable does not have a high value then the other variable will have a low value. This result also explains the strength of associate (R^2) is $(0.802)^2$, which is equal to 0.643. It means that if level of motivation increase, it will affect the level of readiness to increase to 64.3%.

Table 7: Correlation Between the Level of Student's Readiness and The Level of Student's Motivation Towards Pdpdt

		Level of Student's Readiness	Level of Student's Motivation
Level of Student's Readiness	Pearson Correlation	1	.802***
	Sig. (2 -tailed)		.000
	N	613	613
Level of Student's Motivation	Pearson Correlation	.802***	1
	Sig. (2-tailed)	.000	
	N	613	613

** Correlation is significant at the 0.01 level (2-tailed)

Conclusions and Recommendations

Based on the findings of the study, it was found that the level of students' readiness for the implementation of online teaching and learning is moderate and it is influenced by the student's motivation being at a moderate level. Students are seen to show positive attitudes towards PdPDT and this method still needs improvements to achieve its goal. In this case, student's self-awareness will play an important role to ensure that the PdPDT that will be implemented would achieve the set goals. Furthermore, students stated that location is also the factor that caused the readiness level of students to be moderate. There is limitation in this study that should be looked into to find the level of readiness of students. This study only involved the students of the Commerce Department. The results of this study may vary depending on the sample of students if they are taken from other departments at Polytechnic Kuching Sarawak or from other educational institutions. This study is expected to give a clear picture to the lecturers on the readiness of students so that the lecturers can plan their lessons well and effectively. Moreover, this study can help lecturers to choose the appropriate approach to conduct the lesson. The readiness of students will help to increase the effectiveness of PdPDT which will be the main catalyst for the education of this country in the future

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PORTRAITS OF SERVICES AND INSTITUTIONAL DILEMMA OF VILLAGE MATERNITY POST (POLINDES) IN INDONESIAN TRADITIONAL AND TRANSITIONAL VILLAGE

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Abstract: *Village Maternity Post (Polindes) in the last decade has been present as a health facility that focuses its services on the promotion, prevention and treatment for maternal and under five-year-old infant health. In addition, due to limited health facilities in the village, almost all existing Polindes provide general health services apart from the maternal and infant health. Polindes as a health facility unit designed and implemented in accordance with the principles of community-based health development and therefore the existence and development of these facilities are adjusted to the circumstance and dynamics of the community. The circumstance and dynamics of the community are technically classified based on the village typology. The typology of the village in which the Polindes is established has a significant impact on its strategic role in health services, institutional dynamics and development programs. This article will describe how the portrait of health services and Polindes institutions in two villages with different typologies in Langkat Regency of North Sumatra Province, Indonesia. The two villages are Kepala Sungai which represents villages with traditional typologies and Teluk Meku which represents villages with transitional typologies.*

Keywords: *Polindes, services, institutions, traditional villages and transitional typologies*

Introduction

Village Maternity Post *(Polindes)* is a health facility that is prioritized by the government to provide childbirth services and health services for pregnant women and children at the village level. The role of this facility is in fact very strategic for villagers for various reasons. Firstly, the lack of health facilities in rural areas when compared to similar health facilities in urban or urban areas. Secondly, the easy access for villagers to the *Polindes* because these facilities are located in the geographical area of the village. Thirdly, service costs are relatively cheap and affordable for villagers. Fourthly, the expansion of health services provided by *Polindes* that exceed their basic role in childbirth and child health services. Lastly, the potential social relationship between midwives as health workers and the community as service recipients because the regulations recommend that every midwife at the *Polindes* must live in the village where they are assigned.

However, the *Polindes* utilization so far is considered not optimal due to the low number of residents or household visits to these facilities. The data of Riskesdas in 2007, for

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13th – 14th December 2020

instance, only recorded 22.1% of total households in Indonesia who utilized this facility (Tumaji & Putra, 2018). In fact, the *Polindes* is a health facility at the forefront or at the lowest level of government which is the village government. The low number of community visits to the *Polindes* basically cannot be separated from the various problems faced by these health facilities. The problems start from the quality of the *Polindes* facilities themselves, the location of these facilities which are geographically far from settlements, the poor healthcare service system, inadequate management and governance, and the competence of midwives as health personnel at the *Polindes*. Even so, the existing position of the *Polindes* still has a strategic role in efforts to build a community-based healthcare development, especially when revitalizing its role and function can be carried out as well as the commitment of the parties to create creative health programs that involve the active role of the community.

Healthcare, however, is a form of basic service that is urgent and cannot be delayed. The international community through a series of collaborative programs such as the Millennium Development Goals (MDGs) followed by the Sustainable Development Goals (SDGs) from the beginning has made this sector as part of a global effort that recommends all countries to pay serious attention to this sector. This attention is indicated through real programs accompanied by a commitment to make it their respective national programs. It is then not surprising that developing countries like Indonesia have made various fundamental efforts such as improvements in the regulatory sector and a commitment to allocating a minimum budget for the health service sector. In the case of Indonesia, furthermore, Law Number 36/2009 concerning on Health is issued which is followed by synchronization and harmonization of various laws and regulations that include global efforts such as the Regional Government Law, the Health Insurance Law, the Work Safety Law and also the Law on Regional Government.

As the spearhead of health services at the village level, the institutions and programs implemented by the *Polindes* should be carried out in a participatory manner, namely programs that involve the participation of all stakeholders in the village, both elements of the village government as the executive body, the village legislative body, elements of civil society and villagers. The Ministry of Health nationally makes a simple concept of participatory methods like this through the concept of Community Based Healthcare Efforts (CBHE) which means that the program is carried out by the community, from the community and carried out with the community as well as is aimed at empowering and providing facilities for the community to obtain health services.

Participatory methods and community-based health development in the healthcare sector such as CBHE, however, must be adapted to the conditions and social dynamics of the community. In general, the conditions and dynamics of the community are expressed as village types or typologies. Government agencies in particular have developed a typology of villages in Indonesia. The Ministry of Home Affairs, for example, makes categories into three levels, namely self-sufficient (*Swakarya*), self-employment (*Swakarya)* and self-help (*Swasembada*), villages. The Ministry of Village makes categories at a more detailed level, namely villages that are independent, developed, developing, left behind and very left behind.

Apart from the typological categories of villages defined by the government, this study tends to create a simpler category in determining village typology. Theoretically, the development of a good community whose legitimacy has been enhanced to become a government entity such as a village can be seen from the dynamics that accompany the journey of the community or village. In simple terms, the status and development of a community or village can be classified as traditional, transitional and modern. This traditional community or village is embedded when the universal elements of the life of its citizens are carried out in

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13th – 14th December 2020

minimal or limited terms. This culture universalism among anthropologists such as Malinowski and Koentjaraningrat breaks it down into seven dimensions which are economic/livelihood system, technology, knowledge system, belief system, social organization and the arts (Yuliati, 2007).

Based on the above thoughts, this study then focuses on discussing and analyzing the institutional dilemma of the *Polindes* as part of a community-based health program within the framework of regional and village autonomy as well as how the portraits of services presented by *Polindes* in villages with traditional typologies and in villages with transitional typologies in Langkat Regency, North Sumatra Province.

This study is a qualitative study using a phenomenological approach. The phenomenological approach seeks to describe the general meaning of a number of individuals towards their various life experiences related to a concept or phenomenon (Creswell, 2015). This research was conducted in Langkat Regency, North Sumatra Province by taking two villages as samples. The first village represents a village with a typology with a traditional typology, namely Desa Kepala Sungai in Secanggang Sub District. The second village is a village with a transitional typology, namely Teluk Meku Village in Babalan Sub District.

The main data sources in this study consisted of observations and in-depth interviews. Observations are made at several health facilities available in the village as well as observations about how health services are provided by health workers to villagers. In-depth interviews are conducted with almost all elements of government, legislative bodies, elements of civil society and citizens as users of health services. Apart from these primary data sources, this study also relies on the availability of secondary data from government agencies, statistical data, statutory regulations and relevant scientific references. Data validation is carried out by using credibility and confirmation standard approach and the application of the triangulation method to data sources and theories (Lincoln in Bungin, 2012). Data is analyzed qualitatively following the qualitative data analysis cycle as stated by Creswell (2015) which are organizing data, reading and making memos, describing, classifying and interpreting data into themes, presenting and visualizing data.

Literature Review

The study of government institutions and public services cannot be separated from the discussion of public management. Government management as an ontology of government and public administration discipline has evolved over a long period, starting from the classic Max Weber management model, Taylor's scientific management model, Elton Mayo's human relations model and Maslow's human resource model. All these models began to be abandoned along with the dynamics of society and state administration practices and shifted to a new model called modern management. The role of government in this model is shifting from its dominant position in development to a role that prioritizes the creation of a proper climate that is able to encourage community independence and auto-creativity (Qohar, 2012).

The era of globalization and openness, according to Etzioni, requires modern government management to be transparent in the sense that the public policy making process starting from the formulation, implementation to supervision level needs to involve related parties including the community (Purnamasari & Ramdani, 2018). The role of society is strategic because they believe that their ideas will be recognized and considered, that more solutions are offered and that creative solutions will emerge (Schiavo, 2016). In such situation, the administration of government and public services in the health sector should be carried out.

Public services, including in the health sector, are the main task as well as a product of government administration. In the terminology of public administration science, the public is

eISBN 978-967-2426-22-6
13th – 14th December 2020

translated as citizens both in the context of individuals, families and communities. Meanwhile, public service is interpreted as fulfilling the needs of people or communities who have an interest in state organizations in accordance with the basic rules and procedures set out (Kamarni, 2011). There are at least three characteristics to categorize a service as a public service which are the nature of the service which emphasizes on social benefits more than the economy, the service users are seen as citizens and the characteristics of complex service users from various dimensions such as individuals, families or community (Dwiyanto, 2011).

Health services are a form of basic or primary services that urgency cannot be postponed like other primary public services such as education. At the national and domestic levels, it is not surprising that this primary service is the sector that receives the most budget priority in annual expenditure. Likewise at the global level, this sector has also received special attention through global programs such as the Millennium Development Goals (MDGs) which ended in 2015 and continued with a new program called Sustainable Development Goals (SDGs) which will be implemented until 2030 (Hodin et.al, 2016).

In order to meet modern management concepts with the need for health services, community-based development methods are needed. This terminology is not far from the meaning of community development defined by Braunstein and Lavizzo-Mourey as "an" industry "that focuses on the revitalization of disenfranchised communities and the empowerment of community members" (Hilt, 2019). This concept is interpreted as a method of planning, implementing, supervising and monitoring development programs by involving resources owned by the community. This model in the Indonesian context is formalized by health institutions as Community-Based Health Efforts (CBHE).

In the study of village development, village characteristics are generally differentiated into three forms which are traditional villages, transitional villages and modern villages. Traditional villages are villages where “relatively independent regional societies in which social activities and social relations occurred” (Zhang, 2015). Traditional village is that those historical village remains intact village environment, buildings, traditional atmosphere and historical cultural features (Weia, 2015). The modern village is the antithesis of the traditional village concept where the social ties of the community are no longer strong and the regional infrastructure development is very advanced. The next concept of a transitional village is a transition from traditional village conditions or limitations to a modern village (Zhang, 2008).

Result and Discussion

Typology of Villages as a Strategic Development Base

The typology or characteristics of the village, however, are important as the basis for designing village development programs. To determine the real, accurate and up-to-date typology and characteristics of a village, serious effort is needed so that the basic data is not misleading to anyone who plans a program for village development. Indonesia actually still fails to make typologies and characteristics of the tens of thousands of villages in Indonesia. The Central Statistics Agency (CSA) in 2018 officially recorded that there were 83,931 villages in Indonesia (https://www.bps.go.id). North Sumatra Province itself consists of 6,132 villages and Langkat Regency with a total of 240 villages (CSA, 2020).

The Ministry of Home Affairs, which was previously known as the Ministry of Home Affairs from the New Order government, has created a village typology based on its level of development. This was marked by, among others, the implementation of the development work area unit (DWEU) implementation instructions issued by the Director General of Village Development, Ministry of Home Affairs in 1977 (Sardi, 1983). The document shows that there are village categories according to their level of development, namely self-sufficiency

eISBN 978-967-2426-22-6
13th – 14th December 2020

(*swadaya*) villages as the lowest category, self-reliant/employment (*swakarya*) villages in a transitional position and self-helf (*swasembada*) villages as the most developed villages. The determination of the next village category is based on the potential that exists in the village, including economic potential, social and institutional potential (Despica; 2018).

In further developments, especially after the village is regulated in a separate Law through Law Number 6/2014, there are adjustments to this categorization, among others, through the Minister of Home Affairs Regulation Number 12/2007 concerning on Guidelines for the Compilation and Utilization of Village and Village Profile Data. The regulation states that the level of village development is based on quantitative measures that reflect the success of village and sub-district development every year and every five years is measured by the speed of development: community economy, community education, public health, security and order, community political sovereignty, community participation in development, social institutions, the performance of village and sub-district government and guidance and supervision. The results of the analysis of the rate of development of the village are used to measure the level of development of villages and sub-districts every five years which results in 3 three forms of village classification which are self-sufficiency (*swadaya*), self-employment (*swakarya*), and self-help (*swasembada*). In each type, there is a further explanation of the existence of sub-categories called initial category, intermediate category and advanced category of self-sufficiency (*swadaya*), intermediate category of self-sufficiency and advanced level of self-sufficiency. The same category applies to the typology of self-employment (*swakarya*) and those of self-help (*swasembada*)

Table 1: Typology of Villages according to the Ministry of Home Affairs

No	Type of Village	Description
1.	Self-Sufficiency (*Swadaya)*	The level of economic development, education, health and so on is less than 60% of the maximum score for the level of development every five years.
2.	Self-Employment (*Swakarya*)	The level of economic development, education, health and so on is in the range of 60% to 80% of the maximum score of development level every five years.
3.	Self-Help (*Swasembada)*	The level of economic development, education, health and so on reaches more than 80% of the maximum score for the development level every five years.

Source: Minister of Home Affairs Regulation Number 12/2007

Other categories of village development are determined by other government institutions, namely the Ministry of Villages, Development of Disadvantaged Areas and Transmigration. This ministry, among others, through the Regulation of the Minister of Villages, Disadvantaged Areas and Transmigration of the Republic of Indonesia Number 22/2016 concerning of Priority Determination of the Use of Village Funds in 2017 distinguishes village types in more detailed characteristics, namely independent village, advanced village, developing village, disadvantaged village and very disadvantaged village. If the categories published by the Ministry of Home Affairs emphasize more on quantitative measures, then the regulations issued by this ministry tend to be on qualitative measures. These two categorization models basically have advantages besides their respective weaknesses. However, researchers see more advantages in the categorization published by the Ministry of Villages.

Table 2: Village Typology by Ministry of Villages

No	Type of Village	Description
1.	Independent	has the ability to carry out village development to improve the quality of life and life as much as possible for the welfare of rural communities with sustainable economic and ecological resilience.
2.	Advanced	has the potential for social, economic and ecological resources, as well as the ability to manage them to improve the welfare of rural communities, the quality of human life, and alleviate poverty.
3.	Developing	has the potential for social, economic and ecological resources but has not managed them optimally to improve the welfare of the Village community, the quality of human life and alleviate poverty
4.	Disadvantaged	has the potential for social, economic, and ecological resources but has not yet managed it, or has not managed it in an effort to improve the welfare of the village community, the quality of human life and experience poverty in various forms
5.	Very Disadvantaged	Experiencing vulnerability due to natural disasters, economic shocks, and social conflicts so that they are unable to manage potential social, economic and ecological resources, and experience poverty in various forms.

Source: Regulation of the Minister of Villages, Development of Disadvantaged Areas and Transmigration Number 22 of 2016 concerning on Prioritization for the Use of Village Funds in 2017

On a more empirical level, the categories given by the Ministry of Home Affairs are more popular. This categorization is then used by the national statistical agency in each of its annual data development reports, which are summarized in a document known as "X" District in "Y" Figures. When viewed from the results of updating statistics published by this institution, it is almost certain that in the span of a decade, updates related to this typology have not changed. BPS as the official government agency is of course not necessarily blamed because the determination of this typology was carried out by other government agencies, especially local governments. BPS in this case only continues this category without further involvement in questioning this unchanging typology. Static data is also indicated by the absence of sub-typology of the existing village by not including the sub-typology: initial, intermediate or advanced. For social science researchers, this is of course confusing the simple assumption that rural communities are dynamic with dynamic economic growth and development. Of course, it does not mean that of course there is an increase in status over a long period of time but has the potential to decrease so that the village typology is not static.

The difference in determining village typology by government agencies however reflects the absence of integration and synchronization of the national village development program. In addition, the creation of village categories at the empirical level was not significant in giving different treatment regarding development programs between villages of different typologies. This study found that at the regional government level, the officials did not know exactly what the set measures were, so that the typology of this village was different and tended to be statically updated. The village government itself cannot confirm how the village is called a self-sufficient village while its access is far from urban areas or the economic capacity of its residents is not much different from other villages designated as independent villages or self-reliant villages (Interview, 2020).

If it is seen from the technical rules and guidelines determining the characteristics or typology of this village, it is actually quite good designed to differentiate villages and provide different treatment in order to build them. The important question that needs to be answered is whether the rules and technical guidelines have been implemented properly or have been carried out by institutions or personnel who are credible and have integrity in updating this village typology. This study provides a hypothetical answer that the determination of village

eISBN 978-967-2426-22-6
13th – 14th December 2020

typology has not been considered by all elements as an important database in an effort to build a village or the categorization loses its objectivity when the subjectivity of the typology determining personnel is more dominant in applying the village category. In the aftermath, the embedding of typology in the village was only as a document on paper which was not considered by policy makers and other elements of society as something that must be fought for or avoided. Creating a village in the highest topological category as a self-sufficient village as well as a developed village according to the two institutional categories mentioned above should be a common goal.

Portrait of Polindes Services in Traditional and Transitional Villages: The Case of Kepala Sungai and Teluk Meku Villages

Kepala Sungai Village is one of 17 villages in Secanggang Sub District, Langkat Regency, North Sumatra Province. This village consists of 11 hamlets with a total population of 5,828 people. The majority of its citizens work as farmers (69.73%). This village is geographically located in the lowland area of the eastern coast of North Sumatra. According to the village typology category published by the interior ministry, this village is classified as a Self-Sufficiency (*Swadaya)* village, while according to the categorization published by the village ministry, it is designated as underdeveloped village. This study theoretically categorizes this village as a traditional village where the universality of culture and community life is still limited.

Teluk Meku Village as the second sample is one of the 8 villages /*kelurahan* in Babalan Sub District, Langkat Regency. This village consists of 7 hamlets with a total population of 7,386 people. The occupation of the people is very diverse and statistically the majority of its residents work as entrepreneurs (12.73%). This village is geographically located in the lowland area of the eastern coast of North Sumatra. According to the village typology category published by the ministry of home affairs, this village is classified as a self-employed (*Swakarya*) village, while according to the categorization published by the village ministry, it is designated as underdeveloped village. This study theoretically categorizes this village as a transitional village because the culture and life of its people have begun to move from a traditional position to a modern village.

The existence of *Polindes* in Kepala Sungai Village and Teluk Meku Village still needs to be maintained. This is due to the high population compared to other villages in the Langkat Regency area, the area of the two villages which each have 11 and 7 hamlets, the limited health facilities in the two villages and the focus of services provided which ideally are only for mothers giving birth and toddler health.

Table 3: General Profile of Kepala Sungai Village and Teluk Meku Village

No	Description	Kepala Sungai	Teluk Meku
1.	Total Population	5.828 inhabitants	7.386 inhabitants
2.	Number of Hamlets	11	7
3.	Jumlah BPD	9 Orang	9 Orang
4.	Percentage of Underprivileged Population	26,59	24,15
5.	Majority Educational Level	Elementary Schools	Elementary Schools
6.	Majority of Villagers Occupation	Agricultural	Entrepreneur
8.	Number of *Posyandu*	5	11
9.	Number of *Polindes*	1	1
10.	Number of *Pustu*	1	2
11.	Number of Pharmacies	-	1
12.	Number of Maternity Clinic	2	5

Source: Government of Kepala Sungai (2019); Government of Teluk Meku (2019)

In terms of health services provided by the *Polindes* in these two villages, it is very different. The services provided by the *Polindes* in Kepala Sungai village in the last two years have almost certainly been zero. Exactly, the only activities available are *Posyandu* (weekly healthcare service) activities which are held at the *Polindes* building once a week. This *Posyandu* service is certainly not an activity of the *Polindes* because the institutions are different and the service focus is different. Almost all residents who live around the *Polindes* location said that *Polindes* activities were almost non-existent in the last two years, long before the Covid-19 case broke out.

The physical buildings and health facilities in this village are very limited. The building area is less than 50 m^2 with two room units, namely the patient waiting room and the practice room. This building has air conditioning but does not have a bathroom. The electricity agency is installed but there is no electronic equipment for either administrative purposes or medical examination needs. The only medical devices available are baby scales and equipment for bathing babies. This building has 1 (one) electricity. The building is only about a size. *Polindes* in this village is very limited.

Unlike the *Polindes* services at Kepala Sungai Village, the *Polindes* in Teluk Meku Village is in much better condition. Physically, the location is easy for residents to recognize and access. It has a large courtyard with a large parking area too. If the patient is busy, there is a kindergarten (TK) school canteen which is united with the *Polindes* area. Even so, a number of kindergarten children's playgrounds can be used by patients who come to bring their children. Due to its location which is very close to the coastline, the building was flooded several times by high tide from the sea. In the identity plank, this facility has changed its name to *Poskesdes* or Village Health Post.

Daily services at the *Polindes* are routinely carried out and there are always health workers or midwives who regularly attend this facility. However, midwives who have a daily schedule at certain times are forced to close the *Polindes* when a patient has to be visited at home and is unable to walk to the *Polindes* (Interview, 2020). Daily patients are neatly recorded and served well by *Polindes* officers. This building is quite spacious for the *Polindes* class and has four main rooms consisting of a front room as an administration room and patient waiting room, examination room, medicine supply room and medical equipment and a meeting room. This building is also equipped with a bathroom / toilet. This *Polindes* is also managed by two health workers or midwives. One of them is a civil servant who is also employed at the Securai Puskesmas. One more person is an honorarium/volunteer. The two midwives live in Teluk

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13th – 14th December 2020

Meku Bay so that it is easier to contact the residents, especially in an emergency that requires care for pregnant women and other residents who are going for general medical treatment.

In the context of public services, the two facilities actually have not provided ideal public services, especially in the health sector for pregnant women, childbirth and toddlers. The *Polindes* in Kepala Sungai village in the last two years has almost certainly not provided public services in accordance with their duties and functions. Meanwhile, the *Polindes* in Teluk Meku Village has shown an embryo to provide excellent public services. This reason refers to the ideal categorization of public services as stated by Parasuraman et al. (1998). Efforts to provide reliable service (reliability) have been made by improving service facilities and also establishing daily watch schedules at the *Polindes*. The initiative to visit patients to their respective homes (door to door) should be considered as part of the responsiveness and care for patients (empathy) carried out by the *Polindes*. Regarding the physical appearance and communication (tangible) provided by health workers, it is appropriate, such as placing oneself as part of the village community through communication according to local habits.

Polindes Institutional Problems: From Asset Ownership Status to Sustainability

Polindes institution becomes important to be researched in connection with the planning of this facility as a community-based health effort and its function as a public servant in the promotion, preventive, curative and rehabilitative sectors for village residents, especially for mothers who give birth and toddlers. This study found a dilemma related to the *Polindes* institution in the two villages sampled in this study. On the one hand, the *Polindes* institution is considered part of the village government-owned institution and on the other hand is considered an institution belonging to the district government. Both views are an obstacle for the *Polindes* to work and maximize its services for villagers.

This institutional dilemma then becomes the task of all parties, especially the local government in developing *Polindes* in Langkat Regency. To solve this institutional problem, all parties must lay the foundation for the establishment of this *Polindes*. As previously described, *Polindes* is designed as a community-based health development model or in central government terminology as Community-Based Health Effort (CBHE). Therefore, all parties, especially district governments, must revisit the context of regional autonomy and village autonomy in forming, managing and implementing *Polindes* works.

In the context of regional autonomy, district governments have broad authority over the health sector. This sector is a mandatory affair for autonomous regions with performance achievement indicators designed to be measurable every fiscal year. District governments also have great resources in terms of both human resources and funding in this sector. The authority to nominate and appoint civil servants (government official) in the health sector becomes the district area so that this area has the opportunity to distribute human resources to the various health facilities in its geographic area. Various sources of funding, from the component of transfer funds from the central government, provincial governments and local revenue allow local governments to provide operational funding for health facilities to develop programs for community empowerment in the health sector. However, the district government must respect the existence of village autonomy so that it does not assume that the direction of the *Polindes* is determined by the district government.

In the context of village autonomy, the village as an entity is a replica of a country or at least an imitation of an autonomous region such as a province, district or city. Theoretically, the concept of village autonomy should create villages that live independently and have the authority to manage their own households, organize them and organize their own government (Kushandajani, 2016). There are still limitations to this village autonomy because the village

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13th – 14th December 2020

itself is geographically and administratively a part of the state or an administrative area of other autonomous regions such as provinces or provinces. Village autonomy should then be read as a concept of self-government limited by the authority of other government entities.

Village autonomy with all its limitations and the obligations and authorities of autonomous regions in the health sector at the village level have implications for the *Polindes* institution in the village. On the one hand, the context of cooperation between district autonomous regions and village governments in running *Polindes* as a community-based program creates positive synergies (Interview, 2019). The village independently provides land for building health facilities to greatly assist the district government because it does not need to spend a large budget for the provision of land for health facilities which further helps to achieve performance indicators in the health sector. On the other hand, the government and villagers benefit from the presence of a midwife with the status of Civil Servants (PNS) in the village, making it easier for them to access better health services.

However, by the time and process, this ideal cooperation was not always maintained, especially in Kelapa Sungai Village and Teluk Meku Village. There is a big problem related to the institution that accompanies the existence of the *Polindes* and its journey in providing public services for the health sector in the village. This study detected at least four problems related to this institution, namely: institutional status, sense of ownership, loyalty of health workers and program planning and sustainability.

Polindes as a form of community-based health program is basically part of the village community institution. Similar to *Posyandu*, this *Polindes* is an organizational unit in the community that carries out some of the health service functions. This *Polindes* occupies the position of social-community and economic institutions in the village. Even though there is a change in name or nomenclature such as Poskesdes in Teluk Meku Village, this institution is still part of the existing institutions in the village whose existence and sustainability are part of the responsibility of the village. In this regard, the village government of Kepala Sungai and the village government of Teluk Meku has not shown its commitment by giving equal attention to other social institutions such as *Posyandu*, women group and youth Groups through budget allocation for *Polindes*. The real form shown by the village government in its annual program is only limited to providing incentives for midwives and additional costs for medicines (Interview, 2020). To lead to the development of Polindes and increase in services has not been done substantially.

Table 4: Health Program in the 2019 Village Government Work Plan

No	Kepala Sungai Village	Teluk Meku Village
1.	Implementation of village posts, medicines, incentives for village midwives / nurses	Supplying additional food for toddlers
2.	Empowerment of *Posyandu* and family planning, additional food, incentives for *Posyandu* cadres and human development cadres	Anti-drug volunteer activities
3.	Health education and training	Maternal and Child Health Services
4.	Implementation of health alert villages	Health and nutrition counselling services
5.	Land acquisition and development of Posyandu	Health and social protection services
6.	Counselling about drugs.	Community empowerment in health and healthy community movements
7	Women group training and procurement of women group uniforms and *Posyandu* cadres -	-

Source: Village Government Work Plan (VGWP) of Kepala Sungai in 2019; VGWP of Teluk Meku in 2019.

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13th – 14th December 2020

The next institutional problem is the sense of belonging to the *Polindes* facilities. In accordance with the existing regulations and also the empirical facts, the land for the construction of the *Polindes* building must come from a village grant. In the context of participation, it can be interpreted as granting private citizens to the public property or being released through the village government budget. In Kepala Sungai Village, the location of the *Polindes* is not very strategic, especially when compared to the *Polindes* building in Teluk Meku Village. The *Polindes* building in Kepala Sungai village is very simple if not worrying. It is located in one of the farthest hamlets and stands in a narrow location next to the residents' houses. This health facility does not have a proper yard for parking for visitors as well as there is no representative place as a patient waiting room at the *Polindes* yard. The road access to the Polindes is very poor; the broken road is used as thin asphalt so that during the daytime the dust on the road decorates the access road to this health facility. The main door of the building does not face the street so it would be difficult for ordinary people to know that the building was a health facility. Informants from elements of the village government as well as the community said that the previous *Polindes* building was in the middle of the village or on a protocol road in the village, but residents who were willing to provide land for grants were only residents of the hamlet where the *Polindes* location is now standing.

The issue of ownership of this facility is also further complicated when the district government considers that the *Polindes* building is an asset of the local government. This study found that the *Polindes* located in Kepala Sungai Village as well as the *Poskesdes* in Teluk Meku Village were declared assets of the district government. In the two *Polindes* buildings, an identity plank was established stating that the land for the building belonged to the local government. When this was confirmed with the village government, they stated that the land was sourced from a village grant and did not know why such an identity plank was made (Interview, 2020). The village government only knows that the construction of the building is fully funded through the district budget.

The next institutional problem is the loyalty of health workers or midwives at the *Polindes*. Both the *Polindes* in Kepala Sungai Village and the Polindes in Teluk Meku Village each have two health workers. Their loyalty related to their duties and functions as village midwives as well as those responsible for health services at the *Polindes* was questioned. Research informants from community elements said that previously the midwives appointed by the local government and the central governments at the *Polindes* were very active and resided in the village through the PTT program. However, after being appointed as a civil servant, the *Polindes* seemed to be left behind and the appointed midwives spent more time in other health facilities such as the *Puskesmas*. Informants from health workers said that specifically for childbirth, it had been directed by the district government not to take place in *Polindes* but to be done in better facilities such as *Puskesmas* or Hospitals (Interview, 2020).

Other facts in the field show that the human resources distributed to community-based health facilities such as the *Polindes* are mostly used for work and health services which are the domain of mandatory regional government affairs. Midwives who are assigned to the *Polindes* are also employed at the *Puskesmas* in the respective sub district. It does not stop there, important functional positions such as treasurer for Operational Health Assistance (BOK) which is a joint program of the central and local governments through a task assistance scheme are also held by midwives who in fact are assigned to *Polindes*. Consequently, on the grounds of welfare, career development or the convenience of access to local government facilities, the village midwives who are stayed in the *Polindes* devote the majority of their time to health facilities owned by the district so that the *Polindes* is a second or more priority.

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13th – 14th December 2020

The next institutional problem is the planning of programs and activities at the *Polindes*. This study found that program planning for *Polindes* have not been planned comprehensively like the existing routine programs in the village and district governments. Based on the secondary data obtained, the budget for each village which is the object of this research is quite large. Kepala Sungai Village has a total income of almost IDR 1.5 billion in 2019 and Teluk Meku Village exceeds IDR 2 billion. However, it is entirely in favor of the concept of community-based development, especially for the health sector.

Table: 5 Description of Village Income/Budget in 2019 (In Indonesian Rupiah/IDR)

No	Description	Kepala Sungai	Teluk Meku
1.	Village Genuine Income	74.500.000	12.923.830
2.	Funds Transferred by Regency Government	568.503.000	831.024.000
3.	Funds Transferred by Central Government	793.593.000	1.389.264.000
4.	Tax / Retribution Sharing	15.072.000	29.554.000
	Total	1.451.668.000	2.262.765.830

Source: Village Government of Kepala Sungai (2019); Village Government of Teluk Meku 2019.

The largest use of the budget is still allocated for the cost of administering the government, especially for the components of administering administration, honorarium and apparatus allowances. Physical development, such as repairing roads, is the next biggest expense component. Especially for this *Polindes*, there is no program specifically designed for the development or improvement of *Polindes* services.

Conclusion

This study found that the *Polindes* services at Kepala Sungai Village as a village with a traditional typology have not shown the expected performance or are in accordance with the community-based health development framework. *Polindes* services in the last two years have almost certainly not been available, not because of the outbreak of the Covid-19 case but the absence of these services has occurred for a long time. This is different from the *Polindes* or *Poskesdes* in Teluk Meku Village which has shown a good health service embryo, at least not according to the standards expected by the villagers. Regarding the *Polindes* institution, the two *Polindes* still experience organizational or institutional dilemma problems. The problem of *Polindes* ownership, minimal attention to the development of the *Polindes* and the lack of commitment of the village government to program and allocate the annual village budget for the development of this *Polindes*.

Recommendation

In line with national regulations on health sector development, the role of the *Polindes* should still be used as the spearhead in providing health services, especially delivery services for pregnant women and health services for children in rural areas. Moreover, the majority of *Polindes* in Langkat Regency also provide general health services outside of childbirth and under-five health due to the lack of other health facilities in the village area. Therefore, a series of steps are needed to revitalize the role and function of the *Polindes* in community-based health development efforts. The revitalization needed is in the realm of service systems, service accessibility and cohesiveness of health workers with the community.

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13th – 14th December 2020

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STUDENTS BEHAVIOUR TOWARDS ONLINE GAMING: THE FACTOR OF TREND, PEER INFLUENCE & EMOTIONAL FACTOR

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Abstract: *Online gaming refers to a type of game that someone can play through internet and computer network. (Nuangjumnonga & Mitomo, 2012) and (Williams et al.,2008). About 700 million of people are playing online games in this world. This shows that internet gives a huge impact on human's working, socialism and behaviour since from 1990 (Dindar & Akbulut, 2014). Online gaming gives benefits which is communication skills, where people who are playing online games can interact with other players. However, people are spending more time on playing online games especially students and teenagers (Boyle, Connolly & Hainey, 2014). Students start to neglect their daily responsibilities as well. Students' behaviour is the main impact that influences them to addict on online gaming. Not only this, peer influence is also a reason students are addicted to online gaming. They might not enough players, so that they call their friends to join and this is how they are using to addict with online games. Emotional factor of students is also one of the major impacts that play very important part towards online gaming addiction. An emotion is truly making a very big significant contribution to students' thoughts and behaviour. The purpose of this study is focusing on the factors that influence student's behaviour towards online gaming. It will focus on trend, peer influence and emotional factors relate to students' behaviour. This studies used quantitative research with distribute the questionnaire to 300 of Commerce Department student at Politeknik Ungku Omar as a sample and result was test using Statistical Package for Social Science (SPSS) version 21. This studies was found that trend, peer influence& emotional factor as a factors that influences student behaviour towards online gaming.*

Keywords: *(Online Gaming, Student Behaviour, Trend, Peer Influence, Emotional Factors)*

Introduction

Games are a virtual world where you as a player are able to shape that world. They allow us as a player to do things that we are not able to perform in reality. In this case, online gaming is really becoming popular and also it is being one of the addictions that have been widespread among students and youngsters in these present days. In this modern era, humans keep discovering new ways to make life on earth easier and hustle free. On the other hand, humans also find new means of entertainment and one such entertainment is gaming. Gaming, have evolved throughout the years creating more realistic game play for a visual graphics for gamers. People can play online games as long as they have a smartphone and internet connection in it. Nuangjumnonga & Mitomo (2012) and William et al (2008) explained the people are exposed to online gaming with anyone at anywhere around the world which is become a social culture. There are many online games becoming popular such as Mobile Legend, PUBG, Clash of Clans

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13th – 14th December 2020

and etc. Online game's influence is rising day by day as researchers' research shows that students and youngsters are mostly obsess in playing online games and the usage of internet is also steadily high among students. About 700 million of them are playing online games in this world. (Dindar & Akbulut, 2014). Online gaming is a good entertainment that can make people increase their communication skill and kill their bored times where people can interact with other players. Not only that, people are spending more time on it then their start to neglect their responsibilities and addicted on online gaming (Boyle, Connoly & Hainey, 2011). When they are playing online games, their only intention is to win. They forget themselves and have such positive and also negative emotions when playing games. This makes them to compete more and make them to play constant. Generally, online gaming addiction focuses on negative effects and also students' behaviour are the factors that influence them towards online gaming addiction.

Literature Review

Online gaming

Online gaming is defined as any games that played by someone through the internet. High-speed internet connection is required for online gaming. In August 2018, the Ministry of Education issued a notice that recommend strengthening of anti-addiction systems for both PC games and online games. According to Hassan (2011), online gaming has both the pros and cons where the pros are to those who know their limits and cons for those who play for hours without engaging with others. The Deputy Health Minister, Dr Lee Boon Chye, said addiction to online games could have a negative impact on individuals, apart from being habit-forming. He also states that the latest updates from the World Health Organisations in its International Classification of Diseases (11th series) founds that online game addiction is listed as a mental health illness. David et al (2011) analyzed that the relationship between gaming frequency and academic performance among students to study the frequent gamers. Muhterem et al. (2014) examined the relationship between gaming time, motive to play and online negative consequences because of playing. Massively Multiplayer Online Role Playing Games (MMORPGs) found out that time spend on gaming was related to negative consequences. Ministry of Education says online gaming causes education system down due to poor academic performance. Academic performance is getting down because students' poor time management. According to Madigan (2005), who chronicles the intersection of phycology and online games said that if a person pick the game up over in the morning coffee everyday or play during lunch break or play as part of getting ready for bed routine. Playing too much game can impact people's sleeping habits as well. Thus, some players used to scarifies their sleeping time just to earn more points for their games. Due to the addiction of online game, students are poor in managing their time. Students wasted most of their time on games and never have a proper time management.

Trend

Trend makes online gaming grows even flourish since the technology has improved and graphics have become richer as well as speed and performance are also improving. Trend can be described as a direction in which style or product develops and increases in popularity (Nicole, 2015). According to Nathan (2015), online gaming applications is still overwhelmingly popular among players. In 2014, Clash of Clan was the year's highest grossing application on IOS and free to play games dominates the popular new offerings on the App Store each week. The popularity online gaming increases as the number of customers taking advantage of wireless technology and enjoying on the move. The 3D online games draw more

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13th – 14th December 2020

hard-core gamers and it does a good job at bridging the expectations people have from the console and handheld gaming environment (Anna, 2015). Trend can also be seen in growth of market revenue. Video games researcher, Su and et (2016) said there are about 1.5 billion people playing online games on their smartphones and tablets in Asia Pacific region. Based on study conducted by Hwang (2019), it has been generate about $25 billion in the end of 2015 either through buying games or via purchases for credits and power-ups

Peer Influence

Peer influence can be defined as peer actions that influence a person to do something (Escardibul JO,2013). It adopts particular types of behaviour, dress, or attitude in order to be accepted as a part of group peer (Lundborg,2006). Based on Scholastic's research on 2008, when a person playing games in a group, his friend say that the games are easy and not worth of time. The other friends agree too. That person just experienced what is commonly referred to as a peer pressure or peer influence. Online games provide a place for social interaction both online and face-to-face, and the content of online games can be modified by interaction of player with the game and with other players. There are also methodological issues that arise when estimating behavioral peer effects. As noted by Manski, the identification of (endogenous) peer effects is difficult because of the "reflection problem"— the fact that individuals tend to select their peers, may face similar environment or select each other based on common traits or interests (correlated effects), or may be influenced by peers' background characteristics (contextual effects).

Emotional Factor

When play online gaming, you will have so much of fun that will make you forget everything that goes around you. Students enjoy while playing online games with their friends. They forgot all their problems and stress-relieved when playing online games. Directly, it shows that emotional is one of the factor that influences the students' behaviour towards online gaming. This statement is supported by Dennis (2018) where he states that some like to play online games to relieve stress and states that they frequently play games as a distraction from daily life issue, to relax, to relieve stress and improve their mood. Mariyln (2013), founds that playing online games can increase your motivation. While playing games, gamer will face many challenges that need to be solved. If they have won the challenge, it will become a motivation for them to continue with the next stage. Kim EJ.(2008) and little has been known about the relationship between online game use in adolescents and emotional competence, including positive emotion and emotional expression. However, articles in the media indicate a trend that many crimes occurs either due to frustration surrounding the game, or to copycat violent acts from the game. In the instance of grand theft auto, there have been copycats who have set out to repeat the crimes they committed in game; one group of teenagers in Garden City, New York decided to live out the popular action-adventure, crime game named grand theft auto. They committed burglary, beat some men, attempted to steal a car, and even punched a police officer in the face. Their only motivation was that they were bored (Gentile D and et, 2004).

Methodology

This study was design to examine the factor of student behaviour toward online gaming. The researcher study of trend, peer influence and emotional factor as a factor that influent student behaviour toward online gaming. This study was using questionnaire to 300 students Commerce Department of Polytechnic Ungku Omar as a sample size. The researcher decided

eISBN 978-967-2426-22-6
13th – 14th December 2020

to use convenience sampling method in obtaining the sample study. The data from the respondent was key in and test using Statistical Package for Social Science (SPSS) version 21. The survey consisted of 29 items in three sections composed of Section A, Section B and Section C. Section A is about respondents' profile consisted of four items regarding their gender, race, semester and programme. Section B refers to the general information of respondents' towards online gaming. Section C measures the variables of Independent Variable (IV) and Dependent Variable (DV). The choice of response for each of the item used in the instrument is using the four point Likert Scale; (1=Strongly Disagree), (2=Disagree), (3=Agree) and (4=Strongly Agree). The reliability analysis was test the consistency of the items being measured and used Cronbach`s alpha coefficient to obtain the internal reliability index instrument. Cronbach's alpha values were in the range of 0 indicating no internal reliability and 1 indicating internal reliability was perfect (Bryman and Bell 2003). The acceptance value used in this study was using the guideline proposed by Hair et al. (2006) with the value of 0.6 and above. The first research objective will be achieved through the use of descriptive statistics such as frequencies, percentages and means scores. For the second objective, the researchers used correlation analysis to determine the strength and direction of linear relationship between independent and dependent variables under study. In doing so, Pearson correlation coefficient(r) has been used in the study. The values lie between -1 to +1. In determining the strength of the relationship, this study used the guideline proposed by Hatcher (2003) as stated below:

No Correlation	0.00
Weak correlation	0.01 to 0.49
Medium correlation	0.50 to 0.79
Strong correlation	0.80 to 0.99
Perfect correlation	1

Data Analysis & Finding

Respondents' Profile

Table 4.1 showed the profile of the respondents under study. The results showed that about 61.33 percent of the participants were female and the rest of 38.67 percent was male. Racial composition of the sample was 125(41.67%) of the participants were Malay, 31(10.33%) were Chinese and 137(45.67%) were Indian and 7(2.33%) were others or "Multiracial". The field of study or "program" stated that 28.33% from Diploma in Accountancy (DAT), 26.0% from Diploma in Finance and Banking (DKB), 18.0% from Diploma in Retail Management (DRM), 14.33% from Diploma in Business Studies (DPM) and 13.33% from Diploma in Islamic Banking (DIB). Besides, out of 300 respondents, 28.33% of them from semester 4, 24.33% from semester 3 and 5 constantly, followed by 12.33% from semester 2 and the least from semester 1 which were 10.67% of them. It was clearly showed in Figure 4.1 that majority of the respondents were from semester three, four and five.

Table 4.1 Respondents' Profile

Item	Options	Frequency	Percentage (%)
Gender	Male	116	38.7
	Female	184	61.3
Race	Malay	125	41.7
	Indian	137	45.7
	Chinese	31	10.3
	Others	7	2.3
Program	DAT	85	28.3

eISBN 978-967-2426-22-6
13th – 14th December 2020

	DKB	78	26.0
	DIB	40	13.3
	DRM	54	18.0
	DPM	43	14.3
Semester	1	32	10.7
	2	37	12.3
	3	73	24.3
	4	85	28.3
	5	73	24.3

Respondents' Characteristics

General information of the respondents under study was also asked by the researchers. According to the analysis on the first category on general information, the respondents were asked which online games that they play the most. The result clearly showed that PUBG is played the most at 40.0%. The second category on general information was asked about the device that is used to play online games. 80.0% of respondents states that smartphone is the device used, 10.0% of respondents play using laptop and only 5.0% play using tablet.

The next category on general information was asked on time spent playing online games. Half of the total respondents (50.0%) play online game more than one hour, 30.0% plays for one hour and the rest 20.0% spent 30 minutes on online gaming.

The following category on general information was asked about when do respondents prefer to play online games. According to the analysis, 55.0% plays during their free time, 30.0% plays before sleep and 15.0% plays during class.

The final category on general information was asked about what the respondents gain by playing online games. The result was 60.0% of them could release their stress level, 20.0% of them get new friends and the rest 20.0% of them had creative thinking.

Reliability Analysis

The result on reliability analysis was shown on Table 4.2 indicated that the Cronbach alpha for all the variables under study were reliable above 0.6. The value ranged from 0.759 to 0.875. In conclusion, the result concluded that the measurement scales of the variables were stable to measure the variables under study. Behavior constituted of five items with the Cronbach alpha 0.834; trend has five items with alpha value of 0.853; peer influence has five items with alpha value of 0.759 and emotional factor constituted of five items with the Cronbach alpha 0.875.

Table 4.2 Reliability Coefficient

Variable	Number of Items	Cronbach Alpha
Behavior	5	0.834
Trend	5	0.853
Peer Influence	5	0.759
Emotional Factor	5	0.875

Descriptive Analysis

To Identify Students' Behavior Of Polytechnic Ungku Omar Towards Online Gaming

The descriptive analysis was identified. The overall mean of students' behavior was 2.8947; means that majority of the respondents agree that students' behavior played a role on online gaming. Based on the analysis, Item BH1 had the highest mean score with the value of 3.08 who plays online games to spend their free time. Besides the respondent agree that they feel bored if they do not play online games (BH2 mean =2.86) . In addition, respondent agree that

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13th – 14th December 2020

they feel angry if someone interrupt them while playing games (BH3 mean=2.93) and (BH4 mean =2.93) agree to look forward play online game. Besides, (BH5 mean=2.66) agree that they delay the assignment just to play online games.

To Identify Trend As A Factor That Influences Students' Behavior Towards Online Gaming

The overall mean of trend was 2.9580; means that majority of the respondents agree that trend played a role on students' behavior towards online gaming. Based on the analysis, Item TD2 had the highest mean score with the value of 3.04 who plays online games due to the easy access of internet. The results shows mean score with the value of 3.02 for item TD5, means that respondent agree that they prefer online games that can connect with their friend. Item TD3 had mean score of 2.99 where respondent agree many choices of online gaming attracts them to play. The second least mean score were recorded by item TD4 with the value of 2.89 means respondents agree that they use social media to link their online game accounts. The least mean score was 2.86 recorded by item TD1 means that respondent agree that changes in mobile device technology influences them to play.

To Identify Peer Influence As A Factor That Influences Students' Behavior Towards Online Gaming

The overall mean of peer influence was 2.9853; means that majority of the respondents agree that peer influence played a role on students' behavior towards online gaming. According to the analysis, Item PI5 had the highest mean score with the value of 3.18 who enjoy playing online games with their friends. PI1 shows the mean value of 3.14 who agreed that it more fund competing competing with their friends in online gaming. Item PI2 had mean score of 3.00 which states that the respondent has been influenced to install the games that have been played by their friends. Meanwhile, the mean score for PI4 with the value of 2.81 shows that they prefer to be quiet if their friends say that the games is easy to be played. The least mean score was 2.80 recorded by item PI3. It shows that they agree they will stay with their friends just to play online games

To Identify Emotional Factor As A Factor That Influences Students' Behavior Towards Online Gaming

The overall mean of emotional factor was 3.0887; means that majority of the respondents agree that emotional factor played a role on students' behavior towards online gaming. Based on the analysis, Item EF3 (Can release stress while playing online games) had the highest mean score with the value of 3.16 who plays online games to release stress. Mean score 3.15 for item EF2 shows that the respondent agree that playing online games can make them much more relax. Meanwhile 3.12 for the mean score for item EF5 states that playing online games can improve their mood and make their day peaceful. Item EF1 had mean score of 3.04 which states that playing online games is so fun and could forgot everything that goes around them and The least mean score were recorded by item EF4 with the value of 2.97. It showed that respondents agree that playing online games improves their motivation level.

Correlation Analysis

The correlation analysis between independent variables and dependent variable under study was shown on Table 4.3. It was revealed that there was two medium positive significant correlation between behavior and trend ($r = 0.631$, $n= 300$, $p= 0.000 < 0.01$); and between behavior and peer influence ($r=0.515$, $n= 300$, $p=0.000<0.01$). Therefore, it can be concluded

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13th – 14th December 2020

that high number of respondents agrees that trend is a factor that influences students' behavior. The output also shows that behavior is weak positively significant correlation to the emotional factor; r = 0.464, n= 300, p= 0.000 < 0.01. Thus, it can be concluded that increases in emotional factor affects students' behavior.

Table 4.3: Correlation Analysis

		Behavior	Trend	Peer Influence	Emotional factor
Behavior	Pearson Correlation	1			
	1 Sig. (2-tailed)				
	N	300			
Trend	Pearson Correlation	.631**	1		
	1 Sig. (2-tailed)	.000			
	N	300	300		
Peer Influence	Pearson Correlation	.515**	.478**	1	
	1 Sig. (2-tailed)	.000	.000		
	N	300	300	300	
Emotional Factor	Pearson Correlation	.464**	.409**	.391**	1
	1 Sig. (2-tailed)	.000	.000	.000	
	N	300	300	300	300

**. Correlation is significant at the 0.01 level (2-tailed).

Discussion and Conclusion

Based on the analysis under this study, most of the respondents prefer to spend their free time by playing online games. This can be assumed that majority of them have less bonding between their family. So, family is playing a major role in student's behavior. They should spend some quality time with their children during their free time.

Besides, based on this study, students have also said that easy access of internet helps them to play online games. It has been known that students are immersed to the gaming culture and trending. Students must concern on their future where they should have self-discipline in their daily life. Students should make schedules to not waste their time. For instance, use the internet for a good purpose in studies such as e-learning instead of playing online games in classes. This might help them to increase their knowledge and not to addict with online games which are being on trend nowadays.

Institution also have to be a part under this study to overcome this problem. The result says peer influence is also a factor that makes student to play online games. Most of the students agreed that they feel happy to play online games with their friends. So institution should initiatively have some curricular activities for students at polytechnic and this might reduce them from involving in online games.

Last but not the least researchers have found that emotional factor is one of the major factor that influenced students to play online games. Based on the result, the students release their stress while playing games. This shows that students are suffering in stress and they don't have attention from their family. So, they feel relief when they play games. If these problems have to be solved, parents have to consult their children and show them some love. This might reduce them from stress and also they won't go for playing online games.

From the result, the researcher can conclude that trend, peer influence and emotional factor are the factor influence student behavior toward online gaming. It show that high number of respondents agrees that trend is a factor that influences students' behavior.

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13th – 14th December 2020

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OPTIMIZATION OF MARKETING PERFORMANCE SMALL MEDIUM ENTERPRISE (SMEs) IN NORTH SUMATERA

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Abstract: *SMEs in North Sumatra Province is one of the strong movers of the people's economy. This is because most of the small and medium entrepreneurs depart from the family industry or home. Consumers generally want innovative products according to their wishes. For SMEs a success in developing new products means that they are one step ahead of their competitors. This requires the cleverness of SMEs in recognizing consumer tastes, so that the product development carried out in the end is indeed in accordance with consumer desires. This product development must be carefully planned and carried out. The purpose of this research is to see and find factors that can increase product sales for all central SMEs located in North Sumatra Province. The research method uses a descriptive quantitative approach. Then the number of samples in this study was determined using the estimation interval formula totaling 120 respondents. The data collection method uses a questionnaire to identify and describe the factors that increase product sales for all SME centers located in North Sumatra Province, North Sumatra Province, secondly distributing questionnaires and interviews to SMEs owners. The results show that the calculation of the coefficient of determination shows that the influence of the Product Innovation (X1), Market Orientation (X2), Marketing Performance (X3) variables simultaneously contributes 43.5% to the Competitive Advantage (Y) variable and the rest. 56.5% influenced by factors outside this study. This is in accordance with the results of the correlation value (R) which states that between variables has a strong relationship. To optimize sales of various SMEs in North Sumatera is through various innovations. One way that is done by SMEs in terms of innovation is in the form of optimization of product sales in the marketplace, digital marketing, and improving the quality of products and services to consumers. SMEs owners must also thoroughly make breakthroughs in product, administration and technology aspects by paying attention to current market conditions, so as to be able to achieve more optimal market performance.*

Keywords: *North Sumatera SMEs, Marketing Optimization, Marketing Performance, Product Marketing*

Introduction

Companies must always be innovative, including new product innovation. This is in line with his opinion. Raharso (2006) states that leading organizations must know about building innovation-based organizations. Innovation can be carried out comprehensively in the aspects of product, process, administration and technology, by always being based on market conditions (market oriented), so as to achieve organizational performance and realize competitive advantage. This is in line with various studies conducted that product innovation

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13th – 14th December 2020

will create the competitive advantage expected by the company. Customers generally want innovative products according to their wishes. For small and medium enterprises, success in developing new product innovations means being one step ahead of its competitors.

This requires the cleverness of small and medium enterprises in recognizing the tastes of their customers so that the development of product innovations that they do ultimately is in accordance with the wishes of their customers. The development of product innovation must really be planned and carried out carefully. Small and medium enterprises are one of the driving forces for economic development. The development of the number of small and medium enterprises in North Sumatra is quite good, namely around 2.8 million business units, this can provide a fairly good contribution to economic growth in North Sumatra. During the period 2015 - 2017 (Statistics of North Sumatra Province, 2018) the growth rate of the trade category of North Sumatra Province fluctuated. In 2015, the growth rate in the trade category reached 7.52 percent, then increased in 2016 to 8.48 percent and in 2017 decreased to 4.80 percent.

When viewed based on the contribution to the formation of the gross regional domestic product of North Sumatra Province at current prices, the contribution of the trade category in 2017 was 10,92 percent, an increase from 2016 which was 10.84 percent. Based on the results of the 2016 Economic Census (Statistics of North Sumatra Province, 2018), the number of medium, small and micro enterprises is 91.475 with a total workforce of 191.891 people, while the number of businesses with medium-large and medium-scale businesses is 1.314 businesses with a total workforce. as many as 18.590 people. Data on the trade sector from the Integrated Service Office and the Office of Industry and Trade of North Sumatra Province, which contains the development of registered companies, the number of traders and the number of types of places to sell. The number of companies registered during 2018 total 222 companies managing trade business permits and 434 companies managing new company registration certificates as well as 7 companies issuing license renewal company registration certificates.

All companies registered in 2018 are individual / small companies. Since June 20, 2018, companies that administer trade business licenses have switched online through OSS (Online Single submission), which has caused a significant difference compared to the previous year. This causes the data contained in the One Stop Investment Service and One Stop Licensing Service of North Sumatra Province is only available until June 2018. Seeing the amount of income of small and medium enterprises which has experienced fluctuating levels in terms of the rate of trade, it can be said that this sector needs development. in terms of product marketing by utilizing a large product potential to be developed as a source of regional income. Utilization of local resources and product potential is expected to contribute to economic development.

However, the impact of the Covid-19 Pandemic has hit small and medium enterprises in North Sumatra hard. According to the Acting Head of the Cooperatives and Small and Medium Enterprises Office in North Sumatra Province, Ridho Haykal Amal said that 679,000 out of a total of 960,000 businesses were affected by Covid-19 in North Sumatra (CNN Indonesia). The impact of this pandemic made companies think hard in order to survive the adverse conditions of the pandemic. The decline in sales is in the first place, namely 56%, while 44% includes capital difficulties, product distribution constraints and raw material difficulties (Sugiri, 2020). From the above phenomena, the authors want to examine the optimization of the marketing performance of small and medium enterprises in North Sumatra Province in order to find out how the products of small and medium enterprises can get revenue value for the company.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Literature Review

Market Orientation

Adi Sismanto (2006) which defines "market orientation is a business philosophy and behavior in managing a business". Market orientation is a style or culture in business activities where the organization is committed to continuing to create and work in creating superior value for all its consumers. Market orientation was first articulated by Kohli and Jaworski in 1990 in market orientation theory, which refers to the generation across organizations and the dissemination of, and responsiveness to, information about customers and their competitors (Deshpandé & Farley, 1998; Jaworski & Kohli, 1993; Narver & Slater, 1990). Kohli and Jaworski's perspective was adopted for this study (Gligor et. Al, 2018). Kohli and Jaworski (1990) operationalize market orientation as organizational generation, dissemination, and responsiveness to market intelligence as the starting point for market orientation. Market intelligence goes beyond understanding customer needs and preferences. This includes analysis of how they can be affected by exogenous factors such as government regulations, technology, competitors and other environmental forces.

An important part of intelligence generation is scanning the environment and anticipating customer needs. Once market intelligence is generated, its spread throughout the organization is facilitated by a common platform for joint action by the various departments. Finally, responsiveness can be described as actions taken in response to intelligence generated and disseminated. Since then, the relationship between market orientation and economic performance has been studied in the commercial context of the company (Gligor et. Al, 2018). Narver and Slater (1990) in Dewi (2006) define market orientation as the organizational culture that is most effective in creating important behaviors for creating superior value for buyers and performance in business. Uncles (2000) in Dewi (2006) defines market orientation as a process and activity related to the creation and satisfaction of customers by continuously assessing customer needs and desires. The application of market orientation will bring increased performance for the company. Narver and Slater (1990) in Dewi (2006) state that market orientation consists of 3 behavioral components, namely customer orientation, competitor orientation and interfunctional coordination.

Product Innovation

Every company must create innovations to expand new markets as well as maintain their current market share. Product innovation is applied to meet market demand, which means entrepreneurs must design their products according to the desires of consumers so that the products produced keep attracting consumers to buy and improve business performance (Miftakhul, Anugrahini, & Hadi, 2019). Maintaining a product so that it is always in demand by consumers requires creative and inspirational efforts such as making innovations in the products offered, in the hope that consumers will not switch to other similar products. Highly innovative companies are able to quickly identify and measure new market opportunities. A company must create an innovation in each of its products, so that consumers do not feel bored with existing products. In creating a product, innovation is needed, in order to differentiate the product from its competitors and what makes the product far superior to other similar products. Ernawati (2019) A company is required to be more innovative in producing a product in order to attract consumers to buy the product. Innovation is one of the important things that a company must always implement if it doesn't want to lose its customers. With product innovation, it can provide more choices for consumers and provide choices according to their "taste". Nasution (2005) explains that product innovation is defined as a product or service that is introduced to the market to meet market needs. The result of this process is the introduction

eISBN 978-967-2426-22-6
13th – 14th December 2020

of new goods and services that can be used to increase company profits. Meanwhile, according to (Hurley and Hult, 1998 in (Wahyono, 2002) that "Innovation is a determining aspect of company performance, in an environment of increasingly fierce competition. The innovation ability of a company will guarantee the company's competitive ability" Sukarno (2016) explains the indicators of innovation. products, namely: new ideas and new products. Products can be used as a source of competitive advantage. Companies that are able to design their products according to customer desires will be able to survive in the midst of competition because their products are still in demand by consumers. Shoham (2005) in Lestari (2019) mentions many experts which has identified a relationship between product quality considerations and overall organizational performance. Innovation is reflected in new product, manufacturing processes and engineering management. Based on the literature it is revealed that there are three organizational activities that characterize high-level product innovation: the ability to see product-market opportunities, build marketing capabilities to respond to identified market opportunities, and the ability to rapidly pursue opportunities.

Competitive Advantage

Competitive advantage is also an important variable which is the main determining factor in improving the quality of small and medium enterprises. Mulyana (2014) findings in Maharani, Maupa, & Andi Aswan (2020) explain that competition is not only about price and quality but also accompanied by the development of creativity and technology. Trihudiyatmanto (2019) Entrepreneurial competence is a person's ability to realize the aspirations of an independent life characterized by a strong personality, is responsible for tasks and results, has the courage to take risks, has leadership, is forward-looking, always works to explore one's own abilities by making innovations by maintaining originality, and has an entrepreneurial mentality by not giving up easily. Competition is not solely on price and quality but is also accompanied by the development of creativity and technology. By increasing the competitive advantage of small and medium enterprises, it will result in better business performance. Exposure to phenomena and empirical studies show that competitive advantage has a strong effect on performance. Porter (1990) Competitive advantage is the heart of marketing performance to face competition. Competitive advantage is defined as the benefit strategy of companies collaborating to create a more effective competitive advantage in their market. The size of the product to competitive advantage is determined by how much consumers compare the company's products with its competitors. (Li, B. Ragu-Nathan, T.S. Ragu-Nathan and Rao, 2006) in (Rahmaniah Malik, et al, 2019) found several indicators in the form of price, quality, delivery dependability, and time to market. The company's ability to make its employees an important part of achieving competitive advantage. The company's ability to develop a product properly will make the company superior from strategy implementation and will be difficult for its competitors to imitate. Good resources are real resources needed by a company to carry out its competitive strategy. These resources should be directed to support the creation of low-cost company performance that is different from other companies.

Marketing Performance

Marketing performance is a measure of achievement obtained from the overall marketing process of a company or organization. In addition, marketing performance can also be viewed as a concept used to measure the extent to which a company's products have achieved market achievements. Ferdinand (2000) Marketing performance is a factor that is often used to measure the impact of the strategy implemented by the company. The company's strategy is always directed to produce good marketing performance (such as sales volume and sales

eISBN 978-967-2426-22-6
13th – 14th December 2020

growth rate) as well as good financial performance. Furthermore, Ferdinand also stated that good marketing performance was expressed in three main values, namely sales value, sales growth, and market share. Marketing performance is a factor that is often used to measure the impact of the strategy implemented by the company in terms of its marketing aspect (Ferdinand, 2000, p.23). Some of the indicators used to measure marketing performance are: Sales volume, customer growth, and profitability.

Research Methods

Location

The subjects of this research are people in Medan City, Deli Serdang Regency, Serdang Bedagai Regency and Langkat Regency. The selection of these four regions is based on

1) The development of small and medium enterprises is fast compared to other regions.
2) The existence of small and medium business centers in Medan City, Deli Serdang Regency, Serdang Bedagai Regency, and Langkat Regency.

Population and Sample

Population

There are basic things in the understanding of population, according to Sugiyono (2010: 389) in quantitative research, population is defined as a generilation area consisting of objects or subjects that have certain qualities and characteristics that are applied by researchers to study and then draw conclusions. The population in this study were small and medium enterprises in North Sumatra Province which were taken from 4 regions which were considered to represent small and medium enterprises in North Sumatra Province.

Sample

The sample according to Sugiyono (2010: 73) states that it is part of the number and characteristics of a population. Erwan & Dyah (2011) suggest that the sample part of the population that is selected follows certain procedures so that it can represent the population. The criteria for respondents to be taken as samples in this study are as follows:

1) Small and medium scale business entrepreneurs in North Sumatra Province which are located in 4 research object areas
2) Willing to be a respondent.

Then the number of samples in this study was determined using the estimation interval formula as follows according to Supramono and Haryanto (2003)

$$n = \frac{(Za^2)\,(p)\,(q)}{d^2}$$

$$n = \frac{1{,}96^{\,2}\,(0{,}5)\,(o{,}5)}{(0{,}1)^2}$$

$$n = 96{,}04$$

Information :
n = Number of samples
Za = normal standard value which depends on a
p = Estimator of population size

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13th – 14th December 2020

q = 1 - p
d = tolerable deviation

Based on the above calculations, the minimum sample size is 96. Because the research site is conducted in 4 places, at least 30 samples will be taken each place. So the total sample to be taken is 120 samples

Data Collection Technique

Field Study

Researchers conducted a direct review of small and medium business entrepreneurs in North Sumatra Province to obtain the necessary data. This research was conducted on the activities of all research objects which include:

a) Questionnaire, which is a data collection technique which is done by giving a number of written questions in the form of closed questions to respondents.
b) Interview, namely conducting direct question and answer with small and medium business entrepreneurs in the 4 regencies / cities of North Sumatra Province to obtain the data needed by the researcher.
c) Observation, namely direct observation of the object under study and to check the validity of the answers given in the questionnaire.

Library Research

In order to be used as a basis for conducting research and comparisons with existing practices, this research was conducted by conducting a review of literature books and textbooks, with this method an overview will be obtained related to topics, namely market orientation, product innovation, competitive advantage and marketing performance. This is done in order to build a theoretical basis to support the analysis conducted by researchers.

Data analysis method

Multiple Linear Regression Analysis

In an effort to answer the problems in this study, multiple regression analysis was used. Regression analysis is basically a study of the dependence of the dependent variable (bound) with one or more independent variables (independent variables), with the aim of estimating and or predicting the population average or the values of the known independent variables. For regression where the independent variable consists of two or more regressions, it is also called multiple regression. Because the independent variable in this study has more than two variables, the regression is called multiple regression. The regression equation in this study is to determine how much influence the independent or independent variables, namely service, work discipline and location, have on the dependent or dependent variable, namely consumer decisions.

The multiple regression formula used in this study is:

$$Y = a + b1 . X1 + b2 . X2 + b3 . X3 + e$$

Information :
Y = Marketing Performance
b1 = regression coefficient of market orientation variable
b2 = regression coefficient of product innovation variable
b3 = regression coefficient of the competitive advantage variable
X1 = Market orientation
X2 = Product innovation

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13th – 14th December 2020

X3 = Competitive advantage
a = constant
e = standard error

In regression there are 3 types of accuracy criteria, namely:

1. Individual Significance Test or Partial Test (t test)

The t test shows how much influence the independent variable individually has on the dependent variable. The test criteria are as follows:

a) H0: ß1 = 0, meaning that partially there is no positive and significant influence from the independent variables (X1, X2, X3) on the dependent variable (Y)
b) Ha: ß1 ≠ 0, meaning that partially there is a positive and significant influence from the independent variables (X1, X2, X3) on the dependent variable (Y)

The criteria for decision making are as follows:

a) Ho is accepted if the value of Tcount < Ttable at α = 5%
b) Ha is accepted if the value of Tcount > Ttable at α = 5%

2. Simultaneous Significance Test or Concurrent Test (Test F)

The F test is used to show if all the independent variables (X1, X2, X3, X4) that are included in the model have a joint influence on the dependent variable (Y). The hypothesis is formulated as follows:

a) Ho: ß1, ß2, ß3, ß4 = 0, meaning that there is no positive and significant effect of all independent variables (X) together (simultaneously) on variable (Y).
b) Ha: ß1, ß2, ß3, ß4 ≠ 0, meaning that there is a positive and significant effect of all independent variables (X) together (simultaneously) on variable (Y).

The criteria for decision making criteria:

a) Ho is accepted if the value of Fcount < Ftable at α = 5%
b) Ha is accepted if the value of Fcount > Ftable at α = 5%

3. Coefficient of Determination

The coefficient of determination (R2) aims to determine how much the ability of the independent variable (independent variable) to explain the dependent variable (dependent variable). In the SPSS output, the coefficient of determination is located in the Sumarry Model table and written R Square, if the value of R Square is greater (close to one) it can be said that there is a large influence between the independent variables on the dependent variable. This means that the model used is getting stronger to explain the effect of the independent variables under study on the dependent variable.

Discussion

Respondent Identity

Table 1 Identity Based on Gender

No	Gender	Percentage	Total Percentage
1	Man	93	78%
2	Women	27	23%
Total		120	100%

Source: Data Processing Results (2020)

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13th – 14th December 2020

Based on the table above, it can be seen that the majority of respondents in this study were men, amounting to 93 people with a percentage of 78%. This shows that more men run small and medium enterprises in this study.

Table 2 Identity of Respondents by Age

No	Age	Total	Percentage
1	17-25 Tahun	14	11,67%
2	26-35 Tahun	45	37,50%
3	36-45 Tahun	50	41,67%
5	>46 Tahun	11	9,17%
Total		120	100%

Source: Data Processing Results (2020)

Based on the table above, it can be seen that most of the respondents in this study were at the age of 26 - 45 years

Research Analysis Results

Table 3 Multiple Linear Regression Test Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std.Error	Beta		
1	(Constant)	7.820	3.520		2.222	.028
	Product Innovation	.229	.091	.205	2.527	.013
	Market Orientation	.132	.065	.165	2.045	.043
	Marketing Performance	.473	.095	.400	4.976	.000
a. Dependent Variable: Competitive Advantage						

Source: Data Processing Results (2020)

Based on the results of the regression test above, the multiple linear regression analysis model used in this study can be formulated as:

$$Y = 7{,}820 + 0{,}229X_1 + 0{,}132X_2 + 0{,}473X_3$$

1. The positive constant value is 7,820, which indicates that it has a positive effect, namely the independent variable Product Innovation, Market Orientation, and Marketing Performance. If the independent variable increases or has an effect in one unit, the Competitive Advantage variable will increase or be fulfilled.
2. The value of the X1 coefficient is 0.229 which indicates that the Product Innovation variable has a positive effect on the Competitive Advantage variable or in other words, if the Product Innovation value is increased by one unit, it will increase the Competitive Advantage by 0.229.
3. The X2 coefficient value is 0.132 which indicates that the Market Orientation variable has a positive effect on the Competitive Advantage variable or in other words, if the Market Orientation value is increased by one unit, it will increase the Competitive Advantage by 0.132.

The value of the X3 coefficient is 0.473, which indicates that the Marketing Performance variable has a positive effect on the Competitive Advantage variable or in other

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13th – 14th December 2020

words, if the Marketing Performance value is increased by one unit, it will increase the Competitive Advantage by 0.473.

Table 4 Partial Test Results (T Test)

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.820	3.520		2.222	.028
	Product Innovation	.229	.091	.205	2.527	.013
	Market Orientation	.132	.065	.165	2.045	.043
	Marketing Performance	.473	.095	.400	4.976	.000
a. Dependent Variable: Competitive Advantage						

Source: Data Processing Results (2020)

Based on the table above, it can be seen that the effect of each variable partially is as follows:

1. It is known that the t value of the Product Innovation variable (X1) is 2.222 > 1.658 with a significance value of 0.013 < 0.05, then H1 is accepted.
2. It is known that the t value of the market orientation variable is 2.527 > 1.658 with a significance value of 0.043 < 0.05, then H2 is accepted.
3. It is known that the t value of the marketing performance variable is 4.976 > 1.658 with a significance value of 0.000 < 0.05, then H3 is accepted.
4. In accordance with the existing theory, it can be seen that the three variables used, namely Product Innovation (X1), Market Orientation (X2), and Marketing Performance (X3) have a significant effect on Competitive Advantage (Y).

Table 5 Simultaneous Test Results (Test F)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	355.134	3	118.378	13.726	.000[b]
	Residual	1000.457	T16	8.625		
	Total	1355.592	T19			
a. Dependent Variable: Competitive Advantage						
b. Predictors: (Constant), Marketing Performance, Market Orientation, Product Innovation						

Source: Data Processing Results (2020)

Based on the table above, it can be seen the effect of each variable simultaneously. It is known that the value of Fcount is 13.726 > 2.68 with a significant value of 0.000 < 0.05. Associated with the existing theory, this shows that the independent variables consisting of Product Innovation (X1), Market Orientation (X2), and Marketing Performance (X3) variables simultaneously have a positive and significant effect on the dependent variable, namely Competitive Advantage (Y).

Table 6 Determination Test Results (R^2)

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.512[a]	.262	.243	2.93677
a. Predictors: (Constant), Marketing Performance, Market Orientation, Product Innovation				
b. Dependent Variable: Competitive Advantage				

Source: Data Processing Results (2020)

Based on the test results in the table above, it can be seen that the R value is 0.512 (51.2%), where the correlation coefficient value shows that the relationship between Product Innovation (X1), Market Orientation (X2), and Marketing Performance (X3) towards Excellence Competing is strong enough. The value of R Square or the coefficient of determination above shows that the variable competitive advantage 26.2% can be explained by product innovation variables, market orientation, and marketing performance, while the remaining 73.8% is influenced by other variables not included in this study.

Conclusion

1. Based on the results of data analysis:
   a. The calculation of multiple linear regression coefficients shows that the effect of Product Innovation (X1) is 0.238 (23.8%) on the Competitive Advantage (Y) variable.
   b. The calculation of multiple linear regression coefficients shows that the influence of Market Orientation (X2) is 0.265 (26.5%) on the Competitive Advantage (Y) variable.
   c. The calculation of multiple linear regression coefficients shows that the influence of Marketing Performance (X3) is 0.094 (9.4%) on the Competitive Advantage (Y) variable.
   d. The calculation of the coefficient of determination shows that the influence of the Product Innovation (X1), Market Orientation (X2), Marketing Performance (X3) variables together contributes 43.5% to the Competitive Advantage (Y) variable and the remaining 56.5% is influenced by factors outside of this study. This is in accordance with the results of the correlation value (R) which states that between variables has a strong relationship.

2. To optimize the sales of various small and medium enterprises in the province of North Sumatra is to carry out various innovations in one way is to do e-commerce, digital marketing, and improve the quality of products and services, small and medium business owners must innovate thoroughly in product aspects , processes, administration and technology, always on the basis of market conditions, so as to achieve market performance.

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THE EFFECT OF KAOLIN AND BALL CLAY ON CERAMIC PROPERTIES VIA SLIP CASTING TECHNIQUE

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Abstract: *Ceramic materials are inorganic, non-metallic materials that consist of metallic and non-metallic elements bonded together primarily by ionic and or covalent bonds which can be crystalline or amorphous in another word, it is defined as solid compounds that are formed by the application of heat, and sometimes heat and pressure, comprising at least two elements provided one of them is a non-metal or non-metallic elemental solid. The properties of ceramic materials vary greatly due to differences in bonding. In general, ceramic materials are typically hard and brittle with low toughness and ductility. The primary components of ceramic are silica, feldspar, kaolin, ball clay and all characterized by small particle size. In a ceramic composition, clay provides plasticity and green strength during forming stage and contributes to mullite formation after firing. Silica acts as filler material whose coarse grains provide resistance to cracking during drying and form skeletal network during firing to reduce pyro plastic deformation. Fluxing action of feldspar above 1000°C leads to densification in the presence of reactive liquid phase that partly dissolves silica and clay which leads to formation of interlocked acicular mullite crystal embedded in feldspatic glass. Alternative filler materials like alumina and other mineralizing agents have incorporated in traditional ceramic composition to study their effect on microstructure development, mechanical and other related properties. The character of the raw material is important in maintaining quality during the manufacturing process. The chemical composition, mineral phase, particle size distribution, and colloidal surface area affect the fired and fired properties of the ceramic. With unfired body, the properties evaluated include viscosity, plasticity, shrinkage, and strength. With fired, strength, porosity, colour, and thermal expansion are measured. Many of these properties are monitored and controlled during manufacturing using statistical methods. Both the raw materials and the process parameters milling time and soaking time sintering temperature, for example can be adjusted to achieve desire quality. The purpose of this study is to fabricate from the slip casting process, to analyze the effect of variation kaolin and ball clay composition on the final properties of ceramic and last to analyze the effect of sintering temperature 1100°C. The physical and mechanical properties of the resultant ceramic bodies are also investigated.*

Keyword: *Ceramic properties, kaolin, Ball-clay*

Introduction

Ceramic has traditionally been defined as an inorganic, non-metallic solid that is prepared from powdered materials, is fabricated into products through the application of heat, and displays characteristic properties such as hardness, strength, low electrical conductivity, and brittleness. Ceramic composites are at the same time one of the easiest and most difficult bodies to formulate. There are between three and five content which; kaolin, ball clay, silica and feldspar. In general, ceramic materials are typically hard and brittle with low toughness and ductility.

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Seeing as ceramics consists of crystalline and non-crystalline elements, thus one should understand the processing characteristics of both the elements clearly, non-crystalline ceramics, being glasses, tend to be formed from melts. The glass is shaped when either fully molten, by casting, or when in a state of toffee-like viscosity, by methods such as blowing to a mould. If later heat-treatments cause this class to become partly crystalline, the resulting material is known as a glass-ceramic. In the meantime, crystalline ceramic materials are not amenable to a great range of processing. Methods for dealing with them tend to fall into one of two categories. Its either makes the ceramic in the desired shape by in situ reaction, or by "forming" powders into the desired shape, and then sintering to form a solid body. Ceramic forming techniques include shaping by hand (sometimes including a rotation process called "throwing"), slip casting, tape casting (used for making very thin ceramic capacitors, etc.), injection moulding, dry pressing, and other variations. A few methods use a hybrid between the two approaches.

Problem Statement

Although many studies have been done in composite ceramics, the unstable composition of the mixture between kaolin, ballclay, feldspar and silica may improve its fragility properties. porosity in composite ceramics will also increase the fragility properties if the applied temperature is not effectively.

Objective

The objective of this work is to evaluate the direct use of refined kaolin and ball clay as a potential raw material ceramic composite composition with the rest of feldspar and silica and the effect of 1100°C sintering temperature which is expected to increase the properties (porosity and bulk density) of the ceramic.

Scope of Research

The scopes for fabrication and characterization of the tiles to study the parameter effects on the ceramic composite body and review the fabrication process using slip casting method. Identify the shrinkage of slip casting process before and after sintering with fix temperature and the better amount of composition mixture with temperature 1100°C. Analyse the microstructure changes and green body response toward parameter changes. Morphological study of the raw material and the sintered bodies. Mechanical and functional evaluation of the resultant samples.

Literature Review

Crystalline ceramic materials are not amenable to a great range of processing. Methods for dealing with them tend to fall into one of two categories. Its either makes the ceramic in the desired shape by in situ reaction, or by "forming" powders into the desired shape, and then sintering to form a solid body. Ceramic forming techniques include shaping by hand (sometimes including a rotation process called "throwing"), slip casting, tape casting (used for making very thin ceramic capacitors, etc.), injection moulding, dry pressing, and other variations. A few methods use a hybrid between the two approaches. As mentioned before, depending on their method of formation, ceramics can be dense or lightweight. Typically, they will demonstrate excellent strength and hardness properties; however, they are often brittle in nature. Ceramics can also be formed to serve as electrically conductive materials or insulators. Some ceramics, like superconductors, also display magnetic properties. They are also more resistant to high temperatures and harsh environments than metals and polymers. Due to ceramic materials wide range of properties, they are used for a multitude of applications.

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13th – 14th December 2020

Meanwhile, porcelain is a ceramic material made by heating refined materials, often including clay in the form of kaolin, to high temperatures in a kiln at temperatures between 1,200°C (2,192 °F) and 1,400°C (2,552 °F). The toughness, strength, and translucence of porcelain arise mainly from the formation at these high temperatures of glass and the mineral mullite within the fired body [3]. In another simplified version of definition would be as ceramic material with very compact structure made up of crystalline phases embedded in a glassy matrix, obtained by fast single firing. In fact, the excellent technical properties, together with the even more improved aesthetic appearance, gave porcelain stoneware a prominent role on the tile market.

Slip casting

Slip casting is very expensive technology, because of degradation of gypsum mold, long production time and the necessity if bin location. For example, in case of handles, which are produced by slip casting technology, different research groups developed possibilities to produce handles or cups with handles by avoiding slip casting. This was achieved by using technologies like pressure casting and injection molding. Slip casting, in which slurry is poured into a porous mold. The liquid is filtered out through the mold, leaving a layer of solid porcelain body. Water continues to drain out of the cast layer, until the layer becomes rigid and can be removed from the mold. If the excess fluid is not drained from the mold and the entire material is allowed to solidify, the process is known as solid casting.

Methodology

Introduction

This chapter will discuss about preparation procedure. Besides that, this chapter also will discuss about the characterizations and of the sample and the mechanical testing which were used to evaluate the properties of the sample were prepared according to different parameters. The processing route start first with weight and mix together the raw material which following the ratio of water. Then, the mixture raw materials and water was formed into a shaped by using plaster of Paris (pop) mold before sent to sintering process. After sintering process, mechanical testing which using charpy test and modulus of rupture test of the sample were carried out. Figure 3.1 below; show the schematic flow charts of the whole experiment process.

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13th – 14th December 2020

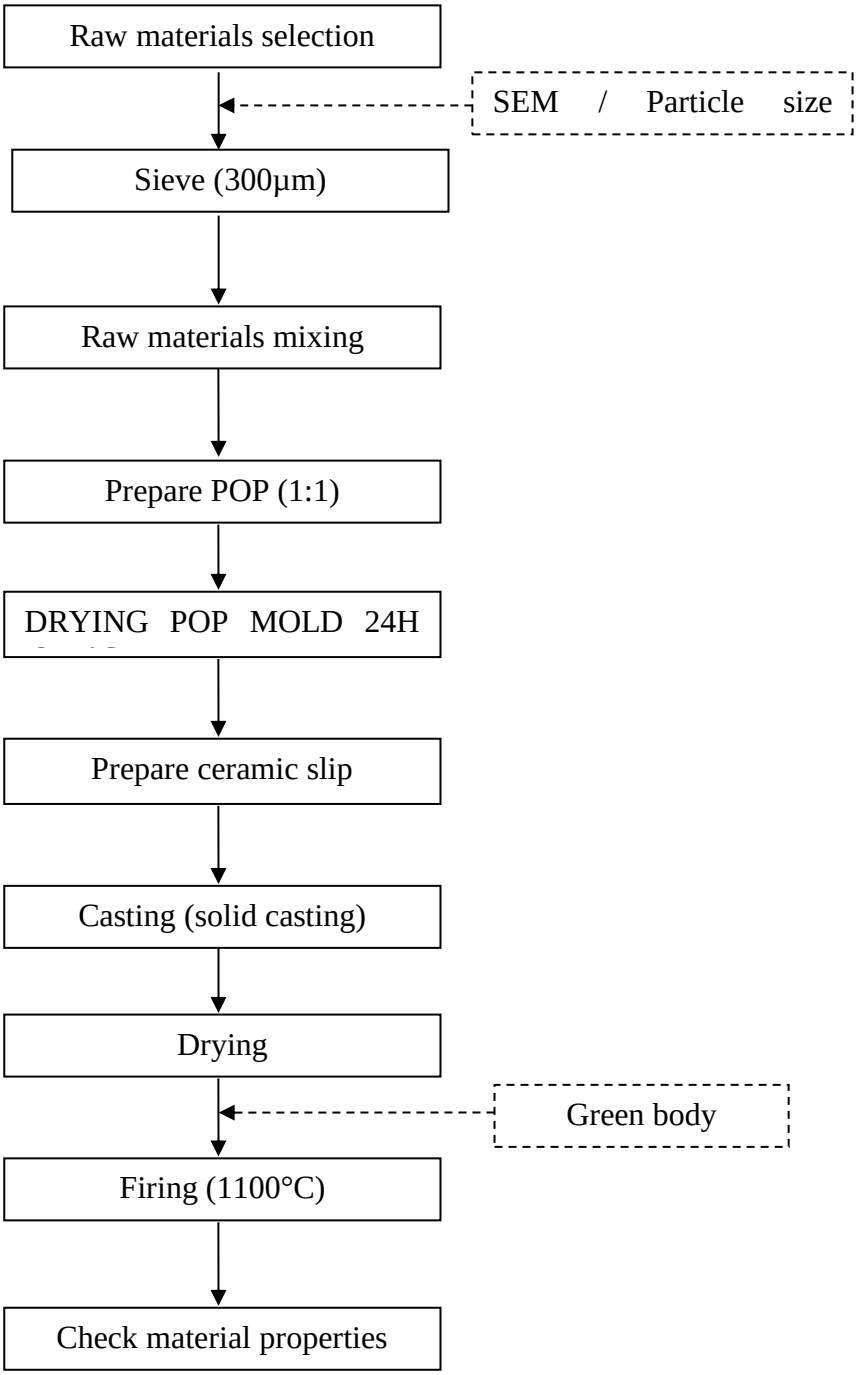

Figure 3.1: Flow of the project

Raw material characterization

The sieved raw materials were sent to particle size analyser, Malvern Mastersizer (MALVERN MASTERSIZER 2000/ SCIROCCO 2000/ Hydro 2000MM Particle size analyzer) for particle size analysis. Besides, the raw materials were also sent to Electron Dispersive Spectrometry (EDS) analysis for chemical composition determination. Besides that, SEM micrographs were also taken to study the morphology (Three dimensional) of the raw material. These tests are conducted to analyse the size and characteristics of the particles. It is of significant to determine

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the particle size and the characteristics because it affects the stability, chemical reactivity, opacity, material Strength and also affects the sintering temperature and rate.

Mixing

Ball clay, kaolin, silica, feldspar is mixed with different of parameter from the weight percent. There are 8 different weight percent were used to produce different mechanical properties of the final products. Before mixing the composition, material is sieved to eliminate impurities. Sieve the sample because to make sure all the sample prepared is in 150 µm particle size process was using wet mixing which is plain water was added to the mixture of raw material. The ratio of water over weight of mixture is 1.7:1. The raw materials were mixed using wise Stir machine 400 rpm within 30 minutes.

Sample forming

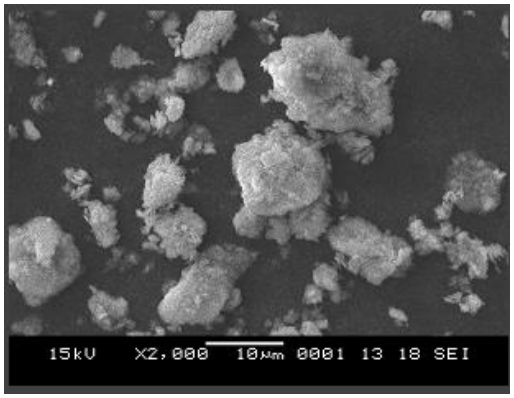
The mixture of ball clay, kaolin, silica, feldspar with added water based to bind the whole mixture will produce ceramic. The mixture has been placed into POP mold and will be form formed into desired shaped. The samples that were already placed into the shape then undergo drying and sintering process. During the forming process, wet mixture is slipped in the mold which is 15mm x 10mm. water in wet mixture is absorbed by plaster of Paris (pop) mold. At the early wet mixture slip in the mold, that is very fast shrinkage but at the last ratio of shrinkage decrease over the time. During the process, each sample to form completely is within 1 hour.

Result and Discussion

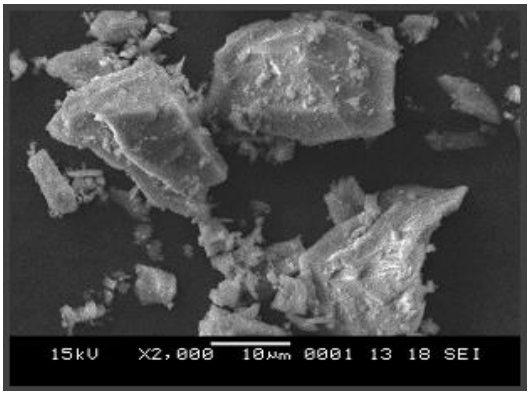
Particle size has been analysed to determine the grain size of each compound which consists of silica, feldspar, kaolin and ball clay. Particle size distributions were used to determine size range and the purity compound of the raw materials. The characterizations of final samples were done including dimensional shrinkage (width, thickness, length and weight loss), and the sintered shrinkage percentage has been measured. Density and porosity was measured using Archimedes principle. A mechanical property of sample was measured using flexural and modulus of rupture test.

Particle morphology

The particle size distribution of the material important to identify that the physical and mechanical properties. The particle size distribution of material affects the strength and load bearing properties. From the result obtained as shown in (appendix A), identification that the smallest particle size of raw material is from silica and biggest particle size are from kaolin.



(a)



(b)

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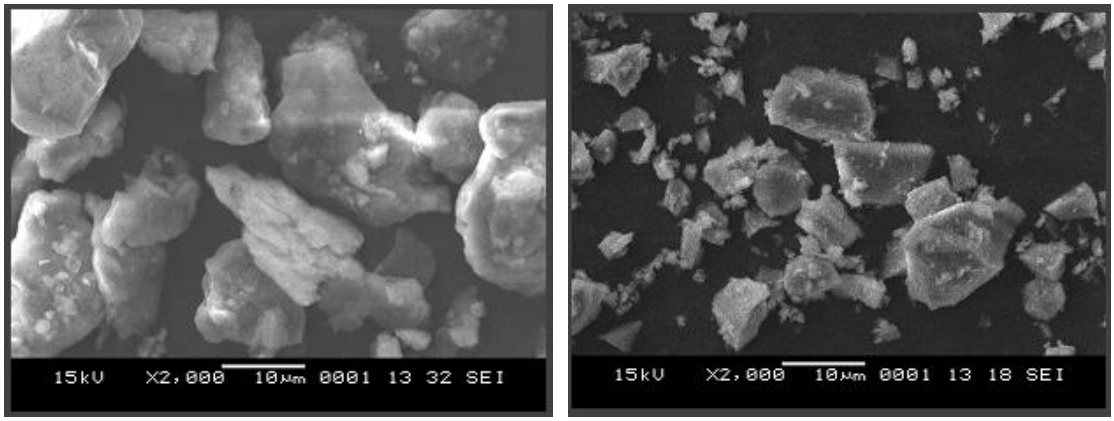

(c) (d)

Figure 4.1: SEM micrograph of raw materials at magnification of 2000x; (a) Ball clay, (b) feldspar, (c) kaolin, (d) silica.

Each compound shows surfaces of the particles are quite rough with non-homogeneous shapes and sizes after sieving with 300µm sieve machine. Kaolin shows coarse of particle compared to others particle of silica, ball clay and feldspar. The particle size directly affects rate of time of forming the sample. Forming rate is higher when the particles are finer. Typical density achievable in reality was around 80% and 60% for multi- dispersed and monodispersed particle respectively. The mechanical properties of ceramic are strongly influenced by the generated thermal stress during processing. When kaolin or ball clay was reduced its influence on the technical properties ceramic products such as tiles and porcelain are changed. In this study, silica and feldspar used as fix composition which ball clay and kaolin is different composition. The experiment results were shown the way that kaolin and ball clay particle size influences the analysed properties. A significant improving ceramic strength was obtained. From this study, the comparison in properties of different composition will result a large different. This is because the selection of composition for raw material is depending on the function of each raw material. Ball clay produced plasticity but kaolin increase of shrinkage and drying during the sample forming. Kaolin used to improve the mechanical properties of final product where feldspar is used as fluxing agent to form a glassy phase at low temperature and silica used as filler.

Particle size analysis

Particle Size Malven Mastersizer 2000 has been used to determine the particle from silica, feldspar, kaolin and ball clay. This machine was produce result in graph which shown percentage of volume versus particle size (µm). Values of mean from graph are important to identify efficiently particle size of kaolin, ball clay, silica and feldspar. Shape and dispersion of particle size was relationship each other's.

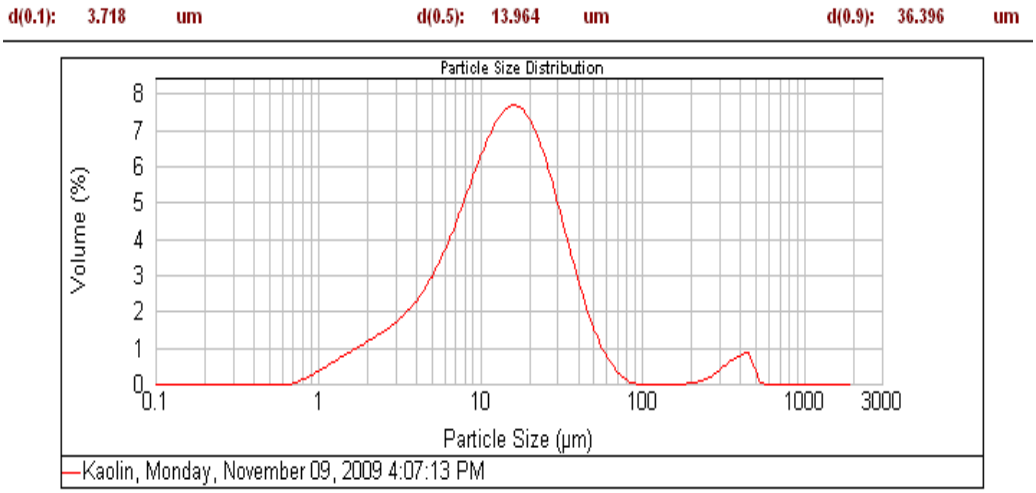

Figure 4.2(a): particle size distributions recorded during seeding of the kaolin powder with coarse (300µm) particle.

Figure 4.2(a) shows the particle sizes were mostly in range of 0.724µm to 478.630µm and other at 208.930 to 549.541µm. The highest percent of the volume of kaolin is 6.91% which has particle size range from 15.136µm to 17.378µm. The mean particle sizes for kaolin is 13.964µm with specific surface area is 0.732m^2/g.

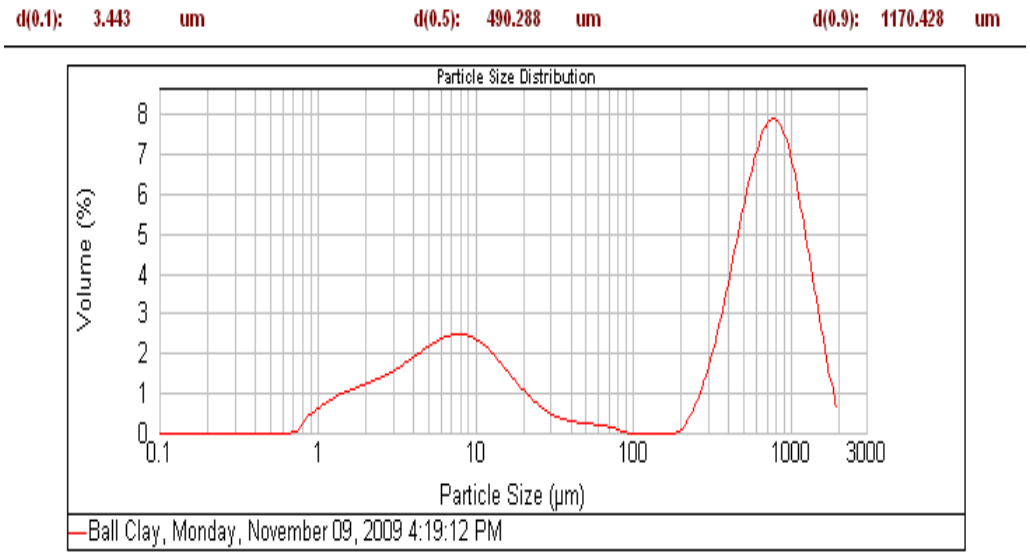

Figure 4.2(b): particle size distributions recorded during seeding of the ball clay powder with coarse (300µm) particle.

Figure 4.2(b) shows the graph of the particle sizes distribution of ball clay powder was mostly in range of 0.724µm to 91.201µm and other at 181.970 to 2187.762µm. The highest percent of the volume of ball clay is 7.1% which has particle size range from 724.436µm to 831.764µm. The mean particle sizes for ball clay is 490.288µm with specific surface area is 0.549m^2/g.

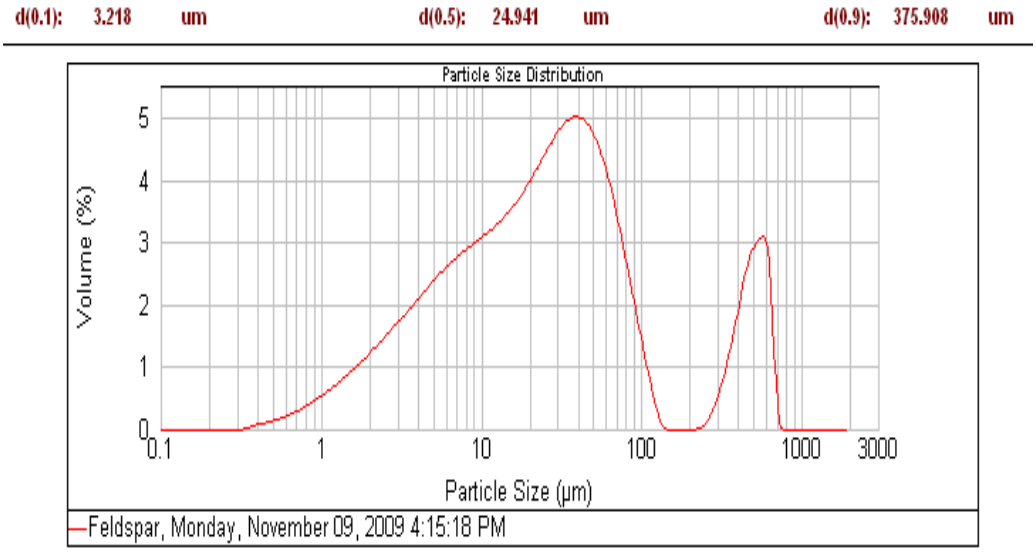

Figure 4.2(c): particle size distributions recorded during seeding of the feldspar powder with coarse (300µm) particle.

Figure 4.2(c) shows the graph of the particle sizes distribution of feldspar powder was mostly in range of 0.363µm to 138.038µm and other at 239.883µm to 724.436µm. The highest percent of the volume of feldspar is 4.5% which has particle size range from 34.674µm to 39.881µm. The mean particle sizes for feldspar is 24.941µm with specific surface area is 0.734m^2/g.

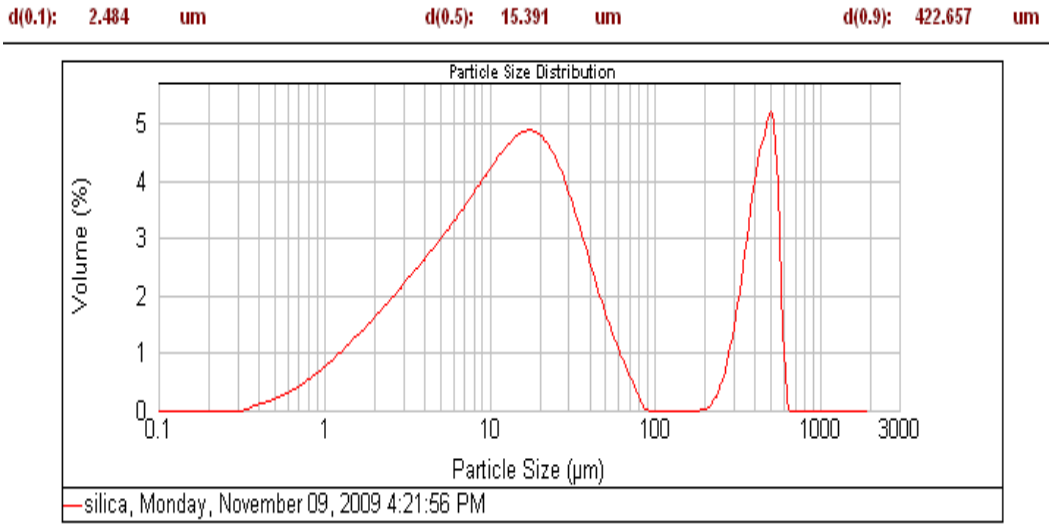

Figure 4.2(d): particle size distributions recorded during seeding of the silica powder with coarse (300µm) particle.

Figure 4.2: (d) show the graph of the particle sizes distribution of silica powder was mostly in range of 0.316µm to 91.201µm and other at 206.930µm to 630.957µm. The highest percent of the volume of silica is 4.71% which has particle size range from 478.630µm to 549.541µm. The mean particle sizes for silica is 15.391µm with specific surface area is 0.948m^2/g. Accurate measurement of ceramic powder particle size distributions is important in

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13th – 14th December 2020

the production of modern ceramic components. The Mastersizer 2000 has proved to be very sensitive to the presence of oversized particles in the ceramic powders tested. Oversized materials were detected at the lowest concentrations used in the experiments. This technique represents a valuable tool in determining the particle size and state of agglomeration of ceramic powders. Result from the experiment has been done not accurate than the standard result. That was happened maybe from the part of sieving process either weakness of sieve machine or not purity of raw material. The particle size can help define the time and temperature required to attain full density during sintering, with finer particles requiring shorter sintering times due to their high surface area. A direct relationship has been known to exist between the particle size and the pore size observed in the green body prior to sintering. Large particles tend to pack inefficiently, leading to the formation of large pores which persist during sintering, increasing the probability of component failure.

Scanning Electron Microscope (SEM)

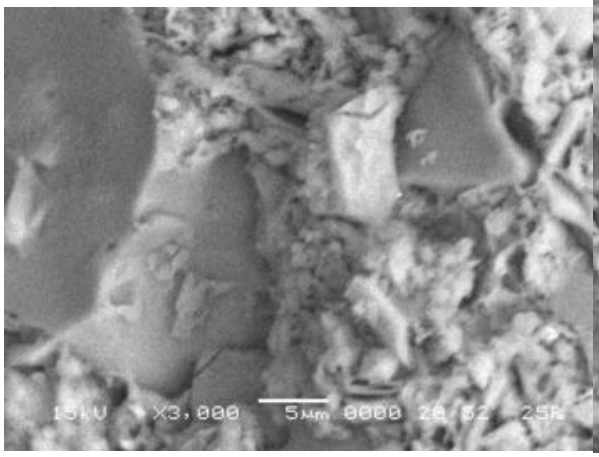

Figure 4.4 (a) Sample 1

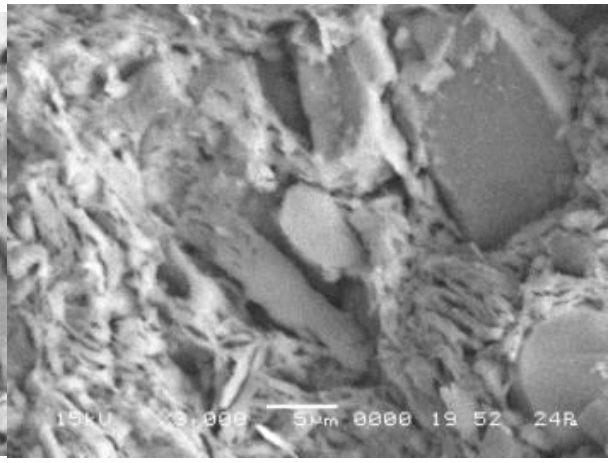

Figure 4.4 (b) Sample 4

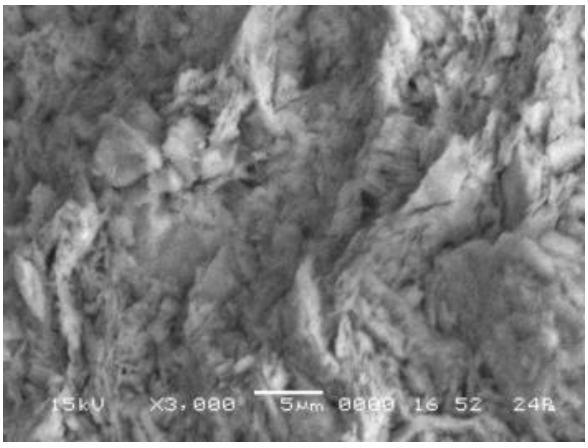

Figure 4.4 (c) Sample 8

Diagram shows the flexural fracture surface of three sample of different content of kaolin and ball clay with magnification 3000x and scale 5µm. From the SEM has been done, the samples show the different porosity level and surface structure. Sample has coarse structure compared with sample 8. If we refer to the result of flexural stress that the sample 8 has higher value than the sample 1 which shows the structure 8 better than structure sample 1. However,

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13th – 14th December 2020

sample 4 has been good result of structure if we refer to the result of flexural stress. This situation because sample 4 has four content which content of silica, feldspar, kaolin and ball clay compared with sample 1 and sample 8 which has 3 content only that was silica, feldspar, either of kaolin or ball clay.

Conclusion

This project is mainly to study and evaluate effect of four main content in ceramic which direct use of refined silica, feldspar, kaolin and ball clay as a potential raw material for tile product, and the effect of variation ratio kaolin and ball clay which is expected to increase the properties (apparent density, flexural and strength) of the tile. From the result obtained through mechanical, physical and optical observation, it is apparent that the kaolin and ball clay content change the properties of the final product.

The high amount of clay minerals existing in the local kaolinites clays was responsible for the industrial ceramic body to stay outside the optimal extrusion condition. The predominance of kaolinite and the presence of hydroxides were the main characteristics responsible for the physical and mechanical condition. Consequently, a high porosity still exists even at temperatures as high as 1200ºC. The microstructure of the ceramic equivalent ratio, which is the maximum temperature that could be used by the local industries due to limitations in the quality of their accurate ratio**,** showed a typical intergranular fracture, associated with the presence of large cracks. Therefore, it is not possible to attain the specifications required for floor tiles by simply using local clays. To reach the required values for the technological properties, one should significantly decrease the refractoriness and mixture of raw material content of the ceramic body by flux addition and/or reduce the loss on ignition.

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THE ACCEPTANCE OF E-WALLET SERVICES AS A PAYMENT METHOD AMONG MILLENNIALS IN MALAYSIA

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Executive Summary: *The e-Wallet service is one of the recent innovations under the Fourth Industrial Revolution (IR4.0) where individuals can use it as a payment method. Millennials in general are large adopters of e-Wallets as a payment method compared to all other age groups. The usage of alternative payment methods is proliferating in Malaysia as people are looking into becoming a cashless society. One of the benefits of going cashless is due to its convenience and less time is associated with the handling of paper money. It also helps individuals to track their expenses better due to the record kept by e-Wallet services. As millennials are the generational cohort that makes up of one-third of the global workforce, they are expected to be the world's biggest spenders and also biggest adopters of mobile payment systems like the e-Wallet service. As such, this study aims to explore the acceptance of e-Wallet service as a payment method among millennials in Malaysia. This study utilises the quantitative method of research in order to obtain the results. In order to get the data required to get the desired results, questionnaires will be distributed among millennials, people born between 1980 and 2000, in the Klang Valley. The data will then be analysed using the SPSS software as it allows a more critical interpretation of the results.*

Problem Statement

Are millennials more open to accept electronic wallet services as a payment method? Millennials in general are large adopters of e-Wallets as a payment method compared to all other age groups. The emergence of the fourth Industrial Revolution 4.0 has increased the focus on new technologies and one of it is Financial Technology (FinTech) which includes electronic wallet (e-Wallet) services. With 83% of internet penetration in Malaysia, the country is a hotbed for e-Wallet players (Punithaa Kylasapathy et al., 2018)

A consequence of this phenomenon is that Malaysia has over 40 e-Wallet services and this has been backed by initiatives such as the "e-Tunai Rakyat Program" to push the nation into becoming a cashless society. This brings forth the issue of identifying if this is caused by high acceptance of e-Wallet services as a payment method. Previous research has found that the e-Wallet service is more likely to be accepted by millennials as that generational cohort is deemed to be more tech-savvy and reliant on the smartphone (Pai H., 2018)

Millennials are projected to make up one-third of the global workforce by 2020 and will undoubtedly be the generation that will shape the world economy in a few years ' time. Already in Malaysia, 29% o its population are millennials (Lin, 2018) Therefore, it is

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13th – 14th December 2020

imperative to understand the acceptance of e-Wallet services by them if the economy wants to predict future business trends.

It is found that there is a lack of data regarding the acceptance of e-Wallet services among Malaysian millennials. As such, this study aims to identify the most used e-Wallet services by millennials in Malaysia and also to examine the acceptance of e-Wallet services among millennials in Malaysia.

Literature Review

E-Wallet services

In line with the adoption of Industrial Revolution 4.0 in Malaysia, financial technology (FINTECH) has been one of the technologies that is being promoted in Malaysia by the government. FINTECH is a revolutionary financial service that has evolved in conjunction with the new technological advancement that involves digital payment, such as mobile wallets, payment apps, wealth and financial planning robots, crowdfunding platforms for alternative financing opportunities.(Chee Seong et al., 2018)

e-Wallet is a form of mobile wallet service which allows transactions to be made online through the smartphone application. The utility of the e-Wallet is similar to the credit or debit card. The e-wallet works like a regular wallet but the money is online. The e-wallet operates as an app in the smartphone to store money.

Like a traditional wallet, money needs to be stored in the e-Wallet. Most apps allow it to do so using credit cards, debit cards, or automatic bank transfer (J. Tan, 2019) Once the e-Wallet has been topped up, the e-Wallet can be used at merchants using various ways such as scanning a QR code or "tap and pay" with the phone's NFC function.

Malaysian users are able to experience the secure, convenient and seamless payment ecosystem through the Quick Response (QR) codes. According to NST Business (2018), these QR codes can be used to conduct transactions such as online shopping, bill payment, retail payments and also person-to-person (P2P) fund transfers.

Nguyen et al. (2016) found that using the e-Wallet for transactions not only reduces the complication surrounding the financial transaction process but it also promotes a more convenient way of tracking expenses. Besides that, it also speeds up the overall transaction process. It could reduce instances of fraud as e-Wallet require verification before payment is made.

Mobile Payment Acceptance

Mobile payment services are gaining traction among the younger generations, particularly millennials and generation Z. These generational cohorts are generally more adept at working with technology as compared to the older generations. There are substantial research on mobile payment systems such as the e-Wallet, particularly on the integration of this system in various countries across different age groups (Dahlberg et al., 2015)

Mun et al. (2017) found that the public would be more inclined to adopt e-Wallet services if they are convinced of the advantages of using this cashless method as opposed to the traditional methods of transactions. It is foreseeable but the Payment Landscape Report by Nielson (2019) shows that the biggest challenges to acceptance and adoption of e-Wallets in Malaysia are security concerns and fraud. Within consumers between 45 and 54 years of age, 34% of this category prefers a cash - on - delivery option even when shopping online, mainly to avoid falling victim to illegitimate sellers.

Based on the Bank Negara Malaysia's data, there are 46 digital money issuers which consists of five banks and 41 non-bank firms in Malaysia (Sulhi Khalid, 2019) This shows that

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13th – 14th December 2020

the market is growing rapidly in Malaysia. This could be partly due to the government's "e-Tunai Rakyat Program" as part of the Budget 2020 initiative. This is an initiative by the government with the goal to support the adoption of digital payment services as an alternative that is safer, cashless, and more efficient (O. K. Tan et al., 2020) A budget of 450 million was allocated in order to give out a on-off RM30 incentive to Malaysians and it can be used at any participating merchants.

Reorganization in the e-Wallet sector in Malaysia seems increasingly unavoidable. The e-Wallet market is so crowded that DiGi.com Bhd's *vcash* was pressured out from the market (Tay & Wong, 2020) The competition is expected to get even more intense as banks are looking towards opening their own e-Wallet service as well. In countries like China, which has a significantly greater population than Malaysia, has only two e-Wallets in the market but Malaysia has more than 30 e-Wallets in the market.

While the initiative by the government and the number of e-Wallet service providers in Malaysia suggests high acceptance and usage of cashless payments, a report by Nielson (2019) shows that although 67% of Malaysian consumers had used cashless payments, mobile wallets only accounted for 8% among the non-cash payment methods as security emerges as a major challenge.

As technology evolves, competitive pressure between rivals has become more intense since more similar technologies have been formed and launched on the market. In order to stay in business, mobile payment service providers must focus on the needs of consumers and set up an e-Wallet system that can satisfy the needs and wants of customers.

Millennials and consumerism

Millennials, or also known as Generation Y, are individuals who were born between the years 1980 to 2000 (Stein, 2013) These millennials grew up in an era where technological advancement is at its peak and thus, making them digital natives rather than digital immigrants. Millennials want to share their experiences, their purchases, and their meals through social media because it is gratifying to them (McCormick, 2016).

Millennials grew up alongside technology and they are known to be comfortable with technology. Millennials give priority to speed, simplicity, efficiency and convenience in every purchase; millennials are always seen in a rush (Barton et al., 2012) Due to that fact, millennials are more likely to be the first adopters of new technologies. This generational cohort also tend to purchase more gadgets like laptop, smartphones and gaming consoles.

As millennials are more comfortable with technology, most of their daily activities are done other on their computers or on their smartphones. This has changed the pattern for consumerism in this generation as they prefer making their purchases online. This has caused most outlets – both online and offline – to provide digital alternatives for payment systems (Sullivan, 2019) Due to that fact, most outlets offer the option to pay through e-Wallet apps.

Rani (2020) found that millennials do not see buying as sometime activity, but it is an act of showing social status in order to communicate their character to others. Millennials will have a substantial impact on the GDP of the countries in which they live by creating trends that will manipulate and affect the economy and businesses that are struggling to attract their attention, particularly when the generational cohort constitutes of purchasing power of 27 per cent of the total population of 7.4 billion (Cushman & Wakefield RED, 2020)

To order to retain revenue, retailers need to keep up with the times and get on the e-Wallet bandwagon. This can be seen in Malaysia as e-Wallet companies such as Boost and Touch'n Go e-Wallet have accrued 138,000 and 135,000 merchants, respectively (Nurul Jannah Kamaruddin, 2020) The e-Wallet program can be seen as a phenomenon among millennials,

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13th – 14th December 2020

but it is a trend that continues to grow as it becomes the preferred method of payment for millennial consumers. Future trends can very much be influenced by the attitudes of millennials, and retailers would be able to take a look at opportunities to buy by studying millennial spending habits.

At the pace of today's technology breakthrough, the retail industry will have more untapped potential. In order to move forward, retailers must develop and sell relevant products and services that resonate with millennials to fulfil millennials diverse standards. It is no longer the question if brands should accept the digital opportunity but brands must think about how to go about embracing it (Sullivan, 2019) Millennials are also anticipated to be the generation that will be the highest-earning generation in history. Undeniably, millennials have lot of power in shaping trends among businesses.

Research Objectives

1. To identify the most used e-Wallet service among millennials in Malaysia.
2. To examine the acceptance of e-Wallet services among millennials in Malaysia.
3. To study the effectiveness of e-Wallet services as a payment method among millennials in Malaysia.

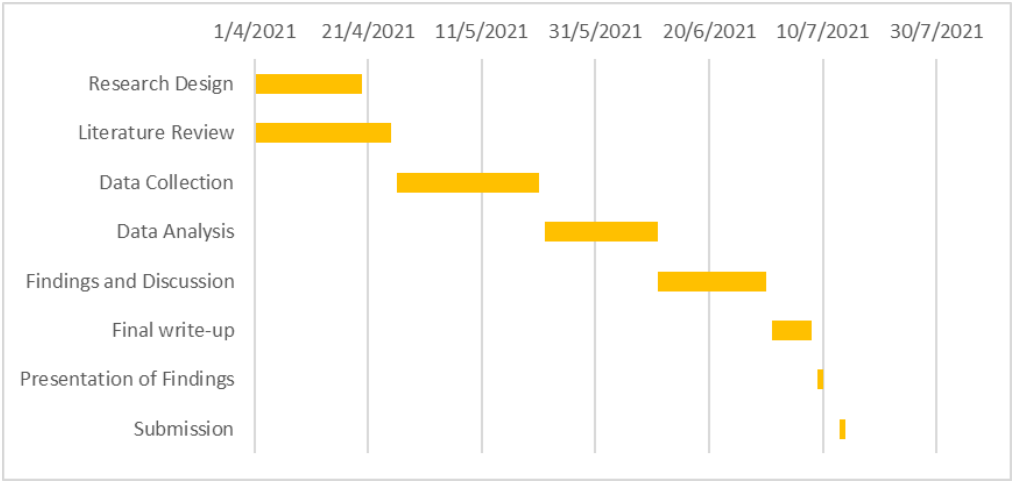
Research Questions

1. What are the most used e-Wallet service among millennials in Malaysia?
2. What is the acceptance of e-Wallet services among millennials in Malaysia?
3. What is the effectiveness of using e-Wallet services as a payment method among millennials in Malaysia?

Methodology

This study utilises the quantitative method of research in order to obtain the results. In order to get the data required to get the desired results, questionnaires will be distributed among millennials, people born between 1980 and 2000, in the Kelang Valley. The questionnaires will be created based on the research objectives. Once the data is collected, it will then be analysed using a software used to compute quantitative data called the Statistical Package for the Social Sciences (SPSS). SPSS is the best tool for statistical analysis in the behavioural sciences. The application allows a more critical interpretation of the results.

Flow Chart of Research Activities



eISBN 978-967-2426-22-6
13th – 14th December 2020

Research Activities

Activity	Start Date	End Date
Research Design	1/4/2021	20/4/2021
Literature Review	1/4/2021	25/4/2021
Data Collection	26/4/2021	21/5/2021
Data Analysis	22/5/2021	11/6/2021
Findings and Discussion	11/6/2021	30/6/2021
Final write-up	1/7/2021	8/7/2021
Presentation of Findings	9/7/2021	9/7/2021
Submission	13/7/2021	13/7/2021

Description	Date	Cumulative Project Completion Percentage (%)
Research Design and Literature Review	25/4/2021	20
Data Collection	21/5/2021	30
Data Analysis	11/6/2021	70
First draft of write-up	30/6/2021	80
Completion of report writing and publication	13/7/2021	100

Theoretical Underpinnings

The e-Wallet system was developed to propel the world into a cashless society driven by the IR4.0 technologies. It was designed to replace existing physical wallets along with bank notes, coins and cards. The e-Wallet systems are so advanced now that it can effectively facilitate the transactions between merchants and consumers. However, this technology would only be as effective if users accept the technology and adopt it into their daily lives. The theoretical underpinnings of the adoption of e-Wallet system can be seen through the Technology Acceptance Model (TAM) formulated by Davis (1989). The TAM has two primary factors that influences an individual's acceptance and intention to use a technology: perceived ease of use and perceive usefulness (Charness & Boot, 2015) This model helps to understand how users come to accept and use a technology which in this study is how millennials come to accept and use e-Wallet services. As such, theoretically, millennials accept e-Wallet services if the technology is deemed to be useful in their daily lives and if the technology is easy to navigate with little learning curve. Sunny & George (2018) found that there is a wide consensus that the TAM model was relevant to demonstrate the individual's acceptance of emerging technologies.

Expected Results/Benefits

It can be seen that the e-Wallet industry in Malaysia is thriving through past research. However, it is found that even though the general acceptance of the e-Wallet services are positive, it is unclear if it is a sustainable practice. There are still other factors that needs to be considered and improved before Malaysia can truly move forward as a cashless nation.

The first expected result of this study is that the most popular e-Wallet services are the ones that was selected by the government for the e-Tunai Rakyat Program. As there are more than 30 e-Wallet providers in Malaysia, the government has to narrow it down to the main three e-Wallet with the most active users. Khazanah Nasional Berhad was appointed to facilitate and coordinate the implementation and launch of the e-Tunai Rakyat initiative. The services chosen must have the expertise, financial power and human funds to create the necessary systems, systems and processes for the initiative, and the ability to handle a large number of transactions over a short period of time ("Three Picked for RM450m E-Tunai Rakyat Rollout," 2019) With

these criteria the identified e-Wallet services are Grab Pay, Touch ‘n Go e-Wallet and also Boost.

With the identification of the most popular e-Wallet services in the market, it could highly benefit businesses to know which services has the most users. With the highly competitive industry of mobile payments, businesses could not be a merchant of every single one of the 30 e-Wallet services in Malaysia. Therefore, identifying the top e-Wallet services would greatly help businesses to concentrate on the services that has good and reliable systems that customers can use. Besides that, individuals also benefit from this as they are able to choose the most reliable e-Wallet that is suitable for their needs. As such, individuals would not need to download more than one e-Wallet application on their smartphone.

The second expected result of this study is that there is a high level of acceptance among millennials in Malaysia. Millennials are technology adopters and are always curious to try out new technologies in the market. The recent e-Tunai Rakyat initiative by the government have managed to raise awareness on the e-Wallet services available in Malaysia. It has also managed to get a lot of Malaysians to download e-Wallet services such as Boost, Touch ‘n Go e-Wallet and also, Boost which increases the level of acceptance. However, it is still unclear whether millennials are actively using the services after claiming the RM30 incentive.

Understanding the acceptance of e-Wallet services as a method of payment among millennials could potentially help more individuals to understand the benefits of incorporating cashless systems in their daily transactions. One of the benefits of using cashless systems is that consumers have more control on their decision making as they can choose the item with the best offer without having to go to the shops physically. Shopping is no longer restricted to one’s neighbourhood, but individuals can have access to businesses from all over Malaysia.

The third expected results of this study are that the e-Wallet services is an effective alternative mode of payment among millennials. As smartphones become increasingly common and versatile, e-Wallet services also increases in demand as people wants to be able to do things remotely. Mobile payment systems allow individuals to skip the long queues and hassle of traditional purchase. Millennials especially dislike having to leave the comfort of their home to run errands. This study by Sekar et al. (2018) found that young people are more prone to staying home with millennials spending 70% more time at home than the general population.

Many businesses are still cautious of adopting into the e-Wallet systems in their business strategy. The inability to incorporate mobile payment systems into business strategies could cause businesses to miss out on sales opportunities, especially among millennials who are expected to hold the most purchasing power. This research will be able to get businesses to understand the importance of integrating mobile payment services into business strategies. Furthermore, this study is focusing on the acceptance of e-Wallet systems as a payment method among millennials and it will be able to provide businesses with the data on millennials view on the systems.

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THE INFLUENCE OF POLITICAL IDENTITY TOWARDS TOLERANCE PEOPLES IN PEMATANGSIANTAR CITY DURING THE GOVERNORS SUMATERA UTARA ELECTION IN 2018.

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Abstract: *The purpose of this study is to measure how much is the influence of political identity has towards the tolerance of the people of Pematangsiantar City in the Governor Election of Sumatera Utara Province of 2018. The research method uses a quantitative approach with a correlation approach, the population in this study is Pematangsiantar City who is registered in the 2018 Daftar Pemilih Tetap (DPT), the research sample uses a 5% margin so that a sample of 399 people was obtained. The sampling technique used a proportional multistage random sampling spread over the research locations, namely 8 districts and 53 sub districts in Pematangsiantar City. The data collection technique uses a research questionnaire that has been tested for its validity and reliability. data analysis technique using Rank Spearman. The results show the correlation between the political identity variable and the tolerance of peoples in Pematangsiantar City in 2018 Sumatra Utara governor election is (-0.120) which means very weak, negative, significant and a two-ways significance value or sig (2-tailed) of 0.017 because the number of significance is 0.017<0.05. This illustrates that political identity has a weak influence on the tolerance of the Pematangsiantar City community in social life, if political identity is high, then the social tolerance of the community will be low (intolerance still occurs in differences in choice due to politics of identity/ethnicity, religion, and regional origin), however, if identity politics is low in the 2018 Sumatera Utara governor election, then social tolerance will be high. In conclusion, the people of Pematangsiantar City, which is known as "Tolerant City", cannot be separated from the influence of political identity in the 2018 Sumatra Utara Governor Election.*

Keywords: *Politic Identity, Tolerance, Pematangsiantar City.*

Introduction

Sumatera Utara Governor Election in 2018 was held and the fighting pair was Edy Rahmayadi-Musa Rajeksah against the Djarot Saiful Hidayat-Sihar Sitorus pair. Identity politics still feels strong in North Sumatra after the local political battle for the 2017 DKI Jakarta Governor Election, this is exacerbated by one of the candidates for Governor of North Sumatra in 2018, Djarot Saiful Hidayat, who was Ahok's running mate during the 2017 DKI Jakarta Governor Election. avoided the constellation of National Politics (because Jakarta is the Capital of the Republic of Indonesia) and Local Politics throughout Indonesia which are still thick with identity politics, which is inevitable, including the 2018 North Sumatra Governor Election.

Strengthening political identity and political representation automatically appears as a result of the opening of the tap of political participation, which began in the reform era until

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13th – 14th December 2020

now (Ana Sabhana and Suryani, 2016: 21). In this case, it seems as if there is a struggle between indigenous and non-indigenous people. The Jakarta Pilkada in 2017 which was won by Anis Baswedan and Sandiaga Uno became a new portrait for the struggle for identity politics and political representation in Indonesia where at that time the opponent was Ahok-Djarot in the second round of elections. In this case Ahok-Djarot became a portrait of identity and a non-Muslim representation of ethnic Chinese and Anis-Sandi became a representation of indigenous Muslims. (Nasrudin, 2018).

A massive wave of Muslim protests seemed to demand the government to immediately decide "what Ahok did was blasphemy". The decision of the MUI fatwa through Maruf Amin regarding the blasphemy committed by Ahok before the Pilgub was held, of course, had an effect on the vote acquisition which resulted in Ahok losing the gubernatorial election. The Ahok case above illustrates the success of identity politics in winning a political competition (Saputro 2018)

Identity politics, especially religion, never die in the political arena in this country. The momentum of the election for the governor of Jakarta, which has just ended, is a clear example of justifying this argument. When Religious Identity, appears to be a political force.

The momentum of the Jakarta elections has also displayed a number of campaign issues that have consumed the energy of the nation, not only the Jakarta public but also the Indonesian people, including the case of Surah Al Maidah verse 51 which led to mass mobilization from various regions in the country to come to protest in Jakarta, until its circulation. public opinion 'I am Muslim, I vote for a Muslim leader'. (Sari, 2016)

Identity politics (religious equality, equality of ethnicity, equality of regional origin) has always been a threat to the development of democracy in Indonesia, especially in local politics (elections for mayors / regents and governors) identity politics has always been a campaign issue and the most effective political marketing to gain voter sympathy. and take down the opponent. What is interesting is that Pematangsiantar City as one of the number 2 largest cities after Medan in North Sumatra has the jargon "Tolerant City" and got the first rperintakat "Tolerant City" in North Sumatra and "Tolerant City" number 3 in Indonesia is not spared from identity politics in North Sumatra Governor Election 2018.

Ideally, the people of Pematangsiantar City are not affected by the issue of identity politics in the 2018 North Sumatra Governor Election, because Pematangsiantar City is ranked as the 3rd Most Tolerant City of Indonesian Swe.

The purpose of this study is to measure how much influence identity politics has on the tolerance of the Pematangsiantar City community in the 2018 North Sumatra Governor Election.

Literatur Review

Politic Identity

Identity can be understood as a social construction. Ethnicity is an expression of past products, the awakening of common origins, social relations, and similarities in cultural values and characteristics such as language and religion.7 It is further explained that the historical dimension of identity shows that identity is uncertain, not constant, and impermanent, but sometimes changing and can be shaped or constructed. Many factors can influence the construction of identity, such as religion, power, politics, and so on. (Abbas, 2016)

In general, the general theory of identity politics and various research results show that there are two main factors that make ethnicity and religion attractive and appear (salient) to be used and influential in the political process. First, when ethnicity and religion are the factors at stake. There is a need to defend or defend the identity of a group. Second, when the political

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13th – 14th December 2020

process takes place competitively. This means that the political process causes identity groups to face each other and no one is dominant, so that it is not clear who will be the winner since long ago. Elections, including pilkada, are political processes in which various factors such as identity are at stake. It is up to now how the actors involved in managing issues such as ethnicity and religion are at stake. (Nasrudin, 2018).

According to Manuel Castells (2010), in The Power of Identity, (in Lestari, 2019) identity is a source of self-meaning that emerges and is given by an individual to himself, or from a group of people to their own group which is built through the process of individualization. Identity is formed if it is internalized by a community outside of itself. (Lestari, 2019)

Castells divides identity into three categories, namely legitimate identity, resistance identity and project identity. First, legitimate identity, this identity is used in the process of introducing the dominant institutions of a society to expand and rationalize their domination of social actors. Second, resistance identity, which is an identity that is maintained by fighting to maintain the identity of the stigma of the dominating party. The function of this identity is as a resistance and defense against differences in principles in community institutions. The identity of resistance can be understood as an identity that is fought for from beginning to end in order to gain recognition of that identity from other parties. Third, project identity, is the act of social actors building a new identity that aims to redefine their position in society by trying to transform from the overall social structure. (Lestari, 2019)

Agnes Heller (in Lestari 2019) defines identity politics as politics that focuses on differentiation as the main category that promises freedom, tolerance and freedom to play (free play), even though it raises patterns of intolerance, violence and ethnic conflict. Identity politics can include racism, bio-feminism, environmentalism, and ethnic strife.

Political studies clearly distinguish between political identity and political identity. Political identity is defined as a construction that determines the position of the subject's interests in the bonds of a political community. Meanwhile, political of identity is a political mechanism for organizing identity (both political identity and social identity) as a source and means of politics (Muhtar Haboddin, 2012: 119). The study of identity politics includes two recognized identity categories, namely social identity and religious identity as the subject. (Lestari, 2018)

Kopko (2012) in (Saputro 2018) states that religion has an effect on political participation. He gave an example of the teachings of the Mennonite Church, which is to prohibit political activities because of their worldly nature. This resulted in low political activity by the Mennonite Church congregation. The effects and relation between religion and political participation in Indonesia are inevitable. In many cases in Indonesia, religion is used as a tool that positively or negatively generates political participation. (Saputro, 2018)

The demand for identity politics in the context of a power struggle is increasingly open considering the pressure on the partisanship of the majority group in society to always support their political position, especially in heterogeneous societal characteristics with the adoption of strong social stratification will further foster identity politics. (Herdiana, 2019)

There are various points of view that view the phenomenon of identity politics. Pierre Van Den Bergh (1991) and Ubed Abdilah (2002) (in Sari, 2016) explain three theoretical perspectives in studying identity politics, namely: primordialism, constructivism, and instrumentalism. The first approach is the primordial argument that sees religious phenomena in the socio-biological category. This view holds that social groups are characterized by descriptions of territory, religion, culture, language and social organization as 'given' and cannot be denied. The second approach is constructive which was developed by Frederik Barth.

eISBN 978-967-2426-22-6
13th – 14th December 2020

This theory views religious and cultural identity as the result of a complex process, when symbolic boundaries are continually built and constructed, by the benefits of mythology that take place through language and past experiences. The third view, in a theoretical perspective, is that instrumentalists are more concerned with the process of manipulation and political mobilization. According to this view, when these social groups are composed on the basis of the initial attributes of ethnicity such as nationality, religion, race and language, at that time, the group is mobilizing their interests. (Sari, 2016)

One of the approaches offered by Cohen (Ishiyama, 2013) in the 2018 Sagala and Mukmin is the instrumentalist approach, which suggests that this approach is a social construction, instrumentalists view the creation of identity as a product of manipulation of cultural symbols and kinship by political actors to obtain political advantage. This approach views ethnicity as the result of a political strategy, which is usually to achieve other goals, such as political power, access to resources, and increasing status and wealth. By interacting and communicating with other ethnic identity groups, a sense of empathy and solidarity will be created so that they form close kinship. So from the existence of kinship relations, it can also influence the choices of the community. (Sagala and Believer, 2018)

As a pair of candidates, they try to influence society by building kinship ties with each ethnicity to build intimacy, a sense of solidarity, and a sense of closeness in order to get the attention and trust of the people of each ethnicity which are used to achieve their political interests and goals. The strategy used by building kinship ties is expected to increase the number of votes obtained at the time of the election, because the existence of kinship ties between candidates and the community becomes a reason or consideration as voters to provide support for their votes for candidate pairs. So the ethnic kinship system built into each ethnicity has also succeeded in influencing the choice of voters. The formation of an inter-ethnic kinship system can be a political force, because each pair of candidates has a strong support base from each ethnic group as a source of votes. Kinship can be a strong potential vote that a candidate pair has with a system of approach and is able to attract the attention of voters for voting support. As stated by Buchari (2014) in (Sagala and Mukmin 2018) who sees identity politics theoretically as something that is alive or exists in every ethnicity, where its existence is latent and potential, and at times it can come to the surface as dominant political power. The ethnic diversity that exists in the community in each area, which then forms groups and organizations based on their ethnic similarities such as customs, beliefs, and cultural values of these ethnicities (Sagala and Mukmin, 2018)

City of Tolerance

Tolerant City in this indexing study is a city that has the following attributes. 1) The city government has regulations that are conducive to the practice and promotion of tolerance, both in the form of planning and implementation. 2) The statements and actions of the city government officials are conducive to the practice and promotion of tolerance. 3) In that city, the level of incidents and acts of violation of freedom of religion / belief is low or nonexistent. 4) The city shows sufficient effort in managing the diversity of religious identities of its citizens. (SETARA, 2018)

More specifically, Brian J. Grim and Roger Finke (2006) compiled 3 main indicators to measure the level of religious freedom / degree of tolerance of a country. First, favoritism or government privilege of certain religious groups. Second, government regulations that limit freedom of religion. Third, social regulations that limit freedom of religion. This variable popularized by Grim and Finke was also adopted by Bappenas and many other study institutions. In measuring the Tolerant City Index (IKT) in 2018, SETARA Institute also uses

eISBN 978-967-2426-22-6
13th – 14th December 2020

the Grim and Finke framework modified with other variables, namely the composition of the population based on religion. The composition of the population is one of the meters in measuring tolerance indicators in city governance because it relates to the level of complexity of diversity governance in cities. (SETARA, 2018)

The 2018 Tolerant City Index Study can take the following conclusions: 1) In 2018, there were 10 cities with the highest tolerance scores, namely sequentially; Singkawang, Salatiga, Pematangsiantar, Manado, Ambon, Bekasi, Kupang, Tomohon, Binjai, and Surabaya. 2) In the same year, on the other hand, there were 10 cities with the lowest tolerance scores, namely in order: Tanjungbalai, Banda Aceh, Jakarta, Cilegon, Padang, Depok, Bogor, Makassar, Medan, and Sabang. 3) Compared to the Tolerant City Index data in the previous year, there is a significant change in the city group with the highest score. The inclusion of Ambon, Bekasi, Kupang, Tomohon, and Surabaya in the top ten tolerant cities in Indonesia is a new phenomenon in IKT 2018. This means that 50% of the top 10 ranks are new faces. These cities removed Tual, Kotamobagu, Palu, Tebing Tinggi and Surakarta from the top 10 rankings. 4) In addition, juxtaposed with the previous year's IKT data, in general there was no significant change in composition in the data for the 10 cities with the lowest tolerance index in 2018, unless a very significant change occurred in Tanjungbalai, which this year was ranked 94th (rank 1 bottom ten). In addition, Medan and Sabang were also in the top 10 lowest, ranked 9 and 10). The three cities shifted the position of Yogyakarta, Banjarmasin, and Mataram, which this year came out of the lowest ranks. (SETARA, 2018)

Previous Research

Research conducted by Sayed Muhammad Daulay in 2019 with the title Politics of Identity in the 2018 North Sumatra Governor Election.The findings of this study are: (1) The process of identity politics was carried out by the ERAMAS team by approaching traditional and religious leaders, while the DJOSS team only conduct an identity politics process by approaching traditional leaders in various regions; (2) The patterns of identity politics in the ERAMAS team are carried out in the form of activities related to Islam, such as da'wah safaris with Ustadz Abdul Somad, Dzikir Akbar, mosque cleaning car facilities, the dawn movement in congregation, and officiating, and being involved in traditional activities. Meanwhile, the DJOSS winning team carried out a pattern of activities related to customs in various regions and were involved in customary activities, for religious patterns they only visited religious leaders in the regions. (Daulay. 2019).

The research conducted by Juhana Nasrudin in 2018 was entitled: Identity Politics and Political Representation (Case Study in the 2018-2022 DKI Regional Election). The results show that the political orientation of identity and political representation affects the democratic process in the 2018-20122 DKI regional election cases (Nasrudin, 2018)

Research conducted by Ivan Dei Sagala and Budi Ali Mukmin in 2018 with the title: Ethnic Identity Politics in the Pilkada Election for Mayor and Deputy Mayor of Binjai in 2015 ". The results showed that the involvement of ethnicity has an influence in terms of being a source of voice. Ethnic identity relations are a consideration in determining voter choices. Candidate pairs can exploit the existence of ethnic groups by using approaches as a place or basis for gaining votes. The existence of kinship between ethnic groups that occurs from this approach is also the reason for the community to choose. In addition there is support from ethnicity such as socializing again and inviting families to choose one candidate pair. Meanwhile, the existence of these ethnic identities becomes a political force to get votes. (Sagala and Believer, 2018)

eISBN 978-967-2426-22-6
13th – 14th December 2020

Further research on identity politics was carried out by Saradi Wantona, Rilus A. Kinseng and Sofyan Sjaf in 2018 with the title Practices of Identity Politics in the Local Political Dynamics of Gayo Communities. The results showed that, first; The dominant capital played by political actors in local political contestation is political capital, social capital and economic capital. Second, the practice of identity politics in the Gayo community which propagates the term Uken -Toa is carried out by political actors, while at the grassroots the identity sentiment between Uken and Toa is still ongoing and so strong. Third, the habitus of political actors is influenced by three things, history, religion and culture. That way, the conditions of habitus that played a role in political contestation were the history of the formation of the identity of Uken and Toa in the past and the political influence of fighting against each other by the Dutch colonialists. (Wantona, 2018)

The novelty in this study is the influence of identity politics on voter behavior in Pematangsiantar City in the 2018 North Sumatra Governor Election, which examines the relationship between identity politics in a community known as a "tolerant" city. This study is different from previous studies due to the influence of identity politics in the community of Pematangsiantar City which is known as a "Tolerant" City..

Method Research

The research approach that will be used in this research is quantitative with the type of correlation which aims to calculate the magnitude of the influence of identity politics on the voter behavior of the Pematangsiantar City community in the 2018 North Sumatra Governor and Deputy Governor Election. The research locations are in 8 sub-districts and 53 villages in Pematangsiantar City with a sample of 399 people. The data analysis technique was performed using the Spearman correlation

Result and Discuss.

Choosing behavior is a complex phenomenon. The decision to choose is determined by many factors. A candidate who comes from a certain primordial identity group may not necessarily be able to attract a majority in his own group. This can happen because, apart from the identity factor, voters also consider other factors, especially the personal quality of the candidate. In essence, local political dynamics often open up space for the mobilization of identity politics. In general, this study has found empirical evidence that religion and ethnicity which fuel identity politics are important factors in regional head elections. (Muhtadi, 2018)

Ideally, the people of Pematangsiantar City are not affected by the issue of identity politics in the 2018 North Sumatra Governor Election, because by looking at the results of research (SETARA, 2018) in measuring the Tolerant City Index (IKT) in 2018 in measuring the Tolerant City Index (IKT) which is also uses 3 main indicators to measure the level of freedom of religion / degree of tolerance of a country. Namely: First, faporitism or government privilege of certain religious groups. Second, government regulations that limit freedom of religion. Third, social regulations that limit religious freedom which are popularized by specifics, Brian J. Grim and Roger Finke (2006), the people of Pematangsiantar City will not be affected by Identity Politics both in their voting behavior and social tolerance in the 2018 North Sumatra Governor Election.

eISBN 978-967-2426-22-6
13th – 14th December 2020

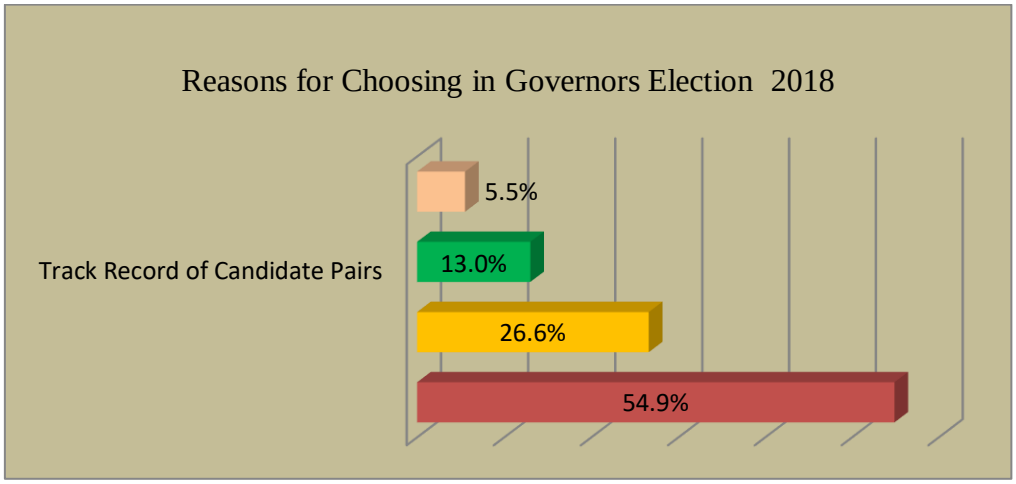

Figure 1: Reasons for Chosing in Governors Election 2018

It can be seen clearly that the choice of Pematangsiantar City community in the 2018 North Sumatra Governor Election cannot be separated from Identity Politics, namely due to religious similarities. Interestingly, in the case of the 2018 North Sumatra Governor Election, the candidate pair Edy-Musa Rajeksah is Muslim, while the Djarot-Sihar Sitorus pair is Muslim-Christian, especially in Pematangsiantar City, where the majority of the people are Christian as much as 55%, of course, vote for the Djarot-pair. Sihar Sitorus. The similarity of religion cannot be denied in the choice of identity politics of the people of Pematangsiantar City in the 2018 North Sumatra Governor Election. Voters in Pematangsiantar City are clearly divided between the voters for the Edy-ijeck and Djarot-Sihar pairs where Edy and Djarot are Muslims, only Sihar Sitous is a Christian. , and of course get full support from voters who are Christian in Pematangsiantar City, which is the majority religion in Pematangsiantar City. It is undeniable that the similarity of religion and political marketing brought by candidate pairs in the North Sumatra Governor Election campaign clarified identity politics in the 2018 North Sumatra Governor election in Pematangsiantar City community which is famous for the jargon of the city of highest tolerance in North Sumatra and number 3 highest in Indonesia. Like it or not, like it or not, identity politics cannot be separated from the local politics of the election for the Governor of North Sumatra in 2018, even though it is faced with people who live in the city which is known to be tolerant, Pematangsiantar City.

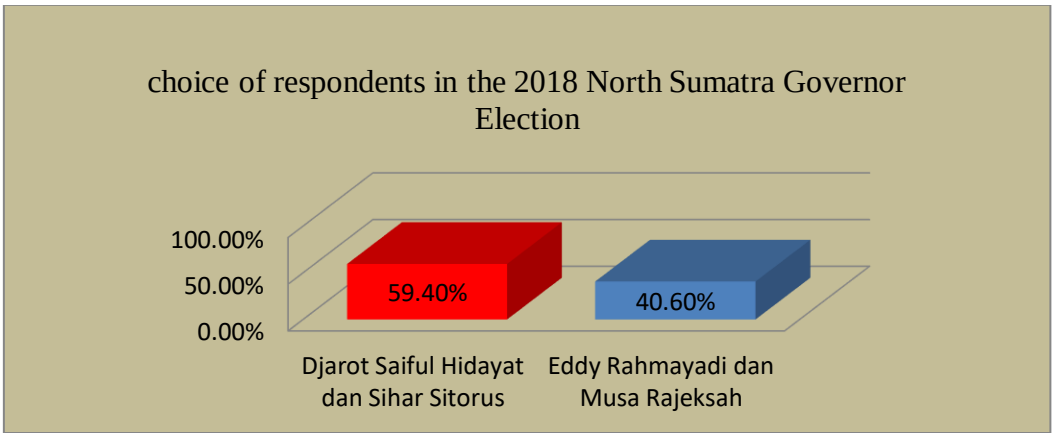

Figure 2: choice of respondents in the 2018 North Sumatra Governor Election

eISBN 978-967-2426-22-6
13th – 14th December 2020

This is important and attractive to political parties with pairs of candidates in local politics, be it the election for mayor / regent or governor election. Identity politics cannot be separated from local politics, this of course must be understood in our democracy in Indonesia, especially in local politics, that the political culture of Indonesian society cannot be separated from identity politics which is strongly embedded in people's choices. Even the most tolerant city in North Sumatra cannot be separated from this identity politics, and according to researchers, this is not a big problem in a democratic climate that gives citizens the freedom to be elected and to vote in every local political election. This clear thread between identity politics and local politics is expected to be able to be understood and managed by political party cadres, and political party administrators so that they are able to present candidate pairs in local politics (election for mayors / regents and elections for governors) who can harmonize local politics and identity politics. . Identity politics is should not and does not conflict with the climate of democracy in Indonesia, identity politics is legally permissible, this must be understood by political party administrators and cadres of political parties or people outside political parties (political party cadres) who wish to advance as a candidate for regional head either mayors / regents and governors in the regions. Thus, political party administrators who will carry candidate pairs in local politics (election of mayors / regents and governors) in the regions can display cadres or figures that are thick with regional identities from religion, ethnicity, regional origin, and of course have high capability and electability. in the community and a good track record and performance. Likewise, cadres and non-cadres of political parties who want to run as candidate pairs so that they are self-aware and pay attention to identity politics as the basic provisions in local political battles (elections for mayors / regents and governors) in the regions.

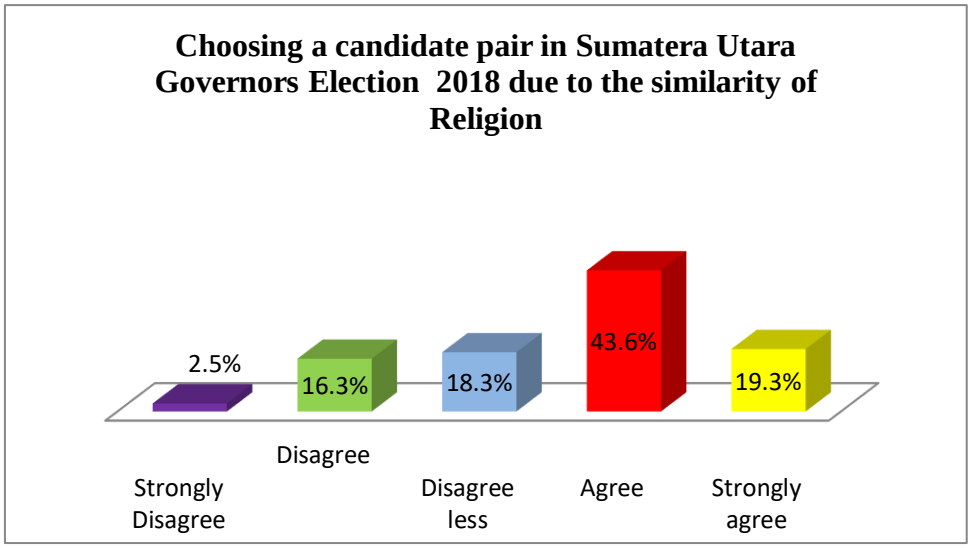

Figure 3: Choosing a candidate pair Sumatera Utara Governor Election 2018 due to the similarity of Religion

In Pematangsiantar City, pair number 2 Djarot - Sihar Sitorus received about 68.604% (percent) of votes, then pair number 1 Edy Rahmayadi - Musa rajeckshah received about 41.551% (percent) votes, this is directly proportional to the majority of Christianity as a religion The majority of the community's religion in Pematangsiantar City is 55%, of course, identity politics with the same religion that Sihar Sitorus has as a partner of Djarot Saiful Hidayat benefits in Pematangsiantar City. Thus the identity politics of religious equality has an

eISBN 978-967-2426-22-6
13th – 14th December 2020

effect on the choices of the Pematangsiantar City community in the 2018 North Sumatra Governor Election.

Table 1. Religion Responden * Choice in Sumatera Utara Governor Election 2018 Crosstabulation

Count

		Sumatera Utara Governor Election 2018		
		Djarot Saiful Hidayat dan Sihar Sitorus	Eddy Rahmayadi dan Musa Rajeksah	Total
Religion of Responden	Protestan	217	47	264
	Islam	20	98	118
	Katolik	15	0	15
	Budha	2	0	2
Total		254	145	399

Based on the table Table 1.Respondent Religion * Choice in the 2018 PILGUBSU Crosstabulation can be seen clearly from the 264 Protestant respondents who mostly chose pair number 2, namely Djarot Saiful Hidayat-Sihar Sitorus, as many as 217 people while Christian respondents who chose Eddy Rahmayadi -Musama Rajeksah, 47 people. This is clear because one of the candidate pairs, Sihar Sitorus, is a Protestant and has the full support of the Pematangsiantar City community, especially those who are Protestants. Meanwhile, as many as 118 Muslim respondents, the majority chose the Eddy Rahmayadi-Musa Rajeksah pair, as many as 98 people and only 20 people who chose the Djarot Saiful Hidayat-Sihar Sitorus pair. Hidayat is also a Muslim, but his partner Sihar Sitorus is a Protestant. Likewise, respondents who were Catholic and Buddhist all chose the Djarot Saiful Hidayat-Sihar Sitorus pair. This explains that identity politics with religious equality cannot be separated from local politics and affects the choice of the people of Pematangsiantar City, which is known as a Tolerant City in North Sumatra and the number 3 Tolerant City in Indonesia in the 2018 North Sumatra Governor Election

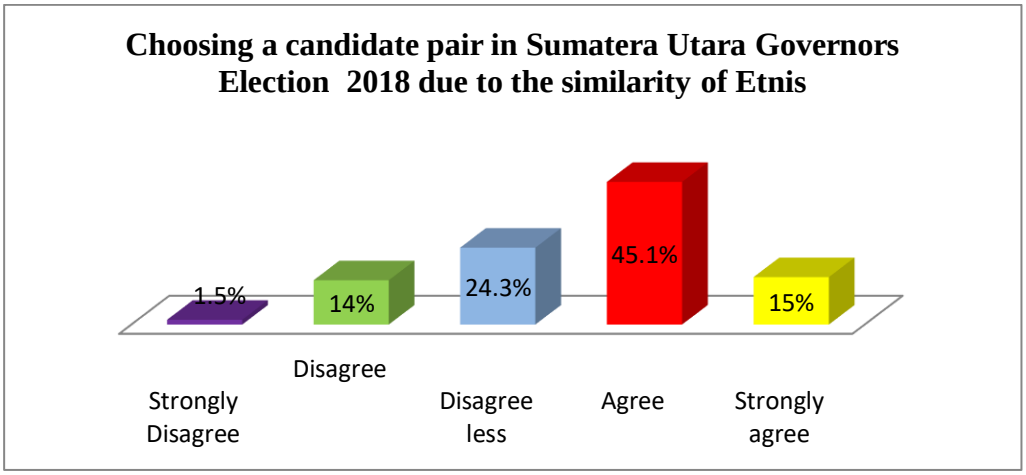

Figure 3: Choosing a candidate pair in Sumatera Utara Governors Election 2018 due to the similarity of Etnis

eISBN 978-967-2426-22-6
13th – 14th December 2020

Figure 3 explains the identity politics of ethnic equality affecting the choice of Pematangsiantar City community in local politics for the 2018 North Sumatra Governor Election. This is because Djarot Saiful Hidayat is originally Javanese from Solo, even though Djarot Saiful Hidayat is not Javanese born in Sumatra (pujakesuma), but only Djarot Saiful Hidayat is the only Javanese in the 2018 North Sumatra Governor Election. have Javanese ethnicity to the pair Djarot Saiful Hidayat-Sihar Sitorus

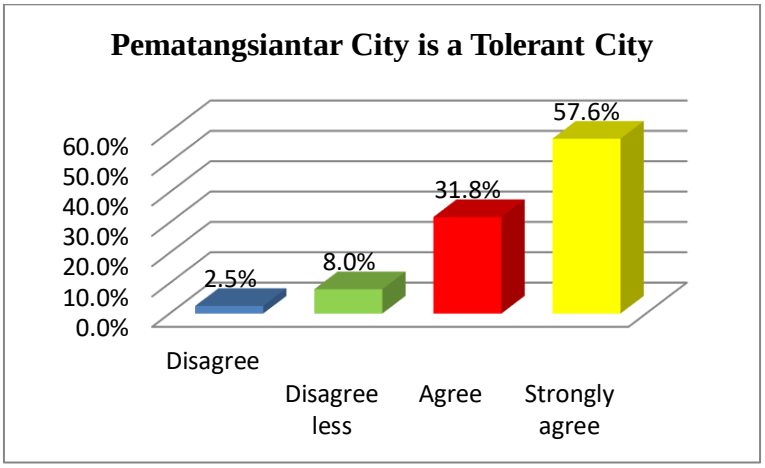

Figure 4: Pematangsiantar City is a Tolerant City

Tolerant city in North Sumatra and tolerant city number 3 in Indonesia are strongly attached to Pematangsiantar City. Religious tolerance, social tolerance, social tolerance are very strong in the social life of the Pematangsiantar City community, however this tolerance did not occur in local political choices, namely the 2018 North Sumatra Governor Election which presented candidate pair Edy Rahmayadi-Musa Rajeksah and pair Djarot Saiful Hidayat-Sihar. Sitorus. The results of the calculation of Pematangsiantar City KPUD pair Djarot Saiful Hidyat-Sihar Sitorus received 2,424,960 votes or 42.42%. In Pematangsiantar City, pair number 2 Djarot - Sihar Sitorus received about 68.604% (percent) of votes, then pair number 1 Edy Rahmayadi - Musa rajeckshah received about 41.551% (percent) votes which was influenced by the similarity of religion and ethnicity in Sumatra Utara Governor Election 2018

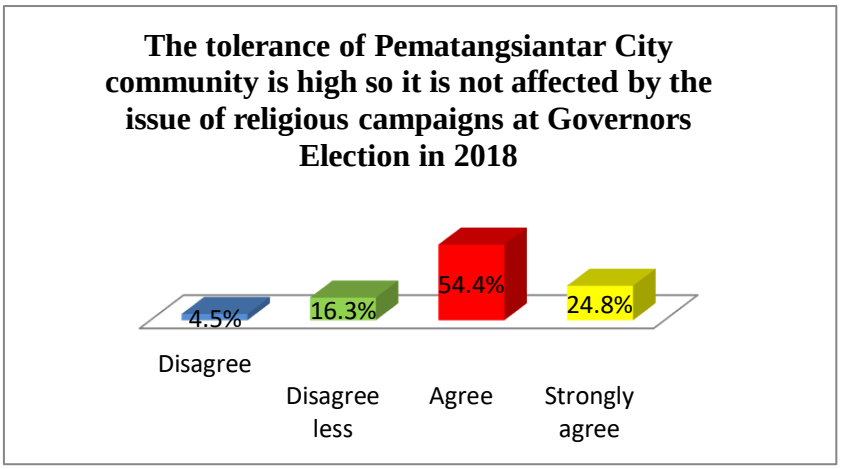

Figure5: The tolerance of Pematangsiantar City community is high so it is not affected by the issue of religious campaigns at Governors Election in 2018

eISBN 978-967-2426-22-6
13th – 14th December 2020

Figure 5 states that the tolerance of the people of Pematang Siantar City is high so that it is not affected by the issue of campaigning for religious differences resulting in divisions in people's lives during the 2018 North Sumatra Governor Election.

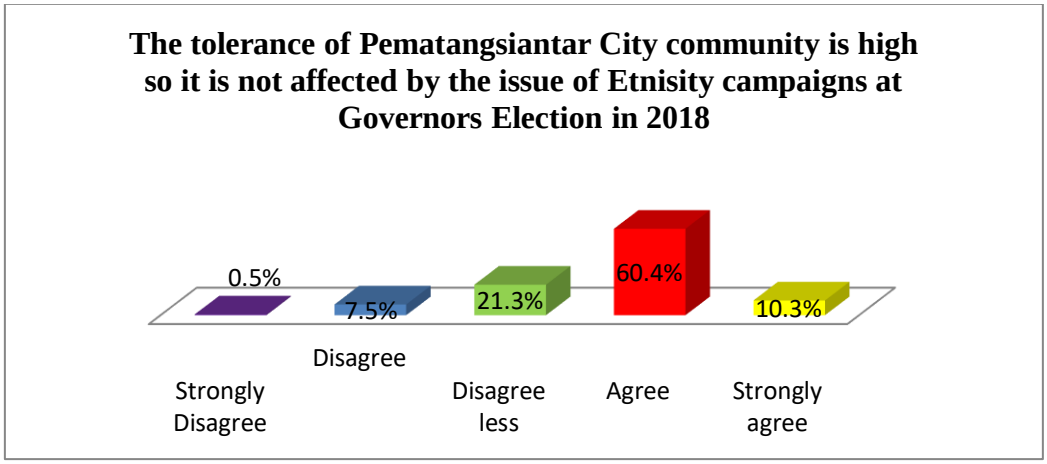

Figure 6: The tolerance of Pematangsiantar City community is high so it is not affected by the issue of Etnisity campaigns at Governors Election in 2018

Tolerance of Pematangsiantar City community is also seen from not being influenced by the issue of ethnicistas campaign in the North Sumatra Governor Election in the year, there is no friction that occurs among the people of Pematangsiantar City with issues of ethnicity, although identity politics still feels thick in Pematangsiantar City society, however, respectively the camp can still hold back and there is no social friction due to different choices in the 2018 North Sumatra Governor Election.

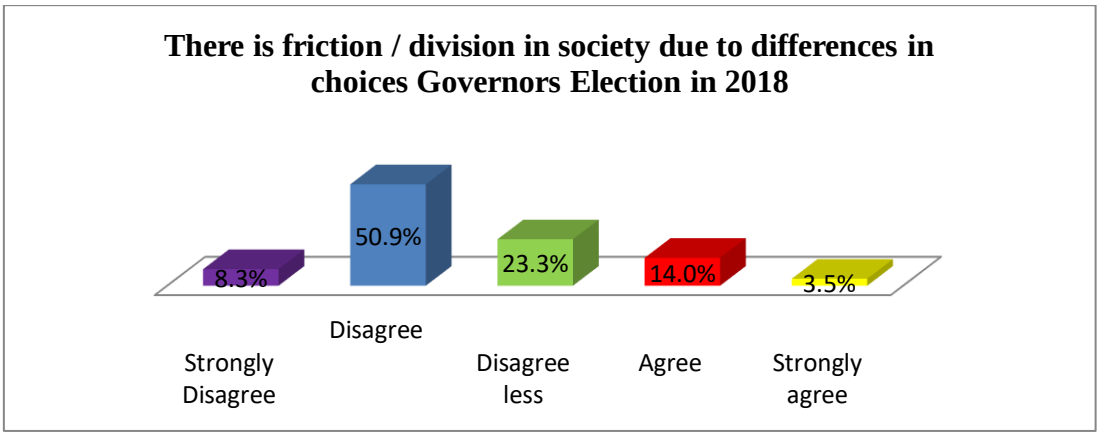

Figure 7: There is friction / division in society due to differences in choices Governors Election in 2018

Figure 7 shows Pematangsiantar City as a tolerant city, this can be seen from the absence of divisions in the Pematangsiantar City community due to different choices in the 2018 North Sumatra Governor Election. Even though there are still differences of opinion and differences in choice but there are no divisions in the community, let alone until they occur. chaos and Pematangsiantar City have proven to be a tolerant city with differences of opinion and different choices in the 2018 North Sumatra Governor Election.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 2. The Correlation of Identity Politics Against Tolerance of Pematangsiantar City Community in Sumatera Utara Governor Election 2018

Correlations

			Politic Identity	Community tolerance in Pematangsiantar City
Politic Identity	Politic Identity	Correlation Coefficient	1,000	-,120*
		Sig. (2-tailed)	.	,017
		N	399	399
	Community tolerance in Pematangsiantar City	Correlation Coefficient	-,120*	1,000
		Sig. (2-tailed)	,017	.
		N	399	399

*. Correlation is significant at the 0.05 level (2-tailed).

From the table above, it can be seen that the Spearman correlation coefficient is -.120. This means that the identity politics variable has a weak correlation with the tolerance of the Pematangsiantar City community in the 2018 North Sumatra Governor Election, which is -0.120 or very weak and negative. Correlation has two-tailed (2-tailed) possibilities.

Seeing the direction (type) of the relationship between the identity politics variable and the tolerance of the people of Pematangsiantar City in the 2018 North Sumatra Governor Election, the correlation coefficient in the table above is negative, namely -0.120, so that the relationship between the two variables is unidirectional. Thus it means that the higher it is identity politics in the 2018 North Sumatra Governor Election, socially tolerant of the Pematangsiantar city community will be low. Seeing the significance of the relationship between the two variables. Based on the output in the table above, it is known that the significance value or Sig. (2-tailed) of 0.017. because the significance number is 0.017 <0.05. So there is a significant relationship between the identity politics variable and the tolerance of the Pematangsiantar City community in the 2018 North Sumatra Governor Election. This means that the relationship between the two variables, namely the politics of identity and tolerance of the people of Pematangsiantar City in the 2018 North Sumatra Governor Election, is two-way or mutually influencing. The conclusion is that there is a correlation between the identity politics variable and the tolerance of the Pematangsiantar City community in the 2018 North Sumatra Governor Election which is very weak, negative, significant and two-way.

Coclusion

Identity politics is inseparable from the community which is known as the city jargon "Tolerant". Although there is a relationship between identity politics and the tolerance of the Pematangsiantar City community, the value of this relationship is weak. The correlation between the identity politics variable and the tolerance of the Pematangsiantar City community in the 2018 North Sumatra Governor Election (-0.120) is very weak, negative, significant and a two-way significance value or Sig. (2-tailed) of 0.017. because the significance number is 0.017 <0.05. The

meaning of identity politics affects the tolerance of the Pematangsiantar City community in the 2018 North Sumatra Governor Election.

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FACTORS INFLUENCING WORK ENGAGEMENT AMONG CANCER SURVIVORS IN MALAYSIA

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Abstract: *This study investigated the antecedents of work engagement of Malaysian employees who were cancer survivors. Work engagement refers to a positive, fulfilling, work-related state of mind characterizing employees who work hard and persist despite difficulties. Employees with high levels of work engagement are deeply involved in what they do and are happily absorbed in their work. This study was aimed at identifying individual and environmental-related factors that impacted work engagement. A quantitative research paradigm was adopted, with a cross-sectional design using data collected from cancer survivors registered at the General Hospital, Kuala Lumpur. The 270 participants in this study were randomly selected by inclusive criteria sampling. A validated instrument was tested in a pilot study. Partial Least Square-Structural Equation Model (PLS-SEM) was used to test the direct effects of work engagement. It was found that the level of all the tested variables (work engagement, employee resilience, social support and quality of working life) among the participants were high. This study highlights the importance of resilience and social support in improving work engagement among cancer survivors in Malaysia.*

Keywords: *work engagement, employee resilience, workplace social support, quality of working life, cancer survivors*

Introduction

Cancer is a major morbidity and mortality concern in Malaysia. Based on the National Cancer Registry for 2012–2016, Malaysia recorded an 11.3% increase in new cancer cases from 103,507 in 2007-2011 to 115,238 in the 2012-2016 period, with 44.7% being males and 55.3% females. Cancer imposes a tremendous economic burden on patients, their families and the society they live in. Apart from financial loss, cancer has important psychosocial effects, including work-related issues, on patients and their families (De Souza et al., 2017). Employment is important for the individual's wellbeing and is needed for economic, socializing and accomplishment reasons, as well as its contribution to the economy. Unfortunately, withdrawal from work participation is often associated with cancer survivors (Chow et al., 2015). Improvements in early detection and effective treatments of cancer have led to a high survival rate and, indeed, the rate of cancer survival has been increasing in Malaysia in recent times. The first population-based cancer survival study was reported by the National Cancer Registry Department, National Cancer Institute in 2018. The study reported a five-year relative survival (RS) involving patients with 15 types of cancers in Malaysia. The survival rate was higher in women and younger patients aged 15 – 44 years who comprised 21% of the sample. The increasing number of cancer survivors in the workforce warrants immediate intervention by organizations to boost work engagement of these employees. As the

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13th – 14th December 2020

population of cancer survivors is growing, it is important to understand the long-term effects of cancer and treatment of survivors at the workplace.

Many studies focus on work limitation for cancer survivors (Mehnert, de Boer & Feurstein, 2013). Unfortunately, such a research focus might spark misconceptions of employers towards cancer survivors' ability at the workplace as well as cast negative perceptions of the impact of cancer treatments and about cancer in relation to work. There were also reports of decreased employment quality, as evidenced by decreased job satisfaction, increased turnover intention, increased absenteeism, decreased job performance, and decreased organizational commitment (Gonzalez et al., 2018). It is not surprising, therefore, that cancer survivors have to deal with negative perceptions of their ability and contribution to their organizations. Little is known about the cancer survivor's 'well-being, engagement, their daily activities, and their work abilities at the work place' (Hakanen & Lindbohm, 2008).

To date, not many studies have been conducted on work engagement of cancer survivors. Are cancer survivors less engaged at work? This question leads to the research gap that this study hopes to fill by investigating the level of work engagement and the antecedents of work engagement among cancer survivors in Malaysia, as well as the role of workplace spirituality.

Work Engagement

Work engagement has been conceptualized in many ways, giving rise to numerous definitions, theories, and measurement instruments, as well as indecisiveness about the construct (Saks & Gruman, 2014). In the context of work engagement, environmental factors include workplace social support and quality of working life. With regard to the present study, it was presumed that cancer survivors would have higher work engagement if they received support at the workplace; they would also strive to have efficacy if they knew they were supported and appreciated by their supervisor and co-workers. Also, other environmental factors in this study included quality of working life which could lead to behavioral aspirations or positive outcome expectations such as work engagement. Employees are found to be more engaged at work if they have better quality working life (Geisler et al., 2019).

Employee Resilience and Work Engagement

There is strong empirical evidence of employee resilience as one of the most important personal resources and antecedents for work engagement. Past research reveals that highly resilient individuals show they can cope better and adapt to adversity such as stress at workplace (Malik & Garg, 2020). Specifically, when employees display positive emotions, it triggers an 'upward-spiral' of psychological resources which stimulate resilience, which in turn, fosters work engagement. In line with Wang, Li and Li (2017), they reported that resilient employees faced adversity, they could successfully cope, adapt, and recover, thus experiencing positive emotions, which in turn contributed to enhancing work engagement. Next, Dai, Zhuang, and Huan (2019) demonstrated that resilience of travel agency employees was the essential trait that diminished their intention to leave the organization and enhance their work engagement. Hence, the higher the employees' resilience, the increased work engagement is. This leads to the first hypothesis:

H1: Employee resilience is positively associated with work engagement of cancer survivors.

Social Support and Work Engagement

Research on the influence of workplace social support has focused on evaluating the impact of support received from various sources, typically supervisors and colleagues, to foster work

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13th – 14th December 2020

engagement. According to Schaufeli and Bakker (2004), supervisory support is a critical resource that can be instrumental in ensuring the successful attainment of work goals and help buffer stress associated with high job demands, thus leading to higher work engagement. For example, Kiema-Junes et al. (2020) reported that high social support at work namely supervisory support and collegial support was associated with higher total work engagement in Northern Finland. In another related study on the Asian diaspora, Nasurdin et al. (2018) revealed that peer support not only made it easier for employees to achieve their work goals but it also provided them with emotional support, particularly in times of stress, which in turn, motivated them to become more engaged with their work among staff nurses in Peninsular Malaysia. As indicated by previous studies, workplace social support gives rise to mutually beneficial actions, resulting in good relationships with superior and co-workers. Based on the discussion thus far regarding the important role of workplace social support in predicting work engagement, the following hypothesis is stated:

H2: Workplace social support significantly influences work engagement of cancer survivors.

Quality of working life and work Engagement

Over the years, a vast amount of research has convincingly enunciated the eminent role of quality of working life (QWL) in predicting work engagement. According Toscano-del Cairo et al. (2020) who opined from a South American perspective, the organization's effort to improve QWL yielded positive effects on the levels of engagement among employees of a higher education institution in Colombia. Together with job satisfaction, autonomy, work relations and continuing education, QWL is an important variable that influences work engagement (Geldenhuy, Laba, & Venter, 2015). Thus, it is likely that employees with adequate benefits from their organization are more likely to be fully committed to their work. Furthermore, such employees would have high work engagement as they feel that they have been treated fairly and with dignity and respect. Markedly, the quality of working life is seen to foster work engagement. Consistent with the existing literature aforementioned, this is indeed another interesting avenue to explore, especially from the cancer survivors' perspective. Having discussed the important role of quality of working life in predicting work engagement, the following hypothesis is developed:

H3: Quality of working life significantly influences work engagement of cancer survivors.

Conceptual Framework

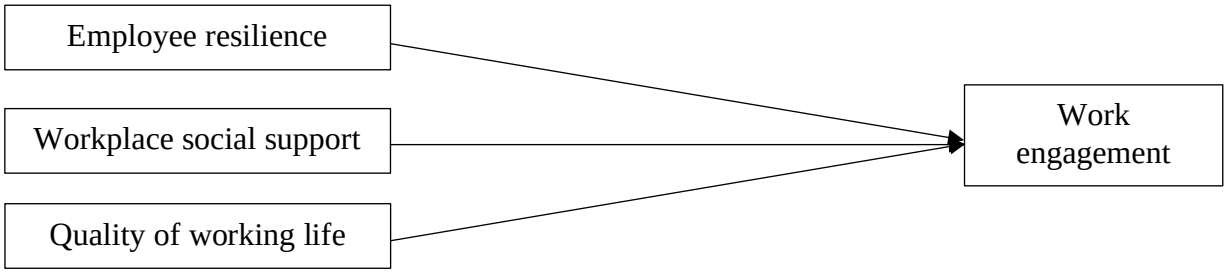

Figure 1: Research Framework

eISBN 978-967-2426-22-6
13th – 14th December 2020

Methodology

A cross-sectional study was conducted among 270 cancer survivors in Malaysia. The sample size for this study was estimated through G-power analysis at 80 per cent with effect size 0.15 (Cohen, 2013). As there was a total of four predictors, the minimum sample size was estimated at 85. The sample of 270 therefore exceeded the minimum sample size. The protocol of this study was approved by the Medical Ethics Committee (MREC), Ministry of Health, Malaysia and National Medical Research Registry (NMRR18-85-40225-IIR). Employed cancer survivors were identified with the assistance of hospital staff. The respondents in this study were selected using a systematic sampling from a list of all 1,192 eligible cancer survivors who had registered for follow-up sessions at the Kuala Lumpur General Hospital within a year.

Measures

This study utilized the Utrecht Work Engagement Scale (UWES-17) scale developed by Schaufeli et al. (2002) that uses a seven-point response format ranging from 0 (never) to 6 (every day). The composite reliability (CR) for work engagement was 0.937, as shown in Table 2. Employee resilience was measured using the Näswall, Kuntz and Malinen, (2015) Employee Resilience Scale (EmpRes). The complete measure consisted of 12 items and was measured using a seven-point Likert scale ranging from 1 (never) to 7 (almost); CR for this study was 0.921. Workplace social support was measured using by Smith et al. (2013). Each item in this construct was measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The CR for this study was 0.884. Quality of working life was measured using the Quality of Working Life Questionnaire for Cancer Survivors developed by de Jong et al. (2016) that contained 23 items scored on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The CR for this study was 0.947. The questionnaire used in this study was based on a well-established instrument originally in English. To adapt to the Malaysian context, the questionnaire in English was translated to the Malay language, while making sure that there was close equivalence between the original source and the Malay language. Back to back translation guidelines were applied to achieve semantic equivalence.

Findings

Demographic Profile

A total of 270 cancer survivors aged 18 to 40 years (mean 25.41) participated in this study. Participation of female cancer survivors was slightly higher at 51.5% than males (48.5%). Most of them were Malays (68.5%), followed by Chinese (22.6%) and Indians (7.0%). The respondents had different levels of educational qualifications: Master's degree (1.5%), Bachelor's degree (27.8%), Diploma (30.7%), Higher Education Certificate of Malaysia (4.4%), Malaysian Certificate of Education (31.1%) and Certificate of Lower Education (4.1%). With regard to marital status, 75.2% were single, 24.1% married, and 0.7% widowed. The demographic profile on work status showed that the majority of cancer survivors had permanent jobs (45.9%), while 20.4% had temporary employment; 25.6% were self-employed, and 8.1% were part-time workers. The mean reported gross monthly income was between RM1001 and RM5000. In addition, the number of cancer diagnoses showed that 89.6% of the respondents had been diagnosed only once, 10.4% had been diagnosed more than once. The most common cancers were leukaemia (52.2%), Hodgkin lymphoma (10.7%), Wilms' tumour (5.9%), Ependymoma (5.9%), ovarian cancer (3.7%). The demographic profiles of the respondents are shown in Table 1.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 1: Demographic Profiles of the Respondents (n=270)

Demographics	Category	Frequency	Percentage
Gender	Male	131	48.5
	Female	139	51.5
Ethnicity	Malay	185	68.5
	Chinese	61	22.6
	Indian	19	7.0
	Others	5	1.9
Religion	Islam	187	69.3
	Buddhism	52	19.3
	Hinduism	18	6.7
	Christianity	12	4.4
	Others	1	0.4
Marital status	Single	203	75.2
	Married	65	24.1
	Widowed	2	0.7
Level of education			
	Master's degree	4	1.5
	Bachelor's degree	75	27.8
	Diploma	83	30.7
	Higher School Certificate	12	4.4
	Malaysian Certificate of Education	84	31.1
	Lower Certificate of Education	11	4.1
Work status	Permanent	124	45.9
	Temporary	55	20.4
	Self-employed	69	25.6
	Part time	22	8.1
Types of cancer	Leukemia	141	52.2
	Breast cancer	1	0.4
	Ovarian cancer	10	3.7
	Hodgkin lymphoma	29	10.7
	Testicular cancer	5	1.9
	Papillary thyroid cancer	1	0.4
	Nasopharyngeal cancer	1	0.4
	Ependymoma	16	5.9
	Yolk sac tumour	7	2.6
	Wilms' tumour	16	5.9
	Ewing's sarcoma	9	3.3
	Langerhans Cell histiocytosis	2	0.7
	Left Orbital RMS	2	0.7
	Germinoma	2	07
	Lung cancer	3	1.1
	Brain cancer	5	1.9
	Skin cancer	2	0.7
	Pancreatic cancer	1	0.4
	Embryonal rhabdomyosarcoma	1	0.4
	Bladder cancer	1	0.4
	Hepatoblasma	7	2.6
	Neuroblastoma cancer	6	1.5
	Medulloblastoma	6	2.2
Frequency of cancer diagnosis	Once	242	89.6
	>once	28	10.4
Gross monthly income			
	< RM3,000	199	73.7
	RM3,001-RM5,000	57	21.1
	RM5,001-RM10,000	14	5.2

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13th – 14th December 2020

Age			
	18-20	59	21.9
	21-25	97	35.9
	26-30	61	22.6
	31-35	30	11.1
	36-40	23	8.5
Mean (Age) = 25.41; Standard deviation=5.682			

Data Analysis

The partial least square structural equation modelling has experienced widespread recognition in recent times. Since the study hypotheses were directional, the application of variance-based structural equation modelling (e.g. PLS-SEM) was a preferred method for examining relationships in exploratory research. Hence, we used Smart PLS 3.0 software (Hair et al., 2012) for the data analysis. The PLS-SEM analysis was carried out in two stages. The first stage analyzed the reflective measurement or outer model of the study. The structural or inner model showing the hypothesized relationships was analyzed in the second stage.

Assessment of the measurement model

A measurement of the outer model's reliability and validity can be examined in terms of internal consistency, convergent validity, and discriminant validity. The internal consistency was assessed using composite reliability (CR) values. A measurement model has satisfactory internal consistency reliability when the CR of each variable exceeds the threshold value of 0.7 (Hair, Ringle & Sarstedt, 2013). Table 2 shows that the CR of each variable for this study ranged from 0.88 to 0.94, all above the recommended threshold. The results indicated that the items used to represent the variables had satisfactory internal consistency reliability.

Next, the convergent validity of the outer model was examined for indicator reliability and average variance extracted (AVE). Fornell and Larcker (1981) suggest that a construct's convergent validity is still adequate if it has AVE less than 0.50, but CR above 0.60. As shown in Table 2, AVE values for work engagement, employee resilience and workplace social support were above 0.5, however, the AVE value of QWL was below 0.50, but since the CR value was above 0.60, the construct thus had sufficient convergent validity (Table 2).

Table 2: Evaluation of Measurement Model

Construct	Loading	AVE	CR	Mean	SD
Work Engagement	0.730	0.535	0.937	5.043	.752
Employee Resilience	0.791	0.626	0.921	6.069	.865
Workplace Social Support	0.773	0.608	0.884	4.116	.562
Quality of Working Life	0.667	0.454	0.947	4.096	.526

Discriminant validity, on the other hand, assesses the extent to which a construct is truly distinct from other constructs in the model, and thus captures a single unique phenomenon (Hair et al., 2017). Heterotrait-monotrait ratio of correlations (HTMT) was utilized in this study to assess the measurement model's discriminant validity. In this case, as can be seen in Table 3, all the HTMT values are lower than the conservative threshold value of 0.85. Discriminant validity was therefore established between all the construct pairs and distinctively different from one another.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 3: Discriminant validity assessment for the reflective variables (HTMT criterion)

	QWL	Resilience	Social Support	Work Engagement
QWL	-			
Resilience	0.747	-		
Social Support	0.731	0.835	-	
Work Engagement	0.180	0.108	0.158	-

Structural Model Assessment

The analyses of the hypothesis began with the structural model. In this study, the validity of the structural model was examined using the assessment of collinearity, significance, and the relevance of the structural model path coefficients, coefficient of determination (R^2), and predictive relevance (Q^2). First, collinearity statistics were measured in terms of the variance inflation factor (VIF), which is a suggested tool for assessing multicollinearity. Table 4 shows that all VIF values were less than the threshold value of 5, indicating that collinearity among the exogenous constructs of the structural model was not at critical levels (Hair et al., 2017). Table 4 also shows the results for Q^2 value for employee resilience (0.55), quality of working life (0.41), workplace social support (0.41), work engagement (0.42) respectively. The satisfactory values of predictive relevance for the dependent variable of work engagement demonstrated the large predictive validity of the work engagement model.

Table 4: Validity of Structural Model (VIF, R^2, Q^2)

	VIF	R^2 Value			Q^2 values		
	WE	R^2	Adjusted R^2	Effect size	SSO	SSE	Q^2 (=1-SSE/SSO)
Work Engagement (WE)		0.561	0.555	Moderate	536.366	307.566	0.427
Resilience	2.509				282.04	126.28	0.552
Social Support	2.203				194.05	113.184	0.417
Quality Work Life	1.016				903.612	531.878	0.411

Next, the level and significance of the path coefficients were examined using a bootstrapping procedure with 5,000 bootstrap samples in Table 5. The results in support of H1 ($\beta = 0.329$, $t = 3.325$) indicated that employee resilience had an influence on work engagement. Next, social support also had considerable influence on work engagement ($\beta = 0.243$, $t = 3.399$). Thus, H2 was supported. H3 focused on the influence of quality of working life on work engagement. However, the results ($\beta = 0.034$, $t = 0.621$) suggested that the relationship was not significant. Thus, H3 was not supported.

Table 5: Hypothesis testing of structural model

Hypothesis	Path Coefficient	Std. Error	t value	p value	Decision
H1: ER→WE	0.329	0.099	3.325**	0.001	Accepted
H2: SS→WE	0.243	0.071	3.399**	0.001	Accepted
H3: QWL→WE	0.034	0.056	0.621	0.535	Rejected

Note: t-value greater than 1.645 at *p<0.05, t-value greater than 2.33 at **p<0.01
WE= Work Engagement; ER= Employee Resilience; SS= Social Support; QWL= Quality of Working Life

Discussion

The main purpose of this study was to investigate the antecedents of work engagement, with special focus on the mediating role of workplace spirituality of cancer survivors. The cancer survivors in this study reported having high levels of work engagement. Thus, this study

concluded that cancer survivors were able to work and function as well as other employees who had not been stricken with cancer. The finding of this study thus, broadens the understanding of the researchers and practitioners by offering the empirical evidence of the study results. First, a direct correlation existed between employee resilience and work engagement (0.325, $p<0.001$). Resilience enhanced the cancer survivors' work engagement. This finding is well supported by Malik & Garg (2020) which state that cultivating employee resilience might aid a pathway to fostering engaged employees, wherein the employees not only employ their resources to tackle new challenges but also find new ways to deal with demanding situations at the workplace.

The testing of the second hypothesis (H2) resulted in a positive correlation between workplace social support and work engagement (0.399, $p<0.001$). The finding was similar to Wolter et al. (2019) whose study indicated that job resources like social support were capable of promoting work engagement internal and externally. Concurrently, Kiema-Junes et al. (2020) agreed that workplace social support influenced employee's work engagement. Hence, the present study concluded that the more the support received from the supervisor and co-worker, the more likely the cancer survivors will be engaged at work. Next, no significant relationship was found between QWL and work engagement; thus, H3 was not accepted. In this study, cancer survivors were engaged at the workplace without depending too much on the quality of working life. Next, the fourth hypothesis revealed a significant positive relationship between workplace spirituality and work engagement (3.885, $p<0.000$). Roof (2015) had similar findings regarding the relation between workplace spirituality and work engagement. Employees will be engaged when they are allowed to conduct themselves at the spiritual level in their workplace.

Implications of Study

This study has a number of theoretical and practical implications for HRD. Firstly, the findings of the study contribute to a better understanding of the concept of work engagement of employees who are cancer survivors in Malaysia. With a paucity of research on the influence of employee resilience, workplace social support on workplace engagement of cancer survivors in Malaysia, this study thus offers significant implications for HRD practitioners to develop an arsenal of approaches by which to boost employee resilience and workplace social support to enhance work engagement.

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ONLINE NEWS COVERAGE OF THE ARAB SPRING: CORPUS-BASED ANALYSIS OF KEYWORDS

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Abstract: *The so-called 'Arab Spring' in 2011 is one of the most significant event happened in the Arab region which bring major social and political reform to the Arab world. Arab Spring which begins in Tunisia at the end of 2010 rapidly seperated into other neighbouring countries such as Egypt, Libya, Morocco, Syria, Bahrain and Sudan. Since the early stage of protest, mass media has comprehensively reported on this historical event which brought down many Arab leaders who were in power for decades. Thus, Arab Spring has become the headline of many international media outlets, and the significant impact of the event is still being discussed by the media until now. Hence, the article aims to examine the Arabic online news discourse of the event by focusing on the keywords and prominent social actors in the news reports suuronding Arab Spring. The data for this study is consist of Modern standard Arabic online news published by four prominent news outlets namely: Al-Arabia of Saudi Arabia, Al-Jazeera of Qatar, BBC Arabic of UK and CNN of USA. These well-established news oulets were selected for their wide international coverage aims at various backgrounds of Arabic readers worldwide. Moreover, Al-Arabia of Saudi Arabia and Al-Jazeera of Qatar represent the Arab international media as both are based in the Arab countries, while BBC Arabic and CNN Arabic represent the 'West(ern)' media. The study employs corpus linguistics analytical tools by using corpus data mining software 'AntConc 3.4'. Then, the quantitative result of corpus data then will be analyse using qualitative approach based on the textual-oriented Critical Discourse Analysis (CDA) of Fairclough (1992) and Wodak (2001). The preliminary result shows that the outlets have a different way of depicting the Arab Spring events according to the outlet stance and ideology towards the event. Thus, the study will uncover the hidden ideologies at the back of discourse construction approaches utilised by the news outlets. Finally, the study will present suggestions for other related studies in the future.*

Keywords*: Arab Spring, Arabic Online news, CDA, Corpus Linguistics, Keywords.*

Introduction

The so-called 'Arab Spring' (in Arabic الربيع العربي*al-Rabi' al-Araby*) is a command term which widely being used to refer to the revolutionary wave of anti-government demonstrations, protests and riots happened in many Arab countries at the end of 2010 up untill 2013. This up-sclaed of protests against their Arab leaders who roled the countries for decades autocraticly started on 18th of December 2010 in a remote area of Tunisia known as Sidi Bouzid. This small town of Tunisia located approximately 250km South from the capital city of Tunis. The small

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13th – 14th December 2020

protest participated by the locals than turned into a huge demonstration and reached the Tunis city more than a a week later. The Tunisian version of Arab Spring also known as the 'Jasmine Revolution' has succesfully brought down President Ben Ali who governed Tunisia from 1981 until he was forced to left Tunisia on 14th January 2011. The 'domino effect' of Tunisian Jasmine Revolution then influenced other Arabs in the Middle East and North Africa (MENA) region to start their own anti- government uprising. Hence, the so-called 'Arab Spring' had brought huge political changes in many Arab countries such as Egypt, Libya, Yemen, Syria, Bahrain, Morocco and Sudan.

As of 2014, three years after the first wave of the so-called 'Arab Spring' started in Tunisia, the Arab rulers from Tunisia, Egypt, Libya and Yemen have been forced to step down after decades of clinging in power. Besides, big-scaled of demonstrations which resulted in political changes also have been reported in other Arab countries such as Algeria, Morocco, Iraq, Jordan, and Sudan. Even the Arabian Gulf where most of the oil-rich Arab countries are located were not save from being hit by the wave of 'Arab Spring. As a result, Bahrain, Oman, Kuwait and Saudi Arabia for instance are not exempted from recording series of minor protests demanding for changes in political and social issues.

The condition in Syria the worst Arab country hit by the 'Arab Spring' is much worse and torn the country apart. The anti-government protests in Syria had turn into full-scale of civil wars involved many groups and sects and resulted into more complex of political crisis. The Syrian crisis has already claimed thousands of lives and hundred thousands more leave Syria and become refugees in many countries particularly in Europe.

The signifan of 'Arab Spring' as one of the major historical events in the modern history of Arab region has attract international attention. Since 18th of December 2010 a day after Bouazizi set fire on himself as act of protest which later on inspired the wave of 'Arab Spring', the mass media has provided comprehensive media coverage of the 'Arab Spring' events. The news on the Arab Spring increased dramatically when the 'domino affect' of Arab Spring spread widely effecting many countries from the Northern Africa to the Arabian Gulf from Morocco in the West to Bahrain in the East.

There are several factors which caused this historical revolution which successfully removed many Arab dictators. The major factors that caused Arab Spring are the feeling of dissatisfaction with the governments and the huge gaps between the rich and the poor in which the ruler's families monopolised the country wealth. Moreover, factors which turned the protests participated by small group of local protestors into nationwide of demonstrations participated by millions of people are issues related to dictatorship among the Arab rulers, corruption, power abuse, human right violations, unemployment, extreme poverty and youth issues.

Thus, it is vital to examine the discursive constructions surrounding the so-called 'Arab Spring' in modern standard Arabic news articles from prominent Arabic international news institutions. The mass media particularly the modern standard Arabic online news providers have reported every detailed about Arab Spring since its begin in Tunisia. However, this news coverage are differ from each news institution as each of them covered the event from different point of views. As a result, these various versions of news reporting on the Arab Spring seem to be reporting on the different event participated by different characters of social actors and participated in different social events. Therefore, it is extremely interesting to linguistically examine the discourses of Arab Spring in the modern standard Arabic online news by using textual oriented Critical Discourse Analysis approach with the assist from corpus linguistics analytical tools.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Literature Review

Previous studies have examined the use of mass media for the means of encouraging political participation. One of these studies, McLeod *et al.*, (1999) who studied the role of mass media on political participation. The result argued that the newspaper readership received a strong impact on institutionalised participation. Moreover, the result of study showed that television news did not directly affect political participation. However, the news had a slight indirect effect on the institutionalised participation. Despite that, the study emphasised that communication and mass media played an essential role in triggering local political participation. Eilders (2000) on the other hand, examined the role of media in German from 1994 to 1998 as political tools. The study suggested that by focusing and emphasising on specific issues the media outlets indicate their political stand to the audience and highlight a distinct ideological profile of the outlets. The result of the study is backed by another study by Mutz (2001) who critically examined the role of media in facilitating communication across political difference.

Showing that the media has been used by political institutions to serve their ideas. Schudson (2002) and Leeson (2008), examined how the news media can be utilised as political institutions. The study argued that political science has tended to overlook investigating the news media as political institutions, although there are a lot of party-owned newspapers and throughout history an increasing "medialisation" of politics. Howard and Parks (2012) in a more recent study analysed the role of social media in the political change. The study suggested a working definition of social media and discussed other related term proposed by the concerned scholars in their studies. The results of study indicate that the social media is consisted of the information tools which are used to produce and distribute content.

Focusing on the Arab world, the Arabic media plays vital role toward the democratisation and political change in the Arab region of the Middle East and Nothern Africa (Lahlali, 2011). This can be tracked back to 1950s with the emergence of Arabic unity discourse and Arab national identity, which being further enhanced in 1990s with the start of the Arab transnational television broadcasting (Aldawood, 2004; Amin, 2001; Sakr, 2007). Many past studies have highlighted the features of Arabic transnational media outlets by focusing on bias and independence of various media institutions (Zayani & Ayish, 2006; Miladi, 2006; Fandy, 2007; Volkmer, 2008; Mellor, 2011, Ismail et.al, 2018, Harun et. al, 2019). Despite the claim of impartial, indipendence, objectivity and they are privately-owned, these Arabic media outlets have been used as political tools and controlled by people close to the government (Ismail et.al, 2018, Harun et. al, 2019).

Thus, Arabic transnational media is associated directly or indirectly with certain agendas and ideologies. Moreover, these ideologies are rooted in regional conflicts within the Arab world (Fandy, 2007). Mellor (2011) tracked how Arab media outlets managed to move from working under firm governmental grip to become commercially oriented media institutions, but still cannot totally avoid from the governmental influence. Hence, there is a little room for criticising these governments particularly those related to sensitive national and international issues. On the positive side, the Arabic transnational media like *Aljazeera*, *Al-Arabia*, *Al-Hurra*, BBC Arabic and CNN Arabic have offered the Arab audiences with a variety choice of content and presentation (Elareshi & Gunter, 2010; Al-Jaber & Gunter, 2013, Ismail et.al, 2018). As a result, these media outlets have created a challenge to the dominant of Arabic state media. Besides, the Arabic transnational media promoted the freedom of expression through their discussions and current affairs programmes (Miladi, 2006, Harun et. al, 2019).

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13th – 14th December 2020

Methodology

The study has gathered a collection of modern standard Arabic online news articles on the Arab Spring, in particular, those covered the Tunisian and the Egyptian revolution. These two revolutions are the most vital version the Arab Spring as it was happened almost continuously after the fall of Ben Ali's regime in Tunisia and the Egyptian started to overthrow the then President of Mubarak. Secondly, these two revolutions received the most coverage by the media particularly the Egyptian revolution. Thirdly, it happened at the early stage of the Arab Spring in which many have been underestimate the significant impact of the revolution in bringing political reform to the region. Hence, many news institutions as well as many Western superpower were yet to decide their clear stance of the conflict. These online newspaper articles come from various prominent modern standard Arabic news outlets which represents the different background of historical, social culture, political and economic backgrounds of each news institution. These modern Arabic news institutions are Al-Arabia of Saudi Arabia, Al-Jazeera of Qatar, BBC Arabic of UK (Arab region office in Cairo) and CNN of USA (Arab region office in Dubai).

The news articles which have been collected for the pilot study are those published between 17th of December 2010 which marks the start of Tunisian revolution until 10th of March 2011 when the temporary government of Tunisia takes charge of governing Tunisia after the revolution. The details on the collection of these news articles are as follow:

No.	Institution	Number of Articles	Total Words	%
1	Al-Jazeera	90	39,297	56.60
2	BBC Arabic	40	21,790	25.16
3	Al-Arabia	29	12,244	18.24
	TOTAL	159	73,331	100

On the other hand, the data of Egyptian Revolution come from the collection of newspaper articles dated from 25/1/2011 when the Egyptians start their mass protest in Tahrir Square until the early of May 2011 when the Army takes charge of governing the country. The details on newspaper articles on Egyptian Revolution are as follow:

No.	Institution	Number of Articles	Total Words	%
1	BBC Arabic	190	129,194	47.62
2	Al-Jazeera	151	75,447	37.84
3	CNN Arabic	43	20,731	10.78
4	Al-Arabia	15	6,804	3.76
	TOTAL	399	232,176	100

In the next step, all the news articles have been converted into electronic texts to form a collection of corpus data for language analysis. This corpus contains 558 total number of articles which carry 305,507 total number of words. The corpus then has been analysed using corpus analysis software known as AntConc Software version 3.4.4.0 (w) date 20th October 2014. This software is developed by Laurence Anthony from Waseda University, Japan.

The main purpose of utilising corpus analysis software is to obtain very useful qualitative data of keywords and wordlist in the corpus data. These quantitative data are extremely helpful for the quantitative analysis of the online news articles.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Analysis Results and Discussion

The analysis results for this study are focused on the wordlist and concordance analysis of social actor (Ben Ali as a case study). Hence, the study will present first the analysis results of the world list beginning from the wordlist result surrounding the Tunisian Revolution before moving into the Egyptian Revolution. The discussion then compared between the findings between the two revolutions by emphasising on the similarities and differences. The corpus data analysis results and its discussion are as followed:

Wordlist Results on Tunisian Revolution.

From the wordlist results produced by AntConc software, we can point out 13 important keywords which have the highest hit in term of word frequency. Furthermore, these 13 keywords also come in different forms that associated with every single of it such as verb, noun, adjective, singular and plural. All these make the hit numbers being increased. These keywords are:

No.	Keyword	Hit	Note
1	بن علي	857	Former Tunisian President. 837 hit for بن alone.
2	البوعزيزي	159	The young man who sparks the revolution.
3	الغنوشي	157	Most prominent Tunisian opposition leader.
4	الاحتجاجات	151	The Protests
5	المتظاهرين	104	The Demonstrators
6	الشعب	98	The People
7	الثورة	94	Revolution
8	السلطات	93	The Authorities
9	البطالة	85	Unemployment
10	العنف	71	Violence
11	الشاب	60	Young man
12	الاضطرابات	55	Unrest/disorder
13	الفساد	45	Damage \ Bad Thing

From the above table, we can observe that the three highest hits are related to names of important individuals which play an important role in Tunisian Revolution. They are the former President of Tunisia Ben Ali, Bouazizi and Tunisian opposition leader Ghanoushi. On the other hand, another 10 keywords from the list are associated with the detail descriptions of the revolution event. Therefore, we can find there are a lot of words which related to 'protest', 'demonstration', 'authorities', 'violence', 'chaos' and many more.

بن علي

This very important keyword which recorded the highest hit is referred to former Tunisian President Zain el-Bidine Ben Ali and most commonly known as Ben Ali. He becomes the President of Tunisia in 1987 and forced to step down by the vast majority of Tunisian during the Tunisia Revolution. Finally, Ben Ali has been forced to leave Tunisia on 14th January 2011. Thus, Ben Ali is the most important character in the Tunisian Revolution. Other keywords which associated with Ben Ali are:

No.	Keyword	Hit	Note
1	**الرئيس التونسي**	**456**	President of Tunisia.
2	**الحكومة التونسية**	**385**	Tunisian Government. 340 hits for **الحكومة**
3	**زين العابدين**	**217**	Zain el-Bidine.

eISBN 978-967-2426-22-6
13th – 14th December 2020

4	**المخلوع**	205	Ousted
5	**ليلى**	**59**	Laila Ben Ali – wife of former President of Tunisia

البوعزيزي

The second important keyword in Tunisian revolution is Mohamed el-Bouazizi. Being widely labelled as the most important man who sparks the Tunisian revolution. He just an ordinary young man doing a small business in his hometown and suddenly gain huge public attention when he burn himself protesting the government. Therefore, other keywords that surround Bouazizi are associated with 'burn' and 'suicide' as follow:

Word	Hit	Word	Hit
احراق	26	**الانتحار**	26
انتحار	20	**حرق**	12
حرقا	12		

الغنوشي

Ghanoushi is the most prominent opposition leader in Tunisia. He forms the major opposition force to compete with Ben Ali's government. Besides Bouazizi, Ghanoushi also plays very important role in Tunisian Revolution.

الاحتجاجات

'Protests' is the highest frequency keyword used to describe the Tunisian Revolution events and how it take place. The word **الاحتجاجات** (The protests) alone has recorded 151 hits. It also comes in different forms as can be seen in the table below:

Word	Hit	Word	Hit
احتجاجًا	70	**احتجاجات**	51
المحتجين	40	**احتجاجية**	19
الاحتجاجية	14	**المحتجون**	13
محتجين	12	**الاحتجاج**	11
للاحتجاج	**9**		

المتظاهرين

The word 'demonstrators' also recorded highest hits after the word 'protests'. Although the word 'protests' come with many different forms and variants, the word 'demonstrators' recorded the highest number in term of associated forms. The 'demonstrators' has 12 other forms in the corpus as follow:

Word	Hit	Word	Hit
المظاهرات	41	**مظاهرة**	36
مظاهرات	34	**المتظاهرون**	26
متظاهرين	24	**تَظاهرَ**	16
تظاهرات	15	**تظاهرة**	15
متظاهرون	15	**المظاهرة**	13
ومتظاهرين	13	**التظاهرات**	8

الشعب

The keyword **الشعب**, which means the people, also comes in different variants but still carry the same basic meaning.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Word	Hit	Word	Hit
الشعبية	**98**	شعبية	**49**
للشعب	**17**		

الثورة

The other forms of keyword of 'revolution' are:

Word	Hit	Word	Hit
ثورة	**59**	الثورات	**15**

السلطات

The keyword of 'the authorities' only have one other form in the corpus which in singular form السلطة (The authority). This singular word recorded 59 hits.

البطالة

Unemployment is the major factor that leads to Tunisian Revolution. The keyword 'unemployment' only has other one single form, which is العاطلين (unemployment men). It only recorded eight hits.

العنف

The word 'violence' mostly used to describe the revolution events particularly those involving the clash between the demonstrators with the authorities. It also has different forms in the corpus.

Word	Hit	Word	Hit
عنيفة	**35**	عنف	**17**
العنيفة	**9**		

الشباب

The other forms of keyword الشاب (Young man) are:

Word	Hit	Word	Hit
شاب	**43**	الشباب	**25**
الشبان	**22**		

الاضطرابات

This keyword also associated with another word such as:

Word	Hit	Word	Hit
الإضراب	**11**	إضراب	**11**
اضطرابات	**10**		

الفساد

This keyword only comes with another two types which are:

Word	Hit	Word	Hit
بالفساد	**17**	فساد	**13**

eISBN 978-967-2426-22-6
13th – 14th December 2020

Other Keywords

The other keywords which also recorded a significant number of hit are **الشغب** (chaos) 40 hits, **القتلى** (dead people) 28 hits and **قتيلاً** 17 hits, **المعتقلين** (remanded people) 28 hits and **اشتباكات** (clashes) 27 hits.

Wordlist Results on Egyptian Revolution.

Slightly different from wordlist results for the Tunisian revolution, the corpus data on Egyptian revolution has 20 important keywords which have the highest hit in term of word frequency. As previously mentioned, these 20 keywords also come in different forms that associated with every single of it such as verb, noun, adjective, singular and plural. These 21 keywords are:

No.	Keyword	Hit	Note
1	**مبارك**	**2940**	Mubarak, Former Egyptian President.
2	**القاهرة**	803	Cairo.
3	**التحرير**	792	Tahrir Square.
4	**المتظاهرين**	733	The Demonstrators
5	**الجيش**	716	Army
6	**الشعب**	**686**	People
7	**الحكومة**	623	Government
8	**النظام**	386	Ruling System
9	**الاحتجاجات**	385	The Protests
10	**السلطة**	350	Authorities
11	**الثورة**	321	Revolution
12	**الجمعة**	318	Friday
13	**المصريين**	303	Egyptian
14	**المعارضة**	292	Opposition
15	**البرادعي**	228	El-Baradei, prominent Egyptian opposition leader
16	**الحوار**	183	Dialog
17	**العنف**	164	Violence
18	**الشباب**	159	Young man
19	**الديمقراطية**	129	Democracy
20	**إسرائيل**	126	Israel
21	**اشتباكات**	73	Clash

The data in the table shows that the keyword **مبارك** (Mubarak) former Egyptian President recorded the highest hit compare to other keywords. This also reflects how Mubarak plays an important role in Tunisian Revolution as he becomes the centre of attention in newspaper articles which report on Egyptian Revolution. On the other hand, another two keywords from the list which also recorded the highest hit are related to the location of Egyptian Revolution namely capital city of Egypt, Cairo and the Tahrir Square. In addition, other keywords such as 'army', 'demonstrators', 'revolution','violence', 'democracy' and many more are used to describe the revolution events that largely take place in Cairo particularly in Tahrir Square at the centre of Cairo city.

مبارك

This very important keyword in the corpus of Egyptian Revolution refers to Mohamed Hosni Mubarak former Egyptian President who serves as Egyptian President from 1981 until 2011. Mubarak is the centre attention in Egyptian Revolution when Egyptian voice their protest against his government and ask him to resign. Finally, on 11th of February 2011, Mubarak

eISBN 978-967-2426-22-6
13th – 14th December 2020

declared his resignation after serving as President of his country for almost 30 years. The keyword **مبارك** also largely associated with another keyword which recorded among the highest hit according to the wordlist result. These words are:

No.	Keyword	Hit	Note
1	**الرئيس المصري**	1775	President of Egypt. 1492 hits for **الرئيس**
2	**الجمهورية المصرية**	1007	Tunisian Government. 115 hits for **الجمهورية**
3	**حسني**	687	Hosni (Mubarak).
4	**رئيس**	505	President
5	**عمر سليمان**	431	Omar Suleiman – former Vice President of Egypt
6	**للرئيس**	135	For the President
7	**جمال**	122	Jamal Mubarak – the son of Mubarak
8	**لمبارك**	116	For Mubarak
9	**المخلوع**	74	Ousted
10	**سوزان**	**66**	Suzan Mubarak – Wife of Mubarak.

القاهرة

This keyword refers to the capital city of Egypt Cairo. Cairo is the major location for the Egyptian Revolution. Cairo also gains huge international attention during the revolution. Another keyword associated with 'Cairo' is **العاصمة** (the capital city) which recorded 141 hits.

التحرير

This third keyword is closely related with previous keyword 'Cairo'. Tahrir Square situated in the middle of Cairo and it is considered as an important landmark of Cairo. During the revolution thousands of Egyptian gathered here to show their protest toward Mubarak' regime. Another keyword which closely works with 'Tahrir Square' is **ميدان** (square) 745 hits.

المتظاهرين

This keyword means the demonstrators. It is widely used to describe people who participated in the revolution particularly those who are gathered in Tahrir Square. It also comes in many language forms such as noun, verb, singular and plural as can be seen in the following table:

Word	Hit	Word	Hit
المتظاهرون	233	**المظاهرات**	226
مظاهرات	135	**التظاهرات**	104
تظاهرات	73	**التظاهر**	61
مظاهرة	50	**تَظاهرَ**	42
تظاهرة	41	**للمتظاهرين**	40
متظاهرين	38	**متظاهرون**	37
المظاهرة	34		

الجيش

This keyword means 'army'. In contrast to the keyword of 'demonstrator', it is widely used to refer the group who control the demonstrators in order to protect the government and other public interests. Therefore, there are a lot of clash between these two groups of demonstrators and the army during the revolution. There is also keyword of **الشرطة** (police) with 329 hits and 49 hits for **شرطة**. Police also help the army to control the demonstrators and when the demonstration become violence the armed force take the full charge in dealing with the demonstrators. Another keyword that also used to refer the army **المسلحة** 220 hits, **العسكري**160 hits and **العسكرية** 97 hits.

eISBN 978-967-2426-22-6
13th – 14th December 2020

الشعب

Other language forms for this keyword in the corpus which recorded significant number of hits are:

Word	Hit	Word	Hit
الشعبية	**147**	**للشعب**	**64**
شعبية	**56**		

الحكومة

The keyword 'government' also forms the opposite image to compete with the 'demonstrators'. In addition, the government also tries to protect their interests and take actions again the demonstrators. At the same time, the government has been negatively labelled by the demonstrators to show their anger and protest towards the ruling system. Other language forms for this keyword are:

Word	Hit	Word	Hit
حكومة	**234**	**الحكومية**	**50**

النظام

This keyword means the 'ruling system' and it is closely related to 'government'. According to wordlist result from the corpus, other language forms for this keyword are:

Word	Hit	Word	Hit
نظام	**241**	**التنظيم**	**49**
تنظيم	**47**	**نظامهُ**	**47**
للنظام	43		

الاحتجاجات

Other language forms for this keyword are:

Word	Hit	Word	Hit
المحتجون	**90**	**احتجاجات**	**79**
الاحتجاج	**45**		

السلطة

This is another keyword which has a direct link with the keyword of 'government'. It also comes in different language form as can be seen in the following table:

Word	Hit	Word	Hit
السلطات	**178**	**للسلطة**	**128**
سلطة	**37**		

الثورة

This keyword which means 'revolution', comes with another two language forms. They are:

Word	Hit	Word	Hit
ثورة	**132**	**للثورة**	**43**

eISBN 978-967-2426-22-6
13th – 14th December 2020

الجمعة

The Egyptian revolution is well known for its link with Friday. Friday is the day when the demonstrators hold their mass protest in Tahrir Square. The demonstrators also set Friday as the final day for Mubarak to resign. Therefore 'Friday' is among important keyword which recorded a significant number of hit from the corpus. Another language form for this keyword is **جمعة** with 120 hits.

المصريين

This keyword refers to the main participants in the Egyptian revolution. Rather than being label as 'demonstrator' they are more generally labelled as 'Egyptian'. Another word which also carry almost similar meaning is **المواطنين** (residents) 128 hits. Other language forms for keyword 'Egyptian' are:

Word	Hit	Word	Hit
مصرية	**92**	**المصريون**	**77**
مصري	**74**		

المعارضة

Naturally, this keyword represents an opposite wave with the keyword 'government'. Other language forms for this keyword are:

Word	Hit	Word	Hit
المعارض	**64**	**معارضة**	**43**
المعارضين	**35**		

It is also good to mention that, the most prominent Egyptian opposition movement 'the Muslim Brotherhood' also recorded a significant number of hit from the corpus, which is 183 for **الإخوان** and another 94 hits for **الاخوان**.

البرادعي

Mohamed El-Baradei is a well-known figure for his international involvement for International Atomic Energy Agency (IAEA) and won the Noble Peace Prize in 2005. He then, compete with Mubarak in Egyptian Presidential election. During the revolution, he plays an important role together with other opposition movements to topple Mubarak regime.

الحوار

This keyword perhaps shows that the revolution is not always riots, chaos and violence. There is some initiative from the government and the opposition toward a peaceful end of the revolution. One of this initiative is through dialogue or negotiation among the leaders.

العنف

This keyword does not have any other language form in the studied corpus.

الشباب

Youth is the main participants in the revolution. Word **شباب** also recorded 82 hits.

eISBN 978-967-2426-22-6
13th – 14th December 2020

الديمقراطية

One of the major demands ask by the demonstrators during the revolution is to have their own right in 'real democracy', therefore, keyword 'democracy' recorded a high number of hit in the wordlist result. Other language forms associated with this keyword are:

Word	Hit	Word	Hit
الديمقراطي	**78**	**ديمقراطية**	**63**

Democracy also associated with the election, thus, we can find the word **انتخابات** also recorded almost same number with keyword 'democracy' 130 hits plus **الانتخابات** with 115 hits.

إسرائيل

It is quite interesting to mention that, the Egyptian revolution has grabbed attention and pressure from foreign countries particularly Israel and United State of America (USA). According to the wordlist result, the word 'Israel' is mentioned 221 times in the corpus and the USA with total 425 hits. The details as follow:

Word	Hit	Word	Hit
إسرائيل	**126**	**الاسرائيلي**	**51**
إسرائيل	**44**		

Word	Hit	Word	Hit
الأمريكية	**98**	**الأمريكي**	**78**
الأميريكية	**74**	**الأميريكي**	**66**
الأميركية	**65**	**الامريكي**	**44**

It is worth to mention that other words that associated with the USA, particularly their leaders, name also recorded a high number of hit for instance: **واشنطن** (Washington) 118 hits, **باراك** (Barack) 106 hits, **الأبيض** (White House) 84 hits, **أوباما** (Obama) 67 hits and Clinton **كلينتون** 66 hits.

اشتباكات

The other language form for this keyword is **الاشتباكات** which recorded 59 hits.

Another keyword.

According to the wordlist result produced by Antconc software from the studied corpus, other significant important keyword are **الغضب** (anger) 104 hits, **الفساد** (damage) 91 hits, 51 hits for each of this word which refers to the action taken toward the demonstrators **القتلى** (killed), **المعتقلين** (remanded), **القبض** (arrested) and **السجناء** (prisoners). In addition, word **الاضطرابات** (unrest/disorder) only recorded quite a low number of hits in the corpus of Egyptian revolution with 45 hits compare to other keywords.

Comparing and Contrasting between the Wordlist Results.

Before going into the details of the comparison between both set of corpus data, we must acknowledge that both corpus data for Tunisian revolution and Egyptian revolution have different size. The corpus data for Egyptian revolution is bigger than Tunisian revolution in term of both total number of articles and the total number of words. Corpus for Egyptian revolution has 399 number of articles and 232,176 number of words compared to 159 articles and 73,331 words for Tunisian revolution. Therefore, the corpus data on Egyptian revolution

eISBN 978-967-2426-22-6
13th – 14th December 2020

has recorded a higher number of hit for each of its keyword compare to the corpus data on Tunisian revolution. In addition, the Egyptian revolution corpus offers more keywords and the language variants which associated with every keyword. Although both corpus data for the Egyptian revolution and the Tunisian revolution come from three same modern Arabic newspaper institutions, the number of articles published by them are more towards the Egyptian rather than Tunisian revolution. This shows that the Egyptian revolution has grabbed more attention among the Arabic media compare to the Tunisian revolution.

Despite these fundamental differences between both corpus data, the wordlist results produced by Antconc software reveal that both of the corpora share many similarities. The first and the most obvious similarities between the corpus of the Egyptian revolution and the Tunisian revolution is both former Egyptian and Tunisian presidents during the revolution have recorded the highest hit in the wordlist result. This result reflects how important these two individuals in the discourse of Egyptian and Tunisian revolution. It is also safe to say that Mubarak and Ben Ali are the centre attention of the discourse on each Egyptian and Tunisian revolution. Furthermore, both keywords of Mubarak and Ben Ali are associated with many other words linked to their position as a President of their countries. Interestingly, keywords of Mubarak and Ben Ali also associated with their wives Susan Mubarak and Laila Ben Ali. Finally, both keywords of Mubarak and Ben Ali also shared the most high frequency of adjective associated with their name which is **المخلوع** (Ousted).

Both corpus of Egyptian and Tunisian revolution wordlist result also reveals that they share seven important keywords which recorded a high number of hit. These keywords are **المتظاهرين** (demonstrators), **الاحتجاج** (protest), **السلطة** (authority), **الشعب** (people), **الثورة** (revolution), **العنف** (violence) and **الشباب** (youth). All these keywords are used to describe the details on revolution events for both Egyptian and Tunisian revolutions. Although there are a group of words such as **القتلى** (killed), **المعتقلين** (people being arrested), **الفساد** (bad/damage) and **الاضطرابات** (unrest/disorder) recorded a low number of hit for both set of corpus data, all these words are widely being used to describe the revolution events in both corpus data.

In term of differences between the corpus of the Egyptian revolution and the corpus of the Tunisian revolution, the wordlist results show that each of these two revolutions has its own unique characters. For example, while the Egyptian revolution is famously related to keywords of location such as ‘Cairo’ and ‘Tahrir Square’, the Tunisian revolution, however, is closely linked to names of important individual who spark the wave of revolution like ‘Bouazizi’ and ‘El-Ghanouchi’.

Among other unique features in term of keywords for the Egyptian revolution is the high frequency of keyword ‘Friday’ which cannot be found in the corpus of the Tunisian revolution. Furthermore, we can observe a significant number of foreign countries involvement the news articles around the Egyptian revolution particularly from the USA and Israel. Therefore, a total number of hit for all word associated with both keywords of USA and Israel in the frequency list is 425 and 221 respectively.

One of the major reasons for mass protest among Tunisian during their revolution is unemployment issues. Thus, the word **البطالة**‘unemployment’ has recorded a high number of hit in frequency list of Tunisian revolution corpus. In contrast, unemployment is not considered as a major issue in the Egyptian revolution. As a result, the word **البطالة** ’unemployment’ does not record a high number of hit in Egyptian corpus. Egyptian in their revolution asks for ‘real democracy’ and ‘clean election’. This can be clearly observed from the wordlist result for Egyptian revolution which shows both keywords of **الديمقراطية** (democracy) and **انتخابات** (election) have recorded a high number of hit.

eISBN 978-967-2426-22-6
13th – 14th December 2020

To sum up, the wordlist result shows that both corpus data on Egyptian revolution and Tunisian revolution of Arab Spring has their own keyword, which in turn reflects the unique characters of each revolution. However, there are a lot of command keyword which associated with both versions of revolutions. These keywords are mainly related to the details of revolutions events itself.

Conclusion

The so-called the Arab Spring which began in the late 2010 has bring a major transform to the social and political landscape of the Arab region. Media as one of the most influential tools in shaping people perspective has comprehensive reported on the event since the very beginning. However, media has been covering the event with and attitude which make the narrative of the event significantly differ from each news institution. This study highlighted one of the main linguistics elements of the modern standard Arabic news discourse construction surrounding the Arab spring. By focusing on the two version of the Arab Spring namely the Tunisian and the Egyptian Revolution, the study has highlighted the most prominent keywords in the corpus data surrounding the two revolutions.

The results showed that, there are many shared keywords between the two revolutions such as command words related to the protests, demonstration, authority and governments which indicated the shared similarities in the ingredient of the two revolutions. However, looking into more details of the keywords showed that the wordlist result shows that both corpus data on Egyptian revolution and Tunisian revolution of Arab Spring has their own keywords, which in turn reflects the unique characters of each revolution. This furthermore emphasised the different characters of each revolution and significantly different events took place in these two revolutions. These significantly differed keywords have abolished the command shared keywords which associated with both versions of revolutions, hence highlighted the distinguished identity of each revolution. These keywords, moreover, are mainly related to the details of revolutions events itself, which in turn make each of these two revolution is unique by itself.

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THE IMPACT OF INTELLECTUAL CAPITAL TOWARDS FIRM PERFORMANCE: EVIDENCE FROM FOOD AND BEVERAGE COMPANIES IN MALAYSIA.

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Abstract: *As the world of corporate focuses on generating profit and attaining capital gain, most organization need to realize the importance of non-financial disclosures for the enhancement of better decision making. The non-financial disclosures include all the intellectual capital components as they, individually affect the firm performance of Food and Beverage companies in Malaysia. Using regression analysis, shown that Capital Employed Efficiency is found to be significant to the performance of Food and Beverage companies in Malaysia. Physical capital and financial assets also are important elements for stockholders and the business management. Hence, Food and Beverage firms in Malaysia should focus in maintaining or increasing the fixed asset since it can boost the firm performance.*

Keywords: *Intellectual Capital, Firm Performance, Food and Beverage*

Introduction

An organization only possess knowledge and capability of it's employees as the irreplaceable capital and that productivity of the capital heavily rely on the effectiveness of people sharing their competence with those who can use it.

Many people are aware that knowledge-based organization cannot run smoothly if the internal management are not in par with the organization's objectives, vision, and mission. An organization is able to put up with global challenges only if the organization can be such a competitive organization. To achieve such standard, one must have knowledge management. Knowledge management covers a wide range of courses that includes fields of business administration, information systems, management, and library and information sciences (Nonaka, 1991). Of many listed above, an indirect vital field for surviving in the edging competition market is intellectual capital. Intellectual capital is a key to boost firm's performance if well monitored. Knowledge-based economy not only includes traditional alternative but also intellectual capital. Therefore, it is not suitable to use traditional method such as conventional accounting principles for economy which are based on intellectual capital (Gan & Saleh, 2008).It is inevitable that creation of intellectual capital is able to provide better economic value than production of material goods.(Chen, Cheng & Yuchang, 2005)

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13th – 14th December 2020

Intellectual Capital

As a part of company's asset, intellectual capital can simply be defined as a term used to depict the intangible assets offered to a corporation in the sense of efforts of the employees of the entity and knowledge assets such as patents, trademarks, copyrights, and other results of human innovation and thought.

According to Nazari & Herremans (2007), intellectual capital is usually categorized into four categories which are as follows:

- **Legally recognized bought intangible assets** such as franchises, patents and copyrights
- **Legally saleable and protected intangible assets** such as brands, trademarks, customer lists and customer orders
- **Structural intangible assets** such as the databases and system used within the company. For instance, information system and accounting system
- **Human capital intangible assets** such as the ideas and opinions of employees towards the organization. For instance, an idea of marketing techniques of an employee

As indirect it sounds, intellectual capital is intangible – it cannot be physically seen, grasped or accurately measured. As per Frykman & Tolleryd (2010), intellectual capital is all of the non-financial assets of an entity that cannot be portrayed by balance sheet of that entity. Since intellectual capital is something that cannot be solidly visible, Tawy & Tollington (2012) have deduced that no universal definition exist for intellectual capital and the best way to connect cause and effect relationship between intellectual capital and creation of value must be indirect. Measuring intellectual capital of firms' are vital as it is the era of Knowledge Age , where the economy is slowly all turning to use knowledge to run their business operations. Andrew Kok (2007) has mentioned in previous study that elements such as human capital, structural capital and customer capital are essential variables of intellectual capital management programme, which forms a part of knowledge management.

Human Capital

As the first part of the element exist in VAIC method, human capital can be defined as the accumulation of knowledge, habits, social and personality which are formulated together to provide an opportunity for economic value creation of an organization.

In other words, human capital is a collection of resources. Resources which are included in the capital are talents, knowledge, skills, experience, wisdom and so on which are possessed by the employees of an organization. These resources are considered as wealth of the organization as they can be used to achieve profitable decisions of the organization. In a broader view, human capital can bring an economic value to the country since every organization in Malaysia contribute to national income.

Human capital efficiency, which an independent variable in this study can be measured by value added divided by human capital. According to Kamath (2008) in India, when the relationship between IC components and the traditional measures of performance in the drug industry are tested during 1996-2006, the outcome indicates that human capital has a major impact on the profitability and productivity of the firms.

Structural Capital

The second part of the element in VAIC method, structural capital can be defined as almost every vital element that must exist in an organization to provide support for human capital in performing in their tasks. Structural capital is an aiding assistance in structuring the human

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13th – 14th December 2020

capital to function. The capital is owned by an organization and retained with an organization even when people dismiss from the organization. Structural capital includes traditional things as buildings, hardware, software, processes, patents, and trademarks. In addition, it also includes such things as the organization's image, organization, information system, and proprietary databases. According to Gan and Saleh (2008), structural capital efficiency (SCE) is a way how structural efficiency added value is measured. Structural capital is essential in organization to ensure products and services can sell well in the market.

Relational capital / Capital Employed

Capital employed can be viewed from the economic side as well. It is known as the equity capital and funds as well as loans and long-term liabilities. It is fixed asset plus working capital where working capital is a vital element in generating value. Working capital is under a manager's control and generally includes accounts receivable, inventory and equipment.

Capital employed in this research will be measured by capital employed efficiency. The formula of calculating this independent variable is value added divide with capital employed. According to Irina Berzkalnea and Elvira Zelgalvea (2014), capital employed efficiency portrays value created by one unit of investment in the capital employed and mentioned that relational capital represents that portion of firm's market value that can be attributed to its portfolios of business relationships.

Problem Statement

As knows, only physical asset is included in the balance sheet which would not show the true value of asset held by an organization. This is because non-physical assets such as trademarks, employees' ideas, talents, experience, pattern rights and database system have contributed to the overall wealth of the organization. Conventional financial statement fail to convey about intangible assets. The non-recognition of intangible assets have been a controversy since it has resulted to a rise in the gap between market value and book value of the firm. The problem continue to haunt firms since firms only looking towards competitive advantage over the other firms in order to attract loyal customers. Thus, the problem statement of this study is whether intellectual capital can determine the excellence of firms' performance?

Objectives

The objectives are as follows:

- To determine the significant impact of Human Capital Efficiency (HCE) towards performance of food and beverage companies listed in Main Market of Bursa Malaysia.
- To determine the significant impact of Structural Capital Efficiency (SCE) towards performance of food and beverage companies listed in Main Market of Bursa Malaysia.
- To determine the significant impact of Capital Employed Efficiency (CEE) towards performance of food and beverage companies listed in Main Market of Bursa Malaysia.

Scope of the Research

This research is about the impact of intellectual capital towards firms' performance. The study is conducted using secondary data which consists of company annual reports and data bought from Bursa Malaysia Food and beverage companies listed under Main Market in Bursa Malaysia are chosen. This is because Malaysia has rising middle upper income population and has a strong GDP forecast with Food and Beverage sales expected to grow in the next 3 years to $21.17 billion as per New Zealand Trade and Enterprise news. This is particularly due to

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13th – 14th December 2020

rising health concern among Malaysian. Hence, Food and Beverage companies play a vital role in producing food and beverage according to the taste and needs of citizen. Out of 70 companies, only 52 firms were taken for data analysis due to lacking of information. This research is covered for the recent 10 years which is from 2009 to 2018.

Literature Review

Hong Pew Tan, David Plowman and Phil Hancock wrote a journal entitled Intellectual capital and financial returns of companies in 2016. This research is focused to instigate the relationship that exist between the intellectual capital (IC) of firms and their financial performance. The result disclose that intellectual capital and company performance are positively related. This prove that intellectual capital can be associated with future company performance because the rate of growth of a company is positively related to the company's performance. The study also reveal intellectual capital performance differs among industry.

Ngozi Ben Anuonye wrote Intellectual Capital Measurement: Using the Earnings Per Share Model of Quoted Insurance Companies in Nigeria in 2015. The purpose of this study is to evaluate how much intellectual capital can affect the earnings per share model of quoted insurance firms in Nigeria. This research then concluded that all intellectual components has statistical insignificant relationship with earnings per share (EPS).

A study titled Intellectual Capital Performance in Romanian Public Companies has been conducted by Cristina Maria Morariu (2014). The study is researched to find out about intellectual capital performance of the selected companies in Romania using Value-Added Intellectual Co-efficient (VAIC), intellectual capital performance versus traditional methods to measure companies' performance and to search about how VAIC's elements contribute to the company's performance. According to Cristina, many different methods are available to measure intangible assets such as Balance Scorecard and Intangible Asset Monitor. However, she chose VAIC method because of the simplicity and flexibility of the method as it offers information regarding tangible and intangible assets. The study is researched using regression and correlation analysis. Findings of the study shows that only nine out of twelve correlation are found to be significant. The result imposed that Value added human capital coefficient (VAHU) is significantly has a positive correlation with profitability and market value and fail to have significant correlation with productivity. Value-added capital employed coefficient, VACA, on the other hand, is significantly positive with all the three dependent variables. Value added structural capital co-efficient, SCVA is found to be negatively correlated with productivity and fail to produce significant result when tested with market value and profitability.

Furthermore, Mina Kharal and Muhammad Zia-ur-Rehman (2014) have conducted a study on intellectual capital and firm performance from Oil & Gas Sector in Pakistan. This study is carried out to understand and decide on the value of intellectual capital in terms of organizational performance in Oil & Gas sector of Pakistan. The study also highlighted the importance of the intellectual capital as a tool that boost the firm's value as well as provide some insight for an advanced management in the future. VAIC method is used and the data are run using regression and correlation analysis. The independent variables are all sum up to only VAIC. The result shows that VAIC is significantly positively related with ROA, ROE, sales growth, EPS and market-book ratio.

Mahfoudh Abdul Karem Al-Musali and Ku Nor Izah Ku Ismail (2014) have also conducted a research on intellectual capital and its effect on financial performance of banks in Saudi Arabia. This research is aimed to provide a measure that significantly enable the banks in Saudi Arabia to understand and evaluate performance, as well as enhancing the management

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13th – 14th December 2020

of intellectual capital. The study is conducted based on results obtained by this study as a whole is that Arab Saudi banks perform less efficient than Emirates, British, Malaysia and Australia banks. Based on the calculation done, the trend of intellectual capital of banks in Saudi Arabia experienced a decline in the value creation efficiency in 2009. This may due to the global financial crisis back in 2009. Not giving up, the banks performance increased in 2010 due to Saudi Arabia's government policies. After running the data, a significant and positive connection is found between VAIC elements which are human capital efficiency, capital efficiency and structural capital efficiency and profitability which are measured using ROA and ROE. A positive relationship exist between human capital efficiency and both financial performance indicators. In contrary, structural capital efficiency has portrayed an insignificant associations with financial performance indicators. As for capital employed, capital employed efficiency has significant positive relationship with the banks' ROE.

In addition, authors Naghme Nazari Bayatiani and Ahmad Khodamipour (2013) have investigated relationship between intellectual capital and financial variables of companies that are listed in Tehran Stock Exchange. The study is conducted by measuring intellectual capital through the difference between the market value and book value of surveyed companies. The calculation involved annual inflation rate. The dependent variables used in this study are earning per share (EPS), gross profit ratio (GPR) and operating profit ratio (OPR). The dependent variables are calculated using formulas. The findings of the study indicate that there is a significant relationship between intellectual capital components and EPS and between intellectual capital and GPR. However, it is found that intellectual capital and OPR have insignificant relationship.

Likewise, the journal entitled Intellectual Capital and Firm Performance of High Intangible Intensive Industries using Malaysia Evidence is written by Mohammadghorban Mehri Mohammed, Sangiru Umar, Parvaneh Saeidi, Reza Keyhani Hekmat and SeyedHossein Naslmosavi in 2013. The study focuses on the effect of intellectual capital and its component (human capital efficiency, structural capital efficiency and capital employed efficiency) have on the firm performance. Only there sectors are chosen from Bursa Malaysia, namely from the Technology, Trading and Services, Consumer Products and Hotel sectors. The study found out HCE, SCE, CEE and VAIC are significantly positively related to M/B, ROE and ROA. As for ATO, there is a significant and positive correlation between ATO with CEE and VAIC.

Ismaila Yusof wrote journal entitled The Relationship between Human Capital Efficiency and Financial Performance: An Empirical Investigation of Quoted Nigerian Banks in 2013. This study only focused on one of the intellectual capital component, which is Human Capital. This study tested two hypotheses, namely Human capital efficiency has no significant impact on the EPS of Nigerian banks and Human capital efficiency has no significant impact on the ROE of Nigerian banks. The result revealed that optimizing human capital does not have any significant impact on the return of equity of banks. Another dependent variable, the size of a bank also found to have insignificant impact on it return on equity.

Nik Maheran Nik Muhammad and Md Khairu Amin Ismail have written a journal entitled Intellectual Capital Efficiency and Firm's Performance: Study on Malaysian Financial Sectors in 2009. This journal is aimed to find the efficiency of intellectual capital towards the performance of Malaysian financial sectors. The analysis is done from the data taken from 18 companies under financial sector for the year 2007. It is revealed that the banking sector depended more on intellectual capital compared to insurance companies and Brokerage firms. This study disclose that intellectual capital has significant and positive relationships with company's performance. The indicators were profitability and Return on Asset (ROA).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Data and Methodology

Data

The study is conducted using Value-Added Intellectual Co-efficient (VAIC) model. VAIC is a method to measure values that are contributed to an organization from the three (3) main components- human capital, capital employed and structural capital (Pike & Roos, 2004; Bhartesh & al, 2005). VAIC method offers a standardised and constant measure that enables an effective conduct of analysis that studies many kinds of sectors –in this case, Bursa Malaysia. Higher VAIC value propose that a particular firm has a utilized management. Not only following the technology trend, VAIC is a direct technique which embraces the cognitive understanding of calculation for many internal and external stakeholder. Since the major aim of this study is to empirically analyse the connection between intellectual capital and financial performance of the firm, this study propose VAIC as an aggregate measure of corporate intellectual ability, following Goh (2005).

The data used in this study are samples collected from food and beverage companies which are from Main Market listed in Bursa Malaysia. As at As at December 31 December 2018, there are 64 food and beverage companies in which only 52 companies are chosen due to lack of data in terms of annual report and period of study. All the data are found from Bursa Malaysia. The study is conducted for 10 years from 2009 up to 2018.

Methodology

This study has both independent and dependant variables. Independent variable is a variable (often denoted by x) whose variation does not depend on that of another while dependant variable is a variable in a functional relation whose value is determined by the values assumed by other variables in the relation as y.

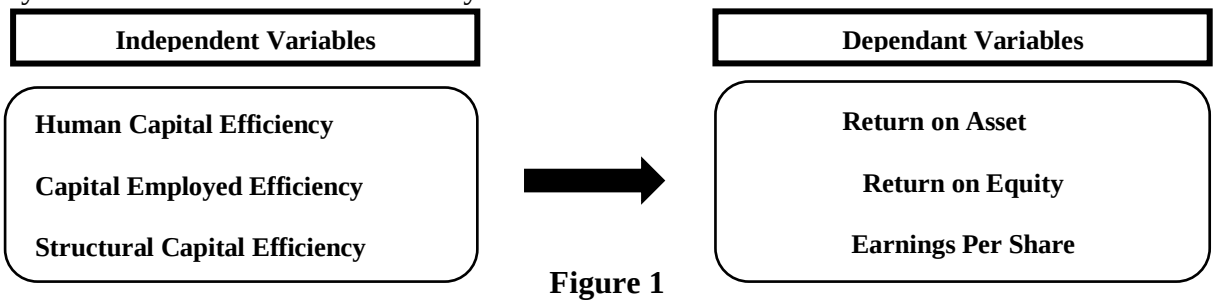

Figure 1

Table 1: Proxies of Independent Variables

	Variable	Proxies
INDEPENDENT	Human Capital Efficiency (HCE)	$\frac{\text{Value Added}}{\text{Human Capital}}$
	Capital Employed Efficiency (CEE)	$\frac{\text{Value Added}}{\text{Capital Employed}}$
	Structural Capital Efficiency (SCE)	$\frac{\text{Structural Capital}}{\text{Value Added}}$

$$\textbf{VAIC} = \textbf{HCE} + \textbf{CEE} + \textbf{SCE}$$

Where,

Value Added (VA) = Pretax income – operating expenses excluding personnel expenses
Human Capital (HC) = Total salaries and wages or staff cost of a firm
Structural Capital (SC) = Value Added (VA) – Human Capital (HC) and,
Capital Employed (CE) = Capital employed of the firm

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13th – 14th December 2020

The following are explanation on the dependant variables;

Return on Asset (ROA)

Return on assets (ROA) is an indicator on how a company is able to make profit in relation to its total assets. ROA enables one to get a hint on how efficient management of a firm is at using its assets to generate earnings.

$$ROA = \frac{\text{Net Income}}{\text{Total Asset}}$$

Return on Equity (ROE)

Return on equity (ROE) is a measure of profitability which calculates how many ringgit of profit a company is able to generate with each ringgit of shareholders' equity. ROE also known as return on net worth.

$$ROE = \frac{\text{Net Income}}{\text{Total Equity}}$$

Earnings Per Share (EPS)

Earnings per share (EPS) is the portion of a company's profit allocated to each outstanding share of common stock. Earnings per share can be used to measure company's profitability as well.

$$EPS = \frac{\text{Net Income – Dividend on Preferred Stock}}{\text{Average Outstanding Common Stock}}$$

Regression Model

The first model that is used for this study is Regression Model. The model can examine the relationship that exist between the independent variables – HCE, CEE and SCE towards dependent variables, which are ROA, ROE and EPS.
The model are represented as below:

$$Y = \alpha + \beta 1X1 + \beta 2X2 \ldots\ldots + \beta kXk + e$$

W Y = Dependant variable
α = Constant Value
$\beta 1, \beta 2$ = Regression Coefficient
X = Independent variable
e = Error term

Where,
Y = ROA / ROE/ EPS
α = Constant Value
$\beta 1, \beta 2$ = Regression Coefficient
X1 = HCE
X2 = CEE
X3 = SCE
e = Error term

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13th – 14th December 2020

Hypothesis

H_1 = There is a significant impact between Human Capital Efficiency (HCE) and performance of food and beverage companies listed in Main Market of Bursa Malaysia.

H_2 = There is a significant between Structural Capital Efficiency (SCE) and performance of food and beverage companies listed in Main Market of Bursa Malaysia.

H_3 = There is a significant between Capital Employed Efficiency (CEE) and performance of food and beverage companies listed in Main Market of Bursa Malaysia.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Results and Findings

The following show the result of the study in detail which has been covered for 10 years from 2009 until 2018.

Descriptive Statistics

Table 2: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
HCE	520	-.0000886854985936	.0054853730071192	.000054822280759	.000437106587065
SCE	520	-81079236.7131383000000000	39596841.9586055000000000	-630621.445853635300000	6385875.550894252000000
CEE	520	-15.9170049395999000	5.6633888048411500	-.091430043740911	.956018528577626
ROA	520	-45.53200	211.46060	6.6222371	11.49654256
ROE	520	-59.24660	431.17280	11.1436069	22.98242898
EPS	520	-.77700	4.86670	.2365706	.41377171
Valid N (listwise)	520				

The following shows descriptive analysis for minimum, maximum, mean and standard deviation for both independent and dependant variables.

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13th – 14th December 2020

The table 2 shows the descriptive analysis for both intellectual capital and firm performance indicators. Analysis for independent variables will be discussed first. As seen in the table, the minimum value for Human Capital Efficiency (HCE) is -0.0000886854985936 while the maximum value is sustained at 0.0054853730071192. The mean for the said variable is .000054822280759 and the standard deviation is 0.000437106587065.

Moving on, the minimum value for Structural Capital Efficiency (SCE) is -81079236.71313830000000 and the maximum value stood at 39596841.95860550000000. The mean for the said variable is -630621.445853635300000 and the standard deviation is 6385875.550894252000000.

Going south, Capital Employed Efficiency (CEE) has the minimum value of -15.9170049395999000 and maximum value of 5.6633888048411500. The mean of the CEE is -.091430043740911 and the standard deviation stood at 0.956018528577626.

Next will be the analysis of the descriptive analysis of firm performance indicators, which are Return on Asset (ROA), Return on Equity (ROE) and Earnings Per Share (EPS). Firstly, the minimum value of Return on Asset (ROA) is -45.53200 and the maximum value is 211.46060. The mean of ROA is 6.6222371 and the standard deviation substained at 11.49654256.

Return on Equity (ROE) has the minimum value of -59.24660 and the maximum value is 431.17280. The mean of ROE is 11.1436069 while the standard deviation stood at 22.98242898.

Finally, the Earnings Per Share (EPS) has minimum value of -0.77700 and maximum value of 4.86670. The mean of EPS is 0.2365706 and the standard deviation is 0.41377171.

Regression Analysis

Table 3: Model Summary of ROA

Model	R2	F	Sing
1	0.076	14.205	0.000

Based on the above table, the coefficient of multiple determinations R square determines to which extent the independent variables affect the dependent variable. It is found that this study has R square of 0.076 or 7.6% of the variations in the dependent variable were explained by the independent variable while 0.924 0r 92.4% were affected by other variables outside the independent variables. Hence, this result is a solid proof that Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE) do not contribute a major portion in influencing the Return on Asset (ROA) (profitability). The result of ANOVA f = 14.205 with a significant level of 0.000 also connote that intellectual capital components does affect Return on Asset but just a little

Table 4: ANOVA and Multiple Regression Analysis

Model	B	t	Level of Significance
Constant	6.808	13.787	0.000
Human Capital Efficiency	1293.312	1.162	0.246
Structural Capital Efficiency	0.00000003977	-0.552	0.602
Capital Employed Efficiency	3.225	6.334	0.000

The above table presents the probability values of coefficient of Model 1. The Human Capital Efficiency (HCE) and Capital Employed Efficiency (CEE), both share a positive

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13th – 14th December 2020

relationship with Return on Asset (ROA) with the t-statistic value of 1.162 and 6.334 respectively. On the other hand, Structural Capital Efficiency (SCE) has a negative relationship with Return on Asset (ROA) with the t-statistic value of -0.552. Furthermore, the result of level of significance are as following: P(x1=0.246>0.05), P(x2=0.602>0.05) and P(x3=0.000<0.05) respectively.

These results prove that the Human Capital Efficiency (HCE) and Structural Capital Efficiency (SCE) had statistically insignificant impact on the Return on Asset (ROA) of food and beverage companies in Malaysia. This result contradicted the widely held view and the research theory that all components of intellectual capital will boost the firm performance.

However, Capital Employed Efficiency (CEE) is found to have statistically significant impact towards Return on Asset (ROA) of food and beverage companies in Malaysia.

Refer to the result shown, the estimated regression equation can be written in a standard format as illustrated below:

Model 1: $Y = 6.808 + 1293.312\ X1 + 0.00000003977\ X2 + 3.225\ X3 + e$

Where Y= Return on Asset (ROA)

X1 = Human Capital Efficiency (HCE)

X2 = Structural Capital Employed (SCE)

X3 = Capital Employed Efficiency (CEE)

e = Error Term

Table 5: Model Summary of ROE

Model	R2	F	Sing
2	0.074	13.685	0.000

Based on the above table, the coefficient of multiple determinations R square determines to which extent the independent variables affect the dependent variable. It is found that this study has R square of 0.074 or 7.4% of the variations in the dependent variable were explained by the independent variable while 0.926 0r 92.6% were affected by other variables outside the independent variables. Hence, this result is a solid proof that Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE) do not contribute a major portion in influencing the Return on Equity (ROE) (profitability). The result of ANOVA f = 13.685 with a significant level of 0.000 also connote that intellectual capital components does affect Return on Equity but not much.

Table 6: ANOVA and Multiple Regression Analysis of ROE

Model	B	t	Level of Significance
Constant	11.586	11.717	0.000
Human Capital Efficiency	451.375	0.203	0.840
Structural Capital Efficiency	0.0000001518	-0.996	0.320
Capital Employed Efficiency	6.402	6.282	0.000

The above table presents the probability values of coefficient of Model 2. The Human Capital Efficiency (HCE) and Capital Employed Efficiency (CEE), both share a positive relationship with Return on Equity (ROE) with the t-statistic value of 0.203 and 6.282 respectively. Moreover, Structural Capital Efficiency (SCE) has a negative relationship with Return on Equity (ROE) with the t-statistic value of -0.996. Additionally, the result of level of

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13th – 14th December 2020

significance are as following: P(x1=0.840>0.05), P(x2=0.320>0.05) and P(x3=0.000<0.05) respectively.

These results prove that the Human Capital Efficiency (HCE) and Structural Capital Efficiency (SCE) had statistically insignificant impact on the Return on Equity (ROE) of food and beverage companies in Malaysia. This result contradicted the widely held view and the research theory that all components of intellectual capital will boost the firm performance.

However, Capital Employed Efficiency (CEE) is found to have statistically significant impact towards Return on Asset (ROA) of food and beverage companies in Malaysia.

Refer to the result shown, the estimated regression equation can be written in a standard format as illustrated below:

Model 2: $Y = 11.586 + 451.375X1 + 0.0000001518X2 + 6.402X3 + e$

Where Y= Return on Equity (ROE)

X1 = Human Capital Efficiency (HCE)

X2 = Structural Capital Employed (SCE)

X3 = Capital Employed Efficiency (CEE)

e = Error Term

Table 7: Model Summary of EPS

Model	R2	F	Sing
3	0.041	7.332	0.000

Based on the above table, the coefficient of multiple determinations R square determines to which extent the independent variables affect the dependent variable. It is found that this study has R square of 0.041 or 4.1% of the variations in the dependent variable were explained by the independent variable while 0.959 0r 95.9% were affected by other variables outside the independent variables. Hence, this result is a solid proof that Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE) do not contribute a major portion in influencing Earnings Per Share (EPS) (profitability). The result of ANOVA f = 7.332 with a significant level of 0.000 also connote that intellectual capital components does affect Earnings Per Share but not much.

Table 8: ANOVA and Multiple Regression Analysis of EPS

Model	**B**	**t**	**Level of Significance**
Constant	0.239	13.192	0.000
Human Capital Efficiency	50.919	1.247	0.213
Structural Capital Efficiency	0.000000002735	-0.979	0.328
Capital Employed Efficiency	0.081	4.330	0.000

The above table presents the probability values of coefficient of Model 3. The Human Capital Efficiency (HCE) and Capital Employed Efficiency (CEE), both share a positive relationship with Earnings Per Share with the t-statistic value of 1.247 and 4.330 respectively. In addition, Structural Capital Efficiency (SCE) has a negative relationship with Earnings Per Share with the t-statistic value of -0.979. Likewise, the result of level of significance are as following: P(x1=0.213>0.05), P(x2=0.328>0.05) and P(x3=0.000<0.05) respectively.

These results prove that the Human Capital Efficiency (HCE) and Structural Capital Efficiency (SCE) had statistically insignificant impact on the Earnings Per Share of food and

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13th – 14th December 2020

beverage companies in Malaysia. This result contradicted the widely held view and the research theory that all components of intellectual capital will boost the firm performance.

However, Capital Employed Efficiency (CEE) is found to have statistically significant impact towards Earnings Per Share of food and beverage companies in Malaysia.

Conclusion

As the world of corporate focuses on generating profit and attaining capital gain, most organization need to realize the importance of non-financial disclosures for the enhancement of better decision making. The non-financial disclosures include all the intellectual capital (IC) components as they, individually affect the firm performance of Food and Beverage companies in Malaysia. As per mentioned by Pulic in 2000, VAIC method is a universal indicator of revealing the capability of the firms in value creation and representing a measure of business efficiency in knowledge-based economy.

This research has shown that among all the intellectual capital components, only Capital Employed Efficiency (CEE) is found to be significant to the performance of Food and Beverage companies in Malaysia. The results are aligned with Ting and Lean (2009) that capital employed has been a great factor in creating high value returns for the firms. This research also proved that physical capital and financial assets are important elements for stockholders and the business management. Hence, Food and Beverage firms in Malaysia should focus in maintaining or increasing the fixed asset since it can boost the firm performance.

On contrary, this study has also found that Human Capital Efficiency (HCE) and Structural Capital Efficiency (SCE) are insignificant to the firm performance of Food and Beverage companies in Malaysia. Therefore, firms should reduce the expenditure spent on said components of intellectual capital and direct the flow of the money towards other relevant expenses to boost firm performance.

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THE IMPACTS OF FINANCIAL LEVERAGE ON COMPANY PERFORMANCE IN MALAYSIA.

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Abstract: *This study aims to investigate the impact of financial leverage on firm's performance using a sample of 159 Malaysian companies in six sectors (construction, consumer, plantation, properties, trading or services and industrial). From the finding, the financial leverage is essential as solution in order to help the firm maximizing their profit. In fact, by using the financial leverage that means that the firm is grant to finance their operation of business by taking on debt. The regression result of the analysis show that the Debt to Asset ratio has a statistically negative significant impact on Return on Asset and Return on Equity. On other hand, high Debt to Asset ratio shows that a company has been aggressive in financing its growth with debt and if might be a greater potential for financial distress.*

Keywords: *Financial Leverage, Firm Performance, Debt to Asset*

Introduction

In corporate finance literature, capital structure is one of the most ambiguous issue. Generally, the proportion of long-term debt and equity is considered when analysing capital structure that create the total capital of a firm. Furthermore, the capital structure decision is an important managerial decision that impact the shareholder's return and risk (Ahmadu Abubakar 2015). Therefore, the firm need to plan their capital structure from the beginning because the capital structure will affect the market value of a share.

The main objective of firm taking financing decision is to maximize wealth firm's profitability are affected by the quality of any financing decision (Mwangi et al, 2014). Therefore, financial decision making is very important for any firm performance. Thus, how much firms use their equity and debt to finance its assets can be measured by using financial leverage. In addition, a firm have an option either to finance their firm by equity and debt. Moreover, the firm also can use preference shares to finance their firm.

In addition, a firm may use debt and equity and use the preference share to finance their investments. In concept, firm will advantage from using the debt. This is because the debt is tax shield, interest payment is usually not taxable. The management likely either to inject free cash in paying dividend to the shareholders. Therefore, the value of a firm can be increased by taking debt. Other than that, it aids the firm to strictly monitor the managers as they are obliged to current fixed payments. If the firm is not devoted to some fixed payment such as interest expense, then the manager could have incentive to misuse excess free cash flows. Specifically,

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13th – 14th December 2020

a bank put into use financial conditions for the firm borrowers such as fixed debt to asset ratio to boost the firm effectiveness. It is a management responsibility to reveal the information about the firm activities to the debt holder which makes the management more transparent to controlling their activities.

Despite that, to improve their investment the firm can improve their performance by used the debt. By using the debt, it can optimized gains (losses) and help to rise the return of stock of firms. For instance, the firm will do some borrowings (debt) and proceed for reinvestment in order to obtain a higher rate of return than cost of interest. In addition, the companies can get risk of bankruptcy if the firm is not capable to pay back the debt. This will contribute to a lot of debt that make the firm will not get financing and not get new lender in the future. In short, the debt will help the firm to operate and invest with a higher rate, but it also comes with a greater risk.

Debt can ensure the gain and losses of the firm increase too. One of the very good choice of alternative is the firm can increase its profit through the financial leverage. Moreover, by using financial leverage debt instruments it would help to increase the anticipated level return of the firm.

Problem Statement

Most studies have been researched on financial leverage and firms' performance. One of the ten unsolved problems in corporate finance is financial leverage (Myers, 1999). According to trade-off theory after receiving both cost of debt and equity, the firm can determine an optimal ratio of debt and equity. Whilst, pecking order theory states that capital sources are found but does not suggest an optimal ratio between debt and equity. Moreover, signalling theory has been well-known for adverse selection, information asymmetry and moral hazards.

Objective

The main objective of this study was to analyse the impacts of financial leverage on company performance comprises of 159 companies cover for six sectors listed on Bursa Malaysia. Therefore, the objectives are as follows:

1. To analyse the significant impact of debt to asset ratio towards the firm performance.
2. To analyse the significant impact of debt to equity ratio towards the firm performance.
3. To analyse the significant impact of interest coverage ratio towards the firm performance.
4. To analyse the significant impact of long-term debt to equity ratio towards the firm performance.

Literature Review

In order to analyze the impact of debt on company performance some empirical studies have been carried out to analyze the impact on firm's financial performance. Abbasali Pouraghajan et al (2012) has conduct a study on the relationship between capital structure and firm performance evaluation measures evidence from the Tehran Stock Exchange. This study is to examine the impact of capital structure on the financial performance of companies listed in the Tehran Stock Exchange and take a sample of 400 firm years among companies listed in the Tehran Stock Exchange for period 2006 to 2010. In addition, the researcher using variables return on asset and return on equity represent the financial performance of companies while debt ratio, asset turnover ratio, size of the firm, firm age, asset tangibility ratio, and growth opportunities of firm represent independent variables. Therefore, their study found that there is

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13th – 14th December 2020

a strong negative and significant relationship between debt ratio and financial performance of Iranian firms (ROA and ROE).

According to empirical analysis conducted by Kale Ahmed Ali (2013) used a set sample of data from Nairobi Securities Exchange consisted of all the companies listed under 20 share index excluding the financial sector firms on the period from 2008-2013. In addition, from the case of non-financial firms in Kenya. This study is mainly done to see the impact of financial leverage on the performance of companies. Therefore, from the result they found that there is a significant negative relationship between leverage and firm performance. Moreover, this study used dependent variables such as return on asset, return on equity and return on sales. While for independent variables they used leverage (debt to asset ratio), liquidity (current asset to current liabilities ratio), firm size and firm age. From the result this research find that the financial leverage is essential for any profit increased firm. However, wakeup call for the management and board of directors of those blue chips firms shows a negative relationship which need to consider the costs associated with debts and any decreased of profit or losses will give implication to shareholders who the bears the residual costs.

Innocent, Ikechukwu, Nnagbogu (2013) has carried out a research on effect of financial leverage on financial performance of the Nigeria pharmaceutical companies for period 2001-2012 (12 years).The significance of this study is due to the phenomenon arose with the volume of short-term and long-term loans that combines to form capital structure. This phenomenon is commonly seen in the financial reports of Nigerian pharmaceutical companies. Hence, In addition, from Nigeria pharmaceutical companies this study selected a sample of 3 companies. Therefore, their result found that debt ratio and debt equity ratio have negative relationship with return on assets while interest coverage ratio have positive relationship with return on asset in pharmaceutical companies in Nigeria. However, the debt equity ratio has positive relationship with debt ratio while interest coverage ratio has negative relationship with debt ratio and debt to equity ratio pharmaceutical companies in Nigeria.

Markonah (2017) has conducted study to examine the factors that usually affect financial performance of Jordanian Insurance companies for period (2002-2007). In addition, in this study they use independent variables such as leverage (debt to equity), liquidity (current asset to current liabilities), age, size (total assets) and management competence index (ratio of profit to number professional) while for the dependent variables is financial performance of Jordanian Insurance companies (return on asset). The researcher use basic statistical techniques such as T-test and Multiple-regression. Therefore, their finding has showed that the leverage, size and liquidity have a positive statistical effect on the financial performance of Jordanian Insurance Companies.

Based on 12 listed public limited firm from fuel and energy sector listed at Karachi Stock Exchange, Aqsa Inam and Ghulam Mustafa Mir (2014) has conducted a study on the impact of financial leverage on firm performance in fuel and energy sector in Pakistan. Moreover, the researcher used variables consist of a dependent variables such as return on asset, return on equity, return on capital employed, net profit margin, earnings per share before tax and earnings per share after tax while for independent variables such as debt to equity ratio and long-term debt to shareholders equity (gearing ratio). Therefore, the result from the study shows that financial leverage positively affect the firm financial performance.

Ilyukhin Evgeny (2015) conduct a research by used large sample of Russian joint-stock companies cover for period 2004-2013 years. The study conducted to analyze the impact of financial leverage on firm performance. Thus, from the result the researcher found that there is a positive relationship between financial leverage and firm performance was expected based on the agency cost theory. Conversely, in their findings found that return on equity, return on

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13th – 14th December 2020

asset and operation margin which represent as the performance measures are negatively affected by financial leverage. A negative effect of firm indebtedness on firm performance can be explained by inability of Russian market for complication in debt attracting, corporate restriction, shifting profits from the country to offshores, for management lack of clear budget limits, high growth possible of developing markets and to financing through debt with high interest rates.

Data and Methodology

Descriptive data

Most of the collected data involved the use of secondary data from the income statement, balance sheet and note to the account that can be gain from the annual report of the company. The study makes an analysis from construction, plantation, properties, trading or service, consumer, and industrial sector listed on Bursa Malaysia. The data is covered for ten years from 2008-2017.

Determinants of Variables

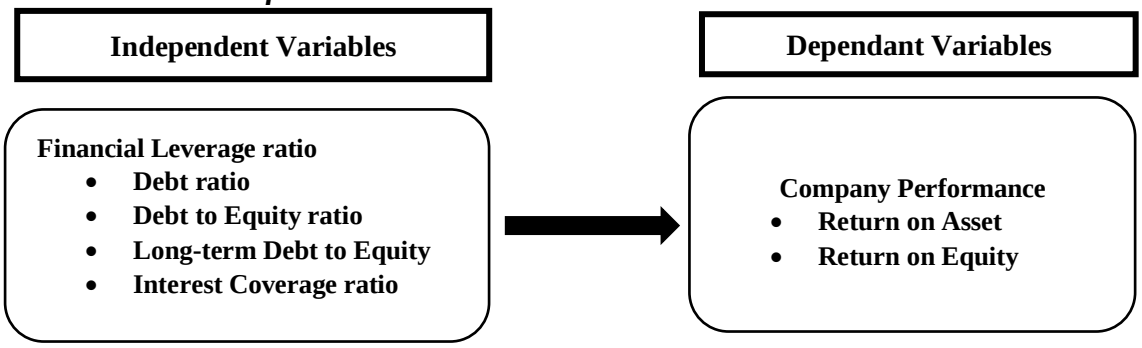

Figure 1

Formula used to determine the variables selected

Companies Profitability;

$$\text{Return on Asset (ROA)} = \frac{\text{Net Profit before Tax}}{\text{Total Asset}}$$

$$\text{Return on Equity} = \frac{\text{Net Profit after Taxes}}{\text{Shareholder's Equity}}$$

Financial Leverage ratio

$$\text{Debt to Asset ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

$$\text{Debt to Equity ratio} = \frac{\text{Total Liabilities}}{\text{Shareholder's equity}}$$

$$\text{Interest Coverage ratio} = \frac{\text{Earnings before Interest and Taxes (EBIT)}}{\text{Interest Expenses}}$$

$$\text{Long-term Debt to Equity} = \frac{\text{Long-term Debt}}{\text{Shareholder's Equity}}$$

Sampling

The research is about researching the impact of financial leverage on company performance. Even though the sample is randomly selected, only companies that provide all the needed

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13th – 14th December 2020

information are chosen. Therefore, the initial sample of companies is identified from six sector in Bursa Malaysia for the period of 2008 – 2017. Six sectors were selected and only 30% from total companies in each sector will be selected which to be analysed in the study.

The company selected from different industries are collected from the number of industries for the following:

Table 1

Industry	Number of companies in the industry	Percentages	Number of samples needed	Number of selected companies
Trading/ Services	210	30%	63	34
Consumer	128	30%	38	28
Construction	45	30%	14	11
Industrial	241	30%	72	53
Plantation	42	30%	13	11
Properties	96	30%	29	23

*Note: the number of selected companies are chosen because lacking data from the number of samples needed.

Methodology

Regression analysis

A regression was run to decide the coefficients of the independent variables in relation to the dependent variable. In this study, the regression was run to test the relationship between two variables or more which are dependent (company performance) and independent (financial leverage ratio) because the regression method is an effective method. Simple regression is known when there is only one independent variable is examined while multiple regression is used when examining the influence of two or more independent variables on a dependent variable. In this research, multiple regression can be stated as:

Table 2: Research Model

Model 1	Model 2
$Y = \alpha_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + e$ **Where ;** **Y = Return on Asset (firm performance)** α_0 **= Constant value** $\beta_1\ \beta_2\ \beta_3\ \beta_4$ **= Regression Coefficient** X_1 **= Debt to Asset ratio** X_2 **= Debt to Equity ratio** X_3 **= Interest Coverage ratio** X_4 **= Long-term debt to Equity** e **= error term**	$Y = \alpha_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + e$ **Where ;** **Y = Return on Equity (firm performance)** α_0 **= Constant value** $\beta_1\ \beta_2\ \beta_3\ \beta_4$ **= Regression Coefficient** X_1 **= Debt to Asset ratio** X_2 **= Debt to Equity ratio** X_3 **= Interest Coverage ratio** X_4 **= Long-term debt to Equity** e **= error term**

Hypothesis Testing

H_1 = There is a significant impact between debt to asset ratio and the return on asset.
H_2 = There is a significant impact between debt to equity ratio and the return on asset.
H_3 = There is significant impact between the interest coverage ratio and the return on asset.
H_4 = There is significant impact between the long-term debt to equity ratio and the return on asset.
H_5 = There is a significant impact between debt to asset ratio and the return on equity.
H_6 = There is a significant impact between debt to equity ratio and the return on equity.
H_7 = There is significant impact between the interest coverage ratio and the return on equity.

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13th – 14th December 2020

H_8 = There is significant impact between the long-term debt to equity ratio and the return on equity.

Results and Findings

By using SPSS, it come out with descriptive statistics which compare the minimum and maximum values, means and standard deviation. The results have showed based on Table 3.

Table 3: Descriptive Statistical of Company Performance Variables

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	1590	-70.75980	211.46060	3.4249287	9.70525813
ROE	1590	-215.33860	431.17280	5.4273888	22.03796714
Valid N (listwise)	1590				

From descriptive statistics of table 3 it shown the company performance variables. The maximum value of return on asset is 211.46060, the minimum value is -70.75980, the mean is 3.4249287 and the standard deviation is 9.70525813. Next, the maximum value of return on equity is 431.17280, the minimum value -215.33860, the mean is 5.4273888 and the standard deviation is 22.03796714.

Table 4: Descriptive Statistics of Financial Leverage Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Debt To Asset	1590	.04840	2.89330	.4480579	.19147471
Debt To Equity	1590	.01370	7841.72770	68.8753748	213.05944041
Interest Coverage	1590	-1004.88000	3882.99500	18.6984575	149.83915977
Long-term Debt To Equity	1590	.00000	622.99150	27.1736618	48.96195044
Valid N (listwise)	1590				

Based on the descriptive statistics Table 4, show the financial leverage variables. The maximum value of debt to asset ratio is 2.89330, the minimum value is 0.04840, the mean is 0.4480579 with the standard deviation is 0.19147471. While the maximum value of debt to equity is 7841.72770, the minimum value is 0.1370, the mean is 68.8753748 and the standard deviation is 213.05944041. In addition, the maximum value of interest coverage is 3882.99500, the minimum value is -1004.88000, the mean is 18.6984575 and the standard deviation is 149.83915977. Besides that, the maximum value of long-term debt to equity is 622.99150, the minimum value is 0.00000, the mean is 27.1736618 and the standard deviation is 48.96195044.

Regression Analysis

The regression model of financial leverage effect on firm financial performance in the total level of sample industries of research is presented in Table 5, Table 6, Table 7 and Table 8

Regression Analysis Model 1

Table 5: Model Summary of ROA

Model 1	R	R^2	F	Significant
Return on Asset (ROA)	0.242	0.058	24.605	0.000

Table 5 above shows that the coefficient of multiple determinations R square determines to which extent the independent variables affect the dependent variables. Hence, the null hypothesis (H_0) can be rejected strongly at 0.1% level of significant. The estimate coefficient

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13th – 14th December 2020

of correlation (R = 0.242) shows low correlation between dependent and independent variables while estimated R square (R^2 = 0.058) indicating that 5.8% of the variance of dependent variables is explained by the variance of the independent variables which show that Debt to Asset ratio (DAR), Debt to Equity ratio (DER), Interest Coverage ratio (ICR) and Long-term Debt to Equity ratio (LDER) impact by (R^2 = 0.058) on Return on Asset. Thus, this shows that the relationship are not strong enough if compare the rule of thumb where by 0.6 is the strong relationship between dependent and independent variables. In addition, based on Table 4.4.1, it shows the computed ANOVA f statistic = 24.605 with significant level of 0.000 also connote that financial leverage does not influence Return on Asset that much.

Table 6: ANOVA and Multiple Regression Analysis

Model 1 (ROA)	B	t	Sig.
(Constant)	7.745	12.073	0.000
Debt to Asset	-9.331	-6.325	0.000
Debt to Equity	-0.001	-1.054	0.292
Interest Coverage	0.006	3.715	0.000
Long-term Debt to Equity	-0.006	-0.956	0.339

Based on above Table 6, it is clearly seen that the t-statistic value, the estimated coefficient of the regression and the significant levels. In addition, for t-statistic value of Interest Coverage ratio (ICR) which has a positive relationship with Return on Asset (ROA) with the t-statistic value of 3.715 but ironically negative for Debt to Asset (DAR) at -6.325, Debt to Equity (DER) at -1.054 and Long-term Debt to Equity (LDER) at -0.956 which has negative relationship with Return on Asset (ROA).

The Debt to Asset (DAR) has negative relationship with Return on Asset (ROA). The t-statistic value of Debt to Asset ratio (DAR) at -6.325, prove that Debt to Asset ratio (DAR) has weak relationship with Return on Asset (ROA). The significant negative relationship shows that the Debt to Asset ratio (DAR) could significantly affect the company performance negatively. Since, its significant level of 0.000 shows that Debt to Asset ratio (DAR) is statistically significant. Hence, from the hypothesis we can reject the H_0 and accept H_1 that there is a significant impact of Debt to Asset ratio (DAR) on Return on Asset (ROA). Thus, any change in Debt to Asset ratio (DAR) will impact on Return on Asset (ROA).

The Debt to Equity ratio (DER) has negative relationship with Return on Asset (ROA). The t-statistic value of Debt to Equity ratio (DAR) at -1.054, prove that Debt to Equity ratio (DER) has weak relationship with Return on Asset (ROA). However, its significant level of 0.292 shows that Debt to Equity (DER) is statistically insignificant. The insignificant negative relationship shows that the Debt to Equity ratio (DER) does not significantly affect the company performance negatively. Hence, from the hypothesis we can reject the H_1 and accept H_0 that there is no significant impact of Debt to Equity ratio (DER) on Return on Asset (ROA). Thus, any change in Debt to Equity ratio (DER) has no impact on Return on Asset (ROA).

The Interest Coverage ratio (ICR) has positive relationship with Return on Asset (ROA). The t-statistic value of Interest Coverage ratio (ICR) at 3.715, prove that Interest Coverage ratio (ICR) has strong relationship with Return on Asset (ROA). The significant positive relationship shows that the Debt to Asset ratio (DAR) could significantly affect the company performance positively. Since, its significant level of 0.000 shows that Interest Coverage ratio (ICR) is statistically significant. Hence, from the hypothesis we can reject the H_0 and accept H_1 that there is significant impact of Interest Coverage ratio (ICR) on Return on

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13th – 14th December 2020

Asset (ROA). Thus, any change in Interest Coverage ratio (ICR) will impact on Return on Asset (ROA).

The Long-term Debt to Equity ratio (LDER) has negative relationship with Return on Asset (ROA). The t-statistic value of Debt to Asset ratio (DAR) at -0.956, prove that Long-term Debt to Equity ratio (LDER) has weak relationship with Return on Asset (ROA). However, its significant level of 0.339 shows that Debt to Asset ratio (DAR) is statistically insignificant. The insignificant negative relationship shows that the Debt to Asset ratio (DAR) does not significantly affect the company performance negatively. Thus, from the hypothesis we can reject the H_1 and accept H_0 that there is no significant impact of Long-term Debt to Equity ratio (LDER) on Return on Asset (ROA). Thus, any change in Long-term Debt to Equity ratio (LDER) has no impact on firm performance.

Furthermore, the estimated regression equation can be written in a standard format as illustrated below:

$$\mathbf{Y = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e}$$

$$\mathbf{Y = 7.745 + (-9.331)\ X_1 + (-0.001)\ X_2 + 0.006\ X_3 + (0.006)\ X_4}$$

$$\mathbf{(12.073)\quad (-6.325)^*\quad (-1.054)\quad (3.715)^*\quad (-0.956)}$$

*Denotes rejection of the null hypothesis at the 1% level of significant

Where **Y** = Return on Asset (firm performance)
$\boldsymbol{\alpha_0}$ = Constant value
$\boldsymbol{\beta_1\ \beta_2\ \beta_3\ \beta_4}$ = Regression Coefficient
$\mathbf{X_1}$ = Debt to Asset ratio
$\mathbf{X_2}$ = Debt to Equity ratio
$\mathbf{X_3}$ = Interest Coverage ratio
$\mathbf{X_4}$ = Long-term Debt to Equity ratio

Regression Analysis Model 2

Table 7: Regression Analysis Result

Model 2	R	R^2	F	Significant
Return on Equity (ROE)	0.374	0.140	64.383	0.000

Table 7 above show that the coefficient of multiple determination R square to which extent the independent variables affect the dependent variables. Hence, the null hypothesis (H_0) can be rejected strongly at 0.1 level of significant. The estimate coefficient of correlation (R=0.374) shows low correlation between dependent and independent variables while estimated R square (R^2 =0.140) indicating that 14.10% of the variance of dependent variables is explained by the variance of the independent variables which show that Debt to Asset ratio (DAR), Debt to Equity ratio (DER), Interest Coverage ratio (ICR) and Long-term Debt to Equity ratio (LDER) impact by ($R^{2=}$0.140) on Return on Equity (ROE). Thus, this show that the relationship are not strong enough if compare the rule of thumb where by 0.6 is the strong relationship between dependent and independent variables. In addition, based on Table 4.4.3, it shows the ANOVE f statistic = 64.383 with a significant level of 0.000 also connote that financial leverage does influence Return on Equity.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 8: Coefficient of Regression Result

Model 2 (ROE)	B	t	Sig.
(Constant)	13.366	8.882	0.000
Debt to Asset	-9.153	-2.859	0.004
Debt to Equity	-0.029	-10.521	0.000
Interest Coverage	0.007	1.903	0.057
Long-term Debt to Equity	-0.035	-2.670	0.008

Based on above Table 8, it is clearly seen that the t-statistic value, the estimated coefficient of the regression and the significant levels. In addition, for t-statistic value for Interest Coverage ratio (ICR) at 1.903 which has positive relationship with Return on Equity (ROE) but ironically negative for Debt to Asset (DAR) at -.2.859, Debt to Equity ratio (DER) at -10.521, and Long-term Debt to Equity (LDER) at -2.670 which has negative relationship with Return on Equity (ROE).

The Debt to Asset (DAR) has negative relationship with Return on Equity (ROE). The t-statistic value of Debt to Asset ratio (DAR) at -2.859, prove that Debt to Asset ratio (DAR) has weak relationship with Return on Equity (ROE). The significant negative relationship shows that the Debt to Asset ratio (DAR) could significantly affect the company performance negatively. Since, its significant level of 0.004 shows that Debt to Asset ratio (DAR) is statistically significant. Hence, from the hypothesis we can reject the H_0 and accept H_1 that there is a significant impact of Debt to Asset ratio (DAR) on Return on Equity (ROE). Thus, any change in Debt to Asset ratio (DAR) will impact on Return on Equity (ROE).

The Debt to Equity (DER) has negative relationship with Return on Equity (ROE). The t-statistic value of Debt to Equity ratio (DAR) at -10.521, prove that Debt to Equity ratio (DER) has weak relationship with Return on Equity (ROE). The significant negative relationship shows that the Debt to Equity ratio (DER) could significantly affect the company performance negatively. Since, its significant level of 0.000 shows that Debt to Equity ratio (DER) is statistically significant. Hence, from the hypothesis we can reject the H_0 and accept H_1 that there is significant impact of Debt to Equity ratio (DER) on Return on Equity (ROE). Thus, any change in Debt to Equity ratio (DER) will impact on Return on Equity (ROE).

The Interest Coverage ratio (ICR) has positive relationship with Return on Equity (ROE). The t-statistic value of Interest Coverage ratio (ICR) at 1.903, prove that Interest Coverage ratio (ICR) has strong relationship with Return on Equity (ROE). The significant positive relationship shows that the Interest Coverage ratio (ICR) could significantly affect the company performance positively. Since, its significant level of 0.057 shows that Interest Coverage ratio (ICR) is statistically significant. Hence, from the hypothesis we can reject the H_0 and accept H_1 that there is a significant impact of Interest Coverage ratio (ICR) on Return on Equity (ROE). Thus, any change in Interest Coverage ratio (ICR) will impact on Return on Equity (ROE).

The Long-term Debt to Equity ratio (LDER) has negative relationship with Return on Equity (ROE). The t-statistic value of Long-term Debt to Equity ratio (LDER) at -2.670, prove that Long-term Debt to Equity ratio (LDER) has weak relationship with Return on Equity (ROE). The significant negative relationship shows that the Long-term Debt to Equity ratio (LDER) could significantly affect the company performance negatively. Since, its significant level of 0.008 shows that Long-term Debt to Equity ratio (LDER) is statistically significant. Hence, from the hypothesis we can reject the H_0 and accept H_1 that there is a significant impact of Long-term Debt to Equity ratio (LDER) on Return on Equity (ROE). Thus, any change in Long-term Debt to Equity ratio (LDER) will impact on Return on Equity (ROE).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Furthermore, the estimated regression equation can be written in a standard format as illustrated below:

$$\mathbf{Y = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e}$$

$$\mathbf{Y = 12.366 + (-9.153)\ X_1 + (-0.029)\ X_2 + 0.007\ X_3 + (-0.035)\ X_4}$$

$$\mathbf{(8.882)\quad (-2.859)^*\quad (-10.521)^*\quad (1.903)^*\quad (-2.670)^*}$$

*Denotes rejection of the null hypothesis at the 0.01% level of significant

Where Y	= Return on Equity (firm performance)
α_0	= Constant value
$\beta_1\ \beta_2\ \beta_3\ \beta_4$	= Regression Coefficient
X_1	= Debt to Asset ratio
X_2	= Debt to Equity ratio
X_3	= Interest Coverage ratio
X_4	= Long-term debt to Equity ratio

Conclusion

This study aims to investigate the impact of financial leverage on firm's performance using a sample of 159 Malaysian companies in six sector (construction, consumer, plantation, properties, trading or services and industrial) for period 2008-2017. From the research findings of this study we can conclude that financial leverage is essential as solution in order to help the firm maximizing their profit. In fact, by using the financial leverage that means that the firm is grant to finance their operation of business by taking on debt. Nowadays, most of companies take debt to help them assist in financial to operate the business. Accordingly, some of the reason why some companies take debt because they cannot reach the sufficient capital by issuing shares in the market in order to meet their business needs.

Consequently, it important to draw a conclusion from this study in order to know the impact of financial leverage on firm performance of the Malaysian companies as a result of its very importance contribution in help the firm to achieve their ultimate goal. Moreover, this conclusion is substantiated by the regression result of the analysis.

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13th – 14th December 2020

TEACHING AND LEARNING METHODS USING AUGMENTED REALITY TECHNOLOGY: INTERACTIVE LEARNING CAMPING EDUCATION USING AUGMENTED REALITY

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Abstract: *The purpose of this study aims to identify the level of awareness and perception of Tourism Management students on the use of 'augmented reality' (AR) technology of teaching and learning. The first objective is to find and gather about camp information. The second is to design content in booklets and AR applications and the third is to create augmented reality as an interactive teaching and learning tool in the topic of camping. Studies on camping in augmented reality have not yet been extensive and not yet well known. The content of augmented reality consists of the history of the camp, the types of tents, the anatomy of the tents, camping equipment, places of interest, procedures and safety, the selection of suitable camping sites and the layout of the campsite. There are 2 methods used to produce teaching and learning tools, namely producing booklets and producing naming methods using uniteAR software. The results show that 90% of students strongly agree that the content of teaching and learning delivery in AR is very easy to understand. 52% of respondents strongly agreed and 48% agreed AR as an educational tool in the subject of camping interactively in the DTM3023 Recreational Tourism (Terrestrial) Course. 52% strongly agree and 45% agree to study the subject of camping in the Augmented Reality application. Most students today prefer technological education. Respondents consisted of students giving a very positive perception of the use of AR in education, especially for the DTM3023 Recreational Tourism (Terrestrial) Course. Augmented reality is seen as an innovative, simple, interesting and effective medium of future teaching and learning media as well as providing a fun experience for students and lecturers when using this method.*

Keywords: *augmented reality, camping, teaching and learning*

Introduction

Nowadays, 'Technology Trends in Travel & Tourism' shows that travel companies are using various technologies to engage with customers at every stage of their journey. For example, Trivago, Kayak, Booking.com, Agoda and so forth. These apps were created to support the tourism industry and to ease tourist to reach the tourism destination and facilities.

Education is a very powerful instrument for social change and transformation and innovative teaching practice is the only way to enhance the quality of our education. The problem which society faces are essentially the problems of educational institutions which are required to be innovative as they teach new skills and develop new insights and approaches towards the solving of social problems which the nation faces. Students must be empowered to be able to withstand the global challenges of the 21st century.

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13th – 14th December 2020

There are two method used in this process which are the traditional and the modern. The back-to-basics traditional education method, also known as conventional education, is still widely used in schools. The old-fashioned way of teaching was all about recitation, for example students would sit in silence, while one student after another would take it in turns to recite the lesson, until each one had been called upon. The teacher would listen to each student's recitation, and they were expected to study and memorize the assignments. At the end of the module a written test or oral examination would be conducted; this process was called an Assignment Study Recitation Test.

The way in which traditional methods were taught ensured that students were rewarded for their efforts, used class periods efficiently and exercised clear rules to manage students' behaviour. They were based on established customs that had been used successfully in schools over many years. The teachers communicated the knowledge and enforced standards of behaviour.

Meanwhile, the modern way of teaching is more activity based, using questioning, explaining, demonstration and collaboration techniques. One modern method is spaced learning, this is when students are encouraged to quickly switch through activities, for example; providing 10 minutes of knowledge on a subject with a PowerPoint presentation and then having 15 minutes of sport. The aim of spaced learning is to achieve better grades, and it works! It is claimed that this is a more effective than teaching students by traditional methods for four hours, thus helping the brain cells to create connections that they need to remember knowledge. It also helps people relax.

The traditional "chalk and talk" method of teaching that's persisted for hundreds of years is now acquiring inferior results when compared with the more modern and revolutionary teaching methods that are available for use in schools today. Greater student interaction is encouraged, the boundaries of authority are being broken down, and a focus on enjoyment over grades is emphasized." (Sonia Jackson, 2017)

Therefore, the study focusses on teaching and learning methods using augmented reality technology. This study about Interactive learning camping education using augmented reality only focus for polytechnic students DTM3023 Recreational Tourism: Terrestrial.

Problem Statement

Teaching and learning is a complex process that requires a variety of activities if a learning process is to succeed. These processes require a combination of activities between teachers and students. Teaching will fail if only one party is involved. Successful teaching will result in a change in student behaviour. This process of behaviour change is known as learning (JPPG, 2006). According to Joyce (2000), the term teaching is actually related to learning because teaching actually means teaching student to learn. Failure to produce an effective teaching and learning process can lead to many problems in the school. Poor teaching and learning process can lead to many problems in the school. Meor (2003) found that students are less interested in learning because of their style that does not meet their learning style. While Abu Hassan's (2003) study found that teacher do not give students the opportunity to actively participate in the teaching and learning process. Teachers are less likely to give students the opportunity to develop critical and creative thinking in their subjects. Teachers follow the procedures contained in the textbook regardless of the student's circumstances. Tan (1991) study also found that teachers tent to adopt traditional teaching approaches and strategies. Ghafar (2003) suggested that a teacher should use a variety of teaching methods and techniques to prevent students from feeling overwhelmed and to make teaching effective.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Objectives

1. To find and collect information on camping content.
2. To design content in booklet and AR application
3. To create augmented reality as an interactive teaching and learning tools in camping topic.

Methodology

This methodology discussed about the method on how to produce our augmented reality product using uniteAR software. UniteAr software usage are to ease the step in producing our Augmented Reality (AR) product as it is one of the easiest software of augmented reality publisher. Furthermore, the I.C.E.A.R augmented reality brochure; booklet is a learning cards, information & direct references to student and lecturer as one of teaching and learning tools. By adding little barcode symbols which is when viewed through a scanner could provide more information about camping. Augmented Reality based mobile applications show the digital information over layered on real world objects. Figure 1.1 flowchart produce booklet for Augmented Reality (AR). First steps, collecting information about augmented reality, camping. Next, analyse all the data collected to choose the best information to be put in the booklet for Augmented Reality (AR).

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13th – 14th December 2020

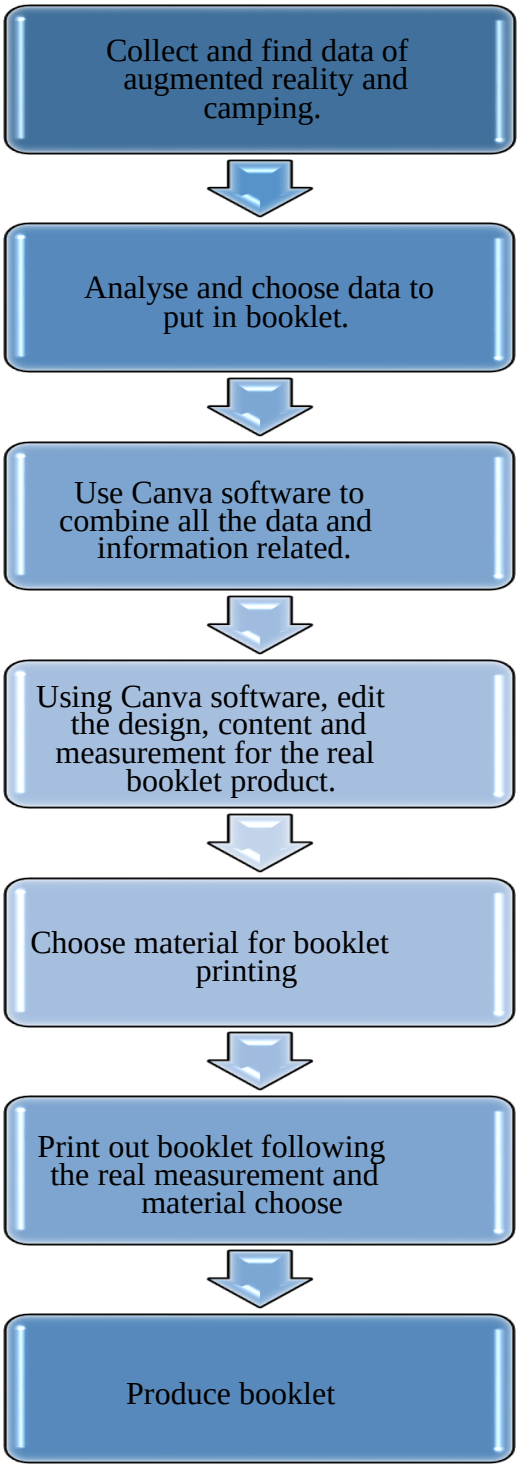

Figure 1.1: Flowchart produce booklet

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13th – 14th December 2020

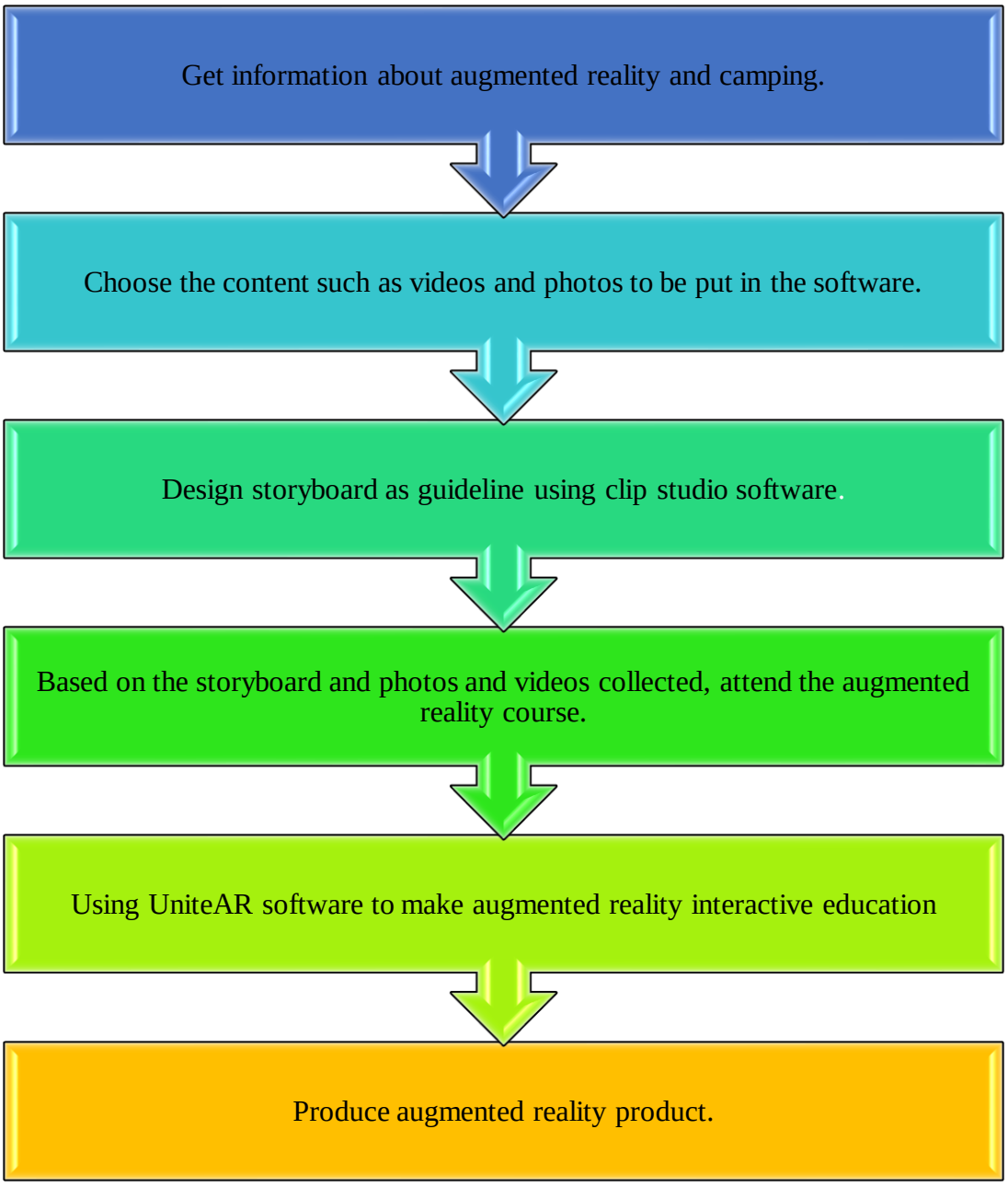

Figure 1.2: Flowchart

Finding and Discussion

The results showed that design content in booklet and AR application were created.

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13th – 14th December 2020

Figure 1.3: Booklet were produced

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13th – 14th December 2020

The results showed that Augmented Reality application were created.

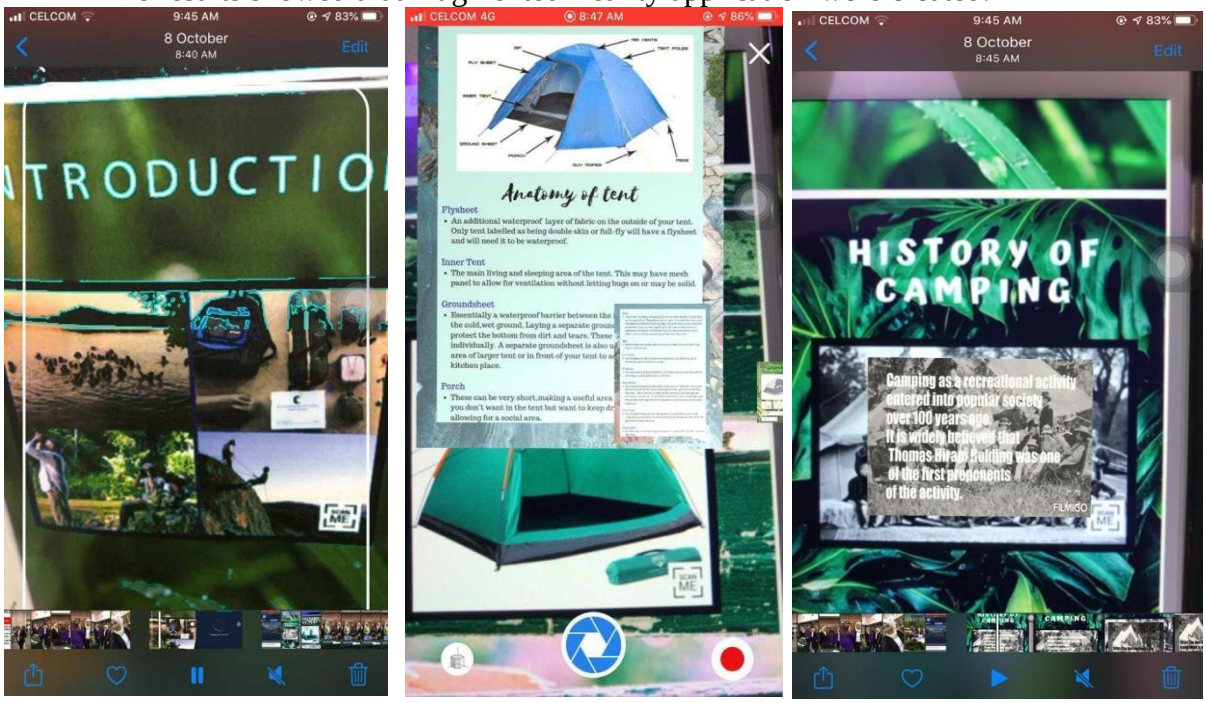

Figure 1.3: Augmented Reality Learning Camping were produced

The Statistical Package for the Social Sciences (SPSS) was used to analyse the collected data using various statistical test and methods. Next, a more detailed discussion of finding will be presented below:

Results Regarding Students Acceptance of Interactive Learning Camping Education Using Augmented Reality

The result showed a high acceptance rate 79% of the use of Interactive Learning Camping Education Using Augmented Reality. Furthermore, female showed the higher acceptance rates, as almost 62% of those who thought AR applications. Next, the result showed 84% a high student ages in range of 18-20 ages are acceptance of interactive learning. The result also showed 39% students are from the Semester 5 likes and acceptance the interactive learning camping.

Results Regarding Interactive Learning Camping Education Using Augmented Reality as Tools Method Teaching and Learning

The result showed a high percentage 59% the contents of Interactive Learning Camping Education Using Augmented Reality are suitable for students. Interactive Learning Camping Education Using Augmented Reality is a very helpful educations tools for camping course in DTM3023 Recreational Tourism (Terrestrial). Augmented Reality also can be applying all another subject to help a creativity lecturer using this method to apply for students. It also can help students to understand more.100% showed students agreed. Next the result showed 97% students would like to learn DTM3023 Recreational Tourism (Terrestrial) Course with augmented reality platform. Interactive Learning is an attractive learning tools as it combined most of the elements that students prefer the most. Such as, videos, animations, photos and also internet-based learning tools. Besides, by the booklet itself are very interactive and attractive

as it is designed with vibrant and fresh colors, photos and combination of ideas.It is one of the portable educational tools as it is available anywhere and anytime for the users as long as they have internet data, booklet and also unitear scanner apps. This could ease the user to reach the access to the content. Contents is understandable and suitable for all range of ages, and educational level as the languages used are common and easy without any extra bombastic vocabulary used in it.

Summary and Conclusion

This study reviews augmented reality were produced and the main benefits of using augmented reality in teaching and learning. It also aims to examine user acceptance of augmented reality applications. Augmented Reality is great for lessons and teaching as it will make it easier for students to learn and understand faster. And have an interest in learning without using books, but only using UniteAR. Overall, the student will be interested in learning because they learn techniques that are different than normal. With this camping book, not only student but tourist who is interested in camping will also make it easier to find or persuade camping information using UniteAR. This project need student to create idea to using UniteAR and find information about it. Lastly, UniteAR will developing skills and knowledge among students.

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CLEAVAGE STRUCTURE CHANGE IN THE 2019 GENERAL ELECTION IN INDONESIA

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***Abstract**: This paper aims to analyze social cleavage change in the presidential and parliamentary elections. The 2019 presidential and parliamentary elections in Indonesia differed from the previous election in that the presidential election was separated from parliamentary elections. In the 2019 election, presidential and parliamentary elections were run simultaneously. Besides, the issues of social cleavages also increased during the political campaign period. Based on some surveys conducted by some research institutions and media, the social cleavages had occurred in the presidential election, especially between church-state, Muslim traditionalist and modernist, education, and religion. However, the influence of social cleavages did not occur in the parliamentary election. Party leaders, candidates, and money politics were still vital to influence the voters. This difference shows that the presidential election is more influential than the legislative election, and the electoral system that uses an open list system has changed voter behavior.*

***Keywords**: Social cleavages, presidential election, candidates, and money politics.*

Introduction

After the 2017Jakarta election, social cleavages had arisen mainly when an Islamic movement emerged during governor election led by the leader of the Islamic Defenders Front (FPI), Habib Rizieq. The Rizieq actions in the Jakarta election had increased the conflict escalation between Islamic groups and secular nationalists ahead of the 2019 general election. *Aksi Bela Islam* (defending Islam Action) led by Rizieq, which was later named the group of 212, was responded by the ruling party with various allegations to Habib Rizieq.

During the presidential and legislative election campaigns, the group of 212, who previously stated that they had not intervened in the general election, transferred their support to Prabowo and Sandiaga Uno. As a result, the incumbent coalitions used the Islamic caliphate issue to describe a new state if Prabowo could win in the election. On the contrary, Prabowo and his allies attacked his opponent with the issue of communist revival.

The issues of social cleavages were the main issues that emerged post-Jakarta election. Even though social cleavages increased, Fernandes (2018) stated that this issue did not influence the presidential election because the votes for Jokowi and Prabowo could not change. A survey conducted by Indikator Politik Indonesian (Indonesian Indicator Politics) and the local election commission in the West Sumatera also showed that social cleavages did not change the voting behavior (Minang Satu, 2019; Tempo, 2019b). Otherwise, Ferdinant (2019), Fossati (2019), and Aminah (2019) found that political identity still influenced Indonesian politics.

However, understanding the social cleavage impact in the 2019 Indonesian election should look at two levels: presidential and legislative elections. The presidential election result showed that Prabowo obtained massive support in some Muslim majority communities. On the contrary, Jokwoi won in the non-Muslim region. Interestingly, even though Prabowo won 57

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13th – 14th December 2020

percent in South Sulawesi, Jokowi's party coalition still won in these areas, such as Golkar (Party of Functional Groups) and National Democrat Party (Nasdem). In Riau, Prabowo won 60 percent, but Golkar and Partai Demokrasi Indonesia-Perjuangan (Indonesian Democratic Party-Struggle-PDIP) still influenced voters these areas.

The differences between presidential and legislative elections showed a gap that influenced the voters in the presidential election and legislative elections. if cleavages structure vote choices, then we should see consistent patterns of voting between the presidency and the legislature. But instead we find split ticket voting. Therefore, this paper will analyze the impact of social cleavage issues on the presidential and legislative elections based on this gap. This paper looks that the social cleavages influenced the voters in the presidential election, but these cleavages did not impact the political parties. Party leaders, candidates, and money politics become some factors that reduce social cleavage or ideology ties between parties and voters. Besides, the voters also were fragmented, because of split ticket voting.

Social Cleavages

Political parties are described as representations from particular groups of communities. Lipset and Rokkan (1967) explained that the differences in communities' structure would become social bases for political parties' support. Political parties will use political identity issues to make voter alignment so that the political parties' support can be stable. The differences in the social structure are mentioned by Lipset and Rokkan (1967) as social cleavages.

Different societal structures can take many forms, such as different languages, ethnicities, religions, classes, and regions. The emergence of political parties in Western Europe, for example, could not be avoided from conflict of interest. The Labour party in England emerged to represent the working class. In Malaysia, the emergence of the Malaysian Chinese Association (MCA), the Malaysian Indian Congress (MIC), and the United Malays National Organization (UMNO) is to represent and protect their communities. Lipset and Rokkan (1967) divided conflict among political parties in Western Europe into some forms, namely the conflict between church and state, center-periphery, urban-rural, working class-employer, and tenant-landowner.

Even though social cleavages can describe the emergence and interaction among political parties and voters, some scholars stated that this model had some weaknesses. For example, Lipset and Rokkan (1967) did not define social cleavages (Bartolini & Mair, 1990; Ford & Jennings, 2020), so that definition of social cleavages is still vague. Therefore, Mair (2006, p. 373) defined cleavage as a profound social division in the communities that contain three elements, namely social division such as religion, ethnicity, and status. Then, collective identities such as farmer or worker, and the last is organization expression such as organization, union, or association.

Then, not all social cleavages can be translated into the party system because the translator plays a vital role in translating social cleavages (Sartori, 1990, p. 176). Critics also were conveyed by Lybeck (1985), who looked that the social cleavage politicization could not guarantee that political parties have stable support because the evidence that political parties can last long cannot be adequately proven. For example, political parties in some industrially advanced countries face the decline of social cleavages. Party identification and candidates become the main factor influencing the electorate (André, 2015; Dalton, 1984, 2002; Dalton & Burklin, 2003; Dalton & Wattenberg, 2002).

The critic on the social cleavages fundamentally cannot be separated from the change in the social structure. The social cleavages such as religion perhaps change because of secularism, and individualism has been more increased. The change in the social process can

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13th – 14th December 2020

blur the boundaries between social divisions such as religious and irreligious. The change in social group behavior also influences social cleavages (Brooks et al., 2006; de Graaf et al., 2001; Goldberg, 2020).

Even though some scholars criticize social cleavages, Bornschier (2009) suggested that using the social cleavages approach can help understand party systems such as forming political parties, institutionalized party systems, voting behavior, and the conflict between new and old democracies. Therefore, to understand the 2019 presidential and parliamentary elections in Indonesia, this paper will use the social cleavage approach.

Research Method

This research uses secondary data to analyze social cleavages in the 2019 presidential and parliamentary elections. In the research about social cleavages, quantitative research is used to analyze the electorate behavior. This research uses quantitative data from some research institutions that were conducted during and post-election. To identify social cleavages, this paper uses some characteristics of social cleavages that proposed by Lipset and Rokkan (1967). Even though some characteristics that were proposed by Lipset and Rokkan (1967) do not appear in Indonesian party system, the new cleavages could be identified with looking conflict between two social cleavages such as muslim modernist and traditional.

Besides, data in this article also come from the media, especially online newspaper. The media gave much information about the result of the survey published by research institutions and gave information about social cleavages during the political campaign. Furthermore, the media also gave information about the events, cases, or political conflict in the election period. Data from media can help analyze the social cleavage in the presidential and parliamentary elections in Indonesia.

Data from media come from media at the national and local levels that are appropriate for this research such. Data from media would be arranged and compared to other data, especially from research institution surveys and other secondary data sources such as journal articles. The conclusion would be made after data collection and reduction. Intepretation in this research will use emic and ethic. Emic could come from the some surveys result, or people opinion on the media, while ethic come from the researchers.

Cleavages in the Presidential Election

The 2019 election showed a competition of ideology. The candidates used the ideological symbol to attract particular voters. Therefore, the 2019 election was considered as a resurgence of ideology or the return of ideology competition (Aspinall, 2019; Fossati, 2019). However, this paper looks that the social cleavages occurred between Islamic traditional-modernist, religious-secular-nationalist, and some cleavages such as education, urban and rural areas.

Church-State Cleavages and the Emergence of Social Cleavages in 2019 Election

The emergence of social cleavages and translation of cleavages into the party system could not be separated from the translator role in how the cleavages are created and emerged. The cleavage between Islam and secular-nationalist (Chruch-state) could be tracked in the Jakarta election 2017 between Anies Baswedan and Basuki Thahja Purnama or Ahok.

In the Jakarta election, Anies was assumed to represent political Islam, even though the political parties nominated Anies to come from a coalition between secular and Islamic parties, namely Gerindra (Great Indonesia Movement Party-Gerindra) and PKS (Prosperous Justice Party). Meantime, Ahok is a Chinese and Christian who was supported by the ruling parties. Before election day, some surveys showed that the electability Ahok was higher than Anies

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13th – 14th December 2020

(Tempo, 2019a). Cleavage issues emerged when Ahok's speech on 27 September in the Kepulauan Seribu was assumed as a contempt on Islam. Ahok's speech then had spread widely and become a discourse in cyberspace not only on the religious side but also on political matters (Ahyar & Alfitri, 2019; Pamungkas & Octaviani, 2017). Some Islamic groups made some series of demonstrations that were known as Islamic Defense Action or the 212 group demanding the police to investigate Ahok's speech. Many Islamic organizations, including Nadhlatul Ulama (NU), support the 212 groups, even though NU is an Islamic organization supporting the Jokowi government. NU leaders did not appear to have taken a firm decision to ban its members from engaging in the action. Politicization on Ahok's speech harmed the secular groups. Some surveys showed that the electability of Ahok declined sharply after his speech in the Kepulauan Seribu (Detiknews, 2016; Suara.com, 2016). In the 2017 Jakarta Election, Anies won, and Ahok went to jail on charges of insulting Islam for two years.

The translation of social cleavages in the Jakarta election affected the 2019 general election. The ruling parties looked that the emergence of the Islamic movement in the Jakarta election could become a threat in the 2019 election. The Leader of FPI that led demonstrations and caused Ahok went to jail received a counterattack from Ahok's supporters. At the end of 2016, Rizieq faced some problems. For example, Sukmawati, the Soekarno daughter and the leader of Indonesian National Party Marhaenism, reported Rizieq to the police with accusations that Rizieq insulted the state emblem in his speech. With this report, the police then set Rizieq as a suspect. In December 2016, the Union of Catholic University Students of the Republic of Indonesian (PMKRI) also reported Rizieq. PMKRI stated that Rizieq's speech mocked the birth of Jesus. Before the case finished, a priest, Max Evert Ibrahim Tangkudung, reported Rizieq because Max had found a new video about Rizieq's speech that recommend killing the priest. In another case, Rizieq was also accused by the police of seizing land owned by Perhutani (CNN Indonesia, 2016, 2017a, 2017b).

Jokowi's supporters did not give a pause to attack Rizieq. Various cases were reported to the police, one case had not finished yet, and the new case was reported. Still in 2017, some cases emerged after some organizations such as Red and White Solidarity Group (Solmet) reported Rizieq to the police relating to Rizieq's statement that he found the communist symbol in Indonesian money. Solmet also stated that Rizieq had provoked that communists had controlled Indonesia (Tempo, 2017). The most controversial issue was the pornography case. Rizieq became a suspect in the case of online chat sex with a woman, Firza Husein (the Jakarta Post, 2017). The Accusations toward Rizieq by the secular-nationalist groups forced Rizieq to escape from Indonesia.

The ruling parties' strike and their supporters to the 212 groups did not end here. The issues *khilafah* (Islamic government) increased and led to the organization that supported 212 groups, namely HTI. HTI was an Islamic organization that has a goal to re-establishment of the Islamic government. The government then dissolved HTI after the Jakarta election in 2017 because the values of HTI's struggle contradicted *Pancasila*, and HTI's activities were considered as a threat to national stability and community (Kompas.com, 2017).

However, the Jokowi Government that banned HTI with caliphate reason was not the real reason, the political interest of Jokowi and his groups seem stronger than security reason (Aswar, 2018), and this policy tended to "maintain pressure on his Islamic foes" (Gregory Fealy, 2017). Moreover, the ban of HTI is an opportunity for Jokowi to cleave Islam identity to split Islamic support for Prabowo. The case of Ahok showed that the supporters of 212 groups were not from FPI and HTI only, but also from NU itself. The dissolution of HTI would retract the NU member and strengthen the minority group's trust to support Jokowi.

eISBN 978-967-2426-22-6
13th – 14th December 2020

The cleavage that was undertaken by Jokowi and his allies can be found during the political campaign. After the dissolution of HTI, provocation on Khilafah had increased. Banser NU and Anshor conducted raids toward the member of HTI and the similar symbol to HTI. Moreover, some *ulama* (Islamic clerics) and *ustadz* (Islamic teachers or preachers) who were assumed to support Prabowo were persecuted and considered HTI affiliation. For example, *Ustadz* (Islamic cleric) Abdul Somad, the famous *ustadz* who supports Prabowo, had to cancel his activities because of intimidation and persecution from some organizations, including Banser and GP Anshor (CNN Indonesia, 2018; Republika.co.id, 2018).

Hendropriyono, the former head of the Indonesian State Intelligence Agency (BIN), also provoked in media. Hendropriyono stated that the 2019 election was different from the previous election. The 2019 election is fighting between ideologies, namely *Pancasila* vs. Khilafah. Therefore, he asked the voters to determine their choices to defend *Pancasila* as the state ideology. Hendro statement implied that Jokowi and Ma'ruf Amin was the protector of the state ideology, *Pancasila*. Otherwise, Prabowo and his allies want to establish an Islamic state (Merdeka.com, 2019). The strategy to split the political and social identity was also stated in the constitutional court hearing in the presidential election dispute. The Jokowi team deliberately spread the issue of *khilafah*, radical Islam, and intolerance to the supporter of Prabowo as a strategy of the campaign (CNN Indonesia, 2019a, 2019b; Suara.com, 2019).

The 2019 election shows that the social cleavage is one of the strategies made by Jokowi and his allies to unite the sympathizers that were split in the Jakarta election, attract the minority groups, and weaken the Islamic support for Prabowo. Through NU, bureaucracy, and police, Jokowi and his allies succeeded in restricting Islamic groups who support Prabowo by persecution and intimidation. Emergence of this issue depeened conflict between Islam and secular-nationalist.

Muslim Traditionalist and Modernist Cleavage

Islamic modernist and traditional cleavage are an old conflict that reappeared in the 2019 presidential election. Muhammadiyah represents Islam modernist, and Nadhlatul Ulama represents traditional. Cleavages between Islamic modernist and traditional has emerged since the colonial period. Muhammadiyah, founded in 1912, aims to educate the Muslim and purify Islam from the traditional and cultural influence that contradicted Islamic values (Nakamura, 2012; Peacock, 1978). Meanwhile, NU established in 1926 aimed to defend the traditional and cultural values (Hasbullah, 2014; Ismail, 2011). However, Fealy and Bush (2014, p. 541) and Bush (2009, pp. 32–33) explained that the emergence of NU fundamentally could not be avoided from the challenge of modernist toward legitimacy and economy of traditional ulama because modernist succeed to attract the middle class such as traders and landowners so that financial position flew to modernists and their schools.

The cleavage between Islamic modernist and traditional continued after Indonesian independence. Even though Muhammadiyah and NU were involved in forming Partai Majelis Syuro Muslimin Indonesia (Council of Indonesian Muslimin Association-Masyumi) in 1945, the conflict between Muhammadiyah and NU could not be avoided. The internal conflict caused by the modernist group's domination at the party and cabinet so that NU formed Partai Nadhlatul Ulama (Nadhlatul Ulama Party-PNU) in 1950. (Bush, 2009; Madinier, 2015; Munhanif, 2012).

After the New Order government, Muhammadiyah and NU formed their party. PAN (the National Mandate Party) represents the modernist groups formed by Muhammdiyah leader Amin Rais, while NU is represented by PKB (the National Awakening Party-PKB). Even

eISBN 978-967-2426-22-6
13th – 14th December 2020

though these parties have social bases for political party support, the dealignment process affected both parties. PAN and PKB tend to be catch-all parties to obtain massive votes.

In the 2019 presidential election, the conflict between Muhammadiyah and NU reappeared. NU firmly stated to support Jokowi, while Muhammadiyah, even though it did not state openly, gave support to Prabowo. For example, Amien Rais, the former chairman of Muhammadiyah, stated to support Prabowo. Then Daniel Anzar Simanjuntak, Muhammadiyah Youth Chairman, became Prabowo's spokesman.

The triumph of Jokowi and Prabowo in some regions could be a conflict description between traditionalists and modernists. Prabowo won in West Sumatera, Banten and West Java, and Aceh. In the West Sumatera, Prabowo won 85.95 percent. West Sumatera is known as Muhammadiyah and Tarbiyah Islamiyah bases. While in Banten and West Java, Prabowo won more than 60 percent. According to Mudzakkir (2019), in West Java, Islamic Union (*Persatuan Islam*-Persis) and Muhammadiyah have developed in this province since the colonial period. They have been very active in building their organization. In the 1955 election, West Java became a political base for Masyumi. Otherwise, Jokowi won in the traditional areas, such as East and Central Java, that become NU bases. Besides, the Islamic organizations opposite NU also support Prabowo than Jokowi, such as FPI, *alkhairaat*, and *Salafi*. Some surveys showed that FPI and *alkhairaat* gave 100 percent of the votes for Prabowo (Liputan 6, 2019; Republika.co.id, 2019). LSI (Indonesian Survey Institute) also found that ahead of the election, the votes for Prabowo in the Islamic organizations increased, and for Jokowi declined except in the NU organization (Katadata.co.id, 2019).

Ethnic Cleavage

Ethnic cleavages fundamentally reemerged in the 2014 election. While the previous election, ethnicity did not influence the electorates because presidential candidates came from Javanese and non-Javanese. However, in the 2014 election, the cleavage structure changed, the Javanese tended to support Jokowi, and the outer Islands preferred Prabowo (Mujani et al., 2018, p. 144).

The 2019 presidential election showed that the ethnic cleavages still influenced the electorates. Some surveys showed that in the outer Islands, especially Sumatera, the majority is Malay tended to support Prabowo. Meanwhile, the majority of Javanese tended to support Jokowi and Ma'ruf Amin. This tendency could be looked at as the triumph of Jokowi in the Javanese areas such as Yogyakarta, Central, and East Java. Meanwhile, Prabowo won in outer Java, such as Sulawesi, Sumatera, and South Kalimantan.

Table 1. The Bases of Prabowo and Jokowi Based Ethnicities

Province	**The Candidates of President and Vice President**		**Ethnicity**
	Jokowi-Ma'ruf (%)	Prabowo-Sandiaga (%)	
Aceh	14.41	85.59	Acehnese
West Sumatera	14.08	85.92	Minangkabau People
West Java	40.07	59.93	Sundanese
South Sulawesi	42.98	57.02	Bugisnese/Makasarenese
South Kalimantan	35.91	64.09	Banjarenese
Banten	38.64	61.54	Sundanese
East Java	65.79	34.21	Javanese
Central Java	77.29	22.71	Javanese

Source: Komisi Pemilihan Umum (General Elections Commission) (2019)

Table 2. Survey Result: Support for Candidates based on Ethnicity

Ethnicity	Survey Result					
	Poltracking (1-8 April 2019)		CSIS (15-22 March 2019)		LIPI (27 April-25 May 2019)	
	Jokowi (%)	Prabowo (%)	Jokowi (%)	Prabowo (%)	Jokowi (%)	Prabowo (%)
Javanese	64.4	27.0	60.5	20.6	75.0	17.1
Sundanese	35.1	60.7	42.3	46.7	37.5	47.5
Bataknese	55.6	26.7	55.2	25.9	85.3	12.0
Malays	26.1	67.8	37.1	52.6	21.3	65.0
Betawinese	25.4	69.0	39.3	32.1	19.4	61.1
Bugisnese/Makasarenese	45.2	42.9	37.3	39.8	44.9	40.8
Minangkabau people	30.2	69.8	16.7	66.7	15.2	81.8
Maduranese	47.4	41.0	39.5	44.7	59.5	38.1
Acehnese	-	-	20.5	77.3	20.0	73.3
Other ethnicities	61.2	33.5	59.3	31.7		

Sources: Poltracking Indonesia (2019), Centre for Strategic and International Studies (CSIS) (2019), LIPI (2020, p. 90).

Based on Tables 1 and 2, there are some differences between the election and survey results. For example, the survey result showed that Jokowi and Prabowo competed in Madura with few different results. However, the result election showed that Prabowo won in Madura. In four regencies in Madura, Jokowi only won in Bangkalan (57.83%), and Prabowo obtained 42.7%. While in the three regencies, Prabowo won 74.5% in Sampang, 64.25% in Sumenep, and 83.77% in Pemekasan (Komisi Pemilihan Umum, 2020).

Meanwhile, in South Sulawesi, Bugis and Makasar are two main ethnicities, and most of them are Muslim. In comparison, others are Christian and Catholics. However, the election result showed that Prabowo won in the 57 percent in South Sulawesi. Meantime West Java and Banten are two provinces in Java Island that is mostly inhabited by ethnic Sundanese. The 2019 presidential elections showed that ethnic cleavages was stronger than the previous election. However, from these differences, a question could arise, how are the other ethnicities in some areas?

The survey result showed that Bataknese in North Sumatera, for example, gave their support for Jokowi. However, why Bataknese voted for Jokowi can be explained in the religion cleavages, because the majority of Bataknese are Christian and Catholic. Likewise, in Bali, Papua, or North Nusantenggara, most communities in these areas are non-Muslim. Therefore, besides ethnic cleavages, religion also become the main factors that influenced the electorates.

Religion Cleavages

In the previous election, religion did not have much impact on voter behavior. However, this cleavage increased in the 2014 election between Jokowi and Prabowo (Mujani et al., 2018). In the 2014 presidential election, Prabowo had been supported by some Islamic leaders, so Prabowo was described as a leader who could protect the Muslim interest even though Prabowo's mother and his sibling are not Muslim. At the same time, Jokowi was assumed as anti-religion, communist, and non-Muslim. Even though Prabowo could use religion to mobilize mass, these issues could not be used alone by Prabowo to win in the 2014 election because other issues played an important role that influenced the electorate (Mujani et al., 2018, p. 141).

In the 2019 presidential election, the religion cleavage increased sharply, voter mobilization based on the religion split the voters into two blocks, namely Islam and non-Islam. Based on some surveys, the non-Muslim gave their support for Jokowi.

Table 3. The Support for Candidates Based on Religion

Religion	**Survey Result**					
	Poltracking (1-8 April 2019)		CSIS (15-22 March 2019)		KI (17-24 February 2019)	
	Jokowi (%)	Prabowo (%)	Jokowi (%)	Prabowo (%)	Jokowi (%)	Prabowo (%)
Islam	47.9	44.9	47.4	36.3	45.3	36.0
Protestant	85.6	7.4	93.1	4.4	90.2	6.5
Catholic					95.3	2.3
Hindu	-	-	-	-	87.9	0 (not answer: 12.1)
Buddha						
Confucian	83.6	13.7	69.4	33.4	50.0	0 (not answer 50)
Others						

Sources: Poltracking (2019), CSIS (2019), Konsep Indonesia (2019)

From the table above, Muslim gave their votes for Jokowi around 45-47 percent, Protestants and Catholics were 90 percent. Then other religions such as Hinduism, Buddha, and other religions supported Jokowi more than 80 percent. The table above showed that the 2019 election's cleavages had been more profound than the previous election. If the survey results are compared to the election result, Jokowi also won in some non-Muslim areas.

Table 4. The highest votes for Jokowi in the Five Muslim Minority Provinces and Two NU bases

Province	**Jokowi (%)**	**Prabowo (%)**	**Religion (%)**
Bali	91.68	8.32	Majority is Hindu (83.4)
East Nusa Tenggara	88.57	11.43	Majority is Catholic (54.14) and Christian (34,74)
North Sulawesi	77.24	22.67	Majority is Christian (63.60),
Papua	90.66	9.34	Majority is Christian (65.48), Catholic (17.67) .
West Papua	79.81	20.19	Majority is Christian (53.77), Islam (38.40) and Catholic (7.03%).
East Java	65.79	34.21	Majority is Muslim (96.36), NU bases
Central Java	77.29	22.71	Majority is Muslim (96.74), NU bases

Note: The percentage of religion in these areas based on the Indonesian census 2010 (Badan Pusat Statistik, 2010).

Table 5. The highest votes for Prabowo in Six Muslim Majority Provinces

Province	**Jokowi (%)**	**Prabowo (%)**	**Religion**
Aceh	14.41	85.59	Majority is Muslim (98.18%)
West Sumatera	14.08	85.92	Majority is Muslim (98%) and Muhammadiyah is the largest Islamic organizations.
West Java	40.07	59.93	- Majority is Muslim. - West Java became a base of Masyumi
South Sulawesi	42.98	57.02	- Majority is Muslim(89,63%)
South Kalimantan	35.91	64.09	- The majority is Mulsim (96,67%)
Banten	38,64	61,54	- Majority is Muslim

Source: Badan Pusat Statistik (2010).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Center-Periphery Cleavages

Center-periphery cleavages in the 2019 presidential election showed an increase than the previous election. Some outer Islands such as Sumatera and Sulawesi tended to support the challenger than the incumbent. In the previous election, Jokowi won in some provinces in the Sumatera and Sulawesi. However, in the 2019 election, almost all provinces in Sumatera support the challengers. The increase of Prabowo votes also occurred in Sulawesi, Kalimantan, and West Papua. Even though Prabowo lost in these areas, his votes increased. For example, in the 2014 election, Prabowo won 54.39 percent in Aceh and 76.92 percent in West Sumatera. In the 2019 election, his vote increased to be 85.50 percent in Aceh and 85.9 percent in West Sumatera. In the South Kalimantan, Prabowo obtained 50,05 percent in 2014 and 49.95 percent for Jokowi. In the 2019 election, Prabowo won with 60.13 percent, and Jokowi only obtained 39.87 percent. The votes for Prabowo also increased in South Sulawesi from 28.57 percent in 2014 to 59.27 percent in 2019.

Table 6. The Prabowo and Jokowi votes in Sumatera

Province	2014 Election		2019 Election	
	Jokowi (%)	Prabowo (%)	Jokowi (%)	Prabowo (%)
Aceh	45.61	54.39	14.41	85.59
North Sumatera	55.24	44.76	52.32	47.68
Riau	49.88	50.12	38.49	61.26
Riau Island	67.26	40.37	54.19	45.81
Jambi	50.75	49.25	41.68	58.32
South Sumatera	48.74	51.26	40.30	59.70
Bangka	67.26	32.74	63.23	36.77
West Sumatera	23.08	76.92	14.08	85.92
Bengkulu	54.73	45.27	49.89	50.11
Lampung	53.07	46.93	59.34	40.66

Source: KPU (2019)

The increase of Prabowo votes and some outer Islands showed that center-periphery still influence the Indonesian election. However, this influence needs other factors to describe the votes for Prabowo increased, and Jokowi decreased. Religion and Ethnicity cleavages could help understand the Prabowo and Jokowi votes because Muslims and Malays dominate the number of votes in Prabowo.

Urban-Rural Cleavages

Since democratization, urban-rural cleavage, especially in the presidential election, still influences the electorates. Less educated and blue-collar workers are a description from rural areas. Otherwise, urban people have good education and income. Mujani et al. (2018, p.109) explained that rural areas tend to vote for the incumbent. In contrast, urban people tend to vote for the challenger because they have an attitude to change. However, urban people can change their attitude in the election and are not always an anti-status quo. The change of urban people depends on the incumbent performance. For example, in the 2009 presidential election, Susilo Bambang Yudhoyono obtained support from urban people because they perceived that Yudhoyono was better than other candidates. However, in the 2014 election, the candidates of presidents were new, and president Yudhoyono and his party did not support and endorse any candidates. Therefore, the urban-rural cleavage was less relevant to analyze the 2014 presidential election (Mujani et al., 2018, p. 109).

In the 2019 presidential election, the incumbent faced his old challenger in the previous election. If looking at the Mujani et al. (2018) analysis in the previous election, the conservative rural areas would vote incumbent. Otherwise, the urban people who are more critical would support the challenger. Some surveys showed that Jokowi won in rural and urban are competitive.

Table 7. The Support for Candidates Based on Urban and Rural

Institution	**Survey Result**			
	Rural		Urban	
	Jokowi (%)	Prabowo (%)	Jokowi (%)	Prabowo (%)
Roy Morgan	63.5	36.5	53	47
Median	53.1	34.4	40	44
CSIS	57.2	35.9	45.6	35.9
LIPI	60.8	30.7	44.9	42.9

Sources: Roymorgan (2019), Tribunnews (2019), CSIS (2019), LIPI (2020, p. 89)

The table above showed that Jokowi won in the rural and urban areas, even though the Median found that Prabowo won in the urban areas. This result strengthened Mujani et al. (2018) research, which showed that rural areas tended to support the status-quo and urban people tended to support the challenger. The competitiveness in urban areas showed another factor that influences the electorate in the urban areas. In this case, education can become an alternative to explain this difference.

Education Cleavages

In the Indonesian presidential election, the level of education has an impact on voter choices. For example, in the 2004 presidential election, Megawati-Hasyim Muzadi obtained 62 percent in the first round from the electorates who have education at elementary or less. Megawati and her party, PDIP, were described as a party that represented the lower class. This number increased in the second round. While her challenger, Susilo Bambang Yudhoyono-Jusuf Kalla, obtained considerable support from educated voters. In the 2009 election, Megawati-Prabowo had 64 percent support from less educated. In comparison, Susilo Bambang Yudhoyono-Budhiono obtained 50 percent (Mujani et al., 2018, pp. 117–118).

In 2019, the level of education also influenced voters in the presidential candidates. The electorates who had an education at elementary school or less tended to vote incumbent. Meantime, the electorates who have a diploma or bachelor tended to votes challenger. Some surveys before elections showed the lower the level of voter education, the higher the vote for Jokowi (See table 7).

Table 8. The Support for Candidates Based on Education

Education	**Survey Result**					
	Poltracking		CSIS		KI	
	Jokowi	Prabowo	Jokowi	Prabowo	Jokowi	Prabowo
<=elementary	64.4%	27.7%			54.8%	21.9%
Elementary	59.2%	33.7%	57.3%	28.0%	54.0%	32.8%
Junior High School	56.7%	34.6%			48.0%	32.9%
Senior High School	45.7%	48.3%	45.8%	39.9%	55.9%	29.7%
Diploma	32.6%	60.9%				
>=Bachelor Degree	40.8%	56.2%	35.2%	42.5%	35.8%	42.1%
Not Answer	60%	30%	50%	33.3%		

Sources: Poltracking (2019), CSIS (2019), Konsep Indonesia (2019)

eISBN 978-967-2426-22-6
13th – 14th December 2020

Employment and Income Cleavages

In the Lipset and Rokkan (1965) analysis, the cleavages between social classes such as owner-worker cleavages become factors that can influence the voters. This cleavage fundamentally also influence Indonesian voters in the presidential election. However, identifying social cleavages is not an easy way to be measured. Therefore, Mujani et al. (2018, p. 110) included income and employment to measure social class.

In the previous election, the proportion of blue-collar workers who support the Jokowi was larger than Prabowo (Mujani et al., 2018, p. 120). In the 2019 presidential election, the blue-collar worker also tended to choose the incumbent than the challenger. While the votes in the white-collar or professional were more competitive between Jokowi and Prabowo.

Table 9. The Support for Candidates Based on Occupation

Employment	**Survey Result**					
	CSIS		Poltracking		KI	
	Jokowi (%)	Prabowo (%)	Jokowi (%)	Prabowo (%)	Jokowi (%)	Prabowo (%)
Labour and others	57.0	28.9				
Farmer/fisherman	58.5	27.0	58.4	33.3	55.5	32.2
Unemployment	49.5	34.3				
Professional	28.6	28.6				
Civil Servant/Teacher and others	33.7	48.3	50.9	43.4	50.0	33.3
Housewife	52.1	35.2	52.1	42.5		
Others	52.2	39.9	44.7	45.3		

Sources: Poltracking (2019), CSIS (2019), Konsep Indonesia (2019)

The table above showed that competition between presidential candidates was in the professional worker. Meanwhile, the labor, fisherman, farmer, and blue-collar worker gave their support for the incumbent. Interestingly, the CSIS survey found that almost 50 percent of civil servants such as bureaucrat, teacher, or lecturer who work under the government voted the challenger. It showed that the level of employment and also education influenced the voters.

Parliamentary Election and Social Cleavages

The influence of social cleavages on the voters in the legislative election has changed from one election to another. In the 1999 and 2004 elections, the social cleavages were still vital to become social bases for political party support. For example, Ufen (2008a) looked that the party system in 1999 and 2004 could not be avoided from some cleavages such as center-periphery, state-church, urban-rural, capital-labor.

The tendency of social cleavages that influenced voters to select political parties could be found in some areas. For example, Golkar represented the periphery, especially in the outer Islands, such as in Sulawesi. Simultaneously, PDIP represented centers such as in Java, Bali, and the Christian regions. Meantime some Islamic parties such as PAN and PKS represent urban Muslims. In contrast, PKB represented rural areas. Based on all cleavages, Ufen (2008a) found a new cleavage in Indonesia, namely status quo-reformation cleavage. Some political parties such as Golkar and The United Development Party (PPP) represented the status quo. Other parties such as PKB and Democratic Party (PD), and PKS were on the reformation side that focused on specific policy areas. Therefore, Ufen (2008a, 2008b) asserts that Indonesia's social cleavages, especially in the 1999 and 2004 elections, were still robust to influence party systems in Indonesia..

eISBN 978-967-2426-22-6
13th – 14th December 2020

However, the cleavage issues in the 2019 legislative election had declined. For example, regionalism tended not to become the main issues that could influence the voters, this change has occurred after the 2004 election, because political parties have developed to be more national parties than represented local areas. For instance in the 2004 election, PD had massive support in Jakarta, West, and East Java, but in the 2009 election, PD obtained massive support nationally. In the 2014 election, the support for democrat declined. Another example is PKB and PDIP having support bases in the East and Central Java. In the 2009 election, the support for PKB and PDIP declined because of the emergence of PD, Nasdem, and the growth of Gerinda in the 2014 election (Mujani et al., 2018, p. 96). However, in the 2019 election, PDIP won in East Java, PKB in the second position, then Gerindra, Golkar, and Nasdem.

Cleavages between rural and urban areas also have changed. Some political parties that was identified as urban (PAN and PKS) or rural (PKB) could not maintain their supporter bases, so that these parties tended to be catch-all parties. Mujani et al. (2018) found that since the first election in the 1999 election, political parties' support in urban and rural areas could change from one election to next election, because level of education, social class, and governmental performance influence electorate in these areas to choose the political parties.

Besides, church-states (Islam and nationalists) could not become a primary factor influencing the electorate. The number of Islamic parties declined, and the votes for Islamic parties are also not stable. Generally, Mujani et al. (2018) found that social cleavages did not influence the legislative election because citizens can shift their choices. Mujani et al. (2018) found that leader personality and party leader can shift the electorates. The voters would evaluate the party leaders in the office and their personality.

In the 2019 election, the leader personality and leadership were still the vital factors that influence voters to select political parties. Evaluation of party leader performance had become an essential aspect of the parliamentary election. 2019 parliamentary election showed that the candidates of president and vice of the president impacted political parties. In the 2019 election, Jokowi came from PDIP and his vice, Ma'ruf Amin, is from PKB. Meantime, Prabowo and Sandiaga Uno come from Gerindra. In the 2019 election, the votes for PDIP, PKB, and Gerindra increased nationally.

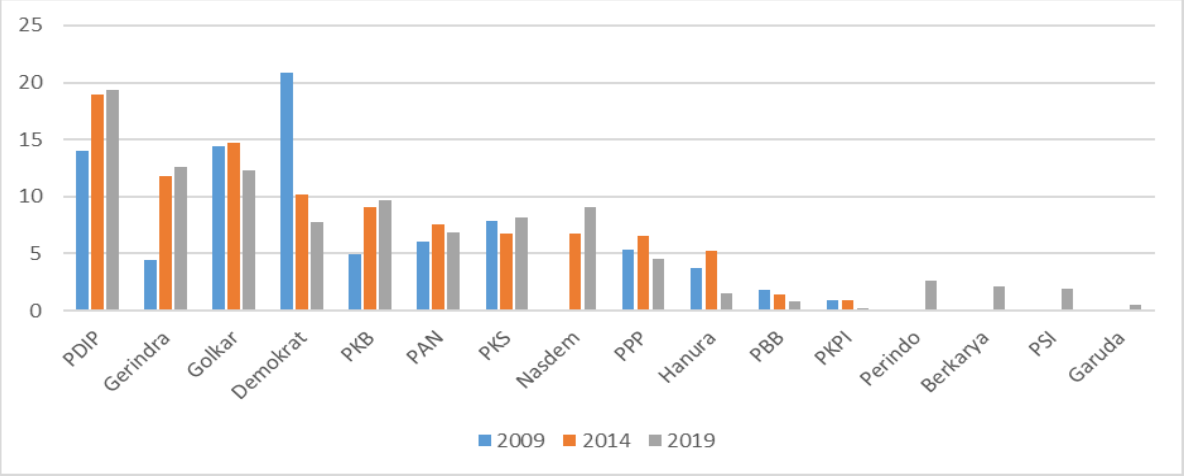

Figure 1. 2009, 2014 and 2019 Indonesian Election Result

Note: PSI, Berkarya, Garuda, and Perindo are new parties that compete in the 2019 election. While Nasdem competed in the 2014 and 2019 election
Source: KPU (2020)

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13th – 14th December 2020

The figure above showed that in the 2014 electio the number of PDIP votes increased in the 2014 and 2019 elections when Jokowi became presidential candidates. Likewise, Golkar votes increased slightly in the 2014 election when Jusuf Kalla became Jokowi's vice-presidential. However, in the 2019 election, votes for Golkar decreased around two percent. Meantime, PKB votes increased when Ma'ruf Amin became the Jokowi's vice-presidential candidate. Meanwhile, Prabowo, who became the presidential candidate in the 2014 and 2019 elections, could increase Gerindra votes. In 2014, Hatta Rajasa became Prabowo's vice-presidential candidate. The votes for PAN also increased.

Meantime, some Islamic parties could not increase their votes in the 2019 election. For example, PPP was one of the parties in Jokowi's coalition, but PPP votes declined in the 2019 election. The popularity of Jokowi could not impact PPP. The problem faced by PPP was the corruption scandal. The PPP leader was arrested by the Corruption Eradication Commission (KPK) for being involved in corruption ahead of the election. Meantime Crescent Star Party (PBB) could not increase its votes, even though this party became a part of Jokowi's coalition. PBB faced internal conflict after PBB leader, Yusril Ihza Mahendra, decided to support Jokowi. In the 2019 election, only PKS could increase its votes. PKS developed a coalition with Gerindra in the 2017 Jakarta election that nominated Anies Baswedan and Prabowo in the 2019 election.

Besides, the parliamentary candidates also were stronger to influence the voters than social cleavages issues. The selection of candidates by political parties becomes a critical aspect in the 2019 parliamentary election. The voters tended to select the candidates than the political parties or the issues of social cleavages. A survey conducted by the Indonesian Survey Circle (Lingkaran Survei Indonesian-LSI) showed that the electorates tended to choose the candidates they know than political parties. From 1200 respondents, 60.3 percent of electorates would choose the candidates, while 26.6 percent looked at the political parties. The voters tended to the candidates because the political parties did not have different programs. LSI looked that the new political parties would face difficulties in appealing to the voters if compared with the large parties such as PDIP, Golkar, and Gerindra because they had many candidates who had popularity (Kompas.com, 2019). LIPI (2020) strengthened LSI research by finding that 65 percent of respondents chose the candidates, and 35 percent chose political parties. LIPI (2020, p. 81) found that some reasons influenced the electorates to choose the candidates; namely, respondents chose because of the candidate performance (incumbent) (20.5%) and candidate programs (17.5%). Then some respondents stated that they only know this candidate (15.4 percent), carelessly choose (9.9%), and follow the family (7.1%). While other factors such as the candidates support the presidential candidates (5.3%), the voters obtained something from the candidates (4.8%), the voters followed the religious leaders (3.2%) and like this candidates (2%), did not have much impact on the voters.

The voter tendency to select the candidates they knew in the 2019 election could not be avoided from an open list system. This system encouraged candidates to promote themselves than their parties because they have to compete with other party candidates and candidates in their parties. Then the 2019 election also was more complicated than the previous election. In the previous election, the presidential election was separated from the parliamentary election. However, in the 2019 election, presidential and parliamentary elections were run simultaneously, so that both political parties and voters tended to focus on presidential elections than parliamentary elections. Besides, Political parties in coalition tended to campaign on presidential candidate programs than political party programs.

Moreover, the large number of candidates made some problematic for citizens to vote because the electorates had determined the candidates on some levels, such as in the city,

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13th – 14th December 2020

regency, province, national, and regional representative council (Dewan Perwakilan Daerah-DPD), and presidential candidates. In the regency, city, or province, political parties proposed ten candidates and some candidates at the national level. LIPI (2020) found that 74 percent of respondents stated that they had difficulties in the 2019 election because of the many ballot papers they had to look at.

Another factor that influenced social cleavage issues that did not impact the voters is split ticket voting. In one side, political parties in the national level gave support for one candidates, but in the local level, political parties allowed their member to choose and promote the another candidates. For example, PD stated that PD would support the Prabowo, however, in the local level, PD gave opportunity to the members to choose different candidates with the reasons the situation in the local voters. Another example is PBB, even though PBB stated to support the Jokowi, this party gave an opportunity to it member to support Prabowo. PBB looked that the candidates need to adapt with the local politics.

Besides, money politics has become a significant issue in the Indonesian election since the 1999 election. Ufen (2008a) highlighted that one of the factors that influence voter dealignment is money politics. The candidates bribed the voters to choose them with cash payment, goods, and bribed electoral officials (Aspinall & Sukmajati, 2016, p. 3). The practice of money politics in Indonesia is perceived as a normal thing. LIPI (2020, p. 60), in its survey, found that 66.1 percent of respondents stated that money politics could be accepted and understood. Only 31.3 percent refused money politics. Thirty-seven percent of the respondent that received money or gift from the candidates stated that they would consider the candidate gift in the election day. Forty percent stated that they did not consider money or gift from candidates, and 23 percent did not answer the question.

Money politics has changed the voting behavior and reduced the ideological and social cleavage ties between the political parties and electorates. Money politics has caused the political parties cannot maintain the voters. As shown above, only 14 percent of voters voted for the same party from the previous election to the 2019 election.

Conclusion

Social cleavages in the 2019 election increased than in the previous election. Anti-*Pancasila*, radical Islam, and communism were used to describe the presidential candidates and their supporters. However, the result of social cleavage issues did not have much impact on the parliamentary election. The proportional system with presidential and parliamentary elections that run simultaneously has reduced the voter focus on the political parties. The issues in the presidential election are more vital to influence the voters.

The 2019 presidential election had created cleavages in the communities. The conflict between Muslim traditionalists and modernists reappeared, ethnic cleavages between Javanese and non-Javanese, and conflict between Islam and non-Islam were broader. Some sociological aspects such as education, region, employment, and income also influenced the electorates, even though these cleavages were not too broad.

The parliamentary election showed that the party leaders, candidates of parties, and money politics still played an essential role in influencing the electorates. The open list system in Indonesia has encouraged the candidates to accentuate themselves and caused the candidates are more concerned with themselves than the interests of the party.

Besides, the electorates also will tend to determine their choice not based on ideology or social cleavage issues, but based on the other factors such as the leader personality, candidates of parties, and money politics in some cases. These factors have encouraged voter de-alignment. The electorates will tend to focus on the presidential election than the

parliamentary election. The cleavage structure in the presidential election can change in the future election that could be influenced by electoral rule, the number of candidates and combination between Javanese and non-Javanese.

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THE FACTORS THAT INFLUENCE THE CHOICE OF GROUP WORK'S SOCIAL WORK METHODS OF THERAPEUTIC COMMUNITY AND NARCOTIC ANONYMOUS MODEL IN THE SOCIAL REHABILITATION CENTER FOR DRUG ADDICTION.

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Abstract: *This research aims to determine the factors that influence the choice of group work's social work methods of therapeutic community (TC) and narcotics anonymous (NA) model in the social rehabilitation center for drug addiction i. The research method is a descriptive qualitative approach, the key informants are the owners of the orphanage or program managers as well as the policymakers in the social rehabilitation center for drug addiction. The main informants are social workers and counselors and staff in the social rehabilitation center. The data collection technique uses in-depth interviews and focuses on group discussions. The data analysis technique uses component analysis. Research locations is in Medan Community Partners Foundation (YAMIMAS Medan), Caritas Shelter House PSE in Medan City, Loka BNN (National Narcotic Agency) in Kabupaten Deliserdang, Permadi PutraSocial Institution 'INSYAF' in Kabupaten Deliserdang, Nazar Foundation in Medan. The research results are; the internal factors: for the private institution's influence by the self-desire or by joint decisions are based on careful consideration of the managers or administrators of social rehabilitation institution. For the government-owned orphanages, the choice of therapeutic community model decides by the ministry of social affairs and the national narcotics agency. The external factors: for the private institution's influence by the pieces of information from national and international seminars, or experiences in dealing with drug clients/resident, social workers, and counselors who are struggling to use therapeutic community and narcotic anonymous group work model and sharing of experiences from administrators or manager of other social rehabilitation institution. Meanwhile, institutions under the ownership of the government are not influenced by external factors because they only carry out an order from the ministry of social affairs or national narcotics agency.*

Keywords: *Factor, Choice, Therapeutic Community (TC), and Narcotic Anonymous (NA) Models.*

Introduction

In 2017, the National Narcotics Agency (BNN) has revealed 46,537 drug cases throughout Indonesia, this is a form of the seriousness of the National Narcotics Agency (BNN) in fighting Drug Abuse in Indonesia. Throughout 2017, the National Narcotics Agency (BNN) confiscated hundreds of tons of drugs including: 4.71 tons of shabu-shabu, 151.22 tons of marijuana, 2,940,748 ecstasy pills and 627.84 kg of liquid ecstasy (Andhitia, 2017). in (Ritonga 2020)

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13th – 14th December 2020

Cases of abuse of Psychotropic Narcotics and Addictive Substances (Drugs) in Indonesia from year to year also continued to increase where in 2008 there were 3.3 million (3,362,527) with a prevalence of 1.99% to 4 million in 2011 (4,071,016)) with a prevalence of 2.32% and it is predicted that this figure will continue to increase in 2015 to 5.1 million (5,126,913) with a prevalence of 2.8%. It is known that 5.3% of them are students (Sholihah, 2013) in (Ritonga 2020)

This condition is considered to be increasingly damaging to the morale of students and the young generation if it is not anticipated immediately. Drug trafficking is not only found in schools and campuses, but has also spread to rural areas that are difficult to monitor by the police. Previously, the National Narcotics Agency (BNN) pocketed the prevalence rate of Drug Abuse in 2015, reaching 2.2 percent or around four million people in Indonesia who are caught in drug circles. The drugs are capable of claiming 40 to 50 lives of the younger generation. State losses due to drug abuse are not small. The survey was conducted by the National Narcotics Agency (BNN) and the University of Indonesia Health Research Center in 2014 that the country experienced a loss of 63.1 trillion due to drug abuse (Aminah, 2018). in (Ritonga. 2020)

According to the National Narcotics Agency (Juandi, 2017). In (Ritonga 2020) recorded that there are 350 thousand people who are users and affected by drugs in North Sumatra. The number of users and affected by drugs is spread across 33 districts in North Sumatra City (Ritonga, 2020)

Still in (Juandi, 2017). In (Ritonga 2020) The National Narcotics Agency (BNN) estimates that there are around 10 thousand people who use drugs in every district in North Sumatra City. The condition that is more concerning North Sumatra is no longer just a drug marketing location but a producer and distribution location to other areas. Residents affected by drugs are almost evenly from the age of 10 to 59 years. Currently there are 8 models in the handling of victims of Narcotics, Psychotropic and Addictive Abuse that are developed in drug rehabilitation centers, as well as other institutions that serve drug addiction such as Dependency Hospitals Medicine (RSKO), Islamic Boarding School, Halfway House, Reporting Mandatory User Institute (IPWL). The service models are: 1). Therapic Community, 2). Medical Model, 3). Minnoseta Model, 4) Electric Model, 5) Multi Discipline Model, 6) Traditional Model, 7) Faith Based Model, 8) Community-based Drug Management Model. (Ritonga, 2020)

The two most widely applied models in drug addiction services (Gani, 2013) in (Ritonga 2020) are the Theurapetic Community Model and the Narcotic Anonymous Model. Almost every drug addiction service agency in North Sumatra uses these two models or a combination of these two models. Therapeutic Community (TC), is a treatment that uses a psychosocial approach, where together with other former drug users they live in one environment and help each other to achieve healing. The process of change expected from the Therapeutic Community (TC) is a change in behavior, emotional development, intellectual development, spiritual development and work skills as well as providing attention, protection, and supporting balanced physical, mental, and spiritual development, with love and mutual feeling. respect for each individual and the community as a whole, so as to create harmony in the environment. (Ritonga, 2020) Another method that is often used is the Narcotics Ananymous Model. (Halgin & Whitbourne, 2009) in (Ritonga 2020)

Narcotics Anonymous or commonly abbreviated as (NA). Is a recovery process with a 12-step approach, Narcotics Anonymous (NA) in general includes the process of self-recognition that there is a problem with addiction being experienced, seeking help from outside, namely from the community. Resident is involved in a thorough self-inventory process to see mistakes that have been committed by himself, disclose himself to fellow community members

about secrets and feelings, make atonement for mistakes that have been committed to people who have been hurt and helping fellow addicts to provide support for the recovery of themselves and others. (Ritonga, 2020)

Addiction is a disorder with chronic relapsing that is characterized by impulsive behaviors in search of drugs despite negative consequences of drug use (Milton & Everitt, 2012). In addictive disorders, relapsing has been defined as return to drug use after a period of abstinence. Even after years of abstinence, there is also the possibility of relapse. For this reason, addiction relapse is considered the main treatment obstacle in addictive disorders (O'Brien, 2006). Despite all the progress made in the treatment of physical symptoms of drug withdrawal, little progress has been made in the treatment of craving and desire to addiction relapse. This issue is more strongly highlighted in addiction to stimulants (Nestler, 2002). Compared with other forms of addiction, including behavioral addiction and opiate addiction, addiction to stimulants is followed by a higher number of disruptive mental and behavioral features (Alipour, Poursa'ead & Hassani, 2015) (Alipoor, 2015)

There is no better model between the Therapeutic Community (TC) Model and the Narcotic Anonymous (NA) Model at the Drug Social Rehabilitation Center, because these two models are the most popularly used of the 10 existing models in handling drug abuse. The Therapetic Community (TC) Model and the Narcotic Anonymous (NA) Model at the Drug Social Rehabilitation Center are equally good because they aim to restore the resident's social function and prepare the resident to return to his family and community. The combination of the Therapetic Community (TC) Model and the Narcotic Anonymous (NA) Model at the Drug Social Rehabilitation Center is the choice of the manager of the Drug Social Rehabilitation Center managed by the private / community / NGO because they think it will produce even better results if it combines the Therapetic Community (TC) Model and Narcotic's Anonymous (NA) Model at the Drug Social Rehabilitation Center. The selection of the Therapeutic Community (TC) Model and the Narcotic's Anonymous (NA) Model at the Drug Social Rehabilitation Center is the choice for administrators of the Drug Social Rehabilitation Center. (Ritonga, 2020)

Therapeutic community according National Istitute on Drug Abuse is Therapeutic community (TC) participants advance through three treatment stages on the way to completing the program (Bunt et al., 2008; Perfas & Spross, 2007; Dye et al., 2012). In the first stage, the individual assimilates into the TC and is expected to fully participate in all activities. Immersion into this drug-free community is meant to disrupt the individual's identification with and ties to his or her previous drug-using life and replace these affiliations with new pro-social attitudes, behaviors, and responsibilities, and increase his or her knowledge about the nature of addiction. (drugabuse. 2020.)

The second treatment stage often incorporates evidence-based behavioral treatments—including cognitive-behavioral therapy (CBT) and motivational interviewing—to facilitate the process of change and enhance the "community as method" approach (De Leon, 2000; De Leon, 2015). The overall goal is to change attitudes and behavior, instill hope, and foster emotional growth, including self-management ability. Other therapeutic activities, including relevant interventions, address the person's social, educational, vocational, familial, and psychological needs. (For more information about approaches to addiction therapy, (drugabuse. 2020.)

The purpose of this study was to analyze the factors that determine drug social rehabilitation homes using the social work group work method of Theurapeutic Community and Narcotic's Anonymous (NA) models in drug rehabilitation homes established by the

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13th – 14th December 2020

community, Non-Government Organizations (NGO) or known as the Mandatory Reporting Institution. (IPWL)

Literature Review

One well-known method of rehabilitation is the therapeutic community (abbreviated as TC). It was first coined by James Moreno (1934), who was called the "Father of Psychodrama" and implemented by Maxwell Jones (1952) for people with psychiatric disorders. The therapeutic community program is carried out in a rehabilitation process for those who experience drug dependence, implemented for the first time in America for addicts (injection needle users), as a result of the failure of therapy that has been provided by a hospital. Furthermore, this method has spread and become one of the methods used in world rehabilitation program services, including in Indonesia. In the attachment of Permenkes 996 / MENKES / SK / VII / 2012 it is explained that psychosocial services can be carried out with a non-medical approach, for example with the therapeutic community method. (Said, 2019).

The TC method uses 4 structures and 5 pillars which form the basis for implementing social rehabilitation. The social rehabilitation curriculum, from material to learning methods, is based on these 4 structures and 5 pillars. The four structures are the values instilled in the client, while the five pillars are the way to instill these values. Each client is required to memorize and then practice these 4 structures and 5 pillars as part of their daily life. To make it easier for clients to memorize, clients are required to write everything down in a walking paper which they will always carry with them while they are still in the initial phase of rehabilitation (known as the induction phase). One of the walking papers contains the values that must be applied by clients during social rehabilitation using the TC model. These values include honesty, responsibility, trust in the environment, equal reciprocity, and forgiveness. In carrying out daily tasks and during all therapy sessions, clients are required to live these values. (Ardani and Cahyani, 2019)

Handling with a spiritual approach such as Alcoholics Anonymous (AA) 12 Step recovery communities and Narcotics Anonymous or commonly abbreviated as NA (Halgin & Whitbourne, 2009).

The recovery process using the 12-Step NA approach in general includes the process of self-acknowledgment that there is a problem with addiction that is being experienced, seeking help from outside oneself, namely from the community, engaging in a thorough self-inventory process to see the mistakes that have been made by oneself. , disclosing oneself to fellow community members about secrets and feelings, making atonement for mistakes that have been committed to people who have been hurt, and helping fellow addicts to provide support for the recovery of themselves and others (Halgin & Whitbourne, 2009).

The core of the NA program is the application of spiritual principles in everyday life (Halgin & Whitbourne, 2009).

NA is a nonprofit fellowship or society of men and women for whom drugs had become a major problem. We are recovering addicts who meet regularly to help each other stay clean. This is a program of complete abstinence from all drugs. There is only one requirement for membership, the desire to stop using. We suggest that you keep an open mind and give yourself a break. Our program is a set of principles written so simply that we can follow them in our daily lives. The most important thing about them is that they work. (Narcotics Anonymous World Services, 2016)

There are no strings attached to NA. We are not affiliated with any other organizations. We have no initiation fees or dues, no pledges to sign, no promises to make to anyone. We are not connected with any political, religious, or law enforcement groups, and are under no

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13th – 14th December 2020

surveillance at any time. Anyone may join us, regardless of age, race, sexual identity, creed, religion, or lack of religion. We are not interested in what or how much you used or who your connections were, what you have done in the past, how much or how little you have, but only in what you want to do about your problem and how we can help. The newcomer is the most important person at any meeting, because we can only keep what we have by giving it away. We have learned from our group experience that those who keep coming to our meetings regularly stay clean. (Narcotics Anonymous World Services, 2016)

Jordan L. Mariano in 2019 with title The Impact Of Therapeutic Community In The Perception Of A Probationer In Quirino Province, Philippines. Result showed that the impact of therapeutic community in the perception of probationers improved their social skills. Behavioural change. Positive outlook, spiritual growth, linelihood programs which led to employable technical skills. It is recomended that the probation office may materials durng trainings and for capital in the livelihood program. Future work may be added to introdce a new knowledge on therapeteutic community for probationer.

Research conducted by Fajar Utama Ritonga (2019) with the title Comparison of Teurapeutic Community (TC) and Narcotics Anonymous (NA) Models in Drug Addiction Social Welfare Services from the 7 stages of the participation model used there are differences in the Functional Participation stage using the Therapuetic Community (TC) Model. 55.5 "%, while the Narcotic Anonymous (NA) Model is 100%, at this stage the difference is very significant at 44.5%, and interactive participation using the Therapeutic Community (TC) Model is 65.4"%, while the Narcotic Anonymous Model (NA) is 44%, at this stage there is a difference of 21.5%. (Ritonga, 2019)

Research conducted by Irfan Ardani and Heti Sri Hari Cahyani in 2019 with the title Effectiveness of the Therapeutic Community Method in Preventing Drug Abuse Relapse in Pamardi Putra Galih Pakuan Social Home, Bogor 2017. The results of this study indicate that the drop out rate of social rehabilitation at PSPP Galih Pakuan reached 44.8% in 2017, while the relapse rate is estimated at 30% of clients who passed rehabilitation. On the other hand, various studies have stated that the TC method is a relatively more effective method than other social rehabilitation methods in reducing drug use and anti-social behavior due to drug use. The challenge with the TC method is that the drop out rate is quite high. Compared to other social rehabilitation methods, TC is effective in improving the social functioning of drug users through strengthening individuals by fostering self-confidence, emotional and spiritual management. (Ardani and Cahyani, 2019)

Research conducted by Trilia and Eva Rusmini in 2019 with the title The Factors Of Using Drug Abuse Related To The Recurrence Of Patients At Mental Hospital In Province South Sumatra. The resut From the result of this study showed that the highest proportion of NAPZA users patient at RS. Ernaldi Bahar in South Sumatra was age 25-44 adult 57.6%, high school middle education level 48.5%, entrepreneur 51.5%, introvert personalities 57.6%, unhelathy enviroment 54.5%, harmonic family 54.5 % same age friends with drug addiction 51,5% and recurrence 60,6%. The result of statistical test showed 2 variables which related with recurrence were environmental factors (0.004) α and same age friends with drugs α 0.008, whereas other 2 variables α 0.172. Conclusion: It is hoped that health officilas at the hospital are able to strengthen their programms in rehabilition center, which is ableto support all patients to elevate the motivation of NAPZA abuse users so they can survive without using drugs anymore.

Research by Restrepo, C.G. etc (2018) Title: Therapeutic Communities In Latin America: An International Descriptive Study In Different Countries Across Latin America. Result Of the 285 TCs identified in the 5 countries, 176 (62%) accepted to participate in this

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13th – 14th December 2020

study. The TCs quality vas evaluated according to the scoring system stablished by De Leon, finding that 70% of the facilities have scores of 11/12 or 12/12 using these criteria.We also found that the majority of the De Leon criteria are known by more than 90% of theinstitutions, however, the dimensions of “separation of the community” and “encounter groups between residents” were the least known with 63 and 85% respectively. The main reasons for abandonment of TCs were “not accepting the rules of the institution”, “lack of money” and “not feeling comfortable with the facilities”. 98% of the TCs provided services to other substance abuse problems, 94% for alcohol and 40% for other types of substances. Conclusions: The majority of the TCs identified in our sample meet the quality criteria stablished by De Leon, mostly providing services for substance abuse. However, they should put in place additional policies to improve the unfulfilled conditions and investigate the reasons for the dissatisfaction and abandonment of these institutions.

Research conducted by Era Fajriah, Husaini, and Adenan in 2016 with the title Narcotics Anonymous Method Approach in Recovery of Drug Abuse Victims at the Harapan Banua Banjarmasin Foundation. The results showed that there were 11 stages of recovery in the Narcotics Anonymous method including the 12-step principle. The material provided is emphasized on the behavior and behavior of drug abusers. 35% development of abuser recovery. Supporting factors for recovery are motivation from the foundation, a sense of kinship and affection. The inhibiting factor for recovery is the lack of previous family and social support. So it is concluded that the Narcotics Anonymous method emphasizes a sense of kinship and a feeling of co-existence. The level of victim participation who follows this method is quite high. This method has strong support for the recovery of victims of drug abuse and helps to improve relationships with families and regain confidence in families and themselves. (Fajriah, et al. 2016).

Method

According to Neuman (2005, p. 35) "descriptive research presents a picture a specific details of the situation, social setting or relationship" (descriptive research aims to provide a detailed description of a social situation, social relationship or social setting). By using this type of research, it is expected to be able to describe and analyze the factors of choosing the Teurapeutic Community (TC) and Narcotics Anonymous (NA) group work model social work method in drug addiction social rehabilitation homes. Report Mandatory User Institution (IPWL)

This research was carried out at the Drug Addiction Social Rehabilitation Center using the Therapeutic Community (TC) model and the Narcotic Anonymous (NA) model, namely (IPWL Nazar in Medan City, Medan City's YAMIMAS Community Partners Foundation, the Caritas PSE Halfway House Medan City, Panti Perpadi Putra " INSYAF ”Deliserdang Regency, LOKA BNN Deliserdang Regency.

The research informants used in this study used a purposive technique (aiming) which consisted of the following: Key informants, namely the owner of the orphanage or drug addiction social rehabilitation program manager who knew about the selection of the group work model method of Therapeutic Community (TC) and Narcotic Anonymous (NA) in drug addiction social rehabilitation center. The main informants are Social Workers and Counselors and Staff who are involved and know about the Teurapeutic Community (TC) and Narcotics Anonymous (NA) at drug addiction social rehabilitation centers. Technique of collecting data was done by in-depth interview, data analysis technique. The technique of data analysis used a comparative analysis technique, namely using a contrast approach between elements.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Result and Discuss

The choice to use one of the 10 popular models in providing services in drug social rehabilitation institutions is an independent choice for the orphanage manager, but not all institutions can make choices about using the TC and NA group work methods. Based on the results of interviews with research informants, it is known that social rehabilitation institutions that are free by themselves determine the use of the NA model and the TC model or the combined model of NA and TC are social drug rehabilitation institutions formed by the community such as the Mandatory Reporting Institution of the Nazar Foundation in Medan City which uses a combination of TC and NA, then the Caritas PSE Halfway House in Medanyang City also uses a combined model of TC and NA, and the Medan City Community Partners Foundation (YAMIMAS), which uses the NA model in providing social welfare services for drug addiction through social rehabilitation homes.

Based on the results of the study, it is also known that the two popular models used in drug social rehabilitation centers, both the TC model and the NA model, are both good and effective in their respective social rehabilitation institutions. This is because not all problems in the handling of residents in social rehabilitation institutions only have to use one particular model. For example, only using the NA model, which is based on research results (Ritonga, 2019) is better than the TC model in increasing resident participation and changing resident behavior.

The NA model used by YAMIMAS requires that prospective residents or drug users who will get services at the YAMIMAS Social Rehabilitation Center must be at the entry level user level (new) and have an awareness that they have a problem with drugs and want to get away from drugs. So on the basis of this awareness, prospective residents can get services at the YAMIMAS Social Rehabilitation Center in Medan, while at the LOKA BNN Deliserdang Social Rehabilitation Home, for example, they accept all levels (initial, medium, high) except users whose levels cannot be tolerated by their social rehabilitation services. to the Adam Malik Drug Addiction Hospital (RSKO) in Medan or Jakarta and with various problems how to enter (input) to LOKA BNN Deliserdang, such as being arrested by North Sumatra BNN officers, forced by parents or family, forced husband / wife with threats of divorce do not want to be rehabilitated, preferring to be in rehabilitation rather than going to prison.

If you look at the input or the entry of prospective residents at the YAMIMAS Social Rehabilitation Home and LOKA BNN Deliserdang, it is clear that there are significant differences, of course the results will be different because the input process and entry requirements are different. If the entry requirements for the prospective resident are determined, they must have a high awareness of wanting rehabilitated, it will be very many drug users who are not rehabilitated, because most of the drug users are not aware that they are in trouble because of consuming or using drugs. And this of course will have an impact on other fields such as the increasing crime rate due to drug use, cases of domestic violence (KDRT) because the husband uses drugs, or children in the family who use drugs. All of which do not get services from the Social Rehabilitation Center.

It can be concluded that the use of the TC model at the LOKA BNN Deliserdang Regency and the "INSYAF" Putra Permadi Home is a good model because it aims to overcome drug addiction for residents, both those who come with their own awareness and those who come with coercion and threats. The selection of the TC Model and the NA Model at the Drug Social Rehabilitation Institution is the most appropriate choice for the management of the social drug rehabilitation institution managed by the community / private / NGO or under the auspices of the Ministry of Social Affairs and the National Narcotics Agency (BNN).

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13th – 14th December 2020

The TC and NA models are equally good because they aim to restore the social function of the resident and prepare the resident to be well accepted when he returns to the family and to the community. This is because each model has its own weaknesses and strengths, as in the NA model it requires that prospective residents have a high level of awareness due to using drugs and have a strong desire to recover. And prospective residents are at the entry level (or new users / trial and error) While the TC model accepts all levels of drug users (initial, middle, high), with a record that drug users at high levels after assessment, counselors or social workers can participate in social rehabilitation programs and will not disturb other fellow residents who are in the process. recovery at the drug social rehabilitation center.

Based on this, there is a drug social rehabilitation institution that uses a combined TC and NA approach, namely the Medan City Nazar Foundation Social Rehabilitation Home and the Caritas PSE Shelter in Medan City. The two orphanages used a combined approach between TC and NA because they saw the advantages and disadvantages of TC and NA, the foundation management decided to combine the TC and NA models, this was done by the Medan City Nazar Foundation, while according to the program manager of the Rumah Singgah Caritas PSE Medan City the TC model and the NA Model are equally good and need not be compared because they have the same aim to save generations of the nation from drug bondage. Of course, by using a combination of the TC and NA models, maximum results are obtained because the TC model and the NA model are equally good when combined, the maximum results will be obtained to restore the resident's social function in preparing the resident to return to his family and to the community

The factors that influence the choice of using the TC model or the NA model in this study are influenced by internal factors and external factors. The internal factor is the desire of the social rehabilitation institution manager to determine what model is most suitable for use in their social rehabilitation home using the TC, NA model, or a combination of TC and NA models. And this decision can only be made at the Social Rehabilitation Institution which is managed by the community / private / NGO, while the Social Rehabilitation Institution under the Ministry of Social Affairs and the National Narcotics Agency that manages the Social Rehabilitation Institution cannot determine the use of the TC model or the NA Model and the TC combined model. and NA in their place, because the decision to use the drug handling model has been decided by the center, so that the social rehabilitation institution managers only carry out the decision in accordance with the applicable Procedural Operational Standards.

Conclusion

Internal factors

For social rehabilitation homes owned by the community or Non Government Organizations (NGOs) such as the Medan Community Partners Foundation (YAMIMAS) which uses the NA model, then the Medan City NAZAR Foundation and the PSE Caritas Halfway House Medan City use a combined model of TC and NA influenced by the manager's own wishes or management of social rehabilitation institutions themselves, There is no intervention or compulsion to use one of the models set by other agencies or organizations, the desire to use either NA or a combination of TC and NA is a joint decision based on careful considerations.

For the orphanages under the auspices of the National Narcotics Agency (BNN), namely LOKA BNN, Deliserdang Regency, and the Putra Permadi Panti "INSYAF" in Laubakrie, Deliserdang Regency, the choice of using the TC model has been decided by the ministry or BNN so the rehabilitation center manager and addiction counselor cannot make a choice. using the TC model or the NA model in the LOKA BNN rehabilitation center in Deliserdang Regency and the “INSYAF 'rehabilitation center in Deliserdang Regency

External Factor

Social rehabilitation homes owned by the community or Non Government Organizations (NGOs) such as the Medan Community Partners Foundation (YAMIMAS) which uses the NA model, then the Medan City NAZAR Foundation and the PSE Caritas Halfway House Medan City based on scientific studies that have been carried out, information from national and international seminars, experiences in dealing with clients / drug residents themselves, social workers and counselors who work on the TC and NA group work model and sharing experiences from administrators or managers of other social rehabilitation institutions. While there are no factors for INSYAF and LOKA BNN institutions external because they only carry out orders from the Ministry of Social Affairs or the Central BNN.

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ARE OUR STUDENTS OK? PSYCHOLOGICAL WELLBEING AMONG UNDERGRADUATES OF HIGHER LEARNING INSTITUTIONS IN MALAYSIA.

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***Abstract**: Psychological wellbeing is an important aspect of a student's life that has been garnering a lot of attention lately. Under the recent Covid-19 pandemic condition and the mandatory quarantine, depression, anxiety, stress and other psychological illness have been reported to have escalated among adults and children alike. Malaysian National Institute of Health in their National Morbidity & Health survey report 2019 stated that 2.3% of population is found to be displaying symptoms of depression and a whopping number of 424,000 children were also found to be the same. This study was undertaken to generate a profile that represents indicators of optimal functioning among students of higher learning institutions using the PERMA model with its five elements: Positive Emotion, Engagement, Relationships, Meaning and Accomplishment. A sample of 308 students from private and public higher learning institutions in Malaysia were selected using a simple random sampling technique. Data was collected online using google form and analysed using SPSS. Findings indicated that Malaysian undergraduates were operating at a sub-optimal functioning level and experiencing depression. There is a need for our higher learning institutions to have good intervention strategies in place to improve students' psychological well-being.*

***Keywords**: Positive Psychology, Psychological Well-Being, Mental Health, Depression PERMA Model*

Introduction

Psychological well-being among students of higher learning institutions have been receiving a lot of attention from the academic community, researchers and scholars recently. Although it is often referred to as being happy, satisfied, socially connected and functioning at an optimal level, in actual reality it is all about experiencing both the positive and negative emotions equally (Huppert,2009). Undergraduates are often under stress due to independent living, heavy academic burden and pressure to obtain good grades apart from securing a job upon graduation. Manap et al. (2019) in their study of 91 Malaysian undergraduates revealed that the students experienced varying degrees of depression at the higher learning institutions; 19.8 % experienced moderate level, 14.3% mild ;8.8% severe and 2.2.% extremely severe levels. Being confined to their hostel rooms or homes without much social contact during the recent quarantine made these levels worse. Studies conducted in Spain and Italy the two European counties that were most effected by the pandemic reported worsening of negative emotional conditions such as boredom, irritability and loneliness among children (Orgiles et al., 2020). Negative emotions such as depression does not only impact physical well-being, it is also leads to suicidal thoughts and behaviours (Islam et al., 2018). The Malaysian Reserve (2020)

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13th – 14th December 2020

reported that Befrienders Malaysia received about 4,142 calls between March 18 and May 16 during the Movement Control Order period, where over a third of the calls on Covid-19 were suicidal in nature. As the future of the nation is much dependent on our younger generation especially undergraduates, it is crucial to detect and provide early deterrence of mental health problems among university students. This paper aims to explore the psychological well-being of undergraduates in higher learning Institutions in Malaysia using positive psychological model (PERMA) and its association with depression level.

Literature Review

In recent years positive psychology is preferred in studies related to mental well-being instead of the traditional psychology as it looks into healthy traits of the mind (Woolston, 2020). With an increasing prevalence of stress, anxiety and depression, experts are looking into what people can do to help themselves to 'flourish'. One such expert is Seligman (2011) who introduced the PERMA model of flourishing which is constituted of five domains related to psychological wellbeing: 1) positive emotions (P), 2) engagement (E), 3) relationships (R), 4) meaning (M) and 5) accomplishment (A).

Depression

Depression is a common and serious mood disorder among individuals that is also known as major depressive disorder. Individuals suffering from depression often experience prolonged feelings of sadness and hopelessness and loss of interest in once enjoyed activities (Truschel ,2020). Seligman (2019) describes individuals with depression as being in pain: "suffering a lot of sadness, crying a lot, very passive, with no zest, major loss of pleasure and interest, and they were usually functioning very poorly, if at all, at work and home" (Seligman, 2019, p. 7). The American Psychologist Association (2013) explains that individuals can only be clinically diagnosed as having depression when they display excessive crying, feeling of hopelessness, lethargic, insomnia or hypersomnia, appetite issue, feelings of worthlessness or suicidal ideation for at least 2 weeks. In Malaysian educational context, Kotera &Ting (2019), discovered that students between the ages of 18 to 24 years were found to have depression due to the overwhelming responsibilities that they have to shoulder; hence, leading to the feeling of incompetence, financial struggles, and difficulty of class tasks. Students of higher learning institutions who reported feeling depressed also noticed decline in their overall academic performance (Suleiman et al., 2017).

Positive Emotion (P)

Positive emotions such as peace, gratitude, satisfaction, pleasure, inspiration, hope, curiosity, compassion, contentment, empathy, joy and love are the building blocks of well-being (Seligman, 2011; Webster, 2014). In the application of this model in an educational context, Noble and McGrath (2008) discussed how schools help students experience positive feelings such as: (a) belonging to their school; (b) safety from bullying and violence; (c) satisfaction and pride through experiencing and celebrating success; (d) excitement and enjoyment by participating in fun activities or special games; and (e) optimism about their success and/or school. McFerran, (2010) indicated that experiencing positive emotions on a regular basis in educational settings is considered important for well-being of learners. Positive emotions are found to improve learner's attention span, creative and adaptable ideas, and supplement self-concept to be more agreeable with others (D'raven & Pasha-Zaidi ;2015). Positive emotions are known to help minimize depressive symptoms (Santos et al., 2013; Gander, Proyer & Ruch 2016). Therefore,

eISBN 978-967-2426-22-6
13th – 14th December 2020

H1: Positive emotion negatively influences the depression level among undergraduates in Malaysia

Engagement (E)

Seligman (2011) explained that engagement is about being deeply involved with something in life such as work, personal interest, or hobby. It is a connection between an individual and their circumstances which imparts meaning, greater performance and positive feelings (Ayse, 2018 ;D'raven & Pasha-Zaidi, 2015). Engagement is defined by flow or intense psychological engagement that requires immense concentration, commitment, and focus. Csikszentmihalyi ,2014; Butler & Kern, 2016). In terms of educational context, engagement refers to the degree of confidence; vigour or force that leads to a great effort; dedication and absorption in an individual's academic work (Kotera & Ting ,2019). It was also pointed out that when students engage with their strengths, they are more likely to experience well-being (Noble& McGrath, 2008; Seligman, 2005). Engagement is also found to have a of positive effect on depression although for a shorter period (Gander, Proyer & Ruch ,2016). Therefore,
H2: Engagement positively influences the depression level among undergraduates in Malaysia

Relationship (R)

Relationships refer to the ability of an individual to build and maintain positive relationships with others (Seligman, 2011). According to Butler & Kern (2016) humans are "social beings" and healthy connections form the nature of their well-being. Therefore, individuals who have meaningful, healthy and positive relationships with others around them are more content compared to those who do not. Social relationships have positive effects on an individual's well-being (Ayşe ,2018; D'raven & Pasha-Zaidi 2015). In educational settings, positive relationships with peers and teachers help students to experience support, acceptance, connectedness and motivate students to achieve higher attainments (Noble & McGrath, 2008). Apart from that, positive relationships are also the capability to adjust to different cultural groups and have a sense of oneness with others (Lino & Hashim, 2019). Personal relationships are also among factors that helps to reduce depression Varma (2017). Therefore,
H3: Relationship positively influences the depression level among undergraduates in Malaysia

Meaning (M)

Meaning is about using strengths to fulfil goals which are perceived to be important beyond one's personal needs (Kun, Balogh & Krasz, 2017). A meaningful path involves a sense of purpose and reasons why people do what they do (D'raven & Pasha-Zaidi ,2015). Individuals often seek meaning through religion, voluntary work or even self-discovery processes and were found to enjoy a better physical health, higher satisfaction, and contentment in life (Ayşe, 2018; Khaw & Kern ,2014). In educational contexts, Noble and McGrath (2008) claim, "pupils have a sense of 'meaning' when what they do has impact on others beyond themselves. They have a sense of 'purpose' when they pursue worthwhile goals" (p. 122). Meaning of life does influence depression. Many studies have shown that meaning in life has a strong negative correlation with depression (Bas, Hamarta & Koksal, 2014). Interestingly a study on Mexican students using the self-reported scales of Meaning in Life Questionnaire (MLQ), indicated that the participants experienced an increase in depression or depressive emotions after they searched for the meaning in life (Vela et al., 2016). Therefore,
H4: Meaning negatively influences the depression level among undergraduates in Malaysia

eISBN 978-967-2426-22-6
13th – 14th December 2020

Achievement (A)

Achievement involves utilizing one's talent and efforts towards a definite and fixed goal (Seligman, 2011). This pathway is pursued for its own sake, even when it brings no positive emotion, no meaning, and nothing in the way of positive relationships (Seligman 2011, p. 18). To achieve well-being, individuals must be able to look back at their lives with a sense of accomplishment and proclaim that they did it, and did it well (Kun, Balogh & Krasz, 2017). In educational contexts, achievements contribute to students' self-confidence and self-esteem (Noble & McGrath,2008). In studies exploring the factors that influences depression, Achievement(A) and (P) Positive Relationships have proved to increase subjective well-being as well as alleviating depression (Gander, Proyer & Ruch 2016). Therefore,

H5: Achievement positively influences the depression level among undergraduates in Malaysia

Methods and procedures

Quantitative method was adopted to measure and evaluate psychological and depression levels among undergraduates in Malaysia. A simple random sampling technique was employed and 308 sample sizes were determined in this study. The sample was obtained by using tabulation Krejcie and Morgan (1970), with 1.3 million undergraduate populations in 2019 (Statistics of Malaysia Education, 2019). In total, 308 questionnaires were selected after rejecting missing data more than 30%. All the questionnaires were measured through well-established instruments from the past studies, Butler and Kern (2016) for PERMA model and depression construct. Questionnaire was created using the Google form and distributed via social media channel like Facebook, Twitter, Instagram and what's application. SPSS statistical package was used to analyse the dataset.

Results and finding

The majority of the respondents for this study was from the age group 18 to 21 years (66.2 percent), followed by 23 to 27 years (32.1 percent) and above 27 (1.6 percent). Females were the highest group of respondents (61 percent) with males coming next (39 percent). On the ethnicity of the respondents, Indians have the high representation (30 percent), followed by Chinese (29 percent), Malays by 28 percent, Natives of Sabah (5 percent), Natives of Sarawak (5 percent) and others (3 percent). The highest number of respondents were from private higher learning institutions in Malaysia (60 percent), followed by public universities (27 percent), colleges (10 percent) and technical institutions (3 percent). Most of the respondents were from the Faculty of Business Administrative (28.8 percent), Faculty of Education (27.5 percent), Faculty of Engineering (18.8 percent), Faculty of Information Technology (10.7 percent), Faculty of Social Science (6.8 percent), Faculty of Tourism and Hospitality (5.1 percent) and other faculties (2.2 percent). Respondents' profiling is presented in Table 1.

Table 1: Respondents Profile

No	Items	Frequency	Percentage
1	Age		
	18-22 years	204	66.2
	23-37 years	99	32.1
	Above 27 years	5	1.6
2	Gender		
	Female	186	66.4
	Male	120	39
	Not prefer to say	2	0.6
3	Ethnicity		

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13th – 14th December 2020

	Indian	92	30
	Chinese	89	29
	Malays	87	28
	Sabah natives	16	5
	Sarawak natives	15	5
	Others	9	3
4	Education Institutions		
	Private universities	184	59
	Public universities	80	27
	Technical & vocational institutions	10	3
	Colleges		
	International branch universities	30	10
		6	2
5	Faculty		
	Business & Management	89	28.8
	Education		
	Engineering	85	27.5
	Information Technology	56	18.8
	Social Science	31	10.7
	Tourism & hospitality		
	Others	21	6.8
		16	5.1
		8	3.2

Table 2: Descriptive Analysis

Constructs	Mean (M)	Standard Deviation (SD)	Reliability test (Cronbach alpha)
Depression	4.8182	1.37317	0.878
Positive Emotion	4.7938	1.10969	0.850
Engagement	5.0660	1.15163	0.645
Relationship	5.1677	1.16793	0.663
Meaning	5.1558	1.31185	0.860
Achievement	3.4799	1.27749	0.804

Out of 315 datasets collected, only 308 data sets were reliable for analysis with 7 questionnaires (0.22 percent) had missing data, errors or were deemed incomplete. Table 2 represents mean value ranged from 3.4799 to 5.16 and standard deviation from 1.10 to1.37. Internal consistency and reliability of each sub-scale ranges from good to acceptable levels. Referring to Butler & Kern's (2016) interpretive table of PERMA profiling, mean scores between 5 to 6.4 (5.1 to 6.5 for negative emotion) indicates sub-optimal functioning and anything lower is deemed as languishing. Findings suggest that Malaysian undergraduates are operating at a below-average functioning level.

Table 3: Pearson's Correlation Analysis

Constructs	Depression
Positive Emotion	-.399
Engagement	-.235
Relationship	-.218
Meaning	-.375
Achievement	-.200

eISBN 978-967-2426-22-6
13th – 14th December 2020

Pearson's correlation analysis shows a negative relationship between the PERMA constructs and Depression (refer to Table 3). It is similar to the findings of Gander, Proyer & Ruch (2016) that reported negative correlation between PERMA constructs and the depression level. As the psychological well-being improves, negative emotions such as depression decreases.

Multiple regression linear analysis was performed to analysis the relationship between PERMA model constructs and depression among undergraduates' students in Malaysia. Based on the analysis finding, the first hypothesis relationship between positive emotion and depression have a significance effects with negative relationship ($p=0.00$, $\beta=-0.432$), therefore H1 was accepted. The second hypothesis tested between the engagement construct and depression, the result indicates positive relationship but insignificance ($p=0.547$, $\beta=0.053$), therefore H2 was rejected. The similar result was found for the third hypothesis, there was a positive relationship between the relationship construct and depression but insignificant ($p=0.399$ $\beta=0.065$). The fourth hypothesis has negative relationship and significant between the meaning construct and the depression. Therefore, H3 was rejected and H4 was accepted. The last hypothesis indicate a positive relationship between the achievement construct and depression but insignificant ($p=0.093$, $\beta=0.129$), therefore H5 was rejected. In conclusion, 3 hypotheses were rejected and 2 hypotheses were accepted.

Table 4: Multiple Regressions Linear Analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.440[a]	.194	.180	1.24321	1.649

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	5.769	.379		15.237	.000	5.024	6.514
	PositiveEmotion	-.432	.101	-.349	-4.293	.000	-.631	-.234
	Engagement	.053	.087	.044	.602	.547	-.119	.225
	Relationship	.065	.077	.056	.845	.399	-.087	.218
	Meaning	-.281	.081	-.269	-3.460	.001	-.441	-.121
	Achievement	.129	.076	.120	1.683	.093	-.022	.279

a. Dependent Variable: Depression

Discussion

Many of the previous studies have shown the impact of students' wellbeing due to depression while, the current study strives to prove that depression worsens under the recent pandemic and quarantine situations. Results of this study show that Malaysian undergraduates experience depression and their daily functioning level is below optimum as shown through the PERMA model. This is aligned with past studies of Kotera &Ting (2019) and Suleiman et al (2017).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Based on the findings obtained, there is a significant inverse relationship between positive emotions and depression. An increase by one unit in the positive emotion decreases depression by 0.432 units. This is the most achievable significant influencing variable as tested by many researchers. This is obvious as depression is usually accompanied by negative emotions and the presence of positive emotion will displace the negativity which has the potential to prevail and turn into depression. Meaning also shows a positive influence on depression. Inferring this, the Malaysian community is collectivist in nature; therefore, individuals in this community already have a general meaning in life or a sense of being part of something bigger which is to be an integral part of the community. Religion is also a part of having meaning in life where most of the individuals in the Malaysian community have beliefs and religion. Thus, the sense of obeying a deity gives meaning in life.

Engagement, Relationship and Achievement constructs were shown to have insignificant influence on depression where $p \geq 0.05$. This reflects Malaysian undergraduates have a different understanding of what engagement, relationship and achievement signify compare to Western studies. Engagement within the Malaysian community coincides more to hard work and responsibility rather than enjoyment and passion for work. Thus, it weakens the understanding of engagement as a coping mechanism for depression. Besides that, the aspect relationship not influencing depression could be due to the likelihood of staying with their family and the forced set of family rules; values that the undergraduates have to follow without fail. Thus, having to abide by these expectations that are pre-set by families could be a contributing factor to developing depression. Additionally, the reason achievement does not affect depression could be due to respondents relating achievement to getting a stable job, having a car, or achieving something big in life. It could also mean that Malaysian undergraduates have a different perception of achievement in life or the way they achieve their goals.

Conclusion

This study shows that Positive Emotion and Meaning have significant positive effects on depression level among undergraduates. This is an undeniable proof that positive psychology can lower depression among undergraduates in Malaysia. As such higher learning institutions should look into intervention strategies to improve positive emotions among undergraduates. Programmes that encourage undergraduates to be aware of their emotions, ways to manage them and help others must be introduced. Awareness on the importance of mental well-being must be communicated and an environment where students can talk and seek help without being stigmatized must be created. Counsellors, mentors and lecturers should help undergraduates to set realistic expectations of themselves and their grades. A better support system is needed in Malaysian Higher learning Institutions to address this issue. Therefore, this warrants for further research on effective intervention strategies at Higher learning institutions that will improve the overall psychological well-being of undergraduates.

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CAPITAL STRUCTURE AND FIRM PERFORMANCE: AN ANALYSIS OF CONSUMER PRODUCTS

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Abstract: *This study is established to determine the relationship between capital structures and firm performance. In this analysis, 120 consumer product companies were selected as a sample from the Bursa Malaysia. The financial reports that collected by current study is started from year 2013 to year 2017. This study used pooled ordinary least square (OLS) and fixed effect model (FE) to examine the association between capital structure and firm performance. Mostly consumer product firm raise funds though issuance shares and need to improve its assets management. Current study result showed that there is a significant relation between capital structure and firm performance. Total debt to total assets (TD) and total equity to total assets (TE) have a significant and negative relation with Tobin's Q (TQ). Liquidity (LIQUD) and tangibility (TANG) have a significant and negative impact on firm performance; while, firm size (SIZE) has a significant and positive impact on firm performance. Consumer product firm should diversify its investment and involve in different market segment in order to maximize shareholders' wealth. Future study can be including the external factor variable in his or her research such as income tax, inflation rate, and exchange rate.*

Keywords: *capital structure, firm performance, consumer product industry*

Introduction

This study is to determine the firm performance by two different models using either financial dimension or non-financial dimension. According to Santos and Brito (2012) under the first model, they considered and grouped three aspects as financial performance measurements which are profitability, growth, and market value. Under the second model, they used six measurements of profitability, which are Returns on Assets (ROA), EBTIDA Margin (EBTIDA_MG), Returns on Investment (ROI), Returns on Sales (ROS), Returns on Equity (ROE), and Economic Value Added (EVA). The indicators of growth aspect they used were market share growth, assets growth, revenue growth and net profit growth. The studies, measurements of Market Value aspect used were EPS, stock price improvement, dividend yield, stock price volatility, market value added, and Tobin's Q.

Appraisal of firm performance is a prior action before an organization can design and go for business planning. Firm performance appraisal assists an organization to know "where it is", and "what is follow step". For instance, sales manager makes its next month sales strategy accordance to previous month sales assessment. Moreover, firm performance measurement

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13th – 14th December 2020

helps the firm to determine the efficiency and effectiveness of management. Then, company can be based on its assessment to improve its operating performance such as minimize the source usage and maximize its profit (Kakada, Bello, & Abba, 2016). In addition, the firm performance measured by current study is only emphasized on financial performance. Financial profitability is an essential factor for company to survive and continuousness. For firm funding activities, investors and lenders also make their investment decision based on company's financial performance appraisal. A firm with good financial performance is mostly easier to obtain funding than an unprofitable firm due to profitable firm able to maximize investors' wealth and minimize lender's credit risk.

Problem Statement

Malaysian reduces their consumptions after GST has been implemented by Malaysia government. This evidence is supported by managing director Datuk Ng Yih Pyng from Tomei Consolidated Bhd group who shared to The Star Online that retail market performance had been declined 10% to 30% compared to year 2014 (Wong, 2015). Furthermore, there is a negative impact of depreciation of Malaysia Ringgit on consumer products industry (Zainul, 2016). In addition, firm performance is a challenging task for researcher to measure as it consists of seven different aspects to measure (Santos & Brito, 2012). Firm Performance measurements should be included with other stakeholders' right such as customer satisfaction, employee's happiness, environmental concern, public concern and so on. Although it is tough to assess, but it is important for a company to know "if it is efficient or inefficient".

Modigliani-Miller Theorem stated that firm performance is not affected by the method companies raise the fund in perfect capital market. This theory cannot explain the truth due to unreal assumptions (Salim & Yadav, 2012). This is how, trade off theory came about. This theory proposes that there is significant impact of capital structure on corporate performance. Besides, there are conflicting results from previous studies. Present study is expected to be beneficial for consumer product firms to strengthen their capital structure to meet the challenges faced by the business environment changes. Moreover, literature review shows a mixed response with conflicting results some studies are either negative or positive relation between firm performances. Therefore, indicators of firm performance are difficult for researcher to measure.

Research Questions

The present study examines the relationship between consumer product firms' capital structure and firm performance based on these three (3) research questions:

i) Is there a significant relationship between debt financing and firm performance?
ii) Is there a significant relationship between equity financing and firm performance?
iii) Is there a significant relationship between liquidity and firm performance?

Research Objective

In order to strengthen the consumer product firm's capital structure, the main objectives of this study are identified as following:

i) To analyze a relationship between debt financing and firm performance.
ii) To analyze a relationship between equity financing and firm performance.
iii) To analyze a relationship between liquidity and firm performance.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Significance of Study

The significant of this study contribute to the firm managers; this study helpful in structuring an optimal capital structure or conduct a greatest capital structure specifically in consumer products industry. From a theoretical view, the company might achieve the maximum profit as company reach an optimal capital structure but with the present study, managers will choose a valuable financing tool to finance their project or implement their strategies. They will also be able to assess which category of financing in the long-term orientation or short-term orientation to value the firm. This study can support investors and lender too. Investors include capital structure factors during investment decision making. Investors use the capital structure analysis to select the companies or sectors for investment that enables them to maximize their returns. Moreover, lenders identify the riskier company and profitable company based on capital structure analysis. Lender may avoid investing their funds into Risker Company or minimize their risky. Lastly, this study is useful for government to set appropriate fiscal and monetary policies in order to develop this industry. Besides, government-link companies may determine a good proportion of debt financing and equity financing to expand their business.

Scope of the Study

This study focus on the impact of capital structure on consumer products and firms' performance, current study uses capital structure (debt and equity) and other organizational factors (liquidity) as independent variable. External factors have not been emphasized in this study such as income tax, inflation, currency exchange, Gross Domestic Product and consumer product index. Other related organizational factors that may influence the firm performance are not included in this study such as sales growth, corporate governance, advertising, research and development. Furthermore, two models employed in this study are Ordinary Least Squares regression (OLS) and fixed effects model. Both models have not included cross-period factors.

Literature Review

Consumer products industry in Malaysia

In Malaysia, consumer products industry is the largest contributor to Gross Domestic Product (GDP). It is evidently supported by the result published by Department of Statistics Malaysia that showed 53.7% share of consumer products industry to GDP in fourth quarter 2017. In the other words, Malaysia GDP is strongly affected by consumer products industry. The main contributors of GDP from consumer product industry are foods and non-alcoholic beverages, communication, housing and utilities. Although performance of consumer products industry has grown, 7% in the year 2017, consumer products firms are challenged by the business environmental changes in the last three years. The Malaysian Government introduced a new consumption tax – GST (6%) on 1 April 2015. Another challenge was the depreciating Malaysia ringgit in international trading which at one time reached the highest exchange rate RM4.49 in December 2016. A significant change was observed in Malaysian inflation rate in 2017, when it grew to 3.7% due to weak ringgit and rise in fuel prices.

Pecking order theory

Pecking order theory is an alternative theory of trade-of theory and was developed by Donaldson (1961) and popularized by Myers and Majluf (1984). This theory demonstrated that internal financing is a prior choice for company raise the capital structure; which are retained earnings and excess liquid assets. The external financing is then last resort for companies to funding such as debt issuance, equity securities issuance and bank loan. Debt financing is preferred more by firm rather than equity financing as external funds are needed. Retained

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13th – 14th December 2020

earnings was previously used by firm to raise funds due to transaction costs of internal financing are lower than transaction costs of external financing. Also, asymmetrical information between owner and investors can be resolved as firm need not apply external financing. Furthermore, equity issuance is more expensive than debt issuance due to increase asymmetric information between insiders and outsiders. So, firm that are high in asymmetrical information will issue debt when external funds are needed.

Signaling theory

The signalling theory was developed by Ross (1977). This theory stated that managers possess more internal information than investors, and they send internal information to investors by using a financial policy. Managers send the following signal to investors such as: i) dividends, ii) leverage, iii) stock purchases, iv) announcement of a merger or acquisition, v) announcement of a tender offer, vi) announcement of spin off, and vii) announcement of poison pill. The valued firm increase their leverage for project investment opportunities. This signal lets investors to believe that company will possess an enormous free cash flow in the future to pay off the interest and principal of debt (Markopoulou and Papadopoulos, 2009). On the other hand, the overestimated firms would not invest the projects by applying debt financing due to company bankruptcy risk will increase.

Agency Theory

Firm performance is significantly and positively correlated with debt financing is a result found in the above previous studies. The result is consistent with agency theory. In order to minimize the asymmetrical information cost between owner and managers, debt financing suits for apply. According to agency theory, managers improve companies' efficiency and effectiveness due to return rate of profit over interest rate of debt financing. Then, manager will work for owners' concern; that is shareholders' wealth maximization. Hence, the agency cost between manager and owners can be decreased, such as share option, bonus and other cost that attract manager work for owners.

The impacts of capital structure on firm performance

According to results earlier studies, firm performance is affected by funding method. Thus, this section discusses the prior empirical results comprehensively. This topic is divided into four specific sub-topics that are:

i) The negative impacts of debt financing on firm performance;
ii) The positive impacts of debt financing on firm performance;
iii) The positive impacts of equity financing on firm performance;
iv) Previous Studies

The results of this study were consistent with Static Trade-Off Theory which stated that companies encounter a higher bankruptcy risk and financial distress risk as they make application of debt for assets expansion during economic crisis. In summary, sufficient literature review of research result showed that debt financing has a significant negative effect on corporate profitability. This may be due to relative high interest rate as firms used the debt for funding. There is a higher bankruptcy risk and financial distress risk when firm make a debt financing during economic crisis.

Previous empirical studies' result has been discussed. Prior empirical studies showed that firm performance is either positively or negatively affected by debt financing; and, it is positively influenced by equity financing. Except from capital structure factor, some of

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13th – 14th December 2020

researchers included other organization factors in their model such as tangibility, liquidity and firm size, to analyse the impact of these three factors on corporate performance.

Methodology

Theoretical Framework

The factors of firm performance were described in the following framework. It has four variables to measure the firm performance which are ROA; ROE; TQ and PE. Variable of ROA and ROE represent the accounting performance while measurement of TQ and PE represent the market performance. The two main independent variables to measure the capital structure are TD and TE. In addition, corporate performance is influenced by other organizational factor is liquidity.

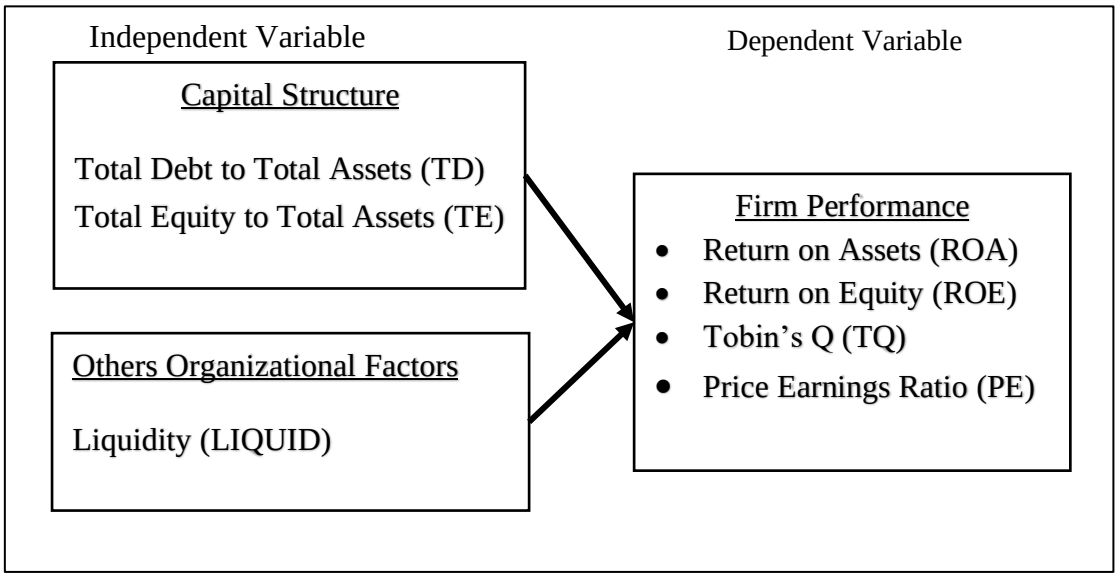

Figure 1 Theoretical Framework

Figure 1 shows firm performance associated with debt financing in term of TD. Moreover, a company's profitability is correlated with equity financing in term of TE. Next, financial performance is related to other organizational factor in term of LIQUID.

Hypotheses development

Hypothesis 1:

H0: There is a positive relationship between debt financing and firm performance.
H1: There is a negative relationship between debt financing and firm performance.

Hypothesis 2:

H0: There is a negative relationship between equity financing and firm performance.
H1: There is a positive relationship between equity financing and firm performance.

Hypothesis 3:

H0: There is a negative relationship between liquidity and firm performance.
H1: There is a positive relationship between liquidity and firm performance.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Research design

This study is an exploratory research to looks for possible factors affecting firm performance or determinant of firm profitability. Quantitative method of analysis is applied to investigate the relationship between capital structure and firm performance. Secondary data was used in the current study collected from Bursa Malaysia to examine the correlation between leverage structure and corporate performance from 2013 to 2017. Consumer products industry is the target population of this investigation and 200 public listed consumer products companies available on Bursa Malaysia webpage (Bursa Malaysia, 2018) are used. To select the firms, a simple random sampling is employed to pick 120 public listed companies from consumer products industry. Multiple panel regression data is employed to examine relationship between firm performance and capital structure across 120 companies from consumer industry and 600 observes were used in this study.

Capital structure is independent variable for this study; and, it is measured by TD and TE. Other organizational factors that may affect the firm profitability also are employed by this study to test their relationship, which is liquidity. At the same time, firm performance is a dependent variable for this study; and, it is measured by ROA, ROE, PE, and TQ. ROA and ROE represent as accounting performance while TQ and PE represent as market performance. Research methods used in this study are descriptive statistic, correlation analysis, pooled OLS model and FE model. Descriptive statistic and correlation analysis were employed by SPSS system, while pooled OLS model and FE model were used by E-views system.

Operational definition

The operational definitions of present study are below:

Key Terms	Definition
Capital Structure	The proportion of corporate financial resource between debt financing and equity financing. (Yazdanfar & Ohman, 2015; Dada & Ghazali, 2016;Vieira, 2017)
Firm Performance	The profitability of firm which is measured by efficiency ratios. (Santos & Brito, 2012)
Total Debt to Total Assets (TD)	The percentage of total liabilities on total assets. (Gleason, 2000; Mahmoodi, 2011)
Total Shareholder' equity to Total Assets (TE)	The percentage of total outstanding shareholders' equity on total assets. (Al-Kayed, 2014; Vatayua, 2015)
Return on Equity (ROE)	An accounting performance that comparing between earnings after tax and interest divided by total equity. (Vieira, 2017; Khan, 2012; Salim & Yadav, 2012)
Return on Assets (ROA)	An accounting performance that comparing between earnings after tax and interest divided by total assets. (Ong & Teh, 2011; Khan, 2012)
Tobin's Q (TQ)	A market performance that comparing between market value of shareholders & book value of debts and book value of total assets. (Zeitun & Tian, 2014; Dada & Ghazali, 2016)
Price Earnings Ratio (PE)	A market performance that comparing between market share prices and earning per share. (Zeitun & Tian, 2014)
Liquidity (LIQUID)	A cash ratio that comparing cash and cash equivalent to current liabilities. (Dawar, 2014)

Research Instruments

Firm performance is recognized as dependent variable in this investigation ROE and ROA were utilized to analyze the accounting performances while TQ and PE were employed to measure the market performance (Zeitun and Tian, 2014). Independent variable of current study is

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13th – 14th December 2020

capital structure. Two indicators of capital structures are TD and TE; and, t other organizational factor variable used in this study is LIQUID.

Table 1 Variables and Proxies

Variable	Proxies	
Capital Structure (independent variables)	Debt Ratio	Book Value Of Total Debts / Book Value Of Total Assets
	Equity Ratio	Book Value Of Total Equity / Book Value Of Total Assets
Other Organization factors (independent variables)	Liquidity	Cash + Cash Equivalents / Current Liabilities
Firm Performance (dependent variables)	Return on Equity	Earnings After Tax & Interest / Book Value Of Total Equity
	Return on Assets	Earnings After Tax & Interest / Book Value Of Total Assets
	Tobin's Q	Market Value of Equity + Book Value of Liability / Book Value Of Total Assets
	Price earnings ratio	Market Value of Share / Earnings Per Share

Table 1 shows the formula of each proxy of independent and dependent variable in this study. Essentially, most of variables in this study are computed in book value basic except of TQ and PE which are calculated in market value basic.

Population and sample

According to Bursa Malaysian Annual Report (2018), 915 companies are public listed at Bursa Malaysia out of which 783 consist of public listed companies at Main Market, 119 public listed companies at ACE Market and 13 public listed companies at LEAP Market. Consumer products industry is composed of 178 listed companies in the main market, 16 listed companies in ACE market and 6 listed companies in leap market. Therefore, target population of current study is 200 listed companies. The current study randomly chose 120 consumer products companies from main market to examine the impacts of capital structure on firm performance; while 120 consumer products firms are our sample number. The related data was collected from 2013 to 2017. The summary of population and sample size of current study is shown on table 3.2.

Table 2 Summary of Population and Sample Size

Population	915 companies (783 companies at Main Market, 119 at ACE Market and 13 at LEAP Market)
Target Population	200 companies in Consumer Product Industry (178 at Main Market; 16 at ACE Market and 6 at Leap Market)
Sample size	120 companies from Main Market in Consumer Product Industry
Period	Year 2013 until Year 2017
Total Observation	600

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13th – 14th December 2020

Data collection procedure

Present study spent about a month to collect the annual report of related companies from Bursa Malaysia website starting from June 2018. Secondly, around another one month (1 July 2018 – 31 July 2018) to key in the related data from annual report to excel sheet. Later, all capital structure and firm performance indicators were calculated using panel data, and this took another 2 weeks (1 August 2018 – 12 August 2018) approximately. Lastly, all related financial ratios were inserted in SPSS to come up with descriptive statistic and pearson correlation among the variable. This study also used the e-views to test the relationship between capital structure and firm performance through multiple panel regression data.

Techniques of data analysis

This study utilized multiple panel regression data analysis as the main analysis method to examine relationship between each measures of capital structure and corporate performance. Besides these, descriptive statistic, correlation and functional models also were used in this study.

Results and Findings

Dependent variable

Firm performance measures of this study are classified into two groups; they are accounting measures and market measures. ROA and ROE are recognized as accounting measures; while TQ and PE are grouped as a market measure. Table 4.3 displays the result of descriptive statistics of each dependent variable.

Table 3 Demographic Industry

Sub-Sectors of Consumer Products Industry		
Agricultural Products	10	8.33%
Automotive	6	5.00%
Consumer Services	9	7.50%
Foods & Beverages	30	25.00%
Pharmaceuticals	5	4.17%
Household Goods	33	27.50%
Personal Goods	19	15.83%
Retailers	5	4.17%
Travel, Leisure and Hospitality	3	2.50%
Total	120	100%

In addition, current study divided 120 samples into 8 groups according on their annual sales as shows in the following Table 4.3. Only one firm's annual sale is over RM10,000,000,000, it was UMW Holdings Bhd. Mostly consumer products companies' annual sales is placed in the range between RM100,000,000 and RM499,999,999. This result indicates that the benchmark of consumer products industry sales is around RM100, 000,000 to RM499, 999,999. Only Kuantan Flour Mills Bhd had the lowest annual sale at RM 3,924,194 in year 2016 and 2017.

Descriptive statistics

Descriptive statistics is a tool to examine the data to test it, whether it is normal distributed or not. Hence, descriptive statistics is employed in this study to conduct the normality test. Minimum, maximum, mean, standard deviation, skewness and kurtosis of each variable chosen will be discussed in detail in the following discussion. Basically, explanations of description

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13th – 14th December 2020

statistics are divided into two groups, which are descriptive statistics of dependent variable (ROE, ROA, TQ, and PE) and descriptive statistics of independent measure (TD, TA, LIQUID, TANG and SIZE).

Dependent variable

Firm performance measures of this study are classified into two groups, they are accounting measures and market measures. ROA and ROE are recognized as accounting measures; while TQ and PE are grouped as a market measure. Table 4.3 displays the result of descriptive statistics of each dependent variable.

Table 4 Descriptive Statistics of Dependent Variable

	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic
ROE	600	-13.1028	1.7134	0.0757	0.5986
ROA	600	-1.4688	0.7567	0.0511	0.1399
TQ	600	0.1376	15.5569	1.3699	1.8031
PE	600	-2830.6385	957.2879	9.3271	147.6348

Results of table above indicate that investors are able to get a return RM7.57 for each RM100 invest in consumer products firm. The minimum and maximum values of ROE are -13.1028 and 1.7134 respectively. The risk on investors did not get the returns of RM7.57 is quite high due to standard deviation was 0.5986. Also, mean of ROA shows that consumer product firm does not use the assets well or in the efficiency and effectiveness ways. From the Table 4.3, the minimum value of ROA is -1.4688 and maximum value of ROA is 0.7567. Standard deviation of ROA is 0.1399.

Mean of TQ implies that currently consumer products firms are overvalued as firms' share start at RM1.3699 that is costlier than replacement cost of its assets. The consumer products market is overbought in the current situation. The lowest and highest TQ values are 0.1376 and 15.5569 respectively. Standard deviation of TQ is 1.8031. The mean of PE reveals that consumer products firms' shares price are overvalued. Minimum of PE is -2830.6385 while its maximum is 957.2879. The minimum value of PE is extreme negative amount due to Tomei Consolidated Berhad gained a loss in year 2015. Standard deviation of PE is 147.6348.

Independent variable

There are two ways that firm finances its business which are debts and equity. Hence two kinds of basic ratios are applied in this study; which are TE and TD. Furthermore, some of characteristic of organization is included in this investigation; which is LIQUID. Table 3.5 shows the result of descriptive statistics of each independent variable.

Table 3.4 reveals that 35.77% of assets are financed by consumer products firms via debts financing. Conversely, 63.93% of assets are financed by consumer products firms via equity financing. The minimum and maximum values of TD are 0.0102 and 2.5132 respectively. In year 2017, the bankruptcy risk of Kuantan Flour Mills Berhad achieved highest level which is 2.5132 over total assets. At same time, Kuantan Flour Mills Berhad achieved a lowest TE which is -1.5132 over total assets due to a huge accumulated loss. Standard deviation of TD and TE are around 0.225.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 5 Descriptive Statistics of Independent Variable

	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic
TD	600	0.0102	2.5132	0.3577	0.2258
TE	600	-1.5132	0.9898	0.6393	0.2254
LIQUID	600	0.0022	37.1757	1.2566	2.6701
TANG	600	0.1580	0.9878	0.6099	0.1705
SIZE	600	15.9237	23.8539	19.5579	1.2277

Next, most consumer products firms are able to meet their short-term obligations because they possess RM1.2566 of liquid assets to pay for every RM1.00 of short-term debts. In the year 2015, FCW Holdings Berhad possessed a larger proportion of liquid assets which was 37.1757 over total short-term liabilities. Standard deviation of LIQUID is 2.6701.

Hypotheses testing

Hypothesis 1, the firm performance is predicted to be negatively influenced by debts financing. In present study, only TQ had significantly and strong-negatively affected by TD in FE model. This evidence is supported by pecking order theory which stated that external funding will be increase asymmetrical information between owners and investor. Current study's result is consistent with Dada and Ghazali (2016), Zeitun and Tian (2014), Salim and Yadav (2012), and Khan (2012). Therefore, hypothesis 1 is accepted in present study.

Hypothesis 2 expects that firm with high equity proportion in capital structure has a superior performance and vice versa. In this study, TE had a significant and negative relation with firm performance that measure by TQ in pooled OLS model and FE model. This result is no support by signalling theory which stated that profitable firm used a costly capital structure choice for funding. However, this empirical result is in line with pecking order theory which stated that external funding is costly than internal funding; and, it has negative impact on firm performance. In addition, this significant result is in opposite with Vatavua (2015) and Al-Kayed et al. (2014) who stated that shareholders' equity has a positive impact on performance instead of debt. Hypothesis 2 is rejected in current study.

Moreover, hypothesis 3 forecast that liquid firm has a higher corporate performance; thus, firm with poor in working capital management may lower its firm performance. From the Table 4.7, a negative and significant relation between ROE and LIQUID was found in this study. This empirical result indicates that an opportunity cost of liquid assets cannot be neglected even though liquid firm has advantages on lower interest from trade payables or lower credit risk. The opportunity costs of liquid assets are such as return on long-term investment and investment in subsidiaries. Therefore, third null hypothesis is accepted which stated that there is a negative relationship between liquidity and firm performance.

Table 5 Summary of hypothesis testing result

Hypothesis	Relationship	Finding	Reject/Accept Hypothesis
H1	There is a negative relationship between debt financing and firm performance.	Negative	Accepted
H2	There is a positive relationship between equity financing and firm performance.	Negative	Rejected
H3	There is a positive relationship between liquidity and firm performance.	Negative	Rejected

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13th – 14th December 2020

Conclusion and Recommendation

This study attempts to find the existence of relationship between firm performance and capital structure in consumer products industry. The study found that external sourcing has negative impact on firm performance. In a reality, debt financing consists of short-term debts and long-term debts. Therefore, future study is to be suggested to employ these two proxies as capital structure measurement. Also, the capital structure proxies used in current research are more related to book value. Therefore, future researcher may use other related capital structure indicators such as market leverage. Furthermore, current study only emphasizes on the impact of capital structure on firm performance. In the real world, the firm performance may influence by other financial factors and non-financial factor such as firm industries factor, business risk, market factor, income tax rate and nominal interest rate. Future study may include other factors in the model.

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MICROSOFT TEAMS AS AN ONLINE LEARNING TOOL: EXPLORING THE STUDENTS PERSPECTIVE

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Abstract: *This study aims to explore student's perspective on Microsoft Teams as an online learning tool in DUE30022 Communicative English 2 course in Politeknik Kota Kinabalu (PKK). In this study, technology acceptance model (TAM) was used to construct the questions which has four sections which is perceived usefulness (PU), perceived ease of use (PEU) and intention to use. Data were collected using survey questionnaires which was distributed via Microsoft Teams through a google forms link. A total of 62 students of semester 3 from PKK participated in this study. This study can be extended to the lecturer's perspective on using Microsoft teams as an online teaching tool in order gain an in-depth understanding from the lecturers point of view.*

Keywords: *Online learning, Technology Acceptance Model, Microsoft Teams*

Introduction

The Malaysian government announced its first Movement Control Order (MCO) in March 18th 2020. Following this announcement, the Ministry of Higher Education (MOHE) in Malaysia have also announced that all public and private universities in Malaysia to be temporarily closed and to conduct teaching and learning activities via online learning. This announcement affected many students from various higher learning institutions including polytechnic students, which forced them to leave campus and to go back to their hometowns.

Due to this announcement, the Department of Polytechnic and Community College (JPPKK) have decided that the coming semester, all Malaysian polytechnics are to conduct their classes online giving exceptions only to semester 1 and 5 students to return to campus, with only 50% students intake for semester 1 for the June 2020 session. Therefore, all polytechnics are instructed to prepare their lecturers with all the tools and skills in preparation for the coming semester. Malaysian Polytechnics

Politeknik Kota Kinabalu (PKK) has decided to adapt synchronous and asynchronous learning which gives the lecturers flexibility to choose which online learning mode they prefer. To encourage online teaching and learning among lecturers, training was provided to lecturers and polytechnic's existing LMS (learning management system) CIDOS was to be fully utilized by the lecturers. However, other tools and LMS was also encouraged to be used by lecturers which includes Microsoft Teams. Since Microsoft teams' package was fully subsidized by the Ministry of Higher Education Malaysia, Politeknik Kota Kinabalu lecturers decided to use this aside from CIDOS to conduct their online teaching and learning.

However, PKK students are still unfamiliar with this new LMS and requires some time to get used to Microsoft teams. Therefore, this study aims to explore PKK students perspective of Microsoft teams as an online learning tool for DUE30022 Communicative English 2 course by their level of perceived usefulness (PU), perceived ease of use (PEU) and intention to use (IN).

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13th – 14th December 2020

Literature Review

Online Learning

Online learning is the newest and most popular form of distance education today. Within the past decade it has had a major impact on post-secondary education and the trend is only increasing. Online learning refers to learning and other supportive resources that are available through a computer (Carliner, 2004), which also implies that online learning is a form of distance learning and that e-learning, web-based training, computer-based instructions, and technology-based instructions are a form of online learning, but each has a specific meaning. Online Learning comprises a range of technologies such as the worldwide web, email, chat, new groups and texts, audio and video conferencing delivered over computer networks to impart education. It helps the learner to learn at their own pace, according to their own convenience.

According to Tsai and Machado (2002), online learning, e-learning and distance learning are widely used as interchangeable terms. However, these terms represent concepts with subtle, yet consequential differences. Online learning is related to the more common concepts of online help, online documentation, and online services. It is associated with readily available learning materials in a computer environment. Often, online learning refers to learning materials directly accessible from within a core application (like in online help); however, learning materials available online on a network also qualify when readily accessible (Tsai & Machado, 2002).

Technology Acceptance Model

Technology Acceptance Model (TAM) is one of the most popular and widely used model by IS researchers for predicting the future use of a product or technology (Pal & Vanijja, 2020). This model was first proposed by Davis (1989) to explain how an individual's acceptance of information technology.

There are 2 major ideas behind TAM, which was proposed by Davis (1989), which are Perceived Usefulness (PU) and Perceived Ease of Use (PEU). Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance their job performance (Davis, 1989) . It indicates how a person feel that a certain system or technology is useful in helping to enhance their work performance. However, the extent of effort that a person feels when using a particular system or technology is defined as perceived ease of use. In other words, means that the degree to which a person believes that using a particular system would be free of effort (Davis, 1989).

In a previous study by Tan and Lee (2016), this study uses TAM to examine the behaviour of pre-service teachers towards the use of e-learning in a social science subject (Tan & Lee, 2016). Weng, Yang, Ho and Su (2018), uses TAM to explore the effects of the information technology (IT) environment on the perceived usefulness, perceived ease of use and attitude towards using multimedia and the relevance and influence of these attitudes on behavioural intention (Fumei, Rong-jou, Hann-Jang, & Hui-Mei, 2018). Another study uses TAM to gather data on the ease of use and usefulness of the Blackboard LMS in anticipation of transitioning to a new LMS (Bove & Sheri , 2019) and a study by Pal and Vanijja (2020) uses TAM to evaluate perceived usability of Microsoft Teams as an online learning platform. This study, will also use TAM to explore student's perceived usefulness, perceived ease of use and intention to use towards using Microsoft Teams as an online learning tool for Communicative English 2 course in Politeknik Kota Kinabalu.

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13th – 14th December 2020

Microsoft Teams

Microsoft Teams is a collaborative workspace within Microsoft 365/Office 365 that acts as a central hub for workplace conversations, collaborative teamwork, video chats and document sharing, all designed to aid worker productivity in a unified suite of tools. (Matthew Finnegan, 2020). Courses using Teams can be 100% online, hybrid, or face-to-face. This tool enables a wider range of instructor and student interactions and allows for regular, substantive interaction in online courses (Poston, Apostel , & Richardson , 2019). Some of the features in Microsoft Teams are chats, group features which is known as "teams" with 2 types of channel: general and private, assignments, class notebooks, files, test and meeting, a feature which is similar to video calling but in bigger groups. Figure 1 is a screenshot of the interface of Microsoft Teams for desktop version.

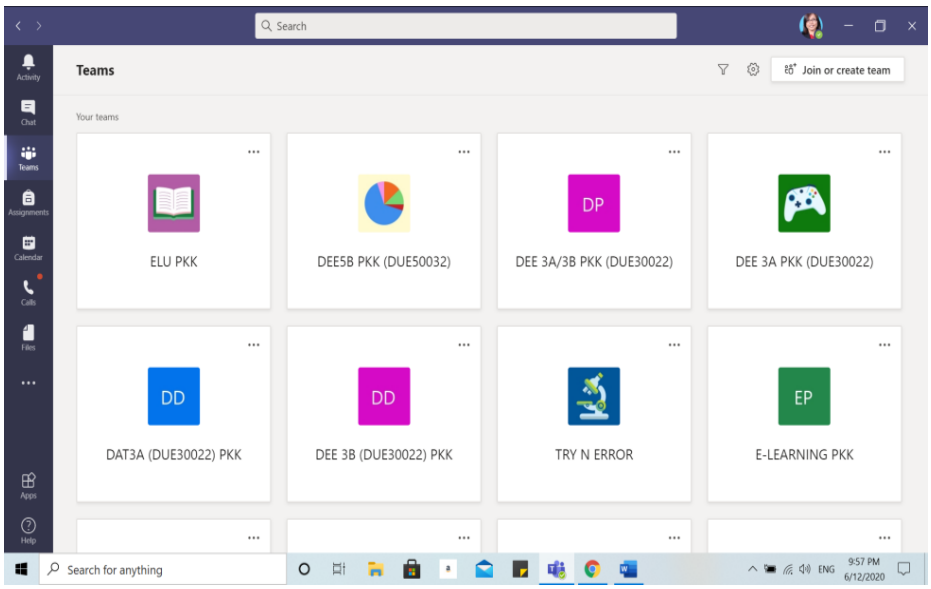

Figure 1: A screenshot of the Microsoft Teams desktop version app

In Figure 2, is a screenshot of Microsoft Teams for DUE30022 Communicative English 2 team channel.

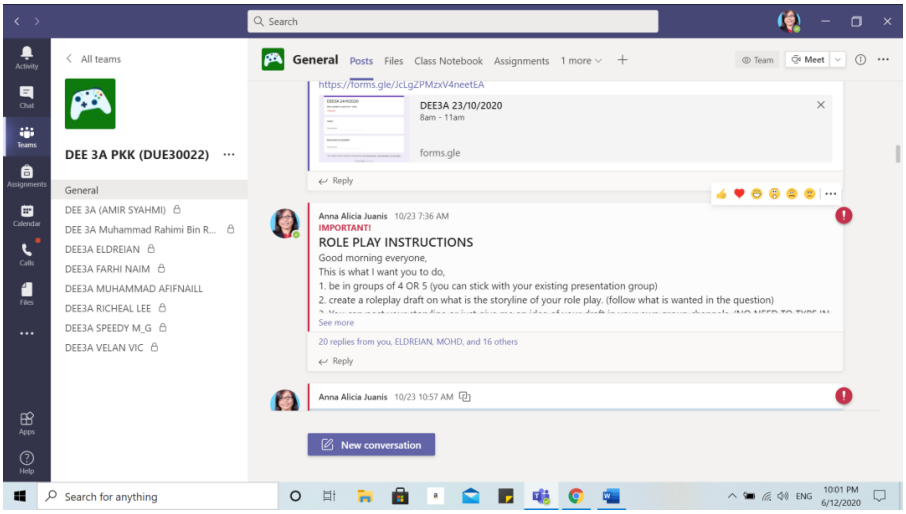

Figure 2: DUE30022 Communicative English 2 team channel.

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13th – 14th December 2020

As can be seen in figure 2, Microsoft teams features is somewhat similar to any other LMS with the basic chats, assignments and files features. However, what distinguishes Microsoft teams from other LMS is the added features such as meetings, apps and class notebook.

Methodology

This is a quantitative study, using an online survey to collect data from respondents. A total of 62 semester 3 PKK students taking DUE30022 Communicative English 2 course participated in this study. Questionnaires were distributed through Microsoft Teams by sharing a google form link. The questionnaire was adapted from technology acceptance model (TAM) by Davis (1989) to explore students perceive usefulness (5 items), perceived ease of use (7 items) and Intention to use (4 items). All items are scored using a 7-point Likert scale. The Cronbach alpha reliability result for this study is shown in Table 1. The questionnaire data were analyse using SPSS using Spearman's rho correlation coefficient. The result of the tests are shown in Table 2 and Table 3.

Findings

The cronbach alpha for Perceived usefulness (PU) is $\alpha = .94$, Perceived ease of use (PEU) is $\alpha = .97$ and Intention to use (IN) is = .94 which indicates that the instruments are reliable. Other researchers reported alpha value for perceived usefulness (PU) as 0.95 (Shroff, Deneen , & Ng, 2011) , perceived ease of use (PEU) as 0.94 (Mao & Hovick, 2020) and intention to use (IN) as 0.95 (Shroff, Deneen , & Ng, 2011).

Table 1: Cronbach Alpha Reliability coefficient

No.	Constructs	Cronbach Alpha
1.	Perceived Usefulness (PU)	0.94
2.	Perceived Ease of Use (PEU)	0.97
3.	Intention to Use (IN)	0.94

Correlation between perceived usefulness (PU) and Intention to Use (IN), and Perceived ease of use (PEU) and Intention of use (IN) is explained based on Table 1 and table 2. The Spearman rank-order correlation coefficient is a nonparametric measure of the strength and direction of association that exists between two variables measured using an ordinal scale. Since the questionnaire is a 7-point likert scale, spearman's rho correlation is the suitable correlation test to use.

In Table 2, A Spearman's rank-order correlation was run to determine the relationship between student's Perceived Usefulness (PU) with their Intention to Use (IN) Microsoft Teams. There was a strong, positive correlation between students' PU and IN, which was statistically significant, hence rejecting the null hypotheses.

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13th – 14th December 2020

Table 2: Spearman's rho correlation between PU and IN

Correlations

			Percieved usefulness	Intention to use
Spearman's rho	Percieved usefulness	Correlation Coefficient	1.000	.941**
		Sig. (2-tailed)	.	.01
		N	62	62
	Intention to use	Correlation Coefficient	.941**	1.000
		Sig. (2-tailed)	.01	.
		N	62	62

**. Correlation is significant at the 0.01 level (2-tailed).

In Table 3, A Spearman's rank-order correlation was run to determine the relationship between student's Perceived Ease of Use (PEU) with their Intention to Use (IN) Microsoft Teams. There was a strong, positive correlation between students' PEU and IN, which was statistically significant, which also rejects.

Table 3: Spearman's rho correlation between PEU and IN

Correlations

			Perceived Ease of use	Intention to use
Spearman's rho	Perceived Ease of use	Correlation Coefficient	1.000	.954**
		Sig. (2-tailed)	.	.01
		N	62	62
	Intention to use	Correlation Coefficient	.954**	1.000
		Sig. (2-tailed)	.01	.
		N	62	62

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation test result reported that there was a strong relationship between students' PEU and IN, and students' PEU and IN when using Microsoft teams as an online learning tool. The relationship between PU and IN and PEU and IN is shown in Figure 3.

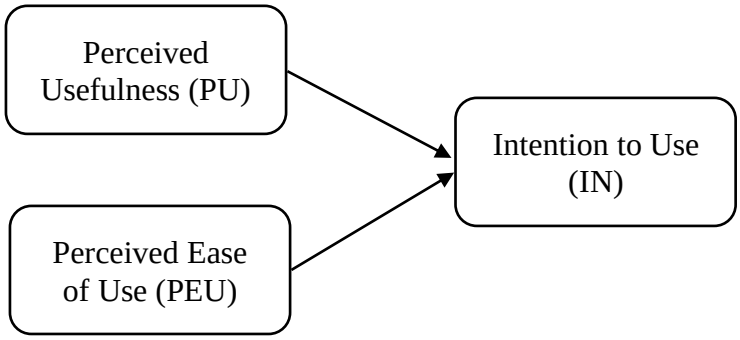

Figure 3: Relationship between PU and IN, and PEU and IN

Discussions

Relationship between PU and IN, PEU and IN

In table 2, the findings shows that how students perceive the usefulness of Microsoft Teams as an online learning tool does influence their intention to use Microsoft teams. In Table 3, the findings shows that how students perceive the ease of use of Microsoft Teams as an online learning tool does influence their intention to use Microsoft teams. According to Masron (2007)

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13th – 14th December 2020

perceived usefulness and perceived ease of use has a significant effect on intention to use, in his study about individual users' acceptance investigation for the e-learning in universities as an effective learning tool (Masrom, 2007). Another study shows that PU and PEU does affects a learners IN. In the study, it shows that the learners' acceptance of online learning was indeed affected by their PU and PEU (Tan & Lee, 2016). Mao and Hovick (2020) in their study about the messaging features of online patient portals among young adults, also indicated in their study that the PU and PEU and IN to use the messaging feature to communicate with a care provider also influence one another. This indicates that if PKK students believe that Microsoft Teams can make their online learning easier, it will have an effect in their intention to use Microsoft teams as an online learning tool in the future. Also, the less effort students must spend on using Microsoft teams, the higher the probability of them preferring Microsoft teams.

Conclusions

Based on the findings and discussions, it can be concluded that in selecting any online learning tool, how users feel about using it is an important factor to consider. The technology used should be something that has a sense of familiarity to the students, for them to have a positive attitude engaging in online class. Microsoft teams has the potential to grow as an online learning as it provides added features that is not available in other traditional LMS. One benefit of using Microsoft teams is that it can easily be integrated into a course management system which will enhance interactions between the users, and it is an important aspects for online learning (Poston, Apostel , & Richardson , 2019). However, there are a few limitations to this study. Firstly, there is no in-depth data to support how students feel about using Microsoft teams as an online learning tool. In this case, another study can be conducted using a qualitative approach, interviews and observations should be included, as a statistical data is not enough to really explore the perceptions of students. Secondly, since Microsoft teams is used by both educator and students, taking into considerations the perspectives of the educator is also important as it would provide answers from the educators point of view. Therefore, a future study can be conducted, to explore the educator's perspectives on using Microsoft teams as an online teaching and learning tool.

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EXPLORATION OF FINANCIAL MANAGEMENT OPERATION OF POLITICAL AND NON-POLITICAL STUDENT ORGANIZATION: A BASIS FOR PROPOSE POLICY DEVELOPMENT

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Abstract: *A strong financial transaction is an important factor in organizational triumph and sustainability, and it is elucidated in the revised student handbook of the University that can be found on page 96 rules 1 to 5. This study assessed the registered students organizations' profile in terms of its type, registration, years of establishment, functions, and designations of student leaders and advisers. The financial practices or internal control system manages their organizational finances and the problems encountered by the student organizations and eventually proposed a manual of operation for students and youth organization's internal control system. This research used the descriptive design with the aid of questionnaire; data gathering through quota sampling from 57 student leaders and advisers of different student organizations of NEUST. Findings showed that most organizations had their constitution and by-laws but kept only as files and renewal requirements. Some provisions were not known to the officers, mostly were registered more than five years in operation; however, in terms of functions of officers and advisers, the results showed that some functions were not done by the officers who supposed to do it like the auditors who serve as treasurers also, the PRO as the record keeper and the presidents who handled finances and collections and as well as disbursements of funds. Generally, the organizations' financial activities were deemed to be "good", especially budgeting and cash receipt, due to the implementation of "no collection and no tuition fee policy". The researchers concluded that the absence of the proper internal control systems and manual of operation and lack of proper transfer of financial records from the previous sets of officers were the serious problems that should be addressed. Moreover, the student organizations' internal control system could still be improved if there is proper training and supervision in accounting operation.*

Keywords: *transparency, accounting, internal control system, financial management, disbursement, a student organization.*

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13th – 14th December 2020

Introduction

The Nueva Ecija University of Science and Technology (NEUST) is one of the state universities and colleges that provide quality education in the region. One of the University's core values aside from nationalism, excellence, unity, and spirituality is the last but one of the most important elements as public officials, the transparency.

Transparency in terms of financial accountability in NEUST top management levels even in the student councils is needed to attain the university objectives. According to Jongbloed (2018), the basic theoretical notion underlying the growing interest in openness or transparency in higher education stems from an (economic) conception of higher education as an experience good. An experience good is a good or service whose quality can only be judged after consuming it. The importance of transparency has been proven on the study of Rafindadi and Olanrewaj (2019) where they found out that the organization financial information, governance structure activities, listing of officers and partnership were open and accessible to public scrutiny; that the organization regularly seek feedback on its activities from project beneficiaries as well as the stakeholders and there exist promotion of a high level of compliance with the organizational financial policies and procedures.

Lack of integrity and unethical behaviour within the education sector is inconsistent with one of the main purposes of education; that is, to produce 'good citizens', respectful of the law, of human rights and fairness (it is also incompatible with any strategy that considers education as one of the principle means of fighting corruption). Lack of integrity and unethical behaviour within the education sector is inconsistent with one of the main purposes of education; that is, to produce 'good citizens', respectful of the law, of human rights and fairness (it is also incompatible with any strategy that considers education as one of the principle means of fighting corruption)

Today's role in teaching core values is essential to ensure the smooth working of the day-to-day mechanism by making people aware of the responsibility, spread awareness, and motivating the students' fraternity to seek a solution. In the same vein, the student organizations organized to serve as a voice of the student body and act as students' representatives to the University's officials. Khandpekar (2016) emphasized that "today when the world is increasingly becoming more and more of one island," education can address the need to teach the broad and modern outlook in Generation Z through education.

Whatever issues, problems, or most especially, the University's activities, they can directly tell and inform people through simple conversation and letters for approval. The student association or organization also seeks to prepare students to become future president, budget officer, accountants, cash custodian, and the will to protect students' funds and interests and to ensure that the student funds are used to secure its real purpose. In line with this, London School of Business and Finance defined financial management as strategic planning, organizing, directing, and controlling financial undertakings in an organization or an institute. It also includes applying management principles to an organization's financial assets while also playing an important part in fiscal management. In summary of this view, Harvard College Office of Student Life stated that, a stable financial system is an important factor in student organizations' effectiveness and survival. Strong fiscal management provides a structure that encourages organizations to work proactively to achieve their objectives and support their communities through financially sustainable activities and programs. However, Tom York argued that in most situations, the use of simple financial controls would have brought the conduct to light much earlier and severely hindered or even avoided subsequent losses.

The involvement of non-governmental organizations worldwide has drawn attention to the variation of foreign and domestic policies used to identify and oversee NGOs' role

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13th – 14th December 2020

following the part of the government (Taylor, 2019). In NEUST, the political and non-political student organizations act as an independent body. The elected officers can enact the students' events and programs upon the supervision of the designated advisers and approval of the University's official most especially the president. However, in the last few years, there has been a mutual understanding that certain student organizations have deficiencies because some projects were accomplished, but there were no sufficient documents support it and no specific forms to be accomplished that is significant for turn-over of the projects and properties. Unfortunately, other students cannot avoid to speculate about what happened to the membership, and other fees they have paid. In the study conducted by Perlas et al. (2018), it was revealed that there could be no rule of law and no accountability without records. Records provide a reliable, legally verifiable source of evidence, decisions and actions. Needless to say, these encouraged the researchers to find out whether these speculations are true and if proven this study well, to provide solutions to solve and eliminate these problems, and to evade these things from happening once more; and most importantly to guide officers and advisers to improve the financial operations of the organization using the proposed training and manual of operations for the internal control system of the concerned officials of the political and non-political student organizations. In fact, one of the objectives of the Office of Student Organization Activities and Development written in the revised student handbook of NEUST is to develop an information system concerning students' organizations, activities, and development.

Materials and Methods

Using the descriptive research method, the study evaluated the 57 respondents that included 48 student leaders and nine advisers of the Political and No-political student organizations.There were two sources where the data gathered. First, the study utilized a modified questionnaire in gathering the data needed. The questionnaire has three parts. Part 1, dealt with the students' profile, organization type, legality of operation and function, designation of officers and advisers, and years of operation; Part II, called for a response on the organization's financial activities specifically budgeting, cash receipts, cash disbursements, and record-keeping/bookkeeping, Part III of this questionnaire dealt with the problems encountered by student organizations about financial management. Another source of data was interview to deepen the understanding for the current situation. The quota sampling technique was used in this study. Officers (24 from present and 24 from previous) and nine (9) advisers of NEUST San Isidro Campus student organizations were the selected respondents. They provided first-hand knowledge of how the student organization is being managed financially. Using these, the researchers have retrieved 57 questionnaires.

Gathered data from the instrument were tallied and analyzed. Using the weighted mean, the typicality of responses were determined. The quota sampling technique was used in this study. Student leaders and advisers (current and previous) of the political and non-political organizations were the selected respondents. They have first-hand evidence as to how the association/organization is being managed financially. With this method, the researchers retrieved 57 questionnaires from various political and non-political student organizations of NEUST-San Isidro Campus.The financial practices or activities of the student organizations were classified using the Likert scale and was interpreted as follows:

For the Financial Management Practices as Internal Control System, Part II:

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13th – 14th December 2020

Table 1: Financial Management Practices

Degree	Verbal Interpretation		Scale	
5	Always	A	4.21	5.00
4	Often	O	3.41	4.20
3	Sometimes	S	2.61	3.40
2	Rarely	R	1.81	2.60
1	Never	N	1.00	1.80

For the problems encountered in terms of financial management, Part III:

Table 2: Problems Encountered in terms of Financial Management

Degree	Verbal Interpretation		Scale	
5	Every-time	ET	4.21	5.00
4	Almost every time	AET	3.41	4.20
3	Occasionally	O	2.61	3.40
2	Almost never	A	1.81	2.60
1	Never	N	1.00	1.80

Statistical Treatment of Data

Frequencies and percentages were used and applied to define the student organizations' profile in terms of type or form, the legality of operations, and the officers' and advisers' designations and functions.

Results and Discussion

Table 3: Types of Organization

Types of organization	Officers				Advisers			
Political:	**Present**	**Percentage**	**Past**	**Percentage**	**Adv**	**Percentage**	**Total**	**Percentage**
CSC	4	7%	4	7%	2	4%	10	18%
CMBT Confederation	6	11%	6	11%	2	4%	14	25%
Non-political:								
YMA	6	11%	6	11%	2	4%	14	25%
SYBEE	6	11%	6	11%	2	4%	14	25%
Other non-political	2	4%	2	4%	1	2%	5	9%
	24	**42%**	**24**	**42%**	**9**	**16%**	**57**	**100%**

Table 3 shows that most of the respondents are from Non-political student organizations, primarily academic-related student organizations. Out of 57 respondents, 24 or 42% were represented by two political student officers, 6 from previous and 6 from current CMBT Confederation and 4 from current and 4 from previous Campus Student Council (CSC) officers and 4 advisers of the Campus Student Council, 24 or 42% were from the department based organizations, and 6 or 11% represents the Young Marketing Association (YMA) and another 6, or 11% from Society of the Young Business Executives and Entrepreneurs (SYBEE) and 2 from other non-political organization.

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13th – 14th December 2020

Table 4: The Legality of Operation (Present officers)

	Yes	Percentage	No	Percentage
Existing constitution and by-laws	24	100%	0	0%
Approved plan/calendar of activities	19	79%	5	21%
Approval of members in by laws	0	0%	24	100%
Registration with a national confederation and organizations	6	25%	18	75%
Election of officers from members	6	25%	18	75%
Issuance of special order to advisers	24	100%	0	0%

Table 4 revealed that almost all organizations have existing constitutions and by-laws duly approved by the members. On the other hand, one of the organizations was still retrieving their filed constitution and by-laws since the previous file could no longer be found. Almost all of the organizations chose their officers by means of election, except the YMA and SYBEE, in which the advisors can appoint officers due to lack of planning and time to hold a meeting. Furthermore, the majority of organizations were not registered with the national confederation and or association.

Table 5: The Legality of Operation (Past officers)

	Yes	Percentage	No	Percentage
Existing constitution and by-laws	24	100%	0	0%
Approved plan/calendar of activities	12	50%	12	50%
Approval of members in by laws	0	0%	24	100%
Registration with a national confederation and organization	6	25%	18	75%
Election of officers from members	6	25%	18	75%
Issuance of special order to advisers	24	100%	0	0%

Table 5 showed that the previous officers of most all of the organizations have almost results with the above present findings in the organization's officers.

Table 6: The Legality of Operation (Advisers)

	Yes	Percentage	No	Percentage
Existing constitution and by-laws	9	38%	0	0%
Approved plan/calendar of activities	6	25%	3	13%
Approval of members in by laws	0	0%	9	38%
Registration with a national confederation and organization	2	8%	7	29%
Election of officers from members	3	13%	6	25%
Issuance of special order to advisers	9	38%	0	0%

As can be gleaned, Table 6, however, the same with the present and previous officer's results, were the approval of by-laws was not considered important for advisers but will served as a requirement only for renewal.

Awareness of Designation and Function of Officers and Advisers in terms of Internal Financial Control System

Based on the interview, the majority of the organizations required the signatures of two officers and the adviser. This mean that three signatures were required to complete a particular organization's transaction. According to Brown University Student Activities Office, this scheme will minimize the risk that funds would be used for personal reasons, thus, ensuring that the organization's costs are of a fair and essential nature to support the organization's mission.

eISBN 978-967-2426-22-6
13th – 14th December 2020

However, the result also showed that the organizations have no bank accounts yet. This affirms the result of the latest Financial Inclusion Survey conducted by the Bangko Sentral ng Pilipinas. Only one-fourth of all Filipinos own bank accounts that facilitate their financial system and licensed (Lucas, 2018). In terms of budget proposal and approval, the respondents answered that their treasurer prepared the budget, organization adviser, and the President. According to Chen et al. (1998), as cited by Shahrabani (2012), strong evidence suggests that college students may not have a high financial literacy level. The budget is, therefore, an invaluable tool to help prioritize expenditures and allocate capital. Budget preparation and control will help the organization recognize unnecessary spending, respond rapidly to changes in the financial situation, and achieve financial objectives. Through budgets, resources are allocated to projects or events necessary, and if the resources are not enough, organizations can devise income-generating projects to augment their expenditures. It should also be carefully prepared after determining the scheduled activities of the organization for the year. The financial plan may consider the financial goals and probabilities of success and may be revised to reflect changes in the financial goals and probabilities of success (Wiks et al., 2011). However, the treasurer should indeed be the organization's cash custodian; some respondents responded that their adviser had managed their funds. No proper accounting or internal control systems were applied in the organization. They used the collections to buy their organizational needs without proper source documents.

Conversely, one of the key roles of accounting is adjudicating, which means that accounting plays a vital role in the success of entries and organizations and in recognizing errors and failures (Miller and Power, 2017). In addition to the idea of the division of duties, the preparation of vouchers should also be segregated from the officer who approves it. In this report, the preparation of cash vouchers rests with the treasurers, and the approval is normally with the president and/or the adviser. However, some and most answered that their organizations were not using cash vouchers and receipts, which should not be the case since these were important documents to assess the validity of the transaction. According to Siddiqui (2011), cash vouchers are prepared as documentary evidence of cash payments and cash receipts. According to the interview, there are some cases that the elected class president/s and other non-political organization's president collected money but declared it stolen, and some were considered as dropped on the campus.

Practices by the Officers and Advisers in terms of Financial Internal Control System

Table 7: Budget Proposal Preparation

	PRESENT OFFICERS			PREVIOUS OFFICERS			ADVISERS		
BUDGET PROPOSAL PREPARATION	**TFS**	**WM**	**VI**	**TFS**	**WM**	**VI**	**TFS**	**WM**	**VI**
1.Budgets are prepared for the events of the organization every semester	64	2.67	S	68	2.83	S	38	4.22	S
2. Budgets are prepared in accordance with the action plan of the organization.	84	3.50	O	84	3.50	O	34	3.78	O
3. Budget preparation is participated by all officers of the organization including advisers.	92	3.83	O	92	3.83	O	34	3.78	O
4. Budgets are approved by authorities, i.e officers, advisers, Dean of OSA, etc.	78	3.25	S	78	3.25	S	32	3.56	S
5. Meeting with your members to create a list of events, activities, or trips to different locations.	96	4.00	O	101	4.21	O	31	3.44	O
6. Conduct fund rasing activities to support your activity budget needs.	75	3.13	S	75	3.13	S	27	3.00	S
7. Set a contingency budget plan for every activities.	84	3.50	O	81	3.38	O	27	3.00	O

8. Keep track of plan for spending	84	3.50	O	84	3.50	O	28	3.11	O
9. Plan all operational expenses versus budgetd collections.	95	3.96	O	95	3.96	O	31	3.44	O
10. Allows donations/sponsorship as part of budget plan.	106	4.42	A	106	4.42	A	38	4.22	A
		3.58	**O**		**3.60**	**O**		**3.56**	**O**

Table 7 shows that the budget proposal preparation was "Often" done by student organizations. A budget is an invaluable tool that helps to plan to spend and allocate resources. Budget preparation and control will help the company recognize unnecessary spending, respond rapidly to changes in the financial situation, and achieve financial objectives. Budget plans should be planned and accepted and serve as a method for comparing budgeted and real disbursements and assessing variance. According to Dropkin et al. (2011), a well-managed nonprofit organization's key economic goal should be to remain solvent, and budgeting is the optimum method for promoting this objective.

Table 8: Cash Receipt Preparation

	Present			Past			Advisers		
	Total Frequency Score	**Weighted Mean**	**Verbal Interpretation**	**Total Frequency Score**	**Weighted Mean**	**Verbal Interpretation**	**Total Frequency Score**	**Weighted Mean**	**Verbal Interpretation**
1. Remittances by the collectors to the treasurers are done every day (during the collection period)	56	2.33	R	68	2.83	S	38	4.22	S
2. The organization has pre-numbered official receipts.	30	1.25	N	84	3.50	O	34	3.78	O
3. Cash collections are issued with official receipts.	32	1.33	N	92	3.83	O	34	3.78	O
4. Collectors are authorized through resolutions and other pertinent documents.	47	1.96	R	78	3.25	S	32	3.56	S
5. Remittances are supported by a control sheet or cash count sheet.	57	2.38	S	101	4.21	O	31	3.44	O
6. Collections for the day are deposited intact within the next banking day.	33	1.38	N	75	3.13	S	27	3.00	S
7. Funds are kept in a bank	52	2.17	R	81	3.38	O	27	3.00	O

or other financial institution.									
8. Petty cash fund is maintained by the organization.	26	1.08	N	84	3.50	O	28	3.11	O
9. Petty cash fund is kept in a safe place by the custodian.	26	1.08	N	95	3.96	O	31	3.44	O
10. Comparison of actual and budgetary expenses is done.	89	3.71	O	106	4.42	A	38	4.22	A
		1.87	**Rarely**		**3.60**	**Often**		**3.56**	**Often**

As can be seen from Table 8, remittances by the collection represented by the class to the treasurer were done every day but not in practice. This practice will keep the records updated as well as prevent the risk of loss or theft. In the case of other sections, their collection was not remitted to the Confederation treasurer/s. However, some organizations did not maintain a small cash fund intended to cover expenditures to prevent regular withdrawals from the account. The custodian of the petty cash fund has the authority to make payments from the fund that conforms to prescribed management policies (Kimmel, 2019). Further, organizations did not relate to actual and budgetary expenses. This instrument would guide the next student leaders regarding setting a budget for the next academic year. This would also assess the effectiveness of the budget set forth by the organization. The table also show that organizations spent the amount stated in the budget, evidenced by a cash voucher of the organization duly approved by the president and the adviser in cash disbursements.

Table 9: Cash Disbursementt Preparation

	Present			**Past**			**Adviser**		
	Total Frequency Score	**Weighted Mean**	**Verbal Interpretation**	**Total Frequency Score**	**Weighted Mean**	**Verbal Interpretation**	**Total Frequency Score**	**Weighted Mean**	**Verbal Interpretation**
1. Disbursements are by the approved budget.	63	2.63	S	71	2.96	S	27	3.00	S
2. CDV's are duly approved by the President of the organization and adviser.	24	1.00	N	24	1.00	N	10	1.11	N
3. Disbursements are supported by official receipts and acknowledge	96	4.00	O	93	3.88	O	33	3.67	O

d by the payee.									
4. Disbursements are supported by resolutions and cash disbursement vouchers.	26	1.08	N	26	1.08	N	29	3.22	S
5. Purchases of tangible assets are supported by canvass from suppliers.	47	1.96	R	60	2.50	R	32	3.56	O
6. The approving authorities approve 6. Disbursements on petty cash funds.	24	1.00	N	28	1.17	N	9	1.00	N
7. The organization has a policy on cash advances and liquidation.	31	1.29	N	31	1.29	N	9	1.00	N
8. Withdrawal slips are prepared once the CDV and resolution were approved.	43	1.79	N	43	1.79	N	9	1.00	N
9. The organization has a policy on cash shortage/overage.	26	1.08	N	30	1.25	N	9	1.00	N
10. CDV's are pre-numbered.	24	1.00	N	24	1.00	N	9	1.00	N
		1.68	**N**		**1.79**	**N**		**1.96**	**R**

Sometimes disbursement is not supported by the student leaders' resolutions showing that it was agreed among the organization's officers. The canvass of supplies and other tangible assets is not common among the organizations and policy on cash advances and liquidation. Besides, CDVs are not pre-numbered, and the policy on cash shortages or overage is not defined. Pre-numbering helps avoid transactions from being recorded more than once or, conversely, from not being recorded at all (Kimmel, 2019. It is noted that the primary goal of internal controls on cash disbursements is to ensure that cash is properly disbursed only after proper management authorization, for legitimate business reasons, and that all disbursements are properly registered. If management routinely reviews transactions then the potential for fraudulent activities to be uncovered serves as a deterrent for fraudulent behavior (Brown, 2011). Moreover, as far as record-keeping is concerned (Table 10), financial statements were always complied with by organizations at least once a semester based on their cash register and

other related reporting documents. The financial statement aims to convey an understanding and content of an organization's financial data (Rao, 2011). On the other hand, the inventory of unused accounting forms has sometimes been carried out by the officers, which means that the organization's materials and other assets have not been closely monitored.

Table 10: Record Keeping / Bookkeeping

	Present			Past			Advisers		
	Total Frequency Score	Weighted Mean	Verbal Interpretation	Total Frequency Score	Weighted Mean	Verbal Interpretation	Total Frequency Score	Weighted Mean	Verbal Interpretation
1. Financial statements are prepared once every semester.	71	2.96	S	70	2.92	S	29	3.22	S
2. The organization maintains a cash receipt book or similar cash monitoring record	49	2.04	R	49	2.04	R	26	2.89	S
3. Physical inventory of unused accountable forms is regularly conducted.	58	2.42	R	58	2.42	R	15	1.67	N
4. Recording is done by an officer other than the treasurer / cash custodian and the approving authorities.	55	2.29	R	55	2.29	R	20	2.22	R
5. Unused official receipts and other accountable forms are properly kept by a custodian other the enducer.	38	1.58	N	38	1.58	N	9	1.00	N
6. Audited and approved financial statements are reported to the members of the organization.	47	1.96	R	49	2.04	R	9	1.00	R
7. Cash collections and disbursements are regularly recorded in the	59	2.46	S	59	2.46	S	11	1.22	N

eISBN 978-967-2426-22-6
13th – 14th December 2020

cash receipt book.									
8. Bank reconciliations are made by the treasurer and audited by the auditor.	24	1.00	N	24	1.00	N	9	1.00	N
9. Physiscal counting of assets, inventories, cash and others accounts.	50	2.08	R	53	2.21	R	20	2.22	R
10. Reconciliation of Recievables, Payables, Investories and other assets. Prepared schedules.	34	1.42	N	40	1.67	N	15	1.67	N
		2.02	**R**		**2.06**	**R**		**1.81**	**R**

Recording day-to-day transactions and operations of student organization is important in achieving proper internal control system. In pursuit of organizational goals in terms of accurate financial statements, successful and productive activities, administratorsand board of directors of companies have recourse to the establishment of internal control mechanisms to ensure effective performance Crawford (2011). It is assumed that properly structured and implemented internal control mechanisms would usually lead to improved financial reporting practices and credible report that enhances the transparency management role of an organization (Doyle, et al. 2007).

Problems Encountered by the Officers and Advisers in terms of Financial Internal Control System

Table 11: Problems Encountered in terms of Internal Control System

	Present			Past			Adviser		
	Total Frequency Score	**Weighted Mean**	**Verbal Interpretation**	**Total Frequency Score**	**Weighted Mean**	**Verbal Interpretation**	**Total Frequency Score**	**Weighted Mean**	**Verbal Interpretation**
1. Absence of internal control policy manual.	105	4.38	ET	100	4.17	ET	43	4.78	ET
2. Lack of proper turn-over of financial documents from the previous set to the current set of officers.	106	4.42	ET	104	4.33	ET	42	4.67	ET
3. Non-functioning officers.	98	4.08	AET	98	4.08	AET	34	3.78	AET

4. Not adhering to proper accounting procedures due to the exigency of the transaction.	104	4.33	ET	104	4.33	ET	37	4.11	AET
5. Lack of training and orientation on financial management.	114	4.75	ET	108	4.50	ET	40	4.44	AET
6. Lack of financial management skills of officers.	80	3.33	O	80	3.33	O	34	3.78	AET
7. Organizational structures limit the implementation of segregation of duties (cash custodian, recording, and approval)	99	4.13	AET	99	4.13	AET	34	3.78	AET
8. Lack of orientation on the duties and responsibilities of the officers.	70	2.92	O	81	3.38	O	32	3.56	AET
9. The fund is controlled by an individual other than the officers.	74	3.08	O	74	3.08	O	22	2.44	A
10. Lack of support from the adviser/s of the organization.	67	2.79	O	73	3.04	O	25	2.78	O
		3.82	**AET**		**3.84**	**AET**		**3.81**	**AET**

Table 11 revealed that most "Almost Every Time" political and non-political student organizations do not have an internal control management system framework and a manual as a basis for handling their funds using that financial system. Cambridge Dictionary (n.d) described the policy as a collection of ideas or strategies of what to do in specific circumstances that have been formally decided upon by a group of people, a business association, a government, or a political party. Officers hold an elected position; therefore, they were subject to certain errands. Those who do not comply with the minimum standards of conduct will be individually responsible for restoring the scheme's damages, because errors and fraud can and do occur, it is vital to have protections to ensure that officers in the student organization can appropriately carry out their fiduciary duties. One way to do this is to introduce appropriate internal control over financial statements, as set out in the Internal Control Policy Manual. According to Zamzani et al., 2018, as mentioned by Ardhiani et al. (2020), the cash out process's internal security can avoid mistakes or theft such that cash outlays can be deemed to

eISBN 978-967-2426-22-6
13th – 14th December 2020

be successful. Accounting information on cash spending will be easier if it has appropriate and structured monitoring procedures. Internal controls are a framework, of policies, procedures, analysis and strategies put in place by the organization to prevent fraud, ensure the veracity and reliability of financial and accounting information and to protect the organization's financial assets, including but not limited to its cash flow (Schaeffer, 2014) Segregation of duties is a form of internal control.

The lack of turn-over of financial records from the previous group of officers was another issue the organizations faced. Too often, the organization leaders commit themselves to effectively leading their groups for the academic school year and, at the end of their term, leave. When this occurs, not all information on the lessons learned in the previous year is passed on to new officers, thereby slowing down their progress. Without taking the time to successfully transition new officers, organizations are missing the ability to maintain the momentum they built in the previous year. A time that could be used to drive the organization forward and reach new goals is focused on catching up. Non-functioning officers were among the challenges the organization had faced, thereby requiring officers to step into another's shoes. This may conflict with the concept of division of duties when example, the President on the approval authority prepares a cash voucher or a financial statement. Few officers have found that their funds were managed by persons other than officers, which should not be the case because their capacity to act as officers is limited, not to mention that the funds should be in possession of students, not with someone else.

Conclusion & Recommendation

The lack of specific manual and expertise in the accounting and internal control system had resulted in an organization with no clear direction of duties and responsibilities. This resulted in one officer performing the duties that are to be performed by other officers in the organization. Most of the organizations whose funds have not yet been deposited in a bank or other financial institution and others are in the hands of individual and officials who delineate the freedom of student organization in carrying out their function, as well as partially overcoming the goal of providing student organizations at the NEUST in general and San Isidro Campus in particular. As far as accounting activities are concerned, the organization typically carry out their work daily. However, some variations should be stressed for a stronger financial management system, such as creating a revolving fund and comparing real and budgetary expenditure. Organizational disbursement procedures are not yet in place. They need to be changed, particularly on the pre-counting of Cash Disbursement Vouchers (CDV) and the policy on cash advance, shortage, and overage.

In this conclusion, the researchers recommended holding annual training for the leader's program to manage its finances. In the same vein, a group of experts in this field may drop a manual of operation in financial and internal control systems for the political and non-political organizations of the NEUST-San Isidro Campus. The officers and advisers of different organizations together with the Office of the Students Organizations, Activities and Development (OSOAD), and the Office of the Student Affairs (OSA) must be the responsible offices for submitting the well prepared and audited financial statements of the organization. The audited financial statements should be posted on the organization's transparency board every after the event is conducted and facilitated by the organization.

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CYBER SECURITY AND MAQASID AL- SHARIAH: A CASE OF FACEBOOK APPLICATION

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Abstract: *Man has experienced a tremendous advancement in his way of communication due to the technological breakthrough which reached the apex in the recent years. Specifically, the importance of social media has become significant as it spans several spectrums of human life. Thus, cybersecurity is becoming an issue of paramount importance since the amount of information and technology available on cyberspace is skyrocketing. This study was an attempt to present the Maqasidic analysis of the benefits derived from the use of Facebook use as a social media platform, as well as the security threats facing cyber users while using the application. Using the Maqasid al-Shariah (The higher objectives of Islam) as the basis, the researcher found that Facebook users derive certain benefits from their Facebook use and this assists them to achieve Maqasid al-Shariah's higher objectives. Nevertheless, human beings are faced with certain security threats which hamper their achievements of these Maqasid higher objectives. The researchers then proposed some guidelines and principles by which cyber security can be best achieved through the Maqasid al-Shariah.*

Keywords: *Facebook, Cyber security, Maqasid al-Shariah*

Introduction

Man has witnessed a tremendous advancement in his way of communication due to the technological breakthrough realized in the recent years. The development of information technology fuelled by an overarching growth of computing and communication techniques has created a new perspective on how the society evolves, and how its needs and decision on the directions of its developments are determined (Gherheș & Obrad, 2016). Nowadays, the importance of social media in our lives has become palpable as it spans several spectrums, ranging from shopping and businesses to news reports and education. According to Ebere and Chibuike (2017), the growing trend of the World Wide Web has culminated in increasing the acquisition of knowledge and facilitating the sharing and dissemination of information. Since the advent of applications like Facebook, Twitter, Google+ and the likes, the difficulties faced by people in their endeavour to affect an efficacious communication from distance have been mitigated. Hence, Facebook has specifically become widely used all over the world since it was adopted by a population of 1.3 billion users, nearly the half of whom were mobile cell phone users (Zeitel-Bank and Tat, 2014). This population has considerably increased in the following year when Amanullah (2015) reported the figure to have mounted to 1.5 billion people. The inception of Facebook one and half decades ago marks a new phase in the history

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13th – 14th December 2020

of communication and interaction, in that people began to easily demonstrate their feelings of social belongings which is an important criterion of man as a social being (Spitzer, 2012 as cited by Zeitel-Bank and Tat, 2014).

Statistics reveals that using Facebook represents the behaviour of youth towards the internet worldwide; nearly half of the people between the ages of 18 and 34 log in to Facebook as soon as they are awake every morning. The research also shows that the average number of friends kept by a Facebook user amount to 130, in addition to the fact that each user is connected to an average of 80 pages, groups and events with an average of 205 photos uploaded daily (Statisticbrain, 2014).

A number of advantages and disadvantages have been attributed to the use of Facebook (Amanullah, 2015). Among its advantages are those proclaimed by Amanullah (2015) as networking, costlessness, its use for information gathering, propagation of Islamic da'wah, platform for Islamic brotherhood and unity, serving group interests, news medium, promoting business, entertainments and so forth. Nevertheless, as reported by Edith (2016), the use of social media, including the Facebook, is disadvantageous due to the possibility of the user to fall victim of cybercrimes such as cyberbullying and harassment, hacking/cyber warfare, online romance scam/catfish, cyber impersonation, online internet fraud, identity theft and so forth.

Hence, the need for cybersecurity by which the user's privacy is guaranteed is actually indispensable. In an endeavour to define the term cybersecurity, Dan Craigen, Diakun-Thibault and Purse (2014) contended that there is a paucity of literature which attempts to provide the definitions of cybersecurity, and the absence of a universally acceptable definition covering its multidisciplinary nature confines the term to a technical view, while other disciplines relating to it are ignored. Nonetheless, a number of definitions which capture different aspects of Cybersecurity are cited as follows:

According to Kumar (2015), cybersecurity can be defined as "technologies and processes constructed to protect computers, computer hardware, software, networks and data from unauthorized access, vulnerabilities supplied through the Internet by cyber criminals, terrorist groups and hackers" (p. 14).

The International Telecommunication Union (2009) also defined cybersecurity as "the collection of tools, policies, security concepts, security safeguards, guidelines, risk management approaches, actions, trainings, best practices, assurance and technologies that can be used to protect the cyber environment and organization and user's assets" (p. 25). Moreover, cybersecurity is defined, according to Canongia and Mandarino (2014), as "the art of ensuring the existence and continuity of the information society of a nation, guaranteeing and protecting, in cyberspace, its information, assets and critical infrastructure" (p. 19).

As can be noticed, a synthesis of these definitions reveals that cybersecurity entails both technical and non-technical activities, even though the former appears as predominant over the latter.

In their reading through the literature, Dan Craigen et al. (2014) identified five cardinal themes in cybersecurity as technological solutions; events; strategies, processes, and methods; human engagement; and referent objects (of security). Moreover, the main objectives that cybersecurity strives to achieve can be summarized into availability, integrity, and confidentiality (Buch, Ganda, Kalola & Borad, 2017).

Cybersecurity is becoming an issue of great significance since the amount of information and technology available on cyberspace is skyrocketing (Zulkarnaen et al., 2016). Moreover, the population of social media users increases almost on a daily basis, creating the challenge of vulnerability to the valuable information harboured by users (Das & Patel, 2017; Jahankhani et al., 2017). In an attempt to throw light on how users' information is attacked

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13th – 14th December 2020

online, Buch et al. (2017) identify twelve types of cybercrimes namely, hacking, virus, logic bombs, denial-of-service attacks, phishing, spamming, jacking, cyber stalking, data diddling, theft and credit card fraud, slicking attack, and software piracy.

The issue of cybersecurity and online privacy protection is of great importance in Islam. Islam sanctifies the private life by prohibiting any act of prying into people's private affairs or unveiling their personal information. The Qur'an emphatically denounces such an act as follows:

O you who have attained to faith! Avoid most guesswork [about one another] for, behold, some of [such] guesswork is [in itself] a sin; and do not spy upon one another, and neither allow yourselves to speak ill of one another behind your backs. Would any of you like to eat the flesh of his dead brother? Nay, you would loathe it! And be conscious of God. Verily, God is an acceptor of repentance, a dispenser of grace (Q, Al-Ḥujurāt, 49:18).

Elsewhere, the Qur'an declares the worldly and otherworldly consequences of breaching other people's privacy when it says:

Indeed, those who like that immorality should be spread [or publicized] among those who have believed will have a painful punishment in this world and the Hereafter. And Allah knows and you do not know (Q, An-Nūr, 24:12).

Kamali (2013) as cited by Badri (2014) argues that The term 'Maqsad' is a singular form of 'Maqasid' which denotes an objective, intent, goal and purpose. On the other hand, Maqasid al-Shariah is a phrase whose definition requires that the three elements namely 'Maqasid', 'al-Shariah' and Islam be defined (Saʿad bin Ahmad, 1429 A.H). Literally, the Arabic term Maqasid as the plural form of 'Maqsad' carries five meanings, namely targeting something, straightness of path, justice and equity, moderation, and breakage of any nature (Saʿad bin Ahmad, ibid). However, targeting something or intention to achieve it is observed as the closest to the operational meaning of Maqasid, although straightness of path and moderation are also pertinent. Nevertheless, only the fourth meaning does not agree with the context in this regard (Saʿad bin Ahmad, ibid).

The Arabic word/term 'al-Shariah' in a literal sense is basically used to mean a source of drinking water. It also denotes religion, a way of life and tradition (al-Qurtubi, 2009). Moreover, the Arabic term/word 'Islam' is literally used to denote submissiveness, subservience and peace (Ibn Manẓūr, 1999).

Operationally, Maqasid al-Shariah can be defined as the targeted objectives that the Islamic rulings aim to achieve (Auda, 2007). According to Wahbah al-Zuhailiy (1985), Maqasid al-Shariah can be defined as the meanings and objectives observed in the rulings of Islamic legislations, or the objectives to be achieved in the Islamic law and the secrets behind each ruling decreed by the Allah, the Law Maker. Any legislation made by Islam is either with a view to attracting interests to humans or for the purpose of warding off harms against them. According to Auda (2007), for a purpose (maqsad) to be valid, it must culminate in the realization of interests (maslahah) or the avoidance of harm and/or mischief (mafsadah).

As propounded by Imam al-Ghazali, Paiizi and Ibrahim (2017) reaffirmed it that the general bases on which the Maqasid al-Shariah seek to accomplish its objectives of attracting interests and warding off harms are Dīn (protection of religion), Nafs (protection of soul), ʿAql (protection of the human intellect), Māl (protection of wealth), and Nasl (protection of posterity). In addition, Al-Qurafī (2007) as cited by Paiisi and Ibrahim (2017) introduced ʿIrd (protection of dignity) as a complementing element to the aforementioned. Furthermore, the three levels in on which these Maqasid al-Shariah are achieved are identified as al-Ḍarūrīyyāt (the essentials), al-Ḥājiyyāt (the complementary), and al-Taḥsīniyyāt (the embellishment) respectively. Thus, in operating the five maqasid, the level of the operation must be observed

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13th – 14th December 2020

and hierarchical order but be adhered to. In other word, the Tashiniyyat level cannot be achieved at the detriment of daruriyyat.

So long as the activation of cybersecurity guarantees the safety of the privacy of social media users, especially Facebook, the Maqasid al-Shariah have not only subscribed to such a measure but also laid down certain important guidelines to achieving this purpose.

Thus, this study is an attempt to present the Maqasidic analysis of the benefits derived from Facebook use, as well as the disadvantages from which users suffer in using the application. Moreover, the Maqasidic guidelines and principles by which cyber security can be best achieved will also be highlighted in this article.

A Brief History of the Facebook

According to Brugger (2015), the website, thefacebook.com, was opened on the February 4, 2004 for students of Harvard University, Cambridge, the purpose of which was to maintain a strong connection among one another. Coed Staff (2009) has defined the Facebook as "an online directory that connects people through social networks at colleges and universities" (p. 2). The website provided each Harvard student with a page on which to create their profile and personal information. At that time, the candidate who wished to create a profile with thefacebook.com should be above 18 years, and should have an email address ending in harvard.edu. It was created by a 19-year-old Harvard University, Mark Zuckerberg, in collaboration with other four Harvard University students namely, Eduardo Saverin, Dustin Moskovitz, Andrew McCollum, and Chris Hughes.

According to Coed Staff (2009) as cited by Brugger (2015), not long after its invention, the Facebook began to include other American universities to the network. Between February and March, Stanford, Columbia and Yale were added, while New York University, MIT, Cornell University and others were included in March. At this point, students were invited from other universities for suggestions on the improvement of the created page. By May, 2005, Facebook had achieved a rapid spread by having 800 American universities using the website. In September, 2005, it opened for American upper-secondary schools for joining, and in the same month the name 'the Facebook' was changed to 'Facebook'. In May, 2006, employees of certain companies like Apple and Microsoft were allowed to use Facebook (Boyd and Ellison, 2007 as cited by Brugger, 2015). In September of the same year, the website became usable for anyone that is above the age of 13. And subsequently in 2008, Facebook was made available in languages other than English such as Spanish, German, French, Japanese, and Italian.

Literature Review

Our literature review in this present work covers most of the researches conducted on the impacts of social media on individuals and society at large, as well as the analysis of the advantages and disadvantages of social media in the light of the five/six Maqasidic higher objectives.

Amanullah (2015) undertook a study in which he analysed the impacts of Facebook on individuals and society at large under the shade of Maqasid al-Shariah. Using the descriptive and analytic methods, the researcher came up with comprehensive Islamic ethics and principles for Facebook users. He also identified the advantages and disadvantages of using Facebook and presented a Maqasidic analysis of them in the light of the five/six higher objectives of al-Shariah. Amanullah concluded that Facebook has both advantages that help to achieve the five al-Shariah higher objectives, and disadvantages that impede the achievement of these objectives. He concluded that overcoming those disadvantages necessitates being selective of

eISBN 978-967-2426-22-6
13th – 14th December 2020

the beneficial and non-contradictory to the principles of Islam, restricting communication with people of the opposite sex to instances of necessity, posting sexual-arousing videos and pictures and avoidance of writing in an obnoxious manner, etc.

Abubakar, Draman and Zuhid (2018) carried out a study to identify the behaviours of Muslim users of social media among the inhabitants of Kuala Terengganu, Malaysia, and ensure the extent to which their behaviours are influenced by the factor of values, religiosity and the concept of Maqasid al-Shariah. In an effort to achieve the objectives of this research, a self-administered questionnaire was employed to obtain data from a group of 120 Kuala Terengganu residents who were chosen through a multi-stage random sampling. The findings indicate all the factors that determine Muslim behaviours and level of religiosity as the strongest determinants.

Furthermore, Paiizi and Ibrahim (2017) conducted a study to explore the problem of cyber war faced by cyber space in Muslim countries and how they can be addressed in the light of Maqasid al-Shariah. In the effort to achieve the objectives of this research, the researchers analysed the entire five/six aspects of human life covered by Maqasid al-Shariah, and identified the aspects that are adversely affected by cyber-attacks. Moreover, the solutions proffered by the higher objectives of al-Shariah were proposed as the most effective measures by which cyber war can be curbed. The researchers concluded that the threats posed by cyber-attacks mostly affect both human life and intellect, and that protection of life and intellect in the light of Maqasid al-Shariah be prioritized.

Another study that is of pertinence to this research was conducted by Awan (2016) in which he chose 100 different Facebook pages from online virtual communities in Britain. Having analysed the posts and comments in the pages, the author found 494 instances of Islamophobic hate speeches which demonize and vilify Muslims (through negative attitudes, discrimination, stereotypes, physical threats and online harassment) as terrorists, rapists and warlike people who deserve deportation. Muslim women wearing the Niqab/Hijab were also portrayed as security threat.

Moreover, Das and Patel (2017) carried out a study to explore the issues of cybersecurity that are peculiar to social networking sites. In the effort to achieve the objectives of this research, the frequently reported social media cybercrimes in India in a period between 2011 and 2015 were analysed. Also, the security concerns and challenges on Social Networking Sites (SNS) such as malware, phishing attacks, identity misuse, and third-party application threats were discussed at length. The researchers concluded by giving some recommendations on how to ensure safety from invasion into people's privacy online, some of which are that companies should make some policies for the use of emails in order that they are confused spam mails and/or phishing, good quality should be used by individuals and companies, authentication of every website to prevent cyber attackers and so on.

In addition, Zulkarnaen, Rasdan, Mat Daud, Afendi and Hery (2016) undertook a study to identify the critical cybersecurity challenges facing social media users, and discuss the criticalness of these cybersecurity risks based on the three principles of information security requirements. In an attempt to achieve the objectives of this study, the researchers employed a survey through questionnaire to obtain data from a group of 33 respondents chosen from different Malaysian cyber communities and knowledge societies. The findings indicated identity theft, information manipulation, cyber assault/ bullying, information theft, espionage, and privacy violation as the most critical cybersecurity risks based on the three core principles of information security requirements namely, confidentiality, integrity and availability respectively.

eISBN 978-967-2426-22-6
13th – 14th December 2020

With this literature, it becomes evident that not enough research has been conducted to address the issue of cyber security in the perspective of Maqasid al-Shariah with a focus on social media applications, especially Facebook.

Maqasidic Analysis

This part presents a Maqasidic analysis of the benefits which can be derived from the use of Facebook as well as the security threats resulting from its use. Benefits of Facebook to Muslim are incontestable when they are used in accordance with the Maqasid al-Shariah. As Amanullah (2015) proclaims, Facebook is advantageous in that it is used for networking, it is costless and easy to administer, it is used for information gathering, propagation of Islamic da'wah, platform for Islamic brotherhood and unity, it serves group interests, it is a news medium, it promotes business, it is a source of entertainments, and used for organizing events. All of the above-mentioned benefits are considered of higher benefits in Islam, though the levels of their benefits may differ in priority according to the three levels i.e., daruriyyat, hajiyaat and tahsiniyat.

Benefits derived from Facebook

Networking

Facebook is a forum that can be used as a means of connecting oneself easily with one's family members, relatives, friends, and colleagues, especially those with whom one has lost the contact. This functionality helps humans to know one another as the vicegerents of Allah on earth. Allah says:

"O mankind, We have created you from a single (pair) of a male and a female, and made you into nations and tribes, that you may know each other. Verily, the most honoured of you in the sight of Allah is (he who is) the most righteous of you. Surely, Allah has full knowledge and is well-acquainted (with all things)," (Al-Hujurat, 49:13).

Having achieved the goal of knowing one another both as siblings in humanity and specifically as Muslims, they can work hands-in-hands with empathy to ensure they attract benefits to one another and ward off evils against one another. This can actually culminate in the achievement of the higher objectives of al-Shariah which are protection of life, religion, intellect, progeny, and wealth on the level of Daruriyyat and Hajiyyat in the Maqasidic paradigm.

Cost-lessness

Though using the application of Facebook may incur buying data, the free of charge nature of Facebook services serves man the opportunity of obtaining these advantages without having to spend huge amount of money before getting to know people around the globe. It can be said that this application helps the users to safe their wealth that should have been spent using some other social media applications. Hence, Facebook helps to achieve the al-Shariah higher objective of wealth protection.

Information Gathering

No one can deny the fact that Facebook users have the opportunity of gathering important information they are required of with ease and less cost. For instance, a researcher who uses Facebook would find it easy to elicit his/her required information from a huge number of respondents through Facebook. Thus, it serves as an indispensable research tool in this modern era which facilitates the achievement of the protection of human intellect stressed out in the Maqasid al-Shariah. Also, all other al-Shariah higher objectives can be achieved in this regard,

eISBN 978-967-2426-22-6
13th – 14th December 2020

depending on the focus of the research whose data is gather via Facebook. Moreover, Facebook functions as a forum through which people share their opinions within themselves. This indubitably would help individuals, organizations, and government to be aware of public opinions and suffers of people and thus, take necessary measures to ensure that their problems are solved.

Propagation of Islamic Da'wah

Among the advantages of Facebook is its tendency to be used as a means of disseminating the message of Islam to the entire world as well as refuting the malicious accusations passed against Islam in their effort to defame the religion and Muslims. Since there is no any regulation which deprives Muslim scholars from this mission, it can be said that Facebook functions to achieve the higher objective of the religion protection.

Platform for Solidarity among Muslims

As stressed by the Qur'an and Sunnah, unity among Muslims is one of the important goals that Allah (SWT) has emphatically called for their achievement on earth. Allah says: "And hold fast, all together, by the Rope which Allah (stretches out for you), and be not divided among yourselves," (Al `Imran, 3: 103). In his symbolism of the real picture of the unity and solidarity to which Allah (SWT) enjoins, the Prophet (SAW) says: "The similitude of a Muslim to his Muslim fellow is that of a compacted building part of which holds the other". The narrator said: "Then the Messenger of Allah joined together his hands". So long as the Facebook performs the function of connecting people worldwide, it becomes easier for a vast number of Muslims the world over to connect themselves with their fellow Muslims and enlighten one another about Islam. This functionality, in other words, can help tremendously to achieve the al-Shariah's higher objectives of protection of religion, life and intellect.

Serving Group Interest

The nature of Facebook application which allows the creation of groups actually gives room for setting up several groups, be it for education, business, and others. Members of the groups created have the opportunity of sharing among themselves important information which would enrich their knowledge and update them of the recent developments in their respective educational fields and professions. This leads to the achievement of the Shariah's higher objective of protection of the intellectual capacity of people.

News Medium

In the Facebook platform, news about the current issues regarding the education, politics, economy, health and wellbeing, security and so on of different states throughout the world is broadcasted. Even some of the important news which hardly average people access via the mass media can be accessed by the overwhelming majority of people through their Facebook platforms. People are being kept abreast of the current situations of their respective states and government, leading to the achievement of the five higher objectives of al-Shariah, depending on the aspects that the news touches.

Business Promotion

One can use Facebook as a means of creating the awareness of one's business to a large population of people in the nook and cranny of the world. This is achieved by advertising a particular product/service or posting articles on the news feed for the Facebook community to

eISBN 978-967-2426-22-6
13th – 14th December 2020

access. This helps the user to minimize the money that should have been spent for this purpose, and thereby achieves the Shariah higher objective of wealth protection.

Source of Entertainments

Some of the functionalities provided by Facebook are meant to amuse the user. Activities like commenting on one's friend's postings, viewing videos, debating with other users on certain matters, and playing games are part of the examples in this regard, so long as they are not contradictory to the Islamic ethics both the functionalities and how they are approached. In a nutshell, this aspect of Facebook's functionality helps the user to relax upon his/her exhaustion and thereby ensures the achievement of the enhancement of human intellectual capacity as ordained by Allah (SWT).

Medium for Organizing Events

Using Facebook facilitates the organization of important events like conferences, workshops, and seminars worldwide. Various events which span several spectrums of life like religion, education, politics, health and wellbeing and others can be successfully organized with the aid of Facebook and thereby, leading to the enlightenment of users and the achievement of increment in the capacity of human intellect as aimed by Shariah.

Security Threats that result from the use of Facebook

Research has reported cyberbullying and harassment, cyberstalking, hacking/cyber warfare, catfishing, online internet fraud, and identity theft as the unethical acts that frequently take place on Facebook platforms (Ahmad, Ismail & Arina Nasir, 2016, Chew Jian, 2014; Edith, 2016; Lai, Mohamad, Lee, Mohd Salleh, Sulaiman, Rosli & Chang, 2017). This part shall be devoted for the Maqasid analysis of the aforementioned security threats arising from the use of Facebook.

Cyberbullying and Harassment

Willard (2006) as cited by Lai et al. (2017) defines cyberbullying as any barbaric act done to another cyber user through which harmful materials (e.g., pornographic text, photo, and video) are posted, or "using other means of social aggression through the internet or any other digital technologies" (p. 2). Potha and Maragoudakis (2014) contend that cyberbullying may either take place on one's personal website or through social networking sites (e.g., Facebook, twitter, Instagram and so on), email, chat rooms, message boards, instant messaging or cell phones. Cyberbullying adversely affect the bullied, those who bully and the witness of bullying, causing them physical and mental disorder such as depression, anxiety, and low self-esteem (Lai et al., 2017). Below is an example of cyber bullying found on Facebook:

In a nutshell, cyberbullying and harassment are antithetical to the principles of Islam. Allah says: "Do not transgress. Indeed, Allah does not like transgressors" (Qur'an 2: 190). It is also prohibited for a Muslim to intimidate other Muslims verbally, let alone by physical attack. In a hadith narrated by ʿĀmir bin Rabīʿ (May Allah be pleased with him), a man took the shoes of his fellow and hid them with the intention of joking. Then, this was related to the Messenger of Allah (SAW) who said: "Do not terrify a Muslim. Indeed, terrifying a Muslim is a great wrong doing" (al-Targhīb Wa al-Tarhīb: 4129).

Cyberstalking

According to Buch et al. (2017), cyberstalking is a new cybercrime by which a person is traced or pursued online (Buch et al., 2017). Meloy and Gothard (1995) as cited by Benjamin, Zhang,

eISBN 978-967-2426-22-6
13th – 14th December 2020

Wang, Wu and Siponen (2013) define stalking as "the wilful, malicious and repeated following and harassing of another person that threatens his or her safety" (p. 5). Although cyberstalking is not as fatal as physical offenses like raping, murder and robbing, it is found as causing perpetual psychological trauma, the effects of which could be changes in sleeping and eating patterns, anger, depression, nightmares, anxiety, helplessness, fear, shock and disbelief. Cyberstalking has caused a number of victims to lose their jobs owing to poor performance that results from fear and anxiety, while others have been compelled to lavish a huge amount of money in their effort to relocate to other places in which to feel more secured (Chew Jian, 2014).

An instance of cyberstalking is that of Lee David Clayworth, a former Vancouver teacher who befriended a 29-year-old Malaysia girl, Lee Ching Yan for a few months. Nonetheless, they broke up in 2010 and his ex-girlfriend began to post his naked pictures on Facebook. She also tagged him with the term 'sexual addict' by accusing him of having sexual relations with his underage students (Matyszczyk, 2013 as cited by Chew Jian, 2014).

Cyberstalking, which is a negative effect peculiar to Facebook, is actually an impediment against the achievement of protection of life, intellect, and dignity which Shariah has stipulated. Islam has prohibited any act of spying on others and prying into people's affairs. Allah says: "And do not spy or backbite each other. Would one of you like to eat the flesh of his brother when dead? You would detest it. And fear Allah; indeed, Allah is accepting of Repentance and Merciful (Qur'an 49: 12).

Hacking/Cyber warfare

Yar (2006) as cited by Jahankhami, Al-Nemrat and Hosseinian-Far (2014) defines the above term as "an unauthorized access and subsequent use of other people's computer systems" (p. 158). It is an offense committed by an intruder who accesses one's computer without one's knowledge. Hackers are usually computer experts who make use of their computer skills to achieve a treacherous purpose like SQL injections, PTF password theft, and cross site scripting (Buch et al., 2017).

If a Facebook account is hacked, all the important personal information (e.g., ID number, password, user name, bank account and pictures) that the user has secured on their newsfeed or elsewhere is stolen. However, the issue of hacking is a serious security threat to the Facebook users causing them to lose their bank deposits and exposing their secrets. The same thing could also happen to their friends on their platforms.

For example, a Facebook account which belonged to Mark Zuckerberg, the company's co-founder and CEO, was hacked in 2011, leading to the leakage of his personal information (including his 14 private photos) to an information sharing website under the title, "It's time to fix those security flaws on Facebook" (Burnham, 2011 as cited by Chew Jian, 2014).

This phenomenon hampers the achievement of the Shariah's higher objectives of protection of life, wealth, and dignity. Islam prohibits all sorts of evil acts that humans commit against one another. Allah (SWT) says: "Say, "My Lord has only forbidden immoralities – what is apparent of them and what is concealed – and sin, and oppression without right" (Qur'an 7:33). In addition, the Prophet (SAW) forbade Muslims from any acts that are harmful to the humanity in general. He says: "No harm should be inflicted on others nor people should reciprocate harms among themselves" (Imam Malik 2:746).

Catfishing

The term catfishing is defined by Harris (2013) as a deceptive activity involving the creation of a fake online profile for deceptive purposes. Some male users may appear on their Facebook

eISBN 978-967-2426-22-6
13th – 14th December 2020

profiles as attractive cute girls with the intent of luring males into deceptive romantic relationships the aftermath of which could be a great financial loss. A number of 83.09 million accounts on Facebook have been discovered as fake (Fire, Kagan, Elyashar, & Elovici, 2014).

An illustration of catfishing was the case of Jennifer, a woman from Buffalo, and a mother of two, who had been single for almost 15 years. On a dating website, she met a man with whom she was engaged in a strong relationship. The man consequently proposed to her. Having depicted himself as a business man, he once informed her of his visit to one of his jobs overseas. At this time, Jennifer was eager to meet him in person. However, he suddenly called Jennifer and requested from her an amount of money under the excuse that since he had left for abroad, he could not easily access his bank accounts. Once the requested amount of money was sent to him, the man turned out to be an online romance scammer. This actually resulted in Jennifer losing her life's savings of $50,000 (Moretti & Ciotta, 2015 as cited by Edith, 2016).

Catfishing is a serious security threat to the use of Facebook which could deprive the users from the right to protection of wealth which the Shariah has stipulated. Islam prohibits any attempt to usurp people's wealth. Allah says: "Any do not consume one another's wealth unjustly (Qur'an 2: 188).

Online Internet Fraud

Online fraud is defined as the use of online facilities to conduct dubious business transactions with the intent of deceiving or defrauding persons, organization or governments (Moore, 2014 as cited by Alanezi, 2015).

It is an act of duping the user into unveiling his/her confidential information such as credit cards, bank account details, and other precious information by appearing through an email as a reliable business entity. Their message may request from the user to update, confirm or validate their account information. It is a technique of gaining access to the user's information whereby the attackers develop a website that resemble the legitimate one and then ask the user to provide their confidential information. Once they do what they are required of, they get into troubles (Das & Patel, 2017; Jahankhani et al., 2017). An instance of online internet fraud is given below in which people are tricked into unveiling their personal information:

Nevertheless, online internet fraud is contrary to the ethics of Islam in that it hampers the user from achieving the Shariah's higher objective of protection of wealth as it causes them to lose their wealth. As earlier stated, Islam prohibits an act of usurping people's wealth unjustly. Allah says: "Any do not consume one another's wealth unjustly" (Qur'an 2: 188).

Identity Theft

According to Merriam-Webster (2017), identity theft can be defined as the illegal or unauthorized use of personal information belonging to someone else for one's own benefit. There are several kinds of identity theft that can be experienced in daily life. It could be financial identity theft which done to the user' bank accounts and financial information, insurance identity theft, medical identity theft, criminal identity theft and many others (Stroup, 2014). Identity theft has become so rampart that a huge number of social media users (including Facebook) have fallen victim over the years (Reza, Rakhman & Bangera, 2016). An illustration of identity theft is the case of Alexander Paul from North Miami who stole identities in order that he could claim the tax refunds from innocent people. According to the report, he successfully claimed more than 109,322 US dollars from federal tax refunds (Department of Justice, 2015). Having investigated and found several evidences to buttress his conviction, Paul

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13th – 14th December 2020

was sentenced into a 31-month jail, three years supervised release, and was compelled to pay 18, 469 UD dollars in restitution (Internal Revenue Service (IRS), 2015).
The phenomenon of identity theft is indubitably one of the cyber security threats which hamper Facebook users from achieving the Shariah's stipulated protection of life, wealth, and dignity. This is because the information stolen could lead to the loss of user's wealth and exposure of their secrets to the public.

Conclusion and Recommendation:
Based on the discussion above, this study found that there is a number of advantages as well as security threats arising from the use of Facebook. These advantages lead to the achievement the Maqasid al-Shariah to a certain extent. However, the security threats posed by this social media application stand as impediments to the achievement of these objectives. Thus, the following suggestions are proposed based on Maqasid al-Shariah in order to ensure that the security threats on Facebook are rectified:

Being cautious of viruses
Like any other social media platforms, Facebook can be infected by viruses, leading to the theft of valuable information of users. Hence, if any link or image is sent to the user from an unknown or suspicious source, or an icon and/or application is automatically installed from an untrusted website, the user has to not open it as it could cause them harmful effects.
Minimizing the posting of Secrete Information
Since it is not fully guaranteed that all the valuable information kept on Facebook will be secured due to the presence of several unethical acts through which the information is rendered vulnerable, it becomes necessary for the user to minimize (if not avoid) the information posted on Facebook so as to reduce the risks of falling victim of these vulnerabilities.

Ignoring response to Spam
Spams are usually sent via social media such as Facebook, some of which are disastrous to the users. Hence, it is suggested that users should disregard any spam sent to their Facebook platform as a remedy against cyber-attacks.

Adherence to the Islamic Ethics
One of the ways by which cyber security can be maintained on the Facebook platforms is that Muslims should abide by the principles of discipline in all their activities on Facebook. All acts of treachery, stealing, and prying into other people's secrets should be avoided in their actions on the platform.

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MALAYSIAN-OMANI HISTORICAL AND CULTURAL RELATIONSHIP[34]

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Abstract: *Current re-emergence of global maritime activity has sparked initiative from various nation in re-examining their socio-political and cultural position of the region. Often this self-reflection would involve the digging of the deeper origin and preceding past of a nation from historical references and various cultural heritage materials. From this, realisation of the pattern in maintaining an empire or enterprise from the immediate ancestral society could be turned into a model or benchmark in developing the present and future planning of the nation. In the context of Islamic civilisation development along the Indo-Pacific seaboard the Omani and Malay nations are the two integral entities which had assumed their central role as seafarers, traders, rulers and travellers in maintaining the dynamics of the region and this happened as early as the Islamic period of the 9th and 10th century CE up till 16th and 19th century when series of European colonial infiltration disrupted greatly the balance of this classical network. The Kitab at-Tarikh Silsilah Negeri Kedah for instance presented a vivid story of an Omani captain and his ship in early 1700s whom had come into contact with Kedahan people. The cultural heritage of the Arabian Gulf brought mainly by the Omanis could even be found there such as a fabric product known as Baju Maskat and a kind of delicacy known as Halwa Maskat which signal that the cultural hegemony of the Omanis indeed exceeded their immediate political boundary.*

Keywords: *Malaysian; Omani; Historical; Cultural; Relationship*

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13th – 14th December 2020

Introduction

This paper is based on a research conducted aiming to discover the significant historical references and cultural heritage regarding the Omani nation's contact with the classical past of the Malaysian nation which originated from as early as 9th and 10th century CE up till 18th and 19th century CE.

It will present explicit Arabo-Persian, and Malay written accounts which related the direct and indirect contact of Omani nation with ancient Malay ports. Third section will finally present the cultural heritage which further compliment the previous chapter and it comes in the forms of; the classical Abbasid and Chinese dynastic potteries, the Omani textile and Baju Maskat; and third the Indo-Arabic cuisine known as *Halwa Maskat*.

Note that the Southeast Asian under Srivijaya enterprise became the middleman which helped distribute Chinese merchandise into the Indian Ocean. This seafarers for sure landed in all port of calls in between to obtain foods, woods and other needed materials and in various early Abbasid period historical records we may find their presence across the Indo-Pacific region resonating a kind of proto naturalist and anthropologist mind describing the society they saw and mingled with, on how their life looked like, their habitat and riches which to be found among their natural environments. Initial Arabic aspiration towards anything Chinese - regarded as the major and most advance civilisation in the world - somehow overshadowed the role of Southeast Asian ports until 9th century when the massacre in Canton port of South China as mentioned by Idrisi in his *Nuzhat al-Mustaq* had more than 120 000 western traders killed by the rebels and forced them to resettle at Champa, Malay Peninsula and Sumatra when from thereon no Arab or Chinese ship passed further.[35]

For years to come they only meet in the Malayan hubs situated in the middle of the seafaring journey. In addition to the aforementioned, among the early pioneers of Omani Muslim seafarers were Abu Ubaidah Abdullah bin al-Qasim, an *Ibadhi Syeikh* who went to China bringing goods such as rope and *sobir* (a type of herb) with him shortly before 758CE rebellion.[36] Second example would be an-Nahdhor bin Maimun of the people of Basrah. He was of Omani descent who went to China in between the end of 8th century and early 9th century CE.[37] Several orientalist scholars also found that some of the Muslim graves in China was indeed are showing its origin from Oman and Arabian Gulf.[38] According to al-Lawati (1994) the remains of a mosque known as al-Dzikra could still be seen in China.[39] This era was indeed the opening of the Arab chronicle to include their lore with experience encountered with the Malays in subsequent centuries.

Starting as late as 12th century Al-Idrisi noted that the Omani trade shifted to Aden as it proven to be a new route to cater Indian trade patronized by the Ayyubids and the Mamluks of Egypt and Syria. From the southern Arabian Ports of Marbat and Dzofar some commodities were traded to India such as the Arabian Horse in exchange of spices. The focus in the east was the disintegration of Srivijaya following the fall of Song and Abbasid and it gave way for new Islamic sultanates with Red Sea inclination to emerged. In 1260s the Sultanate of Samudera-

[35] Paul Munoz (2006), Early Kingdoms Indonesian Archipelago and the Malay Peninsula. Singapore: Editions Didier Millet. p. 145.
[36] Account by Abu Sufyan Mahbub al-Abdi who died in the first half of 9th century CE Arsyad Mokthar (2017), Rihlatus Sirafi: Catatan Pengemberaan di Alam Melayu, China, India dan Afrika. Pulau Pinang: Baytul Hikma
[37] Ibid.
[38] Ibid.
[39] Malallah al-Lawati (1994), Oman and Entrepot on the Maritime Trade Routes, International Seminar of The Contributions of the Islamic Culture for the Maritime Silk Route. Oman: Ministry of National Heritage and Culture.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Pasai emerged while according to *At-Tarikh Salasilah* Negeri Kedah a century earlier in 1136CE the Buddhist kings of Kedah converted to Islam by a Sufi from Baghdad.[40] This rare reference on the Gulf area is indeed interesting and Kedah will provide to be a close-knit counterpart of the Gulf particularly of Oman from 9th century CE until the time of colonial full domination following the establishment of English settlements in Penang (1786), Province Wellesley (1800), Malacca and Singapore (1824). Omani factor on the Malay Peninsula which will be demonstrated in the following section also had its ancient origin, where the early king of Kedah was stated in local annals to had come from the land of Rum and Gumarun, both were overlapping locality situated in the port city of Hormuz. The king was stated to come from a branch of a royal family ruling the Gulf region.[41]

Many of the Omani reference in the Malay *hikayats*, *syairs* and *pantuns* were mainly taken from the account of the Malays who encountered with the various mercantile products of the post Portuguese Oman from 1600s up till 1800s. for example, the reference on Oman occurred to be associated with Muscat products in the form of textile industry and edible material dubbed as 'Muskati' or 'Maskati'. This cultural material products was mentioned in the Malay *hikayat* the Maskati horse used in a Persianate legend called *Syair Madhi* depicting a hero named Badrul Jabil (Jamil) and Rauza Khan who were fighting a tyrant back in their home in Persia.[42] in another collection, similar story can be found in *Tarikh Silsilah* Negeri Kedah, the official chronicles of Kedah, in which mentioned the story of the son of the late sultan , Tengku (Tunku later sultan) Muhammad Jiwa whom for several years had embarked in a soul-seeking journey which had him arrived at the feet of a certain saintly scholar known as Syeikh Abdul Jalil al-Mahdani(Mahdali). For years he studied under the Syeikh from Palembang, to Java and until they settled at Malabar in southern India were eventually his heart was moved to return back home. It is here that they took an *Omani Baghalah* (a type of vessel, also known as dhow in East Africa) which was on the way to Margi (Mergui) in southern Myanmar. The Muscati shipwright (jeragan) in such fashion had his luck to be immortalize in the history of the Malay nation as he then followed southward the returning party where the future sultan was onboard up until they reached Langkawi Island several miles off the coast of Kedah. Today, the place is known as Selat Beghalah Balek located south of Kuah in between Tanjong (Cape of) Chawat and Pulau Bumbon.[43]

The rare occurrence of direct Omani maritime involvement per se in various Malay literature signifies that the Malays were not accustomed to meet the formers after the time their literature industry began to mature in between 17th and 20th century and thus the Omanis were left behind insignificant in the literate Malay society except in few cases as demonstrated by the story from *At-Tarikh Silsilah* Negeri Kedah and also in cultural heritage in the form of material products which will be demonstrated in the following section of this paper.

The Omani Cultural Material Heritage in Malaysia

References on historical records are not enough to prove the whole discourse regarding the presence of Omani elements in a particular foreign setting, and often alongside textual references, cultural material and heritage studies are needed as cross-reference to strengthen or

[40] Muhammad Hassan bin To' Kerani Mohd. Arshad (1968), At-Tarikh Salasilah Negeri Kedah. Kuala Lumpur: Dewan Bahasa dan Pustaka.
[41] Ibid.
[42] Abdul Rahman Kaeh (1997), Syair Madhi Citra Melayu Nusantara. Kuala Lumpur : Perpustakaan Negara Malaysia.
[43] Kedah Dari Segi Sejarah (Terbitan Khas Pulau Langkawi). 1971. Cawangan Kedah Alor Setar: Persatuan Sejarah Malaysia

eISBN 978-967-2426-22-6
13th – 14th December 2020

compliment the former. Some evidence comes in the form of archaeological remains which in majority remained sealed from general knowledge except via systematic excavations or deep archaeological analysis; secondly, via ethnic study where we may find several living evidences of the distant or near past where physical and material items are still at use among particular local society such as in the form of traditional attires, metalworks, ceramics, woodcrafts, cuisines, books, drawings, et cetera. The Omanis historical presence in Malaysia as presented in the previous section in this sense may be represented by many of those but the most obvious would be that of Baju *Maskat*, a type of northern Malaysian traditional attire, and secondly that of Halwa *Maskat* which is a traditional Malay delicacy also popular initially in northern Malaysia. However, both attested to the pre-eminence of Omani cultural material heritage in the Indo-Pacific region specifically in Kedah where various historical records are found in reference.

Baju Maskat

One of the most significant cultural material evidences of Omani nation in Malaysia, but less known by many would be the existence of a classical fashion top known as Baju Maskat. In Malay language throughout the Indo-Pacific region baju means a top garment worn by either men and women alike while 'Maskat' in this sense is a subject of it being Muscati in origin which has been the Omani's biggest emporium for centuries. Therefore, the cloth somehow connected with the Omani nation and it had become the symbol of Malayan nobility preference for over at least two centuries starting from the arrival of the colonial power in the late 16th century. It is an important evidence that shows the influence of the Omani culture in the region and its presence also had a long-lasting effect especially around the sultanate of Kedah Darul Aman in northern modern Malaysia.

The problem of determining the origin of Baju Maskat (or Muskat) is that there is no mentioned on the details of how it came for the first time to the region, the matter of whom had brought it and why the local Malays particularly of Kedah Sultanate in Malaysia came to adopt it as a part of their traditional attire will remain without an exact answer due to the inexistence of precise historical record mentioning the process. However, upon future examining the material references it can be generally assumed, the *Maskat* cloth might have come together with a group of people most certainly traders in contact directly or indirectly from around Oman. This means that a wide array of maritime community is involved who are living in Oman proper themselves, or from those frequenting Oman but originally came from the seaboards of Yemen and Hadhramaut; the Indians of Gujarat, Malabar, and Bengal; and the Sumatrans whom were known to had also frequented the many ports of Kedah since early century of the Common Era and thus such continuous presence brought along Omani commodities to the ports of Old Kedah (Bujang and Kuala Muda) and those of New Kedah (Kuala Perlis, and Kuala Kedah) in Malaysia.[44] The advent of early modern Kedah in between 18th and 20th century saw the rise of Kuala Muda and later Penang Island as the centre of trade items flowing in and out of the region laden to India and Arabia. As we had discussed in the previous section it is clear that following the English domination of Oman in 19th century, direct Omani communication with the Far East and Southeast Asia had dropped to almost non-existence and this was replaced by other communities taking advantage from the colonial

[44] Coromandel and Malabari communities were most prominent to had settled in Kedah, the former also known as the Chulias or klings.

eISBN 978-967-2426-22-6
13th – 14th December 2020

entrepreneur network - the Hadhramis and Indians.[45] They are the most likely candidates whom had brought many Arabian Gulf and Omani merchandises to the orient especially the *saudagiris* of Gujarat based in Ahmedabad and the port of Surat.

This *saudagiri* family (saudagar or merchants in Malay, originated from Indian vocabulary) of Ahmedabad went to Siam under its first ancestor known Abdultayeb Esmaili and became the textile agent for the royal family of Siam for around two hundred years. For years, Esmailji and his family helped regularised the movement of textiles and fulfilling the palace's demand for required types of fabrics and pattern designs where they were in constant contact with suppliers back in Gujarat.[46] This Indo-Siamese product was known as Pha Maskat or Maskati cloth and was intended to come with highest of quality, expensive and naturally could only be owned by people from royal upbringing or those who were granted to possess it.[47] In addition, the version of *Pha Maskat* or *Maskati* is really similar with the earlier type of *Kedahan Maskat* which was a loose , short and thin jacket with additional embroidery, while the much latter version in 20th century came in the form of thicker, black and embroidered jacket worn as top. The older version of *Baju Maskat* is related to fashion top jackets known as *Baju Sikap*, *Baju Takwa* and *Baju Layang* suited with *seluar* Aceh (Acehnese pants), a *dastar* or *tengkolok* (two kinds of Malay headgears), a *samping* (waistcloth resembling the Scottish kilt), and a kris(traditional dagger), which however had its origin long before the early modern time and at least was known since the Malacca and Johore Sultanates.[48] With the continuous evolution of the *Maskat* cloth , suggest that the cloth were continuously brought to the region since the early time and the style might be different according to the time and place it had developed.

It can be noted that in the later form of *Baju Maskat*, the cloth was heavily influence from the European official ceremonial jacket mixed with the style from Ottoman Devlet after the former arrival to the middle east. During this colonial era in middle east, the classical Turco-Arabian world started to transform themselves from wearing turban, caftan and robes into adopting the European styled jackets, pants, crown of fez (which the Malays transformed into their black headgear known as songkok). This new style of *Baju Maskat* will later spread to the Malay World especially in Aceh, Siak, Banjar and Kedah and it is hard to determine its exact point of origin. Furthermore, in early 1900s for instance the Malay sultans and society were greatly inspired by Pan-Islamism movement rooted in Middle East and by claiming their brotherhood and affiliation with the Ottoman Empire - then in gradual decline- they somehow have a mindset, or rather a false hope of living within an all-Islamic alliance which was aspired to cast away colonial rulers of their respective lands including in Malaya which terribly failed.[49] This idea might clarify on why the early Malay especially the sultans adopted *Baju Maskat* as the formal attire for the royal family.

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[45] Ahmed Ibrahim Abushouk & Hassan Ahmed Ibrahim (2009), The Hadhrami Diaspora in Southeast Asia : Identity Maintenance or Assimilation. Leiden : BRILL.

[46] Ibid. See also Posrithong P. (2003), Artistic Relations between Indian Textiles for Thai Market and Bencharong Ware.

[47] Posrithong P. (2007), Indian Trade Textiles as a Thai Legacy. Retrieved June 29, 2018, from http://www.academia.edu/8037464/Indian_Textiles_as_Thai_Legacy.

[48] Zubaidah Shawal (1994), Busana Melayu. Kuala Lumpur : Jabatan Muzium dan Antikuiti Malaysia. Baju Sikap is rather another variation of Baju Maskat where it is worn widespread in Kedah, Perlis, Patani, Kelantan, Terengganu and Selangor. The origin is believed to be of Acenese 'Baju Mengan'. Source : Kedah State Museum.

[49] Uprisings in Kelantan, Terengganu and Johore-Riau-Lingga sultanates against Dutch and British were inspired from this ideological movement encouraged by Sultan Abdul Hamid II of Ottoman Devlet and Sayyid Jamaluddin al-Afghani.

eISBN 978-967-2426-22-6
13th – 14th December 2020

However, if we compare the *Baju Maskat* of the *Kedahan* style with the traditional attire worn by many Omani sultans from Bu Sa'idi lineage since 19th century CE, we can see the similarity in which the *bisht* or long, loose, black robe, worn on top of another inner white dishdasha carries a certain special insignia of Bu Sa'idian pattern made of golden embroidery and it happened to be almost similar with embroidered lining found on *Kedahan Baju Maskat* of the later form. Thus, it eliminated its association with any European tailorship except after the British colonization. *Baju Maskat of Kedah* was somehow modelled on this, and known to be made with 'pesak jubah' (robe posture) which was shortened to suit the Malaysian warm and humid climate and preference for a good ventilated attire.[50] It looks obviously like a shortened Omani *bisht* reaching down to thigh worn with a pair of embroidered black trousers.[51] An official royal programme book published by the *Jabatan Penerangan Malaysia* (2017) directly stated that *Baju Maskat* design was directly taken from Omani capital, Muscat.[52]

After the independence of Malaysia in 1957, *Baju Maskat* was introduced as the traditional garment of high nobility and to the office of king of Malaysia. This was done by the late First Prime Minister, Tunku Abdul Rahman Putra al-Hajj (1903-1990) who in turn was a royal prince of Kedah and the son of its late ruler, His Majesty Sultan Abdul Hamid Halim Syah (1864-1947).[53] Because of his position as prime minister during that time, he managed to indirectly spread the ancient *Kedahan* culture into the central administration. His Majesty Tuanku Syed Harun Putra ibn Syed Hassan Jamalullail (1920-2000) of the kingdom of Perlis, which was a part of Kedah sultanate before 1842, *Kedahan Baju Maskat* was made as official attire of the Malaysian paramount up to this day as mentioned by the Tunku.[54] The attire was later worn during wedding ceremonies among distinguishes family to preserve the heritage.

Images show the early forms of royal robe worn by Omani sultans.

[50] Information retrieved June 2018 from Kedah State Museum
[51] Interview with Royal Museum Malaysia in June 2018, see also information retrieved in July, 2018, from www.istananegara.gov.my.
[52] Jabatan Penerangan Malaysia (2017), Istiadat Pertabalan ke bawah DYMM Seri Paduka Baginda YDPA XV.
[53] Interview with Royal Museum Malaysia in June 2018, see also information retrieved in July, 2018, from www.istananegara.gov.my.
[54] Ibid.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Image Show a type of Baju Maskat worn by Sultan Abdul Hamid Halim Syah of Kedah in about 1894

Halwa Maskat

The Omani culture as a global cultural phenomenon also had left an impressive footprint all over the world with a form of its traditional cuisine known as the halwa or sweet confection. This could be found throughout the Indo-Pacific world where Omanis maritime influence could be felt from South Africa to Japan, and even in Europe marking its popularity once tasted by all locals along the network. In Malaysia particularly and generally in the Malay World this is known as *Halwa Maskat* suggesting its origin from the Muscati community from the previous centuries. However still people after generations has made it as their own cultural heritage while forgetting its distant root in the Arabian Gulf which worth of rediscovery.

Similar with the case of *Baju Maskat*, it is difficult to determine the exact date of the arrival of *Halwa Maskat* to Malaysia. The cuisine was traditionally introduced by the peranakan (foreign people usually raised in Malaya, a term similar with *Muwallad* in the Middle East) who socio-economically and culturally were dominant in their new venture.[55] Over time their presence also began to make inroad into adjacent sultanates, with the Hadhramis in particular became a part of the ruling elites or *bangsawan* (nobility) of the Malay kingdoms of Perak, Johore and Kelantan.[56]

However, it is also worth to note that the tradition might originated much earlier than is believed by many where Haruo Endo(2012) in his extensive work of Omani cultural presence in the Far East had noted that the Japanese had adopted a particular sweet confectionary known as *Aruheito* which came from the Portuguese *Alfeloa*, a form of latinized Arabic for al-Halwah (lit. sweets).[57] Endo believed that the *Aruheito* was Omani in origin where it developed first into Iberian kneaded-sweet pastry before making inroad to Japan, thus explaining the rather dissimilar taste and form it possesses from the authentic al-halwa of the Omani community or

[55] Specifically in Malaysia the Jawi Peranakans or Jawi Pekans referring to hybrid Malays(or Jawi referring to community living in region known as Jawah) living and intermarried in urban areas(pekans). Omar Yusoff & Noriah Mohamed (2010), Daripada Jawi Peranakan kepada Melayu : Tinjauan terhadap Komuniti Jawi Peranakan di Pulau Pinang pada Abad ke-21, in Sari- International Journal of the Malay World and Civilisation, Vol. 28(2).
[56] Ibid.
[57] Haruo Endo(2012), Oman and Japan Unknown Cultural Exchange between the Two Countries. Muscat : Muscat Printing Press.

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13th – 14th December 2020

any other communities which adopted the recipe. As such in Malaysia one will found that *Halwa Maskat* differed from a place or family with the others, distinguished from the Indians, Arabs and Malays all who had creatively adapted the halwa with their respective tongue preference and this usually could be found in any diaspora cuisines underwent metamorphosis, but still the main recipe consists of starch, egg, water, ghee, and nuts and Omani specialty is from mixing rose water and saffron to the ingredients[58]. Omanis also are famous for their mixing of Omani honey into their halwa turning it into an expensive product which come in different colours, white, black, and brown, and which is consumed seasonally usually in May and June while depending on dates as sweet in the others. [59]

Halwa Maskat throughout the years became a popular delicacy which is served during big celebrations such as during Eid celebration, mawlid an-Nabi and wedding ceremony in Malaysia similarly to how the Omanis presented the cuisine during their gatherings. For example, in 2017 the royal family of Johore Sultanate presented *Halwa Maskat* as part of their wedding dowry's presents in which signifies that *Halwa Maskat* had become part of Traditional Malay delicacies of the royal palaces for ages. In its own way, food can also become part of the cultural object since it can represent the identity and pride of particular people from the society.

This cultural phenomenon over food is regarded by some as a technological feat and as a substantial effect coming out of human philosophical mind and their diverse cosmology in perceiving the immediate environment.[60] At such, *Halwa Maskat* within the Malaysian society as well as the Omanis' indeed is an integral element of the people cultural dignity and represent their long civilising process in particular as the imperial and global powers controlling the riches of the Indo-Pacific region and all kind of nations passing its land and water. The cultural exchanges of the vibrant Age of Mar Indianica for the pass two millennia indeed had prospected the arrival of varieties of foreign foods onto local dining tables and helped coloured the society to be all-embracing, open-to-all and cosmopolitan in nature.

Rapid globalisation and modernisation of Malaysia had given much little space for traditional heritage such as *Halwa Muskat* to thrive and this is considered as a great danger for the survival of the Malays and Malaysian identity. Thus, the *Jabatan Warisan Negara* (National Heritage Department) of Malaysia had recently tried to curb this development by listing it as a part of the endangered heritage cuisine in need of preservation. Various activities come out from this inclusion where cultural programmes will present the halwa as a richly delicacy which worth a good reception among the large segment of the society in the future.[61] Many recipe books and websites were created to develop awareness and promote *Halwa Maskat* more widely in Malaysia and for the young generations to appreciate it.

Gastronomy cultural material heritage could be regarded as an important premier historical resource for societies whose past depended and lived beyond the reach of literate

[58] Annamalai Manickavasagan et al. (2011), Texture Profile Analysis(TPA) of Omani Halwa while replacing Ghee with Vegetable Oils, as paper presented during CSBE/ SCGAB. Canada : The Canadian Society for Bioengineering.
[59] Salim Joseph (2015), Traditional Omani Halwa passes the Test of Time. Retrieved June 28 2018 from www.timesofoman.com.
[60] Different food serving and preparation processes also contain their own meaning to be understood as a cultural phenomenon and unique worldview of the Malays distinguishing themselves from the others. Ahmad Hakimi Khairuddin & Wan Abdul Kadir Wan Yusoff (2006), Makanan dalam Masyarakat dan Budaya Melayu : Pengumpulan Perkataan Perkataan untuk Kamus sebagai Pelestarian Warisan Seni Budaya Melayu, in Prosiding Persidangan Kebangsaan Antarabangsa Pengajian Melayu.
[61] Jabatan Warisan Malaysia (2016).

eISBN 978-967-2426-22-6
13th – 14th December 2020

circle. Thus, the image of the past is visible only through the survival of cultural material heritage and it is a pity when the rare occurrence of textual records is worsened by the vanishing of cultural materials. *Halwa Maskat* thus is relevant to be regarded as a time capsule, recording the evolution of the Malay society and its Omani-Arabian flavour coming along with. Wherever textual references could not be found much in describing the cultural situation we are enlightened via the many songs, lore, dances, plays, drawings, engravings, sculptures and other artistic manufactures as the witness. Society passed down many details of their life as well in the form of their oral narration, where in this context had conveyed uncountable known and unknown recipes and cooking mastery techniques which produce beautiful and delicious cuisine.[62] According to the Convention for the Safeguarding of the Intangible Cultural Heritage produced by UNESCO(2003) the preservation of intangible cultural heritage including food and other communal products is very important to the development of sustainable society .[63] As a result, it will preserves the critical knowledge and traditional heritage that only known by people and could provide solutions to many issues being faced.

Different type of
Omani halwas which found their cultural influence all over the Indian Ocean region

Halwa Maskat in Malaysia is a prized delicacy due to its unique taste and tedious preparation. It is a symbol of local cultural richness and social unity.

Conclusion

This paper demonstrated the reality of the historical references and cultural heritage of Oman which could be found in Malaysia. Oman indeed has a lot of common characteristic with Malaysia as vital key players of Indian Ocean maritime trade and geopolitics. The rapid process of trade activity between the two regions during the ancient times allows the cultural exchange to happened between Malaysia and Oman and the cultural heritage is still preserved until now. Academic research should practically be extended into developing cultural heritage material as

[62] Ding Choo Ming (2014), Memory and Local Stories : Sources of History and Knowledge, in International Journal of the Malay World and Civilisation (IMAN), Vol. 2(1). p.15.
[63] In Warisan Kebudayaan Tidak Ketara dan Pembangunan Mampan, published by International Information and Networking Centre for Intangible Cultural Heritage in the Asia-Pacific Region, UNESCO. Refer as well Convention for the Safeguarding of the Intangible Cultural Heritage, by UNESCO in October 2003, Paris.

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13th – 14th December 2020

the potential local economy force by promoting traditional handicraft production such as *Baju Maskat* and *Halwa Maskat*. With available information and proper planning these merchandises may be re-introduced with new varieties depending on the market demand locally and internationally, and also current disadvantages they are having may be improved with the availability of scientific skill and technology. Traditional craft industry normally becomes the natural attraction for tourist seeking exotica in countries they are visiting, and this opens to the visitors the door to a new experience resulting in mutual respect and appreciation. Craft industry development is important in order to revive the long-lost culture or the almost extinct cultural materials or practices in a form of re-enacting the existing remains of the past. Thus, it will turn a particular cultural community into a living museum which gives real soul and spirit to material of the past in possession and exposing its real significance. In many developed countries a cultural villages or towns portrayed living images of the past instead of depending solely on the concept of indoor museums.

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A STUDY ON STUDENTS SEATING ARRANGEMENT LAYOUT FOR COMPUTER LABORATORY

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Abstract: *This study was conducted in order to evaluate and to propose an ideal students seating arrangement layout for the Computer Laboratory. The current design of workstation and layout are provided by developer (central contractor) and not based on any ergonomics aspects. There is no research that has been take to study on the ergonomics aspect of the computer laboratory classroom in their institution. Therefore, this study was undertaken to explore and solve the problem especially in computer workstation and seating arrangement. The result of the questionnaire which is done in order to determine the physical characteristics and the activities that take place in the laboratory. There are a total of 200 males and 200 females' student involved in this study. The mean value of age for male and female are 19.52 and 19.52 respectively. Finally, an ideal seating layout for the workstation in the laboratory was also proposed. In conclusion, an ergonomic workstation in the higher learning institution's computer laboratory is considered as an important element of comfort to the teaching and learning process.*

Keywords: *Seating Arrangement, Computer Laboratory, Ergonomic*

Introduction

The current design of workstation and layout are provided by developer (central contractor) and not based on any ergonomics aspects. So far this is no research that has been take to study on the ergonomics aspect of the computer laboratory classroom. Therefore, this study was undertaken to explore and solve the problem especially in computer workstation and seating arrangement.

Literature Review

Many universities and colleges use computer laboratories to allow student access to the software necessary to complete coursework. Computer laboratories are also used to instruct students on computer use, programming, and related subjects. However, many institutions give little thought to the design and layout of the laboratory. Too often, they simply fill a room with computers and set up the machines any way they fit inside the room.

According to Owu (1992), the classrooms of the 21st century deserve more than the out-dated chalkboards and old furniture. Likewise, the students and teachers who spend an average of 400 hours a year in classrooms deserve more as well (Owu,1992).Planners could see that if the guidelines about these design elements were followed, they might enhance the physical qualities of classroom function, focus, aesthetics, and flexibility (Owu,1992).

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13th – 14th December 2020

Accordingly, each type of classroom could then be adapted to facilitate the type of instruction to be performed. For example, a lecture hall with rows upon rows of desks and chairs could facilitate the necessary purposes of an instructor who lectures or transmits primary information to their students. Next, the classroom design must attempt to focus the student's attention on the learning activities. According to Owu, "focus is achieved through the arrangement of architectural elements, proper acoustics and lighting, and the absence of visual distractions". Also, the aesthetics of a classroom could help to enhance students' enjoyment of their learning experience.

Flexibility is also critical for an efficient classroom design. The adjustable classrooms could allow for a variety of teacher-centered as well as student-centered approaches within the space (Jamieson, 2000). Blackett and Stanfield (1994) believe "flexibility is vital so that a college does not get locked into one technology, and so that the classrooms can be reconfigured as new technologies are developed" .A flexible classroom environment that consists of a variety of ways to present information promotes interchanges among the teacher, students, and information (Conway, 1996).

Classrooms are renovated with inappropriate furniture and equipment, which defy ergonomic principles (Jamieson, 2000). If ergonomics is not enforced, then good posture is compromised, making the user uncomfortable (Computer Classroom Design, 1995). Therefore, items such as chairs and keyboards should be adjustable so that any body shape or size will be comfortable (Knirk, 1992). Knirk firmly believes "Incorporating ergonomic design requirements into the design and refurbishing of teaching and learning areas will create a more effective and positive learning and information handling environment".

Kettinger's (1991) research identified a variety of ways that technology could be used in higher education. He envisioned both computerized lecture halls and computer laboratories. Blackett and Stanfield (1994) explained that the computer laboratory "began as a lecture on computer techniques and exercises, followed by individual student application at stations in a computer center, and has evolved into new instructor podiums with a built in computer". The computerized lecture hall teaches students computer programs that may begin with an instructional tutorial or demonstration, followed by limited hands-on experience by the student. "This allows students to experiment with the lesson that is being taught" (Kettinger, 1991). However, there is a disadvantage to this style. Some instructors believe that in this type of classroom, students tend to focus more on the computer rather than the instruction, therefore diminishing learning as opposed to enhancing it (Blackett and Stanfield). If the students are not productively engaged in the lesson, they may select other options, such as surfing the net (Schwartz, 2003).

The students work at their own pace on different course materials and may ask for faculty assistance during scheduled hours. Therefore, the faculty plays the role of coach or tutor rather than lecturer. The University of Washington Classroom Support Services (1998) characterizes the computer laboratory classrooms as being smaller than large lecture halls and accommodating up to 30 individuals. According to Fawson and Van Uitert (1990), the method of instruction and student interaction required should influence the equipment specified and the physical facility designed. The computer laboratory should be equipped with a presentation system, audio system, and network connections. All computer laboratories require a teaching station, movable chairs, and flexible seating arrangements. Some of the arrangements may resemble a U or V shape, clusters of computers, or a conventional, parallel row configuration.

Sommer (1967) found in the traditional classroom that the nature of student activity, instructor's teaching method, and the physical dimensions and shape of the room are all factors that should influence the functional spatial arrangement of the room. Niemeyer (2003) currently recommends that within a computer laboratory classroom, the U or V shape shown in Figure 1 allows the presenter sight of all of the students' computers. He believes that this design is beneficial

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13th – 14th December 2020

to computer-enhanced courses that use instructional methods such as computer-based independent work, lecture, group discussion, and presentation.

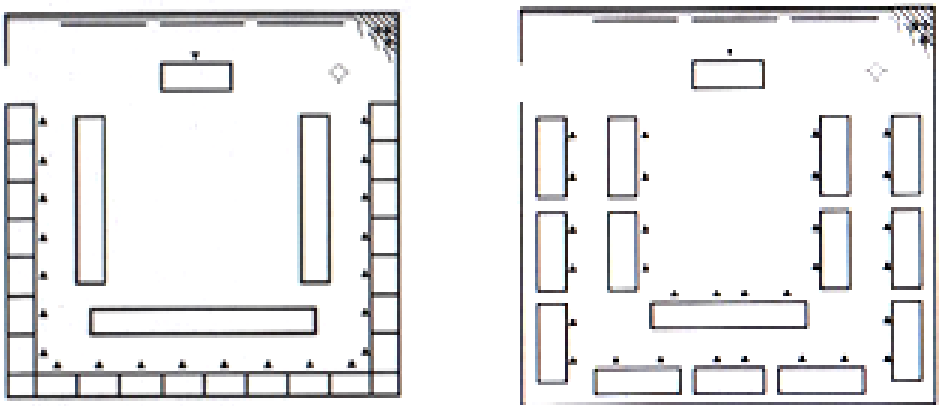

Figure 1: U or V Computer Lab Seating Arrangement.

The cluster arrangement shown in Figure 2 is similar to the conventional straight row layout. The main difference is that the computer tables are placed perpendicular to the front of the room. This layout is ideal for small groups, collaboration, and dialectic instruction (Jessica, 2004)

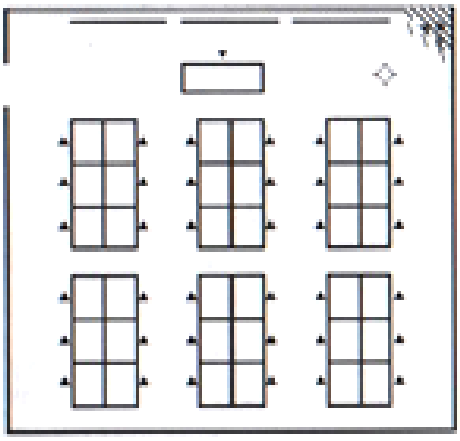

Figure 2: Cluster Seating Arrangement.

The conventional straight row layout shown in Figure 3 resembles a standard lecture classroom. This configuration consists of rows that are parallel to the front of the classroom. These layout characteristics allow for collaboration among students or the typical lecture/training method. Typically, the teacher presents at the front of the room. The disadvantage of the front lectern station is that the instructor cannot see the students' computer screens. Therefore, the ideal setup would provide a front and rear lectern (Jessica, 2004)

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13th – 14th December 2020

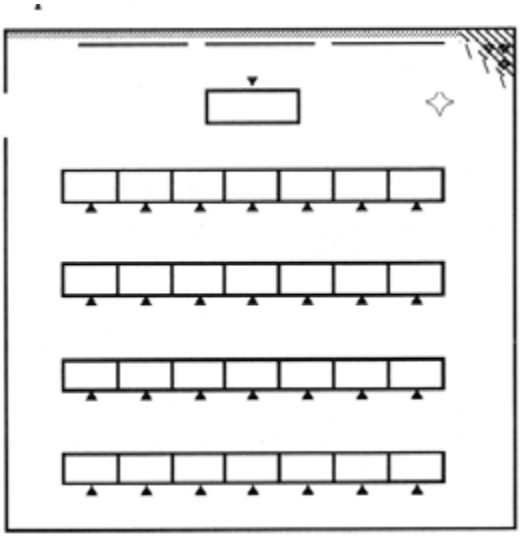

Figure 3: Conventional Straight Row Seating Arrangement.

Most of these general characteristics can be found in the computer lab classrooms The exception lies in the flexible seating arrangements currently provides in two recently renovated computer lab classrooms. Currently, the computer labs have either the conventional layout with a center aisle or a pod configuration shown in Figure 4. Review of research indicates that the instructional purpose of the pod layout is intended to support collaborative computer-based work (Spectrum Industries, 2003; CIRCA Computer Lab Classrooms, 2003).

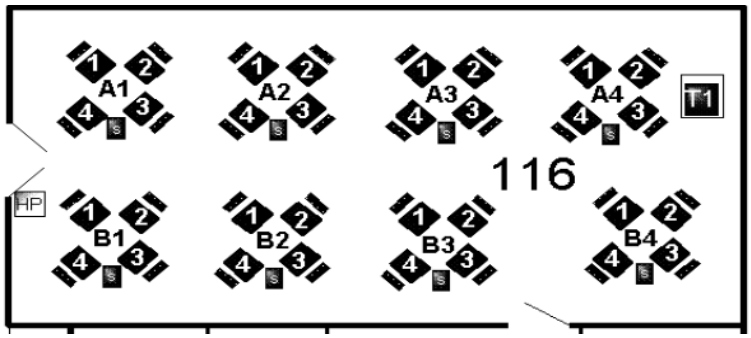

Figure 4: Pod Seating Arrangement.

As department and students become comfortable with technology, higher education planners will continue to explore ways to integrate it into the classroom laboratory environment. The design of the classrooms laboratory should rely heavily on the user's needs and the desired interactions for supporting learning within the space. It will take ongoing collaboration among educational an environmental behavior researchers, architects, designers, facility planners, faculty, and users to design classrooms that effectively support teaching and learning (Jessica, 2004).

Characteristics of Learning Environments

Sommer (1967) compared the relationship between seating arrangement and the amount of student participation in a traditional classroom with a seminar-style arrangement and a classroom with straight rows. In the seminar-style classroom, students across from the instructor participated more than students at the sides of the instructor.

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13th – 14th December 2020

The study of the straight row arrangement found that students near the front and center of the straight row classroom participated more than students in the rear and at the sides. However, most studies have shown that seating position is more closely related to personality variables of the students (Stokols and Altman, 1987).

According to Babey's (1991) defined that half of the faculty preferred fixed seating, which can be repetitive and unexciting, and the other half preferred movable seating, which can occasionally be changed to promote different activities. The students' main concern with seating addressed issues such as the size of the writing surface, crowding, storage space, and the spacing between desks. However, the only variety within the surveyed classrooms was lecture halls with either fixed seating or movable seating..

A "hard classroom", as defined by Knirk (1979), is considered a formal environment due to the presence of cement or tile floors, hard plaster walls and ceilings, and hard-surfaced furniture. Knirk (1979) believes that hard finishes decrease student interactions and encourage students to be passive learners. He noted that a hard classroom environment can be intimidating, discouraging, and uncomfortable.

According to Babey (1991), the number one problem area in higher education classrooms was the lack of appealing aesthetic qualities. In the teaching/learning process there is a "need to create environments that are suitable for living and working" .Babey also believes the levels of communication and user productivity are influenced by the characteristics of the instructional space. To summarize these findings, students and teachers prefer comfortable classrooms that functionally support and promote faculty-student exchanges.

In 1980, Sommer (1967) created an alternative classroom using soft materials. He took a traditional rectangular shaped classroom with 30 tablet arm desks and converted it into a softer learning environment. The hard-surfaced desks, floors, and walls were replaced with cushioned bench seating, carpeted floors, and curtained walls. He found a noticeable rise in participation of students in the soft classroom when compared to a straight row hard surfaced classroom. There was also an improvement in the preference ratings for the soft room. However, this drastically renovated classroom is not functionally appropriate for all courses or users. In the current study, the different finishes of materials and furnishings used within the two different computer lab classrooms will be compared in order to determine students and teachers' satisfaction. Zandvliet and Straker (2001) recognized that physical factors in IT classrooms effect learning, comfort, and safety issues of students. Overall, they found many significant links between physical and social factors that influence student satisfaction with learning in IT rich classrooms.

One of the conclusions made by Zandvliet and Straker's study was that the most common layout found and preferred by teachers was the peripheral arrangement. This arrangement locates the computers along the peripheral walls of the classroom. However, there was no investigation of students preferences related to physical layout since the student learning, and not the physical room arrangement, was the main concern in their study.

In a pod layout, the placement of seating and equipment may not always allow students a direct view of the projection screen when there is a need to follow the teacher's instructions or a tutorial. This may also affect the teacher's satisfaction with the classroom seating arrangement by creating an environment that may frustrate the students and require unnecessary repetition by the teacher. Teacher satisfaction with the appropriate seating arrangement that allows for ease of movement and a variety of styles of instruction is another important factor in this study.

Becker, Sommer, Bee, and Oxley (1973) believe that the arrangement of classrooms reveal information about the learning process as well as instructional and behavior methods

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13th – 14th December 2020

that may be facilitated. Through the study of environmental psychology and research about classroom ecology associated with seating arrangement, designers and planners can understand how the classroom environments affect the users and how their relationships with other people are influenced by the physical environment.

Result and Discussion

Based on this study, four important elements are discussed in this chapter such as questionnaire on laboratory appraisal.

Evaluation on laboratory appraisal

The result of the questionnaire which is done in order to determine the physical characteristics and the activities that take place in the laboratory are presented in this section.

Characteristics of the student's respondent

Table 1 presents the characteristics of gender and age of the responded students. There are a total of 200 males and 200 females' student involved in this study. The mean value of age for male and female are 19.52 and 19.52 respectively.

Table 1: Characteristics Of The Student's Respondent (n = 400)

Characteristics	Male (n = 200)				Female (n = 200)			
	Min	Max	Mean	Std dev.	Min	Max	Mean	Std dev.
Age	19.00	21.00	19.52	0.74	19.00	22.00	19.51	0.80

Characteristics of the student's respondent by race

Table 2 presents the characteristics of the respondent by races. The majority of this respondent are Malays (>83%) for both the male and female groups.

Table 2: Characteristics Of The Student's Respondent By Race (n = 400)

Characteristics	Male (n = 200)				Female (n = 200)			
	Malay	Chinese	Indian	Other	Malay	Chinese	Indian	Other
Race (%)	83.5	7.0	9.5	0	80.0	9.5	10.5	0

Students preferred sitting row in Computer Laboratory

Table 3 presents the summary of student's preferred sitting row in the computer laboratory. The first row contains the sitting row from F1 to G6, middle row for H1 to H6 and last row for I1 to J6. The results highlights that majority (>70%) of the students preferred sitting in the first and middle row in the computer laboratory. It also needs to noted that compared between the two genders, most female students preferred sitting in the first row.

Meanwhile, in the last row, the male have higher preference sitting there compared to the female students.

Table 3: Students Preferred Sitting Row In Computer Laboratory

	Male (n=200)		**Female (n=200)**	
Row	Frequency	%	Frequency	%
Front Row	82	41,0	100	50,0
Middle Row	65	32,5	56	28,0
Last Row	53	26,5	44	22,0

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13th – 14th December 2020

Students module examination results (GPA)

The students result performance for the module CAD which is taught in the computer laboratory is highlighted in Table 4. The result shows that all the female students pass this particular module. Meanwhile, there are a 9 % of male students who failed this module. And in term of higher GPA (>3.5 and 3.00-3.50), the female students perform better compared to the male students.

Table 4: Students Module Examination Results (GPA)

	Male (n=200)		Female (n=200)	
GPA	Frequency	%	Frequency	%
> 3.5	26	13,0	53	26,5
3.00 – 3.50	83	41,5	117	58,5
2.50 – 3.00	73	36,5	30	15,0
< 2.5	18	9,0	0	0

Chi-square analysis of GPA and preferred sitting row between male and female

Table 5 presents the result of Chi-square analysis of results performance (GPA) and preferred sitting row between the male and female students.

The results shows that for the male students, there is a significant relationship between the GPA and preferred sitting row in the computer laboratory, $x^2=2.96$, df=4, $p<0.01$, Cramer's V=0.256. Meanwhile there is no significant relationship between the GPA and preferred sitting row in the female groups.

These finding can be related to the results from Table 4.3 and Table 4.4, which indicates that the male students preferred sitting in the last row and have lower performance in term of GPA compared to the female students.

Table 5: Chi-square analysis of GPA and preferred sitting row between male and female

		GPA Category				Total
Gender	Preferred Sitting Row	> 3.5	3.00 – 3.50	2.50 – 3.00	< 2.5	
Female	Front Row	31	55	14	0	100
		31.0%	55.0%	14.0%	0%	100.0%
	Middle Row	11	37	8	0	56
		19.6%	66.1%	14,3	0,0	100.0%
	Last Row	11	25	8	0	44
		25.0%	56.8%	18.2%	0%	100.0%
	Total	53	117	30	0	200
Male	Front Row	18	36	23	5	82
		22.0%	43.9%	28.0%	6.1%	100.0%
	Middle Row	7	32	23	3	65
		10.8%	49.2%	35.4%	4.6%	100.0%
	Last Row	1	15	27	10	53
		1.9%	28.3%	50.9%	18.9%	100.0%
	Total	26	83	73	18	200

Chi-square analysis between GPA and preferred sitting row among the students

Table 6 presents the result of Chi-square analysis of results performance (GPA) and preferred sitting row among the students. The results shows that there is a significant relationship between the GPA and preferred sitting row in the computer laboratory, $x^2=27.27$, df=6, $p<0.01$, Cramer's V=0.185. The results highlights that, students who sat on the last row received lower GPA (<2.5) compared to those who sat on front and middle row.

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13th – 14th December 2020

Table 6: Chi-square Analysis Between GPA And Preferred Sitting Row Among the Students

	CGPA Category				
Preferred Sitting Row	> 3.5	3.00 – 3.50	2.50 – 3.00	< 2.5	Total
Front Row	49	91	37	5	182
	26.9%	50.0%	20.3%	2.7%	100.0%
Middle Row	18	69	31	3	121
	14.9%	57.0%	25.6%	2.5%	100.0%
Last Row	12	40	35	10	97
	12.4%	41.2%	36.1%	10.3%	100.0%
Total	79	200	103	18	400

Frequency Distribution of student's perception on computer laboratory's social environment

One of the important factors for efficient teaching and learning process is involving the social environment of the particular classroom. This concept applies also for the computer laboratory. Thus, the questionnaire results involving the students on their perception regarding the computer laboratory's social environment are presented in Table 7.

The result in Table 7 highlights that majority (>80%) of lecturer are using least (never and seldom) the one to one interaction with the students, least teaching activities involving teamwork (such as collaboration, group work etc), least discussion (seminar), least of involvement of students help each other in classroom and least of students giving their opinions during the class discussions. The obstacles for this constrain social environment aspects can be related to the current workstation layout in the computer laboratory.

Meanwhile, majority (>50%) (often and always) of students has indicated that they prefer to ask questions with their lecturers during the teaching and learning process. The results also highlighted that majority (>60%) of lecturers restricted their students movement and talking in the computer laboratory. The results also indicates that majority (>90%) of students prefer to work at their own pace and often get distracted during the teaching and learning process.

Table 7: Frequency Distribution of Student's Perception On Computer Laboratory's Social Environment

Social Environment Aspects : How often do you feel that the lecturer uses the following styles of teaching:		Never	Seldom	Often	Always
One to one interaction with students	f	177	173	50	0
	%	44,3	43,3	12,5	0
Presentation (lecture, tutorials, drill and practice)	f	0	0	216	54
	%	0	0	184	46
Teamwork (collaboration, group work)	f	178	175	47	0
	%	44,5	43,8	11,8	0
Discussion (seminar)	f	173	177	50	0
	%	43,3	44,3	12,5	0
Students help each other in this class	f	160	191	49	0
	%	40	47,8	12,3	0
Students work in groups in this class	f	177	174	49	0

	%	44,3	43,5	12,3	0
Students give their opinions during class discussions	f	169	185	46	0
	%	42,3	46,3	11,5	0
Students ask the lecturers questions	f	41	101	158	100
	%	10,3	25,3	39,5	25
The lecturer decides how much movement and talk is allowed	f	52	90	163	95
	%	13	22,5	40,8	23,8
Students work at their own pace	f	0	0	209	191
	%	0	0	52,3	47,8
Students get distracted during class	f	6	6	213	175
	%	1,5	1,5	53,3	43,8

Frequency Distribution of student's perception on computer laboratory's physical environment

Another factor which is related with the conducive computer laboratory is the physical environment. The results based on physical environment questionnaire by the students are presented in Table 8.

The result highlights that majority (>80%) of students felt a bit down regarding that the seating arrangement facilitates class related interaction among the students during class and the seating arrangement allows for ease of movement.

Table 8: Frequency Distribution of Student's Perception On Computer Laboratory's Physical Environment

Physical environment in this classroom		Never	Seldom	Often	Always
The seating arrangement facilitates teacher's assistance during class	f	2	21	208	169
	%	0,5	5,3	52	42,3
The seating arrangement facilitates class related interaction among the students during class	f	170	186	44	0
	%	42,5	46,5	11	0
The seating arrangement allows for ease of movement	f	160	194	46	0
	%	40	48,5	11,5	0
I have trouble viewing the projection screen at the front of the room during demonstrations	f	54	110	157	79
	%	13,5	27,5	39,3	19,8
The computer tables provide adequate workspace for me to write	f	0	3	213	184
	%	0	0,8	53,3	46
I can see every student in the class and the teacher from my seat	f	108	151	98	43
	%	27	37,8	24,5	10,8
There is adequate aisle width between the desks.	f	3	8	207	182
	%	0,8	2	51,8	45,5

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13th – 14th December 2020

Recommendation of computer laboratory seating layout design

An ergonomically layout of workstation is considered as an important criteria for effective teaching and learning activities. Currently this laboratory layout design is engaged with the conventional straight row seating arrangement. The findings based on the questionnaire on laboratory appraisal stated that the student's current layout are least appropriate among the students.

Computer laboratories must be designed intelligently and serve the purpose they were intended to serve. The design and layout of a computer laboratory creates rules and defines how the lab can be used. Thought given to the layout of a computer laboratory dictates the usefulness of the laboratory and increases user satisfaction which justifies its expense and assists in future investments in upgrades. Certainly, the layout of the laboratory depends on the equipment, the furniture, and space available.

There are some basic computer laboratory layouts and their advantages and disadvantages. Any of these layouts can be modified to satisfy the individual needs of the institution. It just takes a little planning and imagination to adapt any of these designs to a specific application. For summary, the U or V shape allows the presenter sight of all of the students' computers. This design is beneficial to computer-enhanced courses that use instructional methods such as computer-based independent work, lecture, group discussion, and presentation (Jessica, 2004).

The conventional straight row layout allow for collaboration among students or the typical lecture/training method. Typically, the lecturer presents at the front of the room. The disadvantage of the front lectern station is that the instructor cannot see the students' computer screens. Therefore, the ideal setup would provide a front and rear lectern. The cluster arrangement is ideal for small groups, collaboration, and dialectic instruction. Review of research indicates that the instructional purpose of the pod layout is intended to support collaborative computer-based work.

Figure 5 shows the new proposed computer laboratory seating layout (adapted to Pod and U shape) is designated with both lecturers and students in mind made adaptable to different approaches of technical instruction. The new facilities provide safe, spacious work areas and convenient preparation rooms adaptable to different approaches of technical instruction (Ogunsola-Bandele, 2002).

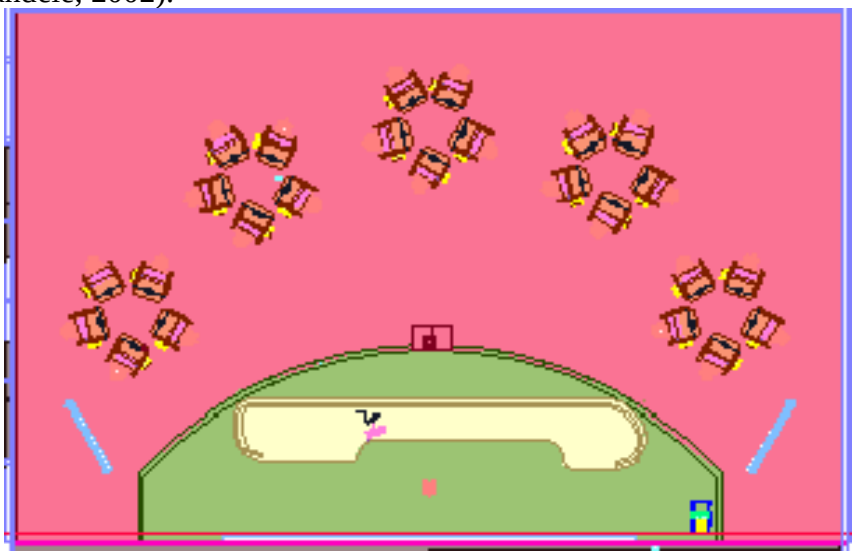

Figure 5: Proposed Computer Laboratory Seating Layout (Adapted To Pod And U Shape arrangement)

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13th – 14th December 2020

Conclusion

This study was undertaken in order to enhance the teaching and learning comfort environment. Meanwhile, in term of computer laboratory layout, the previous design is more to conventional type. Therefore the new proposed layout is combination of current design layout such as pod and U arrangement which will enhance the teaching and learning process.

Finally, it is hope that the research finding will improve the performance and quality of teaching and learning process.

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ANALYSIS ON THE HALAL STATUS OF A MEDICAL DEVICE: A STUDY ON THE SURGICAL SUTURE

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Abstract: *There is a recent demand for halal certification from another healthcare sector which is medical devices, which covers all types of medical equipment used in hospitals from simple equipment such as bandages to complex equipment such as ventilators. This matter has been raised by the industry as halal labelling is a requirement to penetrate the market of Islamic countries such as Saudi Arabia, Turkey and Pakistan. Even it seems critical to prove halal status for the medical devices that incorporate animal tissues, in contact with or invasive to the body, and produce reaction to body, this does not deny the demand of other type of devices. This study will focus on the halal issues related to medical devices which are widely used to stitch and close the wounds of patients after surgery or injury, namely sutures. This study seeks to identify the status of suture usage from the perspective of Islamic ruling. To achieve this objective, a qualitative research method through library research, as well as field studies involving in-depth interviews with the industry players, both medical device and religious authorities, Islamic scholars and medical practitioners. The interviews were recorded, transcribed, translated, coded, and reconciled with the aid of Atlas.ti software (version 7) to identify themes and subthemes for this study. The results show that with regard to the status of resources and processes, and the application of al-darurah (necessity) concept.*

Keywords: *Halal medical device, al-darurah.*

Introduction

From a scientific and Islamic viewpoint, studies related to the study of the use of sutures in the field of halal medicine have not been comprehensively discussed. While past suture studies have touched on many scientific aspects, there is still no significant debate on the legal status of suture use in medicine. In the Medical Devices Act (Act 737), the definition of medical devices defines medical devices as any device, instrument, device, computer, tool, implant, reagent or in vitro calibrator, software, material or other similar device intended for use in the human body, taking into account public safety, public health or public risk concerns (Dura Diyana Kamal, #). In the treatment process, the key role of the use of a medical device is the

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13th – 14th December 2020

opposite of the drug product, as it does not require metabolic, immunological or pharmacological reactions. It is not used as a primary instrument that generates pharmacological, immunological or metabolic reactions, but is supported in its function (Sarah Sharples et al. 2012).

Each country has a different classification definition of medical devices. The classification of medical devices is the responsibility and regulation of the authorities. Authorities identify medical device classes based on several aspects such as the complexity of the form of the medical device, the characteristics of its use, and also the risk imposed. In Malaysia, medical devices are divided into four classes according to the level of risk. Risk means the probability of harm occurring and the severity of the harm. For a device product to be manufactured, the establishment must determine the category of the device based on the level of risk posed by the medical device, its intended use and the potential of the human body to be exposed to danger. Suture is one of the most commonly used medical devices in medical procedures. Essentially, suture is a technique of closing wounds due to surgical incision or injury. Suture actually acts as a tool that supports wound grafting and healing and there are various methods of wound closure in medical practice. For example sewing techniques, glue, stapler and zip. This study only involves sutures that use sewing techniques to cover wounds, which are in the form of threads, fine wire and so on that are used to sew wounds or incisions on the body.

Literature Review

Regarding the halal and haram aspects, Imam al-Ghazali specializes in the chapter on halal haram in the book Ihya '' Ulum al-Din. In addition, 'Abd al-Karim Zaidan in his book Majmu'at Buhuth Fiqhiyyah explains from the perspective of medicine. The rules of fiqh that can be applied have also been outlined by al-Qaradawi and Shawqi Abduh al-Sahi. The method of fiqh that is tried to be highlighted in this study is the method of darurah.

The halal discussion involves aspects of fiqh by Jamaluddin (2015) through the study of alcohol. The study conducted by Shafii & Khadijah (2012) however, sees that the aspect of halal food production should be held accountable to the producers. This is because the manufacturer should be able to track the movement of the product as well as ensure that the process is not in violation of Islamic law. The study indirectly provides guidance to industry players in producing halal food products at the processing, transportation and distribution levels. Halal studies in the medical industry, discussed by Noorizan Abd. Aziz et al. The study also stated the status and challenges faced in obtaining and developing halal medicine. The discussion on the issue of halal pharmaceuticals also raises the status of the use of gelatin as a medicinal material as studied by Harmen Shah and Faridah Yusof. The issue of justification arises for consumers to question halal and illegal drugs during treatment thus encouraging the industry players to produce products that comply with shariah.

The use of filth in medical products has also been conducted extensively by Muhammad Mustaqim et al. This study has analyzed the views of jurists, Muslim medical practitioners as well as the interpretation of Islamic law and related fatwas. Catherine Easterbrook and Guy Maddern have also studied the use of porcine and bovine surgical products among the Jewish, Muslim and Hindu communities by analyzing the views of religious leaders in Australia. Axelina Eriksson conducted a study on the conflict in the use of animal products from animals with the beliefs of six religions, namely Christianity, Islam, Hinduism, Buddhism, Sikhism and Judaism.

The usage of *najs* in medicinal products is also discussed by Middle Eastern researchers. For example, Al-Jam'iyyah al-'Ilmiyyah Al-Sa'udiyah li Al-Dirasat Al-Tibbiyyah

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13th – 14th December 2020

Al-Fiqhiyyah has discussed the issues of medical fiqh. Badr Muhammad ‘Id Mubarak Al-‘Azami explains istihalah in various applications. The use of porcine elements based on the method of ‘general al-balwa, istihalah and istihlak is also discussed by ‘Ali bin Ahmad Al-Muta’. Legal aspects and fatwas for elements commonly used in medicines such as gelatin and alcohol are also studied by Mustafa Afifi et al. The study was also supported by Ab Latiff & Zakaria (2016) who explained about the implementation of MS2424. Based on previous studies, although there is a lot of discussion about sutur, there are gaps in discussion related to suture from a halal and haram perspective. Similarly, studies related to the risks and effects of suture use on patients. Thus, this study will analyze the content of suture and the law of the use of suture from the perspective of fiqh.

Methodology

In this qualitative study, data were obtained by interviewing informants on use of sutures from both aspects of science and Islam. Data were collected and recorded in audio form. Semi-structured interviews were conducted for about an hour with the medical practitioners, Islamic scholars, medical device manufacturers and authorities which are the Department of Islamic Development (JAKIM) and Medical Devices Authority (MDA). The transcripts of the interviews were analysed using content analysis method with the help of Atlas/ti software version 7.

Results

The medical device industry is witnessing the competition among industry players of suture. The production of these suture products should be determined by its halal and haram status so that the suture used is not only clean and pure, but also guaranteed in terms of safety and efficiency. There are various types of sutures as a result of technological advances and developments in the medical device industry, be it sutures that act to cover wounds through sewing techniques, patches or adhesions using glue or stitches. Accordingly, the determination of the law of suture use has considered four aspects namely the source of raw materials, and the process.

Basically, it is compulsory for Muslims to seek something that is halal, based on a hadith narrated by Anas bin Malik that the Prophet Muhammad SAW said:

Translation: Anas bin Malik RA said, "The Prophet SAW said: Finding what is halal is an obligation on every Muslim."

The Halal Status of Surgical Suture based on the Source of Origin

Generally, treatment using haram elements is not allowed, based on the hadith Rasulullah SAW narrated from ‘Abdullah bin Mas‘ud.

وَقَالَ ابْنُ مَسْعُودٍ فِي السَّكَرِ إِنَّ اللَّهَ لَمْ يَجْعَلْ شِفَاءَكُمْ فِيمَا حَرَّمَ عَلَيْكُمْ

Translation: Ibn Mas‘ud RA said, "Indeed, Allah SWT does not make healing on things that are forbidden."

Determining the *hukm* of sutures, the first aspect to consider is the source of the suture, which may classify into two main sources, namely natural or synthetic. It is critical to identify its sources due to the complex medical device ecosystem. There are claims that sutures made of intestines of haram animals such as pigs, and there is still no manufacturer which can verify their suture products derived from halal sources. The use of animal-based sutures has long been practiced in the field of healthcare. There are three types of animal-based sutures that are most

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13th – 14th December 2020

commonly used, namely catgut sutures, reconstituted collagen sutures (RC) and even silk sutures.

The material of these three types of sutures is extracted from protein sources of various animals. Both catgut and reconstituted collagen (RC) sutures, have similar shape and will decompose in the body, made of livestock. It is possible to make catgut from the intestines of all kinds of animals, such as goats, sheep, cows, and pigs. As for RC sutur, it is usually produced from the long flexor tendon of bovine, such as cattle or buffalo. The prohibition of pigs has been stated by Allah S.W.T in surah al-Baqarah.

إِنَّمَا حَرَّمَ عَلَيْكُمُ ٱلْمَيْتَةَ وَٱلدَّمَ وَلَحْمَ ٱلْخِنزِيرِ وَمَآ أُهِلَّ بِهِۦ لِغَيْرِ ٱللَّهِ

Translation: He has only forbidden you to eat carrion, blood, swine, and what is slaughtered in the name of any other than Allah

Catgut suture which is made of animal intestine may be derived of non-halal animals such as pigs, cows, goats and sheep. Since this material is mostly imported, it cannot be confirmed the source of origin and the status of slaughtering. The obligation of proper slaughtering according to Shariah has been stated through the verse:

فَكُلُوا مِمَّا ذُكِرَ اسْمُ اللَّهِ عَلَيْهِ إِنْ كُنْتُمْ بِآيَاتِهِ مُؤْمِنِينَ

(Al-An’am 6:118)

Translation: Therefore eat of that on which Allah's name has been mentioned if you are believers in His communications."

Latest discussion on Islamic slaughtering method was discussed extensively by Zeiad Amjad Aghwan & Joe Mac Regenstein (2019). Suture from the intestinal part of non-halal animals, such as pig intestines and ruminants that are not slaughtered cannot be used in medicine. However, it can be allowed in the situation of emergency or *darurah*. While for synthetic derived suture, the determination of *hukm,* it is permitted considering it is produced from a safe polymer material.

The Halal Status of Surgical Suture based on the Processing Activity

The halal status of suture products was also determined by the processing activity of the suture production including usage of chemical and processing aids. The chemicals and processing aids refers to all materials other than the main raw materials, which are used for the purpose of cleaning, sterilization, and also the maintenance of sutures. Unfortunately, the status of chemicals and processing aids yet to be defined, thus generate doubts on the status of suture (Mamat, N. E, personal communication, December, 1, 2015)

Sterilization of sutures which use alcohol provoke for verification that alcohol source is not by product of the brewery industry. In the practice of suture production, sterilization of products used industrial alcohol synthesized from petroleum, and not considered as najs. The application of alcohol as a disinfectant has also been mentioned in the 8th Nadwah Fiqh of Islamic Medicine, organized by the Islamic Organisation for Medical Sciences held in Kuwait in 1995. Since it is permitted to use industrial alcohol as the production does not involve khamr (wine) industry, sterilization of sutures using industrial alcohol is also halal.

The determination of halal critical issues of suture is not resolved in the manufacturing facility, hence it is significant to address the logistics issues. Even though the product is verified

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13th – 14th December 2020

as halal, the status shall be sustained along the supply chain. Prevention on mixing of highly packed halal and haram suture during storage and transportation is potentially possible by complying with the halal logistics requirement MS2400. Halal logistics is important to maintain the integrity of the product from the farm to the hospital bedside.

Discussion

The fundamental of hukm of using najs is forbidden based on the hadith narrated by Abu Darda', the Prophet SAW said:

عَنْ أَبِي الدَّرْدَاءِ قَالَ قَالَ رَسُولُ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ إِنَّ اللَّهَ أَنْزَلَ الدَّاءَ وَالدَّوَاءَ وَجَعَلَ لِكُلِّ دَاءٍ دَوَاءً فَتَدَاوَوْا وَلَا تَدَاوَوْا بِحَرَامٍ

Translation: "Allah has sent down both the disease and the cure, and He has appointed a cure for every disease, so treat yourselves medically, but use nothing unlawful."

Since the suture is used for wound stitching in various surgical and treatment procedures, the application is categorized into two levels of maslahah or needs, namely *al-daruriyyah* (emergency/urgency) and *al-hajiyyah* (necessity). A*l-daruriyyah* refers to a form of maslahah that is related to the preservation of human life. The absence of it may destroy human life, for example, individu who do not have halal food to eat, except those that are forbidden like carcasses. If he did not consume the carcass, his life would be in danger or die. Therefore, it is permitted for him to eat the carcass at that time due to an emergency. Similarly, the use of najs for medical intention is allowed when there is no treatment from a halal source either in the situation of *darurah* or *hajah* (Desa, 2012).

The fact of protecting human life not only means to preserve life from harm, but also to protect it from anything that may contribute to risk and harm, such as uncontrol exposure to disease and lack of initiative to do treatment when afflicted with disease. Life sustainability which ranked the second after religion, gives great emphasis on us as it is protected under the Maqasid al-Shariah (Objectives of the Islamic Law).

It is possible that there are sutures that contain the element of najs, since no suture products is halal certified. Najs, in the situation of catgut suture production includes all haram sources either najs mughallazah element (pig intestine) or non-slaughtered animals (ruminant such as bovine intestine) as well as from harmful toxic chemicals.

However, there are Quranic verses that allow the use of material considered as najs to preserve human life.

إِنَّمَا حَرَّمَ عَلَيْكُمُ ٱلْمَيْتَةَ وَٱلدَّمَ وَلَحْمَ ٱلْخِنزِيرِ وَمَآ أُهِلَّ بِهِۦ لِغَيْرِ ٱللَّهِۖ فَمَنِ ٱضْطُرَّ غَيْرَ بَاغٍ وَلَا عَادٍ فَلَآ إِثْمَ عَلَيْهِۚ إِنَّ ٱللَّهَ غَفُورٌ رَّحِيمٌ

Al-Baqarah 2:173

Translation: Verily Allah only forbids you to eat carcasses, blood, pork and slaughtered animals not because of Allah then whoever is forced (to eat it because of emergency) while he does not want it and does not exceed the limit (at the rate of the thing eaten) , then he is not a sinner. Lo! Allah is Oft-Forgiving, Most Merciful.

The priority of choosing maslahah for health and safety purposes rather than maslahah to avoid using najs is higher as mentioned by 'Izz ibn' Abd al-Salam. *Al-Darurah* permitted

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13th – 14th December 2020

things that were originally forbidden in normal situations. The concept of darurah implied in allowing the use of syubhah or haram catgut sutures. This is in line with the method of fiqh:

"Darurah requires things that are forbidden"

However, this permission is not absolute unless there is no other medical alternative (Zulkifli Mohamad Al-Bakri, personal communication, November, 6, 2015). In addition, compulsion in darurah situations shall not exceed the limits of necessity (intended to enjoy delicacies as stated in the method of fiqh:

"Things (which are later forbidden to be) should be due to darurah should be limited to the proper rate"

In this situation, there is an urgency (*al-darurah*) and necessity (al-hajah) to utilize syubhah or haram catgut suture as a tools for wounds closure if there is no other suitable halal sutur alternative when the darurah occurs in line with the views of classical and contemporary scholars. Therefore, it is permissible to use sutures from najs elements as wound dressing material when there is no alternative to halal sutures, which shall be used as a necessity and not to exceed the limits. By adopting the theory of darurah, the *hukm* of haram sutur is compulsory when there is no halal sutur. Whenever the darurah situation is resolved, such as the availability of halal sutur, then the usage of syubah or haram suture is prohibited (Nazih Hammad, 2004).

Conclusion

The suture is one of the suitable medical devices use to initiate an understanding towards halal medical device production. Due to the facts that various halal critical issues are identified along the supply chain.

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TO STUDY THE SEASONAL FACTORS AFFECTING RURAL TOURISM: A CASE STUDY BASED ON THREE HOMESTAYS AT NEGERI SEMBILAN.

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Abstract: *The main purpose of this study is to carry out about the seasonality factors that affect the rural tourism at three homestays in Negeri Sembilan. The homestay entrepreneur, tourist and local resident were involved as respondents because their perception about seasonality were needed in this study. 360 copies of questionnaire have been distributed to collect the data. The data has been analysed using Statistical Package for Social Sciences (SPSS) versi 17.5. The results had been shown that there are factors affecting homestays caused by seasonality. Action should be taken to make sure this industry continuously making revenue for benefit of residents' area. The study was involving of three homestays in Negeri Sembilan Homestay Lonek, Homestay Laman Bangkinang and Homestay Gemas were choosing as a case study. The study identified the main factors that causes seasonality were school holiday and promotion. Thus, the study also recognized the effect of seasonality towards entrepreneur.*

Introduction

Tourism is often associated with holiday activities elsewhere. One of the oldest definitions of tourism concept is given by two tourism research experts, Hunziker and Kraft in Nobert (2005) by defining tourism as a number of relationships and phenomena resulting from the adventures and stays of non-residents in an area (foreigners), during the stay does not make them local residents in the area and does not carry out any employment activities either for a permanent or temporary period. A clearer meaning of tourism can be found in the British Tourism Society. It is based on the definition issued by Bukart and Medik in Nobert (2005) states that tourism is believed to include activities related to the movement of a person for a short period of time to an outside destination of where they work and live.

Nowadays tourism in Malaysia is the second most important sector along with the manufacturing and petroleum sectors. In 2005, the industry accounted for about 43 per cent of the country's Gross Domestic Production, generating a total of RM18.1 billion in the country's economy, mainly through the influx of foreign tourists and locals traveling abroad. This figure is expected to reach up to 59.4 billion in 2010 (9th Malaysia Plan).

One of the nature of tourism has created an imbalance in the tourism industry, in order to develop a country's tourism products this condition should been taken into account. This nature of tourism is known as seasonal conditions Hunziker et. al, Nobert (2005). This situation also occurs in the Malaysian tourism industry. On November to February every year shows the seasonal factors bring decline in tourism activities on the island along the East Coast of Peninsular Malaysia due to the Northeast Monsoon. On the other hand, during April to September the number of tourist's increase because of the suitability to do sea and beach activities such as swimming, fishing, diving and seabed photography activities (Katiman,

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13th – 14th December 2020

2001). This shows that the arrival of tourists also depends on how the weather changes. In addition, the seasonal tourist demand conditions or tourist arrival changing evenly and repeatedly every year also known as seasonality.

One of the famous state in Malaysia practice Adat Perpatih is Negeri Sembilan also rich in natural attraction and developed as a tourist destination for Malaysia plugs. Port Dickson, Ulu Bendol, Kampung Stay Wariasan and Air Panas Pedas are some of the tourist attractions found in Negeri Sembilan based on natural attractions. Similarly, there are several Homestays available in Negeri Sembilan, such as Homestay Laman Bakinang, Kuala Pilah, Homestay Gemas, Tampin and Homestay Lonek, Jempol. This homestay also not excluded from the seasonality affected every tourist destination in Negeri Sembilan. Therefore, the three homestays were selected as a case study in this research to study the seasonal conditions of arrival tourists to the homestay.

Background

Seasonality is an inseparable trait in tourism field. There is no denying that the seasonal situation in the tourism industry has begun to be taken into account in recent times due to the rapid development of tourism. The results of this study and the writing from the theory claim that seasonal conditions will have a negative impact on tourism as well as current tourist destinations (Nobert, 2005). Yet there are rarely papers in discussing this topic. There are two types of seasonal conditions associated with natural seasonality and institutionalized seasonality, where it affects the demand for tourism at certain times based on different types of tourism activities. Natural seasonality, as name implies, is caused by natural phenomena as a result of nature and its forces including parameters as sunlight, daylight, air temperature, water temperature, snowfall, ice cover, rainfall, wind, humidity, precipitation, cloudiness, visibility (Butler, 1994). Mostly homestay is depending on the natural seasonality as well as activities planned by homestay entrepreneur. While institutionalized seasonality is more focused on the tradition of family vacations during the holiday season such as school holidays, public holidays, festive holidays and leisure (Moutinho in Baum et. Al, 2001).

Lundtorp et al. (1999) summarized all causes of seasonality, and categorized them into pull and push factors. Seasonality takes place in both – receiving and generating area and creating pull and push-factors, affecting tourist flows (Kolomiets, 2010). In some of the case calendar, trends, social pressure of fashion categorized as push factor for leisure travellers. While climate, sports, events, physical attractions, destination promotion and accommodation categorized as a pull factors.

Problem Statement

Institutionalized seasonality is due to policies and human actions in a society. Institutionalized seasonality has a wider variety and its shape is constantly changing compared to natural sesoanality. These are the effects of the ethnic, social, religious and cultural beliefs of a society (Butler, 1994). One common form of instutionalized seasonality that influences tourism is public holidays, where the most important elements of public holidays are school holidays and holidays. In Malaysia, the best time going vacation with the whole family is during school holiday season is highly chosen by family because it's not affect learning time of their children.

In addition, with the reduction of working hours, there are longer weekend breaks and special holidays allocated to employees, which gives them the opportunity to gather with family and also travel. Institutionalized seasonality occurs in every tourism product and also effect the three Homestays in Negeri Sembilan, namely Homestay Lonek, Homestay Laman Bangkinang and Homestay Gemas. Based on this type of seasonality as well, a study was

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13th – 14th December 2020

conducted to identify seasonality factors in the three Homestays and their impact on the operators involved.

Independent variables and the dependent are related to one another. The independent part is where we trying to determine if changes to the independent variable (studying) result in significant changes to the dependent variables (the test result). The dependent variable is what changes when the independent variable changes. Dependent variables depend on the independent variables. The dependent variable about what is measured in the experiment and what is measured in the trial and what was affected during the trial. The dependent variable responded to the independent variables. In this study, actual choice of homestay is the dependent variables while the independent variables the theory of factor affecting variables such as seasonality, infrastructure and environment. Figure 1 describe the hypothesis model of independent and dependent variables.

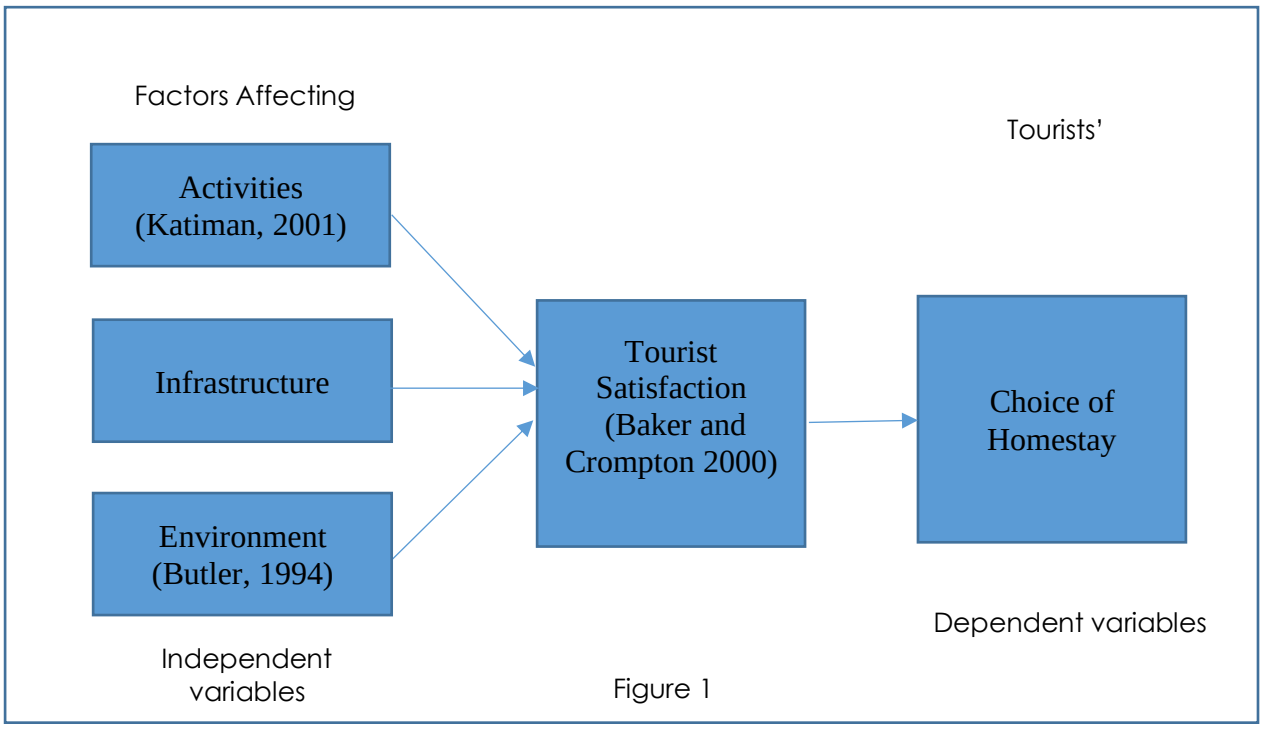

Figure 1

Research Objectives

The research objective for this study is:

i. To study seasonality factors of the three homestay
ii. To identify the effects of seasonality on the three homestay

Research Questions

i. What are the factors cause seasonality to all homestay?
ii. What is the seasonality effects on the three homestay?

Literature Review

Indeed, seasonality exists among these industries, but the demand for tourism may vary from one industry to another in the same period of time. For example, school holidays are a busy time for travel agencies, flights and tourist attractions.

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13th – 14th December 2020

Most tourist destinations are influenced by the systematic changes that occur in the field of tourism throughout the year. In Butler (1994) defines seasonality as a series of movements within a year, in which it will be repeated roughly for each year (Douglas in Baum et. Al, 2001).

According to Swarbrooke et. al in Baum and Lundtorp (2001), seasonality is interpreted as the division of time through the total demand for a product or destination. This phenomenon is associated with peak season and off-season tourists to distinguish a particular time when demand is higher on average or vice versa. Thus, seasonality also means the tendency of tourist flows to be concentrated in only a short period of time in a year (Moutinho, 2001).

Research Methodology

This study is using quantitative methods. This method is used to obtain data on the factors and effects of seasonality on Homestay. In this study, descriptive and correlation research had been chosen as the type of research. This is because the descriptive research is conducted with the objective portray an accurate descriptive of events, situations of person while correlation is carried out to seek relationship (Saunders et al., 2003). Besides that, this type of research is also based on some previous understanding the nature of the problem which is different from exploratory research. As the purpose of descriptive and correlation study is to describe characteristics of the population or phenomenon, it does connect with the purpose of this study which is to study the seasonality factors and effects of the chosen homestay in Negeri Sembilan.

Furthermore, a collections of quantitative data also been used to which involves gathering numerical data using structured questionnaire or observation guides to collect primary data from individuals (Hair et all, 2007). Quantitative data is when measurements which are numbers are being used directly to represent the characteristics of something. Quantitative data collection is chosen because they are recorded through number and being form easily into a statistical analysis. So the result shall be more reliable as it has been derived from numerical types of data instead of qualitative data collection which might leads to bias results.

The main instrument of this questionnaire which is designed by reviewing literature from different source and the key point considered to be essential for this study is put in questionnaire to access the tourist response. The questionnaire is prepared in easy format and the respondent can easily do it within 15-20 minutes. The questionnaire is designed based on objective, problem and hypothesis of the study to measure the relationship between independent and dependent variables.

Questionnaire will be measured based on five point of Likert Scale which is from 1. Strongly disagree, 2. Disagree, 3. Neutral, 4. Agree, 5. Strongly agree. The questionnaire will be distributed to the tourist around Negeri Sembilan.

The data is analysed by using SPSS software (which ever the latest version) and all the graphs and tabulation should be done in Microsoft office. In this study, the respondent and information collected from the various statistical methods will be used to analysed the data that will collect from the respondents. The statistical Package for The Science (SPSS, version 17.0) package will used for statistical analysis. All the items and variable will be coded before entered to the computer. In additional, the Cornbach's Alpha coefficients will also compute to investigate survey will be tested using statistical techniques such as frequencies, correlation and regression.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Research Location

The study location was conducted in three Homestays in Negari Sembilan. The three homestays selected are Homestay Laman Bangkinang, Kuala Pilah, Homestay Lonek Jempol and Homestay Gemas Tampin.

Laman Bangkinang Homestay is located 12 kilometers from Kuala Pilah and also Batu Kikir Town. The village only covers an area of 6 square kilometers. The main tourism product offered here is the village museum which exhibits antique collections in Kampung Tampin Pos. Laman Bangkinang homestay famous with Traditional Sports Festival which will be held every year and also weaving products from mengkuan and bamboo.

Kampung Lonek is located in Jempol. The villagers emphasize Malay cultural and traditional norms seriously and practiced in daily life especially Adat Perpatih. The uniqueness offered to tourists is the Mengemping Festival which is held in July every year.

Homestay Gemas combines four villages, namely Kampung Londah, Kampung Ulu Ladang, Kampung Ladang and Kampung Bangkahulu as one package. Kelamah River Monument is the main attraction where the Australian Army helped paralyze the movement of Japanese troops to the West of Peninsular Malaysia during World War II. Homestay Gemas is also known as Pesta 3M which is Melomang, Merondang and Mengoca. These three locations were chosen due to the close proximity to each other and this will further facilitate the movement of the study group in conducting the study.

Data Analysis

The three data of part A, part B and part C are analyzed by descriptive statistical analysis which is the analysis data in the form of frequency and percentage. Data are presented using mean score. To facilitate the data analysis process, researchers have used the interpretation of the mean score presented by Wiersma (1995) as a reference to the interpretation of the mean score in table 1 below:

Table 1: Division of Interpretation Mean

Mean Score	Level
1.00 – 2.33	Weak
2.34 – 3.67	Moderate
3.68 – 5.00	High

(Wiersma, 1995)

Analysis and Result

Part A (Demografic Data)

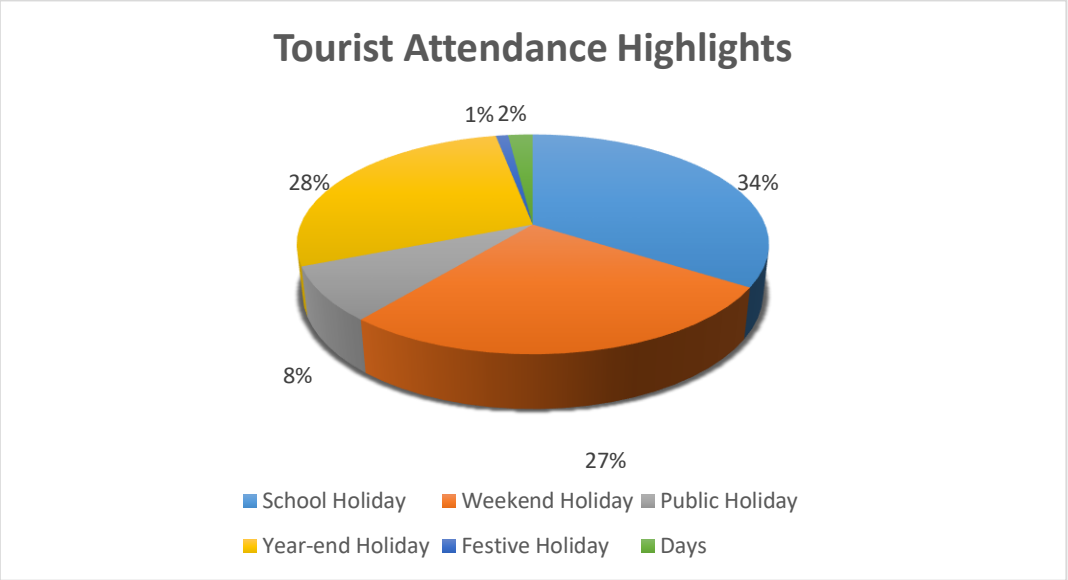
The analysis made is based on research questions to achieve the objectives of the study that have been set. For the demographic information of the respondents, the analysis is in the form of a detailed description in the form of percentages. Table 2 below relates to the demographic information of the respondents:

Table 2: Demographic Information of Respondents

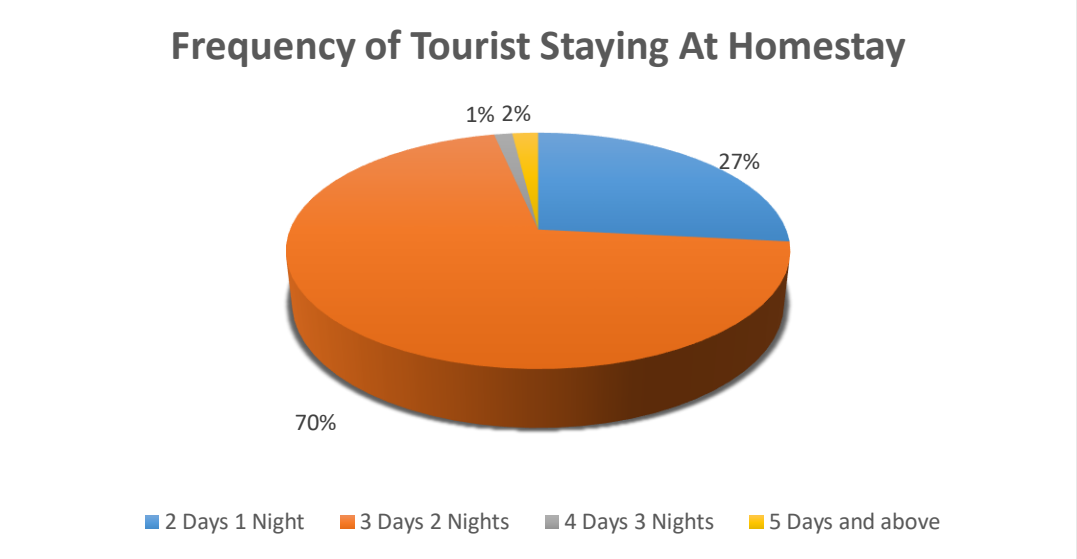
		Frequency	Percent
Valid	Male	160	44.0
	Female	200	56.0
	Total	360	100.0

eISBN 978-967-2426-22-6
13th – 14th December 2020

Part B (Identifying Seasonality Factors in Homestay)



Picture 4.2.1 Tourist Attendance Highlights



Picture 4.2.2 Frequency of Tourist Staying at Homestay

Table 2: Seasonality Factors for Homestay Operators

	N	Mean	Level Acceptance
Programme	360	4.30	High
Tourist	360	4.40	High
Climate Factor	360	4.33	High
Fruit Season	360	4.63	High
Promotion	360	4.53	High
Calendar of Event	360	4.33	High
Overall Mean		4.42	High

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 2 above shows the findings of the study for part B which is the mean score to identify the effects of seasonality on Homestay operators. All the items tested showed that the respondents agreed that the factors of seasonal conditions are influencing the arrival of tourists to Homestay is at a high level that is a total mean of 4.42.

Part C (Identifying the Effects of Seasonality on Homestay Operators)

Table 3: Identifying the Effects of Seasonality on Homestay Operators

	N	Mean	Level Acceptance
Surplus Income (high of tourist)	360	4.33	High
Polllution & epidemic	360	4.27	High
Trends	360	4.43	High
Negative impact	360	4.57	High
InfRstructure	360	4.60	High
Overall Mean		4.46	High

Table 3 above shows the findings of the study for Part C which is the mean score to identify the effects of seasonality on Homestay operators. All the items tested showed that the respondents agreed that the effects of seasonal conditions are influencing the arrival of tourists to Homestay is at a high level which is a total mean of 4.46.

Conclusion

This study was conducted to find out about seasonality conditions that affect rural tourism based on case studies in three Homestays in Negeri Sembilan. The conclusion made from this study is that there is a seasonality factor affecting homestay was involved based on tables 2 and 3 above. The study can identify the factors that cause the occurrence of seasonality is during the school holiday season, organizing events and programs and regular promotions. Furthermore, homestay operators also agreed the seasonality factors affect the tourist arrival at homestay. At the same time, upgrading the infrastructure and facilities also important factors to be considered in order to attract more tourist to come to their homestay.

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ANALYSIS OF HALAL ASSURANCE MANAGEMENT ON IMPORTED FOOD PRODUCTS IN MALAYSIA

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Abstract: *The entry of imported food products into Malaysia is on the increasing trend. However, the weakness in the halal monitoring and enforcement system has given room to the irresponsible entrepreneurs for not conforming to the manual procedure for Malaysia halal certification. This weakness gives rise to various malpractices including the smuggling activities, forgery of international halal logo and certificate, as well as attempts of contaminating with nonhalal ingredients in the food processing. The management of halal assurance system on imported food products in Malaysia is carried out by JAKIM and other government agencies such as the Ministry of Domestic Trade and Consumers Affairs (MDTCA), Ministry of Health (MOH), Food Safety Information System of Malaysia (FOSIM), Royal Malaysian Customs Department, Malaysian Quarantine and Inspection Services (MAQIS), Department of Veterinary Services (DVS) and Local Authority. The monitoring and enforcement are based on Manual Procedure for Malaysian Halal Certification (MPPHM), Malaysian Standard (MS), Trade Descriptions Act 2011 (TDA 2011) and other related directives. Therefore, despite many agencies contributed to this matter, an analysis of Halal Assurance Management on Imported Food Products in Malaysia is crucially needed in the management of halal monitoring and enforcement. This study may contribute to the field of halal management in Malaysia in order to develop a systematic halal assurance management system, particularly for imported food products. This study can provide a guideline for imported food product entrepreneurs in conforming to the act, regulations, procedure and standard specified by the authorities. The implication of this study also benefits the consumers, so that they will become more confident in the halal status of imported food products and entrusting the Malaysian management of halal assurance in monitoring and enforcement system.*

Keywords: *Halal, Assurance, Food Products, Import, Management*

Introduction

The entry of imported food products into Malaysia is on the increasing number since past 10 years. According to Malaysia External Trade Development Corporation (MATRADE 2020), every year the imported food product into Malaysia is always stated as the top ten of major import products. According to World Integrated Trade Solutions (WITS 2018), from 2010 to 2018, Malaysian Imported food products have an increasing number in a good trend over more than 5 years trend. The recent data have shown, the demand for the import of processed food

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13th – 14th December 2020

products from the year 2018 to 2019 was increasing to 2.4% which from RM19.95bil to RM20.28bil for a recent year.

Pertaining to this demand from the consumers, a complete and strong management system in ensuring halal assurance on imported food products is indispensable to avoid any causes of unforeseen issues. Recently, the authorities have busted and seized some of 1,500 tonnes of frozen meat worth RM30mil that had been smuggled from Ukraine, Brazil, Argentina, and China and then repackaging it with the halal logo. (The Star 2020, New Straits Times 2020). This unforeseen issue occurred on cartel meat at a warehouse in Senai, Johor, which has been operating for a few years, allegedly used the warehouse as a location to make fake labels and stamps, which were then pasted on the packages of meat before being sold in the local market. The cartel managed to keep its operations secret by disguising itself as a frozen meat supplier.

On this matter, this also shows the lack of manpower to control goods from entering the country. The recent unearthing of a cartel smuggling in frozen meat shows that there is an urgent need to increase the manpower of the authority's bodies at all entrance gates into the country (The Sun Daily 2020). Therefore, some of the non-Government organizations urged the Malaysian Anti-Corruption Commission (MACC) to conduct a thorough investigation into a meat cartel that smuggled uncertified frozen meat to be sold using fake halal labels.

The demands include revealing the identity and the brand used by the cartel, to investigate how the unauthorized meat was allowed to enter the country, why the meats that have been distributed to the market were not recalled and why no other similar raids have been conducted in other states (News Straits Times 2020). Up until now, the Johor government are in uphold actions in formulating a framework to be taken on the meat cartel involves the state Islamic Religious Department (JAINJ), state Halal Council and all relevant departments including representatives of all ports in the state, will be held soon as it is a serious issue concerning of Muslims foods (Borneo Post 2020).

Due to the above issue, this study will analyze the management of the halal assurance system of imported food products in Malaysia

Management of Imported Food Product in Malaysia

The management of the assurance system on imported food products in Malaysia is carried out by the Ministry of Health (MOH) under the Food Safety Quality Division (FSQD). This management of import and export also has been contributed with many government authorities and agencies such as the Ministry of Domestic Trade and Consumers Affairs (MDTCA), Food Safety Information System of Malaysia (FOSIM), Royal Malaysian Customs Department, Malaysian Quarantine and Inspection Services (MAQIS), Department of Veterinary Services (DVS), Local Authority and also the Department of Islamic Development Malaysia (JAKIM) for the halal imported food products.

Types of Imported Food Products

The types of imported food products in Malaysia can be divided into three types of categories. Which, the imported food product that not declared as a halal product, the imported food products that used Malaysian halal certification and logo, and the last category is the imported food product that used halal certification and logo from foreign halal certification bodies (FHCB) that have been recognized by JAKIM (Zaid et al. 2017). Thus, all of this importation of food products is omitted under the control of the Food Act 1983, Food Regulations 1985, and Trade Description Act 2011.

eISBN 978-967-2426-22-6
13th – 14th December 2020

The Importation of Foods under The Control of The Food Act 1983 And Food Regulations 1985

Generally, the importation of food in Malaysia is not stated specifically towards halal matters but it is contributed with the safety aspect. The importation of foods under the control of the Food Act 1983 and its regulations are not subjected to the import permits. The control is just a food approval by the official office of the Ministry of Health Malaysia (MOH) at the entrance through the Food Safety Information System of Malaysia (FOSIM). The main objective of this control is to ensure the food imported into the country is safe and complies with all provisions of the Food Act 1983 and its regulations. The Imported food control activities carried out at the entrance of the country include the inspection and sampling of food consignments as well as enforcement activities such as detention, withdrawal, rejection, prosecution, and destruction of consignments that violate the food laws. This procedure of approval can be divided into two main phases which are before the importation and during the importation.

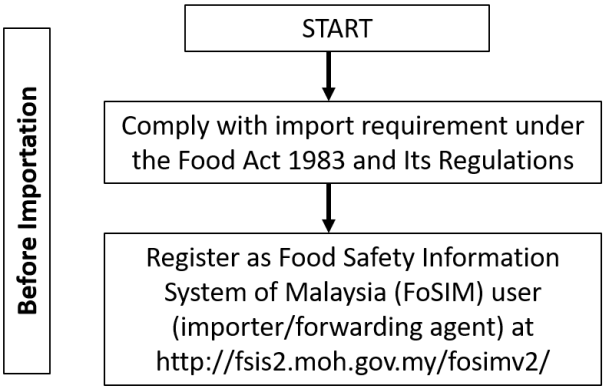

Figure 1: Flow Chart of Food Import Procedures for Importers and Agents (Before Importation)

Source: (Food Safety Quality Division)

Before Importation of The Foods Products

Before the importation, all the importers of food products must ensure they have complied with the Malaysian Food Act 1983 and its regulations. They must ensure the food does not fall under the jurisdiction of the National Pharmaceutical Regulatory Agency (NPRA), Ministry of Health, Malaysia (FSQD 2020). This is because pharmaceutical products are not considered as food products due to drugs or any related under the control of NPRA. Thus, all the importers must identify whether their food requires additional documentation when it is imported such as a health certificate, certificate of analysis, license, or any related documents.

After the fulfilment of the first procedure, the importer and forwarding agent (customs broker) has to register the food products with the Food Safety Information System of Malaysia (FOSIM). FoSIM is a smart web-based information system developed to enhance food security surveillance management systems, besides ensuring the food imported to Malaysia is safe to consume. This system is linked to the Royal Malaysian Customs Department system known as the Customs Information System (CIS), which allows importers, shipping agents, and authorized officers to manage food import activities electronically, using a risk-based approach in determining the hazards of imported food products (FOSIM 2020).

During this procedure, some requirements must be fulfilled by the importers if their product specifically on the infant food or considered as a food that indicates through modern technology (FSQD 2020). The importers with the infant foods shall adhere to the Code of

eISBN 978-967-2426-22-6
13th – 14th December 2020

Ethics for the Marketing of Infant Food and Related Product 2008 governed by the Malaysian Nutrition Department under the Ministry of Health. For the categories of food or ingredients obtained through modern biotechnology, the foods must gain approval by the Ministry of Natural Resource and Environment, Malaysia (NRE) before importation is allowed. Besides, these products must comply with labelling requirements for food and food ingredients obtained through modern biotechnology as stipulated under the Food Regulations 1985 (FSQD 2020).

Furthermore, certain imported food also may require such as import permits or licenses or other requirements from other government agencies. For example, for products that are related to the agriculture and agro-based industry, the importers are required to have import permits or licenses from the Department of Quarantine and Inspection Services Malaysia (MAQIS) under the Ministry of Agriculture and Argo-based Industry (MOA).

During Importation of the foods products

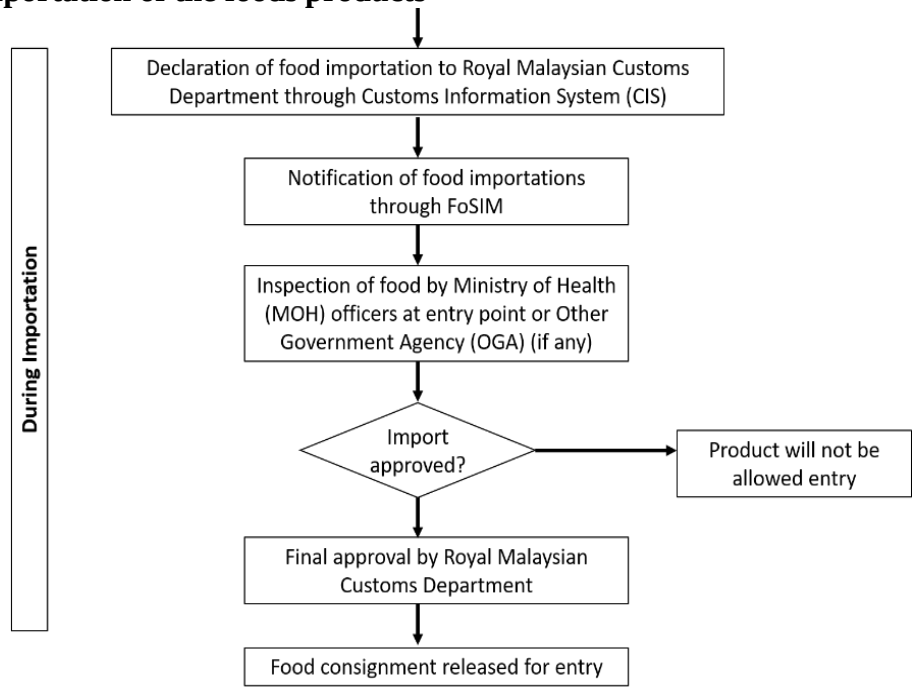

Figure 2: Flow Chart of Food Import Procedures for Importers and Agents (During Importation)

Source: (Food Safety Quality Division)

Based on figure 2 above, this is the procedure of approval during the importation of the food products after the importers have fulfilled the requirements before entering the entrance of the country. For this during importation, it can be measured for several steps before the imported food products can be released to the entry point of the country.

Clearance of Imported Food Consignment via FOSIM

Upon the arrival of food consignment at the entry point, the forwarding agent as known as the customs broker will declare the importation foods to the Royal Malaysian Customs Department via electronic and transferred them to FOSIM system. Upon this process, the forwarding agent will use the updated declaration and fill in the essential information as required by the system to generate an automatic examination level.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Inspection of Imported Food Product at The Entry Point

After the clearance of food consignment by the Malaysian Customs Department, there are six levels of inspection to determine the risk of the food. This depends on the condition of the imported food products. The levels are stated as under the regulations of the Food Safety Quality Division Malaysia (FSQD 2020).

Level 1 (Unconditional Automatic Release), where the food consignment is given an automatic release.
Level 2 (Specific Document Inspection), the Authorizing Officer at the entrance must examine all relevant documents (HC / CoA / License) before issuing the release.
Level 3 (Risk-Based Monitoring), where inspections are mandatory and food samples may be taken for laboratory analysis.
Level 4(Surveillance Surveillance), where inspection and sampling are mandatory. The consignment was released after sampling was carried out.
Level 5 (Hold, Test and Release), inspection and sampling must be done. The consignment is detained after the sampling is carried out and it will be released after the analysis results comply with the Food Act 1983 and the Food Regulations 1985.
Level 6 (Automatic Rejection), where the system automatically rejects the consignment of the food products involved.

Also, if the importation of the food is for research purposes, food for exhibition purposes, food is intended specifically for critically ill patients through hospital application, private use, gifts, and food with special approval from the minister, the confirmation letter of approval is needed.

Pertaining to this matter, any imported foods that are found not to comply with the Food Act 1983 and its regulations, will be denied at the entry-level or re-exported to its region or other countries that can accept it. In other cases, if the imported food has entered the country, a Product Withdrawal Notice will be issued. For the case of Level Five (5), the imported foods will be resistant, test and release for upcoming subsequent food consignments from the same exporter. Other than that, the imported foods will be disposed, re-labeling, re-processing for the quality improvement, or worst the distributor or the importers will be prosecuted under the acts for the court action.

Halal Assurance Management of Imported Food Product in Malaysia

In Malaysia, the Department of Islamic Development Malaysia (JAKIM) is an agency under the Malaysian Prime Minister's Office that has been mandated by the Federal Government to process, verify and issue halal certificates and logos. This includes all local or imported merchandise that acknowledges their products with the halal status. As for now, the Malaysian Halal Certification Scheme is issued into nine categories; food products and beverages, food premises and hotels, cosmetics and personal care, consumer goods, slaughterhouse, pharmaceuticals, logistics, medical devices, and original equipment manufacturing (OEM) (MPPHM 2020). Malaysian halal certification application is open to all interested and voluntary merchandise operators.

The halal certification certificate is issued to the applicant after having passed all the conditions and regulations of Malaysian halal certification. Each owner of this halal certification is bound by the rules and laws that have been set in the Malaysian legislation such as the Trade Descriptions Act 2011, Food Act 1983, or any related regulations (MPPHM 2020). In ensuring the halal assurance on imported food products, JAKIM has conducted a monitoring

eISBN 978-967-2426-22-6
13th – 14th December 2020

and enforcement system on the food products by monitored the recognized foreign halal certification bodies (Zaid et al. 2017). Thus, the process of monitoring and enforcing halal certificates and validating the international halal logo is very important in the management process to ensure the imported foods that entering the country has a guaranteed halal status.

This halal assurance management does not only cover the management and communication systems but also involved the factors that affect the quality of management. Therefore, the management approach of an organization should always be holistic and comprehensive to ensure that imported food products that entering the Malaysian market are always halal and safe to consume.

Types of Halal Imported Food Products

In Malaysia, the halal imported food products can be categorized as the products that used halal certification and logo from foreign halal certification bodies (FHCB) that been recognized by JAKIM (Zaid et al. 2017). According to the FHCB (2020), until now, there is a total of 84 bodies that has been recognized by JAKIM from 46 numbers of countries all over the world. Therefore, all these FHCBs can give certification to the imported food products to be imported to the country.

The Importation of Halal Imported Food Products under The Control of JAKIM and Trade Description Act 2011

JAKIM has established a Procedures for Appointment of Foreign Halal Certification Bodies to ensure the assurance of halal on the imported food products. The purpose of this procedure is to facilitate and conduct a monitoring process on foreign halal bodies that have been recognized to certified imported food products as halal in their own country. Once the imported food products entered the country, JAKIM will not monitor the imported food products again because it has received confirmation from the foreign bodies that have been recognized by JAKIM (Noor Azmi 2015).

Besides, the purpose of this procedure is to encourage any foreign halal bodies or agencies abroad to apply the recognition from JAKIM to market their certified food products to Malaysia. This is because, the halal imported food products that are certified with non-recognition foreign halal bodies from JAKIM, will not be allowed to enter Malaysia (Noor Azmi 2015). Through this circular, it also states the objective of recognition to halal certification bodies abroad. Among the objectives of the circular is to ensure that the halal certification body performs its responsibilities by monitoring and enforcing the products produced in the country (JAKIM 2017).

Procedures on Monitoring and Enforcement as Halal Assurance Mechanism on Imported Food Products

As stated, JAKIM does not have the authority and jurisdiction in carrying out the process of monitoring and controlling for the imported food products that use halal certification from foreign halal certification bodies once the products have entered Malaysia (Noor Azmi 2015). Therefore, one of the ways to maintain the halal status of the imported food products is to impose special conditions on foreign halal certification bodies that have been recognized by JAKIM. Among the conditions imposed, they are required to send a compliance audit report every two years to JAKIM (JAKIM 2017).

Among the aspects assessed during the compliance, an audit is the ability of the recognized certification body to implement halal certification. These include aspects of human resources, a certification system, halal standards or halal guidelines, experts in the field of

eISBN 978-967-2426-22-6
13th – 14th December 2020

shariah and technical, fatwa, sources of references, management and control of certification records as well as conducting monitoring and enforcement (JAKIM 2017). In addition to halal certification compliance audits, JAKIM also conducts observational audits on slaughterhouses and factories or food processing plants to recognized overseas Islamic bodies (JAKIM 2017). Once the compliance audit and observational audit are obtained, the report of the audit results will be presented in the meeting of the halal certification panel board to obtain results. If the decision on the application for recognition is approved by JAKIM, a letter of appointment will be given to the halal certification body and the confirmation of the recognition of the halal certificate for the foreign halal body will continue. After that, a list of all overseas halal certificates recognized by JAKIM will be uploaded on the JAKIM website.

For the application that failed for the audit results, an official letter will be issued informing the rejection and withdrawal of recognition. For the Foreign halal certification body that fails to submit the compliance audit report, or JAKIM finds any doubt on the report submitted, JAKIM will send a two-week reminder notice to resubmit and revise the audit report (MPPHM 2020). If the foreign halal body fails again to submit the audit report within the times given, automatically the halal recognition will be withdrawn (Noor Azmi 2015).

Furthermore, JAKIM has the right to announce the withdrawal of the halal recognition of the foreign halal body to the public. This is to ensure the industry in Malaysia and the consumer to aware of the latest halal certification bodies (Noor Azmi 2015). However, the foreign halal certification bodies that have withdrawn, may re-apply to obtain recognition after six months from the withdrawal of the certification (JAKIM 2017). If the application has fulfilled as stated in the requirements, JAKIM will once again set-up an audit of compliance for the application (JAKIM 2017).

A Halal Assurance on The Enforcement Actions

In general, no specific enforcement action is imposed by JAKIM/JAIN/MAIN on imported food products that used foreign halal certification bodies unless there are complaints and doubts about the imported food products (Zulzaidi 2011, Zaid et al. 2017). If there are reports and complaints of halal doubts about the food product, then the action of enforcement will be taken (Noor Azmi 2015). The inspection performed is almost the same as the enforcement inspection carried out on the local food products that used JAKIM halal certification. If there is a complaint in terms of ingredients that are not halal or dubious, JAKIM will take a sample of the food for laboratory testing at the Department of Chemistry Malaysia. After they obtain the result and found the food product has violated as stated on the halal guidelines, then immediately, the certificate of recognition for the foreign halal body will be withdrawn from the JAKIM recognition list (Noor Azmi 2015).

A notice of withdrawal of halal certification recognition will be issued and the matter will be notified to the involved foreign halal certification body. As a result of the withdrawal, all imported food products that used the halal logo and certification of the foreign halal body will be ordered to be blocked by the Royal Malaysian Customs Department and Malaysian Quarantine and Inspection Services Department (MAQIS) at the national border (Noor Azmi 2015, Zaid et al. 2017).

For products that are already in the Malaysian market, the imported food products that are confirmed to have doubts and violate the prescribed of halal circulars will be ordered to be removed from the Malaysian market according to the batch of food and their entry numbers. However, imported food products of the same type and brand but used different batch numbers will not be withdrawn. In addition, for other imported food products that used as same as the withdrawal foreign halal certification body on their products will not be withdrawn from the

eISBN 978-967-2426-22-6
13th – 14th December 2020

market (Noor Azmi 2015). This is because only the confirmed products to have doubts and violate the prescribed halal circulars will be ordered to be removed.

Prosecution Process

Prosecution actions such as legal action will not be imposed on the foreign halal certification bodies that recognized the imported food products even if it violates the guidelines that have been set. This is due to the absence of specific laws or acts that can be taken to bring legal action against the international halal certification body (Noor Azmi 2015). The prosecution action against halal certification bodies cannot be done because the act in the Malaysian constitution is only subjected to matters that are related to Malaysian affairs and not to international bodies (TDA 2011).

Analysis of Halal Assurance on Imported Food Products

As mention on the importation of foods under the control of the Food Act 1983 and Food Regulations 1985, the importation of food in Malaysia is not stated specifically towards halal matters but it is contributed with the safety aspect. But if the imported food products declared the status of halal by using the recognized foreign halal certification bodies and logo, halal assurance will be checked together while the activities of importation are carried out indirectly.

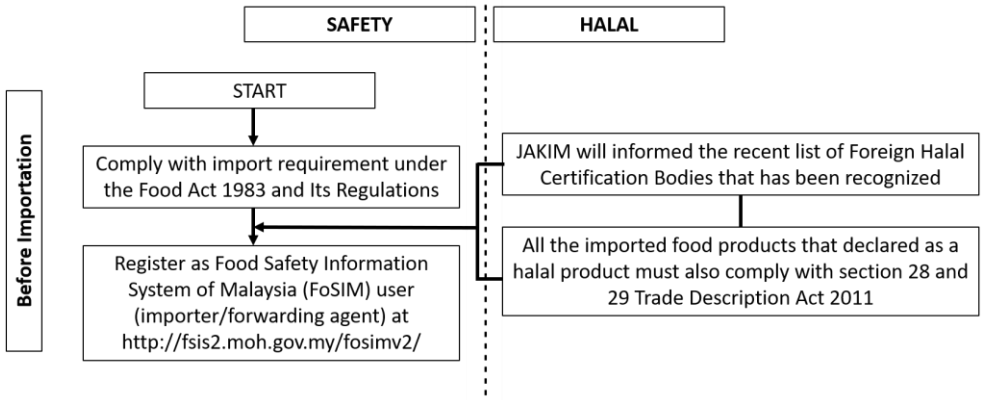

Figure 3: Flow Chart of Halal Food Import Procedures for Importers and Agents
Source: (Noor Azmi 2015)

According to figure 3, before the entrance of imported food products, JAKIM will give the information to the Food Safety Information Management (FOSIM) under the Food Safety Quality Division the latest recognition list of foreign halal certification bodies. This is to inform the Customs and MAQIS to uphold a responsibility to check and accept or reject the imported food products that are declared as halal.

If the violation occurred for the imported food products that declared as halal products, the products are considered to violate two main Acts, which is Food Act 1983 and its regulations and Trade Description Act 2011 under section 28 and section 29 orders for the issues of violating the definition of halal or using fake halal logo and certification on the products.

Pertaining to this matter, the actions will be taken by JAKIM and the prosecution by Ministry Domestic Trade and Consumer Affairs (MDTCA), regarding the violation made by the importers to ensure the halal assurance upon the imported food products. For example, if

eISBN 978-967-2426-22-6
13th – 14th December 2020

the food products contain non-halal ingredients or dubious, the affected products will be recalled by its brand and batch from the market. Besides, the foreign halal certification body that certified the product will be delisted from the JAKIM's Recognition. The importer of the product also can be fine under the Trade Description Act 2011 and JAKIM will make an announcement or public information about the affected product and the delisted halal bodies to the consumers (Noor Azmi 2015).

Conclusion

In conclusion, the implementation of halal assurance for imported food products, JAKIM, and other agencies such as the Food Safety Quality Division (FSQD), FOSIM, Customs, and MAQIS are working together to maintain the status of halal and safety of a product. This is due to the imported food product in Malaysia is voluntary and not mandatory. Every food product declared with halal is subjected to the Trade Descriptions Act 2011, Food Act 1983 and its regulations, and Manual Procedure for Halal Certification (MPPHM). If the imported food products used the International Halal logo and Certification, the logo and certification must be listed as the Foreign Halal Certification Bodies list that is recognized by JAKIM. Thus, if the imported food products or the importers violated these orders, they will be punished under the related rules. Therefore, these actions can be assured as halal assurance system in maintaining the halal and safety aspects of the halal imported food products.

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TOURIST TRACKING APPS: INNOVATIVE PRODUCT FOR TRAVEL AGENCY

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Abstract: *Travel agency is one of the most important organizations in the tourism sector that plays an important role in promoting tourism in the country or in the destination visited. Tour guides are individuals who are responsible and take care of the group when taking tourists to a visit destination. The difficulty that tourists always face when handling tourists is like tourists disappearing form a group while making a tour. The traditional technical approach is the participant observation method, non-participant observation, remote observation and video detection. This technique takes quite a long time to track tourists. Today, GPS is widely used in various fields. This technology can assist in navigation, supplying the tourist information obtained. This innovation project uses the Global Positioning System (GPS) and MIT Apps in the Tourist Tracking Apps Application. The innovation of Tourist Tracking Apps is used in smartphones using device tracker devices, namely smart GPS watch and smart button finder. Tourist Tracking Apps serve as an app to track the location of tourists when they walk or move in the places visited. In this application there are several facilities for tour guides to use it such as tourist locations, tourist identities, maps, as well as itineraries that will make it easier for tour guides to track tourists. This application will be used by tour guides when bringing tourists to the destination visited. In addition, this app helps track travellers more easily and quickly.*

Keywords: *Tourist, Tracking, Apps, Travel Agency*

Introduction

Tourism can have defined as a person out from place that their stay to feel the relaxation, attraction or recreation at another place. Tourism also is one of contribution to our economy for example is, tourist visit to village at Kelantan their buy something from the community product at that area is could increase the income of people around there. The basic of tourism product is accommodation, food & beverage, transportation and attraction, this is also being one of method to increase the economy income. Tourism is very related with traveller, everyone is travellers it could be from different ages, gender, nationality, country or religion.

Travel agency is one of the most important organization in the tourism private sector which plays a significant and crucial role in the entire process of developing and promoting tourism in the country or at a destination. It is a travel agency which packages and processes all the attractions, accesses, amenities and ancillary services of a country and present them to tourists. The operation of each travel agency is based on the scope of its activities and organizational size. Most travel agencies sell both commercial and leisure travel but there are many travel agencies which only specialized in one sector or the other. travel agency also will provide the tour guide or tour leader in their company, tour guide is function as personal in charge in tour grouping with the tourist. Tour guide working as a person who responsibilities in group to make sure and take care of their tourist, their also is work as person who are know the knowledge about that place. There has been selected to have a knowledge about that area in detail, there must to provides assistance, information on cultural, historical and

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13th – 14th December 2020

contemporary heritage to people on organized tours. As a tour guide also have faced with many of problems when travel by grouping for example is tourist is lost from group when travel. To solve this problem, have the tourist tracking methods, tracking tourist that was conducted can be divided into two which are traditional approach and modern approach. Each tracking method has their advantages and disadvantages.

Traditional tracking technique approaches can be divided into two which are direct observation technique and non-observation technique. The direct observation technique can be summed up using the words "identify, follow, observe and map" (Thornton et al.1997, 1851). The direct observation technique can be divided into four which are participant observer method, non-participant observation, remote observation and aggregate video tracking. Therefore, the study is focus on CS Tracking Apps. CS Tracking Apps is function as apps to trace people location when their travel by grouping. This tracker will be connecting with the bracelet and apps in the smart phone, inside of CS Tracking Apps, tour guide will be a admin in the apps to know the location of their tourist, these apps will be show the map by walk, drive and any transportation inside that.

Problem Statement

According (Khairul, 2019) almost three hours to find out one of my guest is missing from group while travel to Korea two weeks ago and she is a senior citizen. CS Holidays that are not only main package to Umrah & Hajj but their also providing package to another country, that is problems that always them faced when travel with the group and their guest is also from any type of ages. To control the everyone is not an easy thing, have many kind of attitude to keep and at the same time to make sure they satisfying with travel agency service. Other than that, if this problem is happened that's not only impact to travel agency but to another tourist and also interfere with the itinerary.

Objectives

1. To identify new innovation product for CS Holidays Sdn Bhd.
2. To design a suitable innovative tourism product for CS Holidays as a tool for tour guide to track missing tourist.
3. To produce a CS Tracking Apps for CS Holidays.

Literature Review

According to (Mohamad Akmal Toha, Hairul Nizam Ismail, 2015) Historic city offers tourists a mixture of cultural heritage and leisure activities in a unique set-ting. However, there are limited research addressing the movement and behavior of tourists in tourism destination that leads the understanding of urban function towards "heterogeneity" and "multi functionality". In order to maintain and ensuring long-term success as an attractive des-tination for tourists, tourist's movement and behavior is most likely an important element to be fully understood by decision maker. Hence, the method of tracking tourist is one of the im-portant aspects in providing better picture, especially in the context of obtaining accurate data on the tourist's movement. Hence, the studies were designed to determine the potential worth of the various tracking technologies for research on tourist movement in Melaka historic cities.

The discussion in this paper focusing on 6 traditional and 5 modern methods of tracking tourist's movement. Accuracy, availability, location of the study area, costs, privacy of travelling, duration of tracking and suitability in tracking daily movement are used as variables to identify which tracking method is the best to track tourists in heritage site. Existing literature

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13th – 14th December 2020

indicates that application of GPS in a smart phone emerges as the best option method for tracking tourists in Melaka heritage site. By comparing methods of tracking tourists, it may assist researcher to choose the best option of method to obtain accurate and precise data about tourist movement. Thus, the study offered a systematic review of several tracking technologies in which potentially able to push the boundaries of tourism studies, as well as improving policy making, planning and management in tourism area.

Methodology

A research framework is the step of process, task, and tools to make a project from start to finish. Below flowchart CS Tourist Tracking Apps.

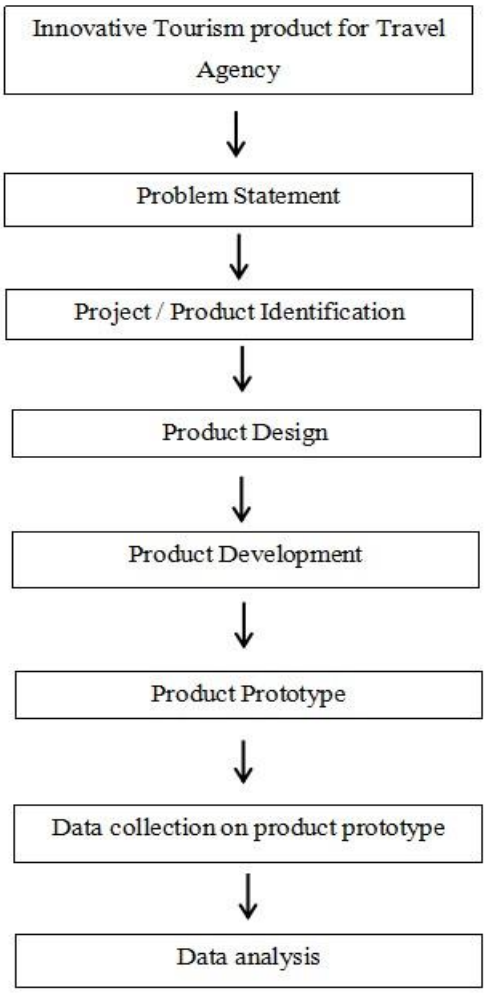

Figure 1: Flowchart CS Tourist Tracking Apps.

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13th – 14th December 2020

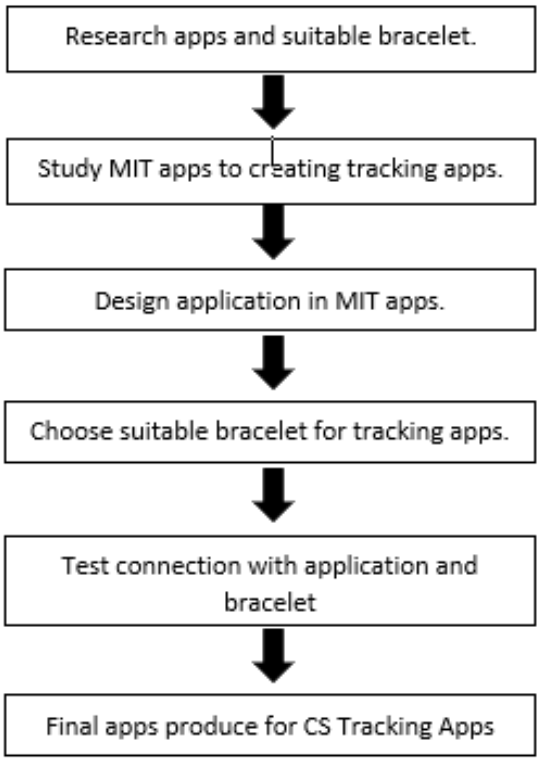

Figure 2: CS Tracking Apps Development

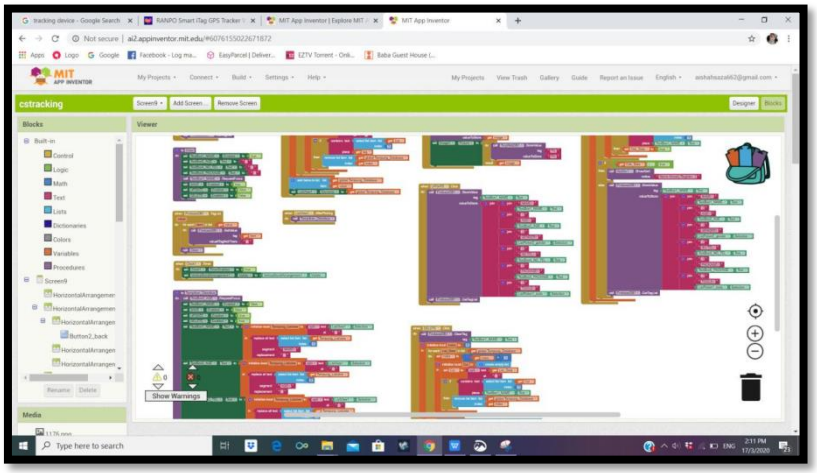

Figure 3: MIT Apps Inventor is the platform to create and design the CS Tourist Tracking.

eISBN 978-967-2426-22-6
13th – 14th December 2020

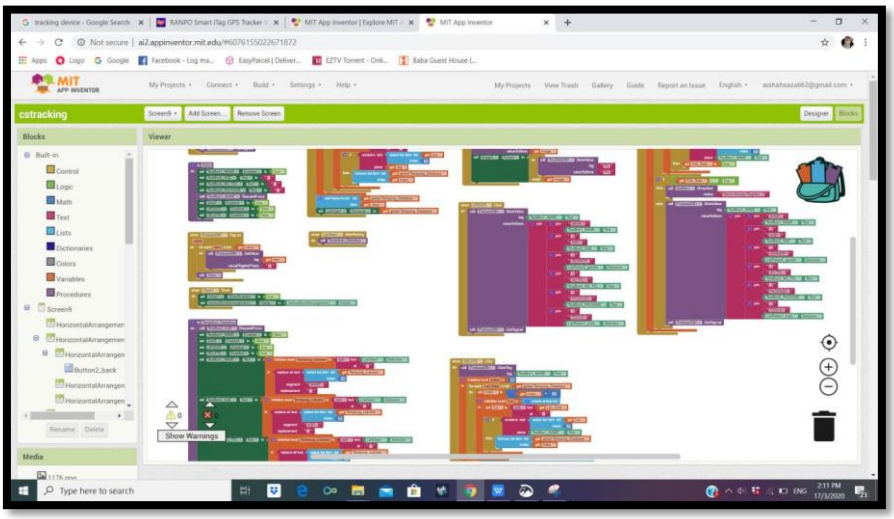

Figure 4: This is block that using to design the application.

Figure 5: The device that use in Cs Tracking Tourist.

Finding and Discussion

Figure 6: Front Page Apps

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13th – 14th December 2020

The front page of apps, first of all the user need to log in to go to next screen is menu.

Figure 6: Menu Page

Menu page is show the headquarters of CS Holiday was located at Jalan Tuanku Abdul Rahman & have five elements.

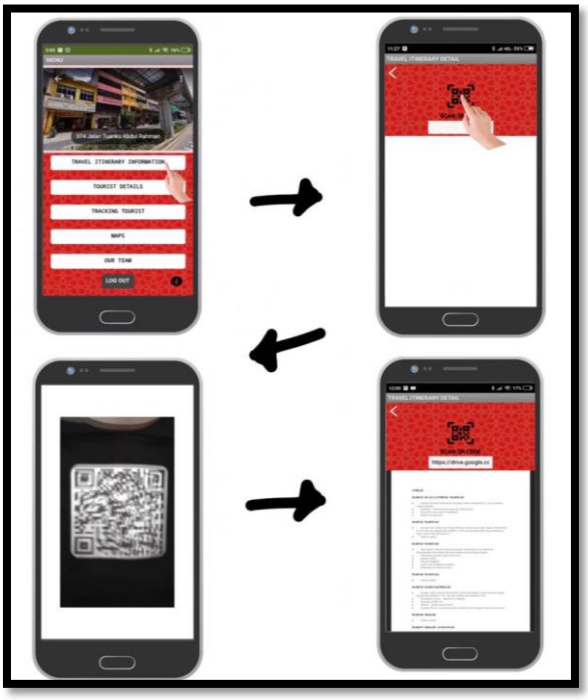

Figure 7: Step using Travel Itinerary

Step to using Travel Itinerary Information, have to screen QR Code first and the detail will come out.

eISBN 978-967-2426-22-6
13th – 14th December 2020

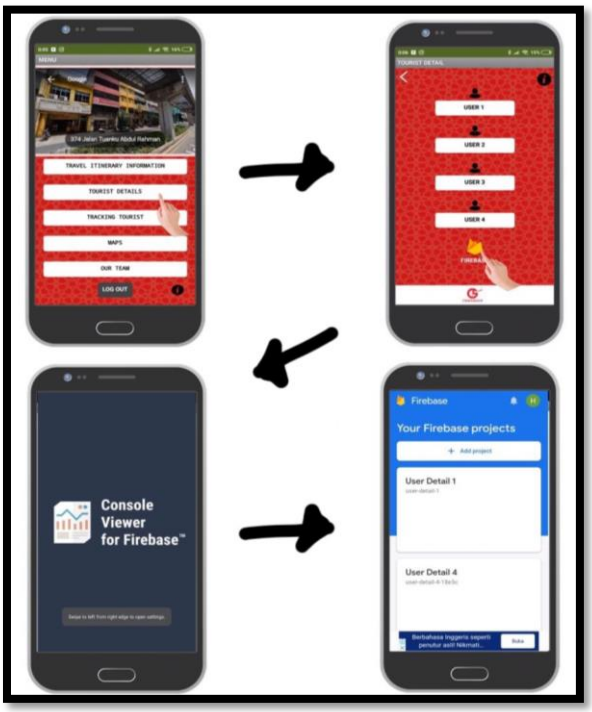

Figure 8: Step using Travel Itinerary

Step to using tourist detail, all the detail of tourist is using the device will be save at firebase.

Figure 9: Fill for user details

Tour guide need to fill user details before start the travel journey. This is how to fill the form at user detail.

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13th – 14th December 2020

Figure 10: Tracking Tourist

The tracking tourist is the element to trace the position of tourist was missing, through using watch & button. Tracking tourist have four type of application would be connected to find the tourist.

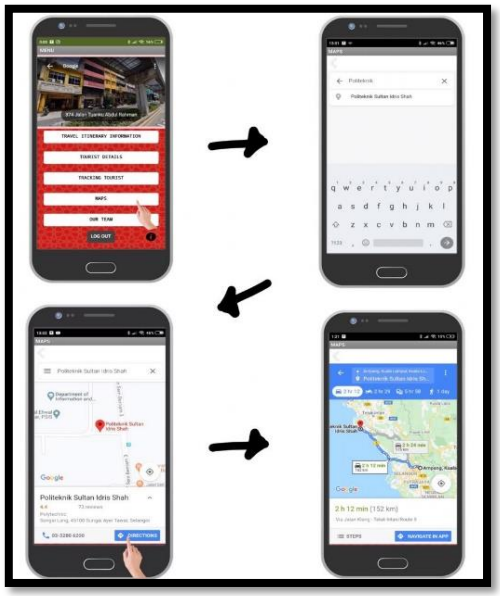

Figure 11: Maps

In this apps, maps are the extra element inside of CS Tracking Tourist to find place.

Strength

CS Tourist Tracking is product method are using to find the tourist when missing. This application is providing many of element that can make tour guide to easy to find their tourist. This product now days are still decrease in Travel Agency market, this product also can connect with the many kind of android mobile phone with easy.

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13th – 14th December 2020

Weakness

This product is problems when to find the best line connection with internet. Sometime this application is stuck when to click the back button. This product also only can use android mobile phone only but for iOS mobile phone such IPhone it's can't. Other than that, this product it only can use for tour guide only.

Opportunities

This product can make the itinerary of tour can become go with the flow and do not drag to much of time when travel with the tourist. This product can apply for another travel agency using tourist tracking apps when handling tourist during visit places.

Conclusion

CS Tracking Apps is very functional to user for tracking as an easy way, that also are function as a safety to everyone when something happen be, mostly to person do not know to use the mobile phone especially to kids & senior citizen. CS Tracking Apps a product that can be beneficial to travel agency and tour guide out there. In additional, CS Tracking Apps product can use for everyday as protector to themselves. Finally, CS Tracking Apps build to solve the problem CS Holidays to find tourist during visit places. Besides that, this application can attract more tourist to choosing CS Holidays and archive their goals in marketing.

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13th – 14th December 2020

POLITICAL CULTURE OF THE COMMUNITY IN PEMATANGSIANTAR CITY (CASE STUDY OF THE BIRMINGHAM SMALL ARM OWNER MOTORCYCLE SIANTAR (BOM'S) COMMUNITY IN PEMATANGSIANTAR CITY IN SUMATERA UTARA GOVERNOR'S ELECTION IN 2018 AND PRESIDENTIAL ELECTION IN 2019

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Abstract: *The political culture of the community can be seen from the symbols that are used and the actions of the community. The purpose of this study is to describe the Political Culture of the Birmingham Owner Motorcycle Siantar (BOM'S) Community, which accommodates the owners of Birmingham Small Army (BSA) motorbikes and Siantar's Pedicabs using Birmingham Small Army (BSA) motorbikes in the 2018 Sumatra Utara Governor's Election and the 2019 Presidential Election. The research method uses a qualitative approach with descriptive type, the research location is in Pematangsiantar City. The research informants use in this study is a purposive technique, that is the key informants of the Komisi Pemilihan Umum Daerah (KPUD) of Pematangsiantar City, Badan Pengawas Pemilihan Umum (BAWASLU) of Pematangsiantar City. The main informants are the President, the administrators, and members of the Pematangsiantar City BSA/Birmingham Small Arm Owner Motorcycle (BOM'S) community. Additional informants are political party administrators, namely Partai Indonesia Perjuangan (PDI-P), Partai Demokrat, Partai Amanat Nasional (PAN) of Pematangsiantar City who knowns the political culture and voter's behavior of the BSA/Birmingham Small Arm Owner Motorcycle (BOM'S) community in Pematangsiantar City during the Governor's Election and Deputy Governor of Sumatera Utara in 2018 and the Election of Indonesian President and Vice President in 2019. The results Political Culture of the Birmingham Owner Motorcycle Siantar (BOM'S) Community is participant political culture. The Political Culture of the Participants is inseparable from the history of the establishment of the Birmingham Owner Motorcycle Siantar (BOM'S) community which aims to make the Siantar pedicab (Becak) a cultural heritage object and a tourist vehicle in Pematangsiantar City like "TukTuk" in Thailand and "Jeepney" in the Philippines.*

Keyword: *Political Culture, Partisipant, BOM'S, Pematangsiantar*

Introduction

The political culture is a pattern of behavior and orientation in the public life of the state, state administration, political government, law, customs, habits and norms internalized by all members of society every day. Political culture can also be interpreted as a common value system of the society awareness to participate in collective decision making and public policy decisions to the public. (Arifin, 2016).

eISBN 978-967-2426-22-6
13th – 14th December 2020

The political culture of society can be seen from the symbols used and the actions of a society as well as the voter behavior of a community in the Regional Head Election and the Presidential Election. The Birmingham Owner Motorcycle Siantar (BOM'S) community which accommodates the owners of the Birmingham Small Army (BSA) motorbikes and the Siantar Pedicab motorbikes using the Birmingham Small Army (BSA) motorbike has a Participant Political Culture which has always been used as a symbol in the local political process of the 2018 North Sumatra Governor Election and The 2019 Presidential Election. Political Culture of the Participants is inseparable from the history of the establishment of the Birmingham Owner Motorcycle Siantar (BOM'S) community which aims to make the Siantar Pedicab become a cultural heritage object and a tourist vehicle in Pematangsiantar City like "TukTuk" in Thailand and Jeepney in the Philippines.

The people of Pematangsiantar City have conducted the election for the Governor of North Sumatra in 2018. The level of community participation in Pematangsiantar City is 67.5%. From the results of community participation, the pair Edy Rahmayadi and Musa Rajeksah (Eramas) received: 41.55 votes, while the pair Djarot Saeful Hidayat and Sihar Sitorus (DJOSS) received: 68,604 votes (kpu.go.id, 2018)

On April 17, 2019 the people of Pematangsiantar City participated in the Presidential and Vice Presidential Election for the 2019-2024 period, the political participation rate reached 81.2% (kpu.go.id, 2019).

The political culture of the community can be an indicator of the ongoing democratic process. Along with the better democracy, it will indirectly create a political culture of a society. This can be a reference for people's maturity in democracy as seen from the use of people's voting rights in Legislative Elections, Regional Head Elections (Mayor / Governor Elections), and Presidential / Vice Presidential Elections.

The purpose of this study describes the political culture of the BSA Owner Motorcycle (BOM'S) community in Pematang Siantar City in the 2018 North Sumatra Governor and Deputy Governor Election and the 2019 Presidential and Vice-Presidential Election.

Literature Review

With the study of political culture, we can know and understand the attitudes of citizens towards the political system which will then influence the demands, responses, support and orientation of the community towards the political system. So that the intention of the people to carry out their activities in the political system or the factors that cause political shifts can also be understood. We can also understand the shared value system of a society that has the awareness to participate in collective decision-making and public policy making, and understand their behavior patterns in state life, state administration, government politics, law, customs and norms shared by all. community members every day. (Fauzan, 2014)

The study of political culture is always interesting. Apart from being related to political developments in a country, political culture is also related to the dynamics of people's political participation. This means that political developments in a country are greatly influenced by cultural developments that exist in the society of that country. Education and political understanding of society (in the Indonesian context) greatly influenced the development of political culture in Indonesia which had different characteristics during the Old Order, New Order, and Reformasi periods. (Sumartono, 2018)

Indonesia's current political culture is a mixture of parochial, traditional, and participant, in terms of Participant Political culture, all of its characteristics have occurred in Indonesia and there are also characteristics of Parochial political culture that fulfill, such as what happens in traditional societies and in traditional political culture. who fulfill such as

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13th – 14th December 2020

citizens fully aware of government authority. After the reform era, people say that Indonesia has used a participant political culture because of the freedom of democracy, the participation of society and is not subject to decisions or the performance of the new government. (Yusuf, 2016)

In Budi Mulyana's research in January 2015 (Rasaili, 2016), Indonesian political culture is a mixed political culture, a combination of 3 (three) political cultures: 1, 20 percent parochial culture, coming from poor people, low education, remnants and isolated tribes. ; 2 political culture participants 16 percent, from among scholars, students, urban political elites and village elites; and 3 cultural subjects, 60 percent of the urban middle class and the rural masses. This research strengthens the concept of a mixed political culture of Almond and Verba, they state that the political culture of a nation is in fact a mixed political culture. It will not be found in the empirical reality that a nation has only one kind of political culture. A mixed political culture that is proportional is a democratic culture known as citizenship (civic culture). There is no nation that has a certain political culture, including Indonesia, because its background, economy, education and views make a difference in the style of political culture. (Rasaili, 2016)

Gabriel A. Almond and Sydney Verba (Arifin, 2016) explained that, based on the attitudes of citizens towards political life and government in his country, political culture can be differentiated into three types: Apathetic political culture (Parochial), Mobilization of political culture (the subject), as well as a Participatory political culture (Arifin, 2016)

According to Ranney, political culture has two main components, namely cognitive orientations and affective orientation. Meanwhile, Almond and Verba more comprehensively refer to what Parsons and Shils formulated regarding the classification of orientation types, that political culture contains three components of political objects, namely: a. Cognitive Orientation, b. Affective Orientation. c. Evaluative Orientation.

According to Johari (in Fauzan 2014). Types of political culture can be distinguished based on: 1. Based on the attitudes shown. Countries with complex economic and technological systems demand broad cooperation to integrate capital and skills. The spirit of cooperation can be measured from one's attitude towards others. In this condition, political culture tends to be militant or "tolerant". This type is divided into two, namely: a. Militant political culture. A militant political culture does not view differences as a search for the best alternative, but sees it as a vicious and challenging endeavor. When a crisis occurs, what is sought is the scapegoat, not the regulations that may be wrong. b. Political culture of tolerance Political culture of tolerance is a political culture whose thoughts are centered on problems or ideas that must be assessed. 2. Based on political orientation. The reality found in political culture has several variations. Based on the political orientation characterized by a character in political culture, every political system has a different political culture. From the reality of political culture that develops in society. (Fauzan, 2014)

BSA *Owner's Motorcycle* (BOM'S) of Community Pematangsiantar City

The long journey of the BSA Becak in Pematangsiantar City from the beginning of its existence in 1960 until now as an object that has historical and cultural value has been famous in North Sumatra, Indonesia, and even the world. According to Warongan (2014), this is because Pematangsiantar City is the only city in the world that uses big motorbikes in the BSA (Birmingham Small Arms) brand as a means of public transportation. (Princess, 2018)

BOM'S was established on June 25, 2006, in Pematangsiantar City, North Sumatra Province, for an indefinite period. The nature and form of BOM'S as stated in AD / ART article 3 (nature and form), is an old motorbike organization for two-wheeled and three-wheeled motorbikes (becak), especially the BSA brand which is open to all citizens of the Republic of

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13th – 14th December 2020

Indonesia, regardless of ethnicity, race , profession, gender, religion, and belief in God Almighty. (Warongon, 2014).

Currently, the population of Siantar becak is decreasing and disappearing from the streets of Pematangsiantar City. The more difficult it is to find siantar rickshaw drivers using a Birmingham Small Arm (BSA) motorbike as an indicator of the increasing scarcity of motorbikes or rickshaws with the Birmingham Small Arm (BSA) brand motorbike. The large number of old motorbike enthusiasts has resulted in many motorbike and rickshaw owners selling their motorbikes or rickshaws to buyers from outside Pematangsiantar City. (Ritonga, 2020)

Table. 1. Populasi periodik Becak BSA di Kota Pematangsiantar

Tahun	Periodic population of BSA in Pematangsiantar City
1958-1970	1.120 Unit
1970-1990	3.000 Unit
1990-1995	1.070 Unit
1995-2005	610 Unit
2005-2015	378 Unit
2015-Sekarang	227 Unit

(Ritonga, 2020)

Based on the research results from the history presented and the observations of the researchers, it is known that the number of Siantar becak using BSA motorbikes is becoming increasingly difficult to find in Pematangsiantar City. This is due to several factors, namely the operation of the Siantar becak which is expensive (the income and operational expenses of the Siantar becak are not balanced), the competition with the Japanese brand motorized rickshaws, the existence of On-Line transportation (Grab and Go Jek), the increasing number of Siantar becak owners who sell their becak or motorbikes. to people outside Pematangsiantar City due to economic needs, school fees, housing needs and others. These are some of the factors that have led to a drastic reduction in the number of Siantar becak in Pematangsiantar City. (Ritonga, 2020)

2016 is the first step in stepping into the peak of the struggle of the Birmingham Small Arm Community (BSA) Owner Motorcycle Siantar (BOM'S) community, with the inauguration of the Tuga Becak Siantar building as an icon of Pematangsiantar City, proving that the long struggle of this community has been well received by Pematangsiantar City Government, City DPRD. Pematangsiantar and the people of Pematangsiantar City as a sign that the Becak with the BSA motorbike brand belongs to Pematangsiantar City and is the only one in the world. Now the Siantar Becak Monument is one of the photo spots used by both local and foreign tourists to do selfies (selfie and wefie). Visiting Pematangsiantar City is incomplete if you don't take a photo with the Siantar Pedicab Monument in the background. (Ritonga, 2020).

Previous Research

The study conducted by Nurlinda, Muhammad Arsyad Tanzil in 2018 was entitled: Community Political Culture in the Election of the Head of Malalanda Village, Kulisusu District, North Butonn Regency. The results showed (1) The political culture of the community in the Head Election in Malalanda Village, Kulisusu District, North Buton Regency can be divided into three, namely (a) Parochial political culture, the community in the election of the village head is apathetic or not interested in the election. (b) The political culture of the pastor is that the people in electing a village head just follow suit, regardless of who the winner is. (c) Participant

eISBN 978-967-2426-22-6
13th – 14th December 2020

political culture is a community that participates in the election of village heads in the form of enthusiasm in voting. (2) What factors cause the community to choose a village head in Malalanda Village, Kulisusu District, North Buton Regency: (a) Rational factors, namely choosing because of the factor of channeling voting rights, Voting because of the candidate's education factor, Choosing because of the candidate's vision and mission , Choosing because you know the ins and outs of the candidate, (b) Pragmatic factors, namely choosing because they expect rewards from the candidate, (c) Emotional factors, namely choosing because the candidate's house is close (Nurliinda, 2019)

Research conducted by Aisandi Dian Hapzin, Syafruddin, and M. Mabrur Haslan in 2019 with the title Political Culture of the Sasak Tribe Society in Direct Regional Head Elections (Study in Pringgajurang Village, East Lombok Regency). The results of the study show that the people of Pringgajurang Village have the characteristics of a subject / subject political culture with a tendency towards affective attitudes and political orientations (feelings) in determining their political choices, mostly choosing based on affective factors (feelings). The political culture of participants can be seen from the level of community participation in the direct post-conflict local election in East Lombok Regency which is already quite high, where the community already has the awareness to participate in voting without coercion from others, the participants here are passive participants because the community participates in voting because they want to choose one of the pairs carried by one of the religious organizations, namely the NW (Hapzin, 2019)

Research conducted by Rasaili in 2016 with the title "Political Culture and Quality of Democracy in the 2015-2020 Pilkada (Study on the First Concurrent Regional Head Election in Indonesia), the results of his research state that in reality there is no dominant political culture in one country, between parochial, kula and participant. In Indonesia it is more of a mixed political culture, a combination of the three political cultures. Political behavior in the regional elections which then serves as a measure of the quality of democracy in the experience of the first simultaneous elections in 2015 shows that the level of public participation is quite high, nationally reaching 70 percent. (Rasaili, 2016)

Other research is Indra Fauzan and Adil Arifin in 2014 with the title Political Culture of the Gayo Nation (Model of Political Culture of the Gayo Nation in Central Aceh Regency, Bener Meriah Regency and Gayo Luwes Regency. Opatnya belongs to the Active Political Culture model, it relies on the social system of institutions that has existed for a long time and has roots long before Indonesian independence and before the social democracy system we know today was introduced in the world. Therefore, if the government in the three districts, from the lowest government - village / village head - to the central government uses a local wisdom approach - with a culture full of opatism - then justice and social welfare as mandated by Pancasila are very easy to be realized for the Gayo community.

This research is different from previous studies, which distinguishes this research because the scope of the research is the community, namely the Birmingham Small Arm (BSA) Owner Motorcycle Siantar (BSA), which is a motorcycle and pedicab community using BSA motorbikes made in England. The BOM'S community can be a representative of the people in Pematangsiantar City, this is because at every Regional Head Election or Legislative and Presidential Elections, the BOM'S community always takes part in political participation in campaigns, socialization of candidates, and is used as an icon of political support from the community. Pematangsiantar City to political parties, pairs of candidates in the Regional Head Election, legislative candidates.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Method

The research approach to be used in this research is qualitative with a descriptive type that aims to describe the political culture of the BSA / Birmingham Small Arm Owner Motorcycle (BOM'S) community in Pematangsiantar City in the 2018 North Sumatra Governor and Deputy Governor Election and the Election of President and Vice President and Vice President. 2019. The research informant used in this study used a purposive technique which consisted of the following: The key informant for the president of BSA / Birmingham Small Arm Owner Motorcycle (BOM'S) Pematangsiantar City, namely Mr. HE Rizal Kusuma Ginting, the main informant, namely the management and active members of the BSA / Birmingham Small Arm Owner Motorcycle (BOM'S) Pematangsiantar City, additional informant, Partai Amanat Nasional (PAN) Pematangsiantar City who knows political culture of the BSA / Birmingham Small Arm Owner Motorcycle (BOM'S) community in Pematangsiantar City during the 2018 North Sumatra Governor and Deputy Governor Election and the 2019 Presidential and Vice Presidential Election. Data collection techniques were carried out by in-depth interviews and Focus Group Discussions (FGD). Analysis of the data using the component analysis technique using a contrast approach between elements.

Result and Discusion

Speaking for Governor Election 2018 and Presidential Election 2019, the results of interviews with the President of the BSA / Owner Motorcycle (BOM'S) community Siantar were obtained:

> *"I can say and I can confirm that if the Pak Djarot-Sihar Sitorus pair are fighting for the Pematangsiantar Mayor election, they will definitely win. Why ? Because it is clear to see the composition of the rainbow-Christian candidate pair (Mr. Djarot is a Muslim and Mr. Sihar is a Christian) that is characteristic of the people in Pematangsiantar City, we here are almost 55% Christian and 40% Muslim, the other 5% are Catholic Buddhists, Hindus, Confucianism. They must win. However, this is the battle for the Pilgubsu and not only Pematangsiantar City, the community which has a composition like that. Last year's Presidential Election, we also had a lot of interactions, of course with supporting parties such as PDI-P, Golkar, Nasdem too, then Gerindra Democrat too. These political party officials in Pematangsiantar City know us well. I just want to emphasize that talking about politics, there are too many sweet promises if our language is "anshor" (Heaven's Wind) in front of it is peaceful or if we just want it, but once there is another story. Because, because of our struggle, Becak, from 2006, since the establishment of this community, we have been offered this many times as long as we want to support certain legislative candidates, this is also the case in the election for mayor. So you just know what we are. For me, what is clear is that their coming to BOM'S shows the existence of the BOM'S community itself that we are still counted on and they come to us, we need help, we need our becak, we need to meet our members on the street, in the market. That is what makes me hope that this siantar rickshaw will become a cultural heritage and a tourist vehicle abroad.* "(Interview with Mr. Kusma Rizal Ginting. Pematangsiantar, September 2020)

The next researcher asked how the relationship between community / political communication with political parties or candidate pairs in the 2018 North Sumatra Governor Election and the 2019 Presidential Election.

> "*Relationship is fine. In fact, you could say that I know him (Djarot) very well. For Pak Djarot himself during the campaign to Siantar, he visited the BOM's*

eISBN 978-967-2426-22-6
13th – 14th December 2020

headquarters and then visited our house. You don't invite us to visit. Then he was a Javanese. In Siantar, the Javanese tribe cannot be underestimated. Plantation, especially the majority of all Javanese. Until there is the name Tanah Jawa in Siantar or in Simalungun, that's great. Well. When he arrived in the context of the campaign, we warmly welcomed us and told him about "becak", *talking about developing politics, especially in Pematangsiantar. Relation is precisely .Only Mr. Djarot came to our house for the gathering, if Mr. Edy was not there, Mr. Sihar was also not there and Mr. Musa Rejeksah was not either ".*
During another presidential election, the story was that there were many times the success team came to meet up, no matter what party we accepted. Gathering, they said, in the end, our rickshaws were also exposed, which were carried around. For me there is no problem like I said earlier. While those who come are those who need us with us, it shows that our existence is recognized and needed, even if only for branding candidates or parties or whatever. The important thing is they come to us (BOM'S). Interview with Mr. Kusma Rizal Ginting. Pematangsiantar, September 2020)

The next question researcher asked about the members of the pedicab and bikers community if a pair of candidates visited the 2018 Pilgubsu or the success team in the 2019 Presidential Election or Pileg, to vote or participate in enlivening / campaigning, how would they react? Do they agree?

"*This is talking about politics. I conveyed to the member's, bikers and rickshaws. This community stands for the purpose of preserving and saving BSA. We have been struggling with screaming demonstrations for 16 years, then the rickshaw campaign there was an event and others were invited everywhere, gathered with other motorbikes. But with what result? It is still far from satisfied, even though our demands have been met by the Pematangsiantar City Government to abolish the old motorbike tax. But our other demands such as cultural heritage, tourist vehicles have not got it. Now politics is a way to achieve goals through policy, we can't just keep campaigning screaming. People outside Siantar know that even abroad know about the existence of this Siantar or BSA Becak, but in fact our own government has closed its eyes right. That's why I said that if political matters take it easy there is no problem with the BOMS children '. As long as those who come with us, not us begging with them, there is no problem I say. That shows that we exist, we are recognized and we are needed by them. As for the individual members, that is their own right. I can't force my will, especially since we live in a democracy, a city in a tolerant city, so I force my political will with the members, that's not true. But I give advice to members who want to come and join, if they don't want to, it doesn't matter, the important thing is that we keep our brotherhood together. The term motorbike child is maintained. Greeting one road* " (Interview with Mr. Kusma Rizal Ginting. Pematangsiantar, September 2020)

The next researcher question is what consideration underlies you before deciding to vote in the 2018 Pilgubsu and the 2019 Presidential Election? Or participate in enlivening / campaigning for one of the pairs of candidates / political parties?

Our first consideration is to look at the track record, vision and mission of the Pilgubsu candidate pair that we first see. Where do North Sumatra take the next 5 years in the 2018 Pilgubsu, as well as the 2019 Presidential Election. When talking

eISBN 978-967-2426-22-6
13th – 14th December 2020

about participating in campaigns to support or become branding for political parties, I personally, besides seeing this, I also see opportunities. The opportunity I mean is how the future of this siantar becak ??? Can we "inject" our request for this Siantar becak that uses BSA to become a cultural heritage? And or become a tourist vehicle in Pematangsiantar City. This is of course not just my personal wish, especially the wishes of the BOM'S community and of course those who will enjoy this will be our children and grandchildren from the wider community in Pematangsiantar City. Because according to my motto, Pematangsiantar City as a Destination City is not a transit city. Thus, the infrastructure must be built, whatever tours must be promoted in Siantar. So people / tourists do not just pass through Siantar to Parapat, but first stop at Siantar for 2 or 3 days and then continue to Parapat. That is our common goal, and I think for that in addition to our existing community capital we must also continuously voice it to our representatives in the Pematangsiantar City legislative (DPRD) so that it becomes formal legal, has a regulation and is run by the executive, namely Pematangsiantar City Government. I think so " (Interview with Mr. Kusma Rizal Ginting. Pematangsiantar, September 2020)

Governor Election 2018 in Pematangsiantar City, Djarot-Sihar Sitorus won over the Edy-Ijek. Meanwhile, in the 2019 Presidential Election Jokowi-Maaruf Amin won 77.13%, from Prabowo-Sandi 22.62%. How do you respond to seeing the behavior of community voters in Pematangsiantar City?

"Looking at these 2 cases, maybe my view is that there are differences that cannot be equated. First, we discuss governor election 2018. This has a very thick nuance from the governor election DKI Jakarta 2017 on religious issues. Then the candidate, Mr Djarot, was Ahok's deputy during Governor Election DKI Jakarta 2017. It is clear that here in Pematangsiantar City there is a religious issue. Then we see the results of the Djarot-Sihar Sitorus pair winning in Pematangsiantar because indeed the Pematangsiantar community saw the candidate's figure, vision and mission, track record. Although it is undeniable that issues of religion, ethnicity, and regionalism are strong. Like Mr Djarot, he is a Javanese who is not native to North Sumatra, then Pak Sihar Sitorus' he is a Christian, in Pematangsiantar City itself the composition has to be a rainbow that wins why because the majority of us here are Christian 55%, Islam 40% the rest was 5%, Catholic, Buddhist , Hinduism, Confucianism. So naturally, in my opinion, Djarot-Sihar Sitorus won a landslide victory in Pematangsiantar City in Governor election 2018, but did not become Governor of North Sumatra. Therefore, apart from looking at the candidate's figure, vision and mission, track record, our society also looks at issues of religion, issues of ethnicity from local origin. But in other areas, Mr Edy won handsomely too, for Siantar I think it is only natural for Djarot-Sihar to win, the number is I told him (Mr Djarot) What are you doing with the govrnor election brother?, if you want to be Mayor Pematangsiantar City, you will win, bro while joking with him when gathering to the house) "think the 2019 presidential election is due to the political party, yes, the PDIP in Pematangsiantar City is the basis of its period, so it is only natural for Pak Jokowi to win hands down in Pematangsiantar City, but yes, apart from seeing the figure of the candidate pair, vision and mission, his track record will definitely be assessment of the Siantar

eISBN 978-967-2426-22-6
13th – 14th December 2020

community. " Interview with Mr. Kusma Rizal Ginting. Pematangsiantar, September 2020)

The next result is an interview with Mr. Daniel Dolok Sibarani as the Chairman of the Regional General Election Commission of Pematangsiantar City. Research questions related to the Political Culture and Community Behavior of Pematangsiantar City in Governor Election 2018 and Presidential Election 2019.?

The researcher asked the Election for the Governor of North Sumatra in 2018 and the Presidential Election in 2019, how did you respond as the Election Commission for Pematangsiantar City?

"When talking about the 2018 Pilgubsu and the 2019 Presidential Election, we saw an increase, especially from the political participation of the Pematangsiantar City community, who exercised their voting rights in the 2018 Pilgubsu at 70.3% and the 2019 Presidential Election was calculated at 81.2%. these voters exceeded the targeted limit of 77.5%. So there is an increase from our targert of 6%. This is inseparable from all the efforts of our team at Pematangsiantar City KPUD to socialize, especially to first-time voters, voters with disabilities and yes, I think it is very good and positive, of course in Pematangsiantar City, because one of the pillars of democracy is the level of community participation in using their voting rights both in Pilkada and the Presidential Election "(interview with Mr. Daniel Dolok Sibarani September 2020).

Researchers asked in North Sumatra Governor Election 2018 and Presidential Election 2019, was there friction in the community due to different choices?

"We went to the Governor Election 2018 first, i I think that the different choices in the Governor Election 2018 and President Election 2019 are fine, that's fine. However, if there is friction, I will say that there is none in Siantar, we all tolerate different choices, but in the choice of each individual in our society, we prioritize "LUBER and JURDIL". Likewise with the 2019 Presidential Election, I think that different opinions and different choices are normal and our people do not have friction because of different choices. " (interview with Mr. Daniel Dolok Sibarani September 2020)

In North Sumatra Governor Election 2018 and Presidential Election 2019, did identity politics (choosing due to similarity in religion, ethnicity) occur in Pematangsiantar City people in making choices?

"If that choice is the right of each individual as a citizen who both uses his / her voting rights in regional head elections and presidential elections. Of course there is identity politics, especially during the election for the governor of North Sumatra in 2018. There are couples who are rainbow (Muslim and Christian) and then there are ethnic groups (Javanese, Batak,). I cannot say there is no, there must be similarity in ethnicity or religious similarity affecting the choice of the community in the last Pilgubsu. But what I want to emphasize is that the broadcasters are also politically literate, they also see the vision and mission of the candidate pairs, the track records of the candidate pairs, the programs they offer, I think they are also their considerations in voting in the 2018 Pilgubsu. For the presidential election, I think there was no identity politics either because at that time there was no religion that was different from the candidate pair, right? Pak Jokowi -Kiyai Ma'ruf Amin are both Muslim and -Pak Prabowo-Sandiaga Uno are also Muslim, so if the Presidential Election is not a politics of identity, religious, ethnic or regional similarities affect the choice of the Siantar community, so purely

eISBN 978-967-2426-22-6
13th – 14th December 2020

the community sees the vision mission, track record, track record and others or political literacy is this broadcast society. " (interview with Mr. Daniel Dolok Sibarani September 2020)

Researcher asked how you saw the Political Culture of the Pematangsiantar City Community in North Sumatra Governor Election 2018 and Presidential Election 2019. ?

> *"If we talk about Political Culture, of course, use political theory, right? I see this that the people of Pematangsiantar City with their Political Culture they see candidates who have fought well in the Pilkada, say the Pilgubsu in 2018 and in 2019 the figures of these candidates are certainly attached to their track record, performance, then the vision and mission they carry, the work program that they carry. it offers. So I see it as politically literate, yes, I am aware of the choices going forward. Yes, if the percentage is not the same, up to 80% of the people in Siantar are like this, but I can say that 55% -60% of Siantar people, both in the Pilkada, are politically literate as I said earlier. " (interview with Mr. Daniel Dolok Sibarani September 2020)*

The focus group discussion was attended by 5 members of the BOM'S community consisting of the Head of Bikers Mr. Juliardi, the Head of the Becak Mr. Boy, the Secretary of BOM'S Mrs. Nila, an ordinary member Bang Khoir Regar, and an ordinary member Kak Ratna Br Sinaga. Here are the results:

Speaking of the 2018 North Sumatra Governor Election and the 2019 Presidential Election, how did you respond as a member of the BOM'S Community?

"For the previous Pilgubsu and Presidential Election, I will be happy because as citizens I can participate in the democratic party to vote" (Interview with BOM'S Siantar regular member Kak Ratna Br Sinaga, September 2020)

"We are happy because many of our activities from BOM'S are from the party, participating in the campaign, the main thing is that our activities are participating" (Interview with the Head of BOM'S 'Siantar Becak Division, Mr. Boy, September 2020).

"Bikers also enlivened it. We do Kopdar more often, because there are also many activities." (Interview with the Head of Bikers Siantar BOM'S Division, Mr. Juliardi, September 2020).

How is the relationship between the community and political parties or candidate pairs in the 2018 North Sumatra Governor Election and during the 2019 Presidential Election?

> *"For political communication, the one who knows best is Mr. Rizal, he is the one who often meets with party people or candidates. After that, we were invited by Kopdar to do joint activities" (Interview with BOM'S Secretary Ms. Nila Siantar Bang Khoir Regar Mr. Boy, September 2020*
>
> *"If the relationship is good, bro. Because they need our becak and our BSA for the campaign. Previously, Pak Rizal and other members also met with party officials and Mr. Djarot during the 2018 Pilgubsu. "(Interview with BOM'S regular member Bang Khoir Regar, September 2020).*
>
> *If there are activities that are just the children, that's where we can get together completely and often. Usually with party people there is also a social service event with party people, with the mayor and the police chief we are invited from BOMS 'come to enliven all the becak members and the bikers. (Interview with BOM'S Siantar regular member Kak Ratna Br Sinaga, September 2020)*

eISBN 978-967-2426-22-6
13th – 14th December 2020

Who are the pairs of candidates who came or established political communication with BOMS during the 2018 Pilgubsu? The Success Team for Pileg and Management of Political Parties in the 2019 Presidential Election?

> "*Yesterday, Mr. Djarot, who had time to go to BOM's headquarters, we picked him up on a siantar becak. All the campaigns yesterday with Mr. K. Ginting* " (Interview with the Head of the BOM'S Siantar Becak Division, Mr. Boy, September 2020).
>
> "*Yes, only Pak Djarot came to Siantar, to BOM's to be precise*" (Interview with BOM's Secretary, Mrs. Nila Siantar Bang Khoir Regar, September 2020).
>
> "*Riding a pedicab with Mr Djarot as well as biker kids going around Pematangsiantar City then to the BOM'S headquarters and to Mr. Rizal's Ginting house*. (Interview with the Head of the Bikers Siantar BOM'S Division, Mr. Juliardi, September 2020).
>
> "*If Mr. Sihar only went through Siantar, he went to Simalungun and went to Toba, maybe for their job it was Mr. Djarot who went to Pematangsiantar City*. (Interview with BOM's Siantar regular member Mr. Khoir Regar Mr. Boy, September 2020).

Then Researcher asked how the response of the members of the pedicab and bikers community if a pair of candidates visited the Governor Election 2018 or the successful team in the Presidential Election 2019 or legislative Elecion in 2019 to vote or participate in enlivening / campaigning?

> "*If we are definitely happy, they will be visited by the success team of candidate pairs, that means we are considered important by that person*" (Interview with Ms. Ratna Br Sinaga, September 2020).
>
> "*It's just a pleasure to get our side jobs too, right*? (Interview with the Head of the BOM'S Siantar Becak Division, Mr. Boy, September 2020).
>
> "*Usually when they come or the successful team or candidates, they will be busy. The children must be gathered at night for meeting (ground coffee) for the agenda.* (Interview with BOM's Secretary Ibu Nila, September 2020)

What were your considerations before deciding to vote in the 2018 Pilgubsu and the 2019 Presidential Election? Or participate in enlivening / campaigning for one of the pairs of candidates / political parties?

> *"This is a personal matter, right? It doesn't have anything to do with BOM's, it is suggested, but yes, it will come back to us if you see that the candidate doesn't like it or it's unclear what work program we choose. Yes, we choose the one that suits us as the candidate, the vision and mission is suitable, we feel that is what we choose. (Interview with the Head of the BOM's Siantar Becak Division, Mr. Boy, September 2020).*
>
> *I think people are smart now,. In choosing Governor Elected 2018 and Presiden Election 2019, he looked at the track record of his person, his performance, , that's our personal right, if we were to be released. There was no force, I was just given input by Mr. Rizal if you wanted to vote, please say yes, if not, no problem Then he said it was for the benefit of the Siantar becak as well if the candidate won. " (Interview with BOM's Secretary Mrs Nila, September 2020).*

These are the results of the Focus Group Discussion conducted by researchers with members of the BOM'S Pematangsiantar Community regarding Political Culture in Governor Election 2018 and Presidential Election 2019.

eISBN 978-967-2426-22-6
13th – 14th December 2020

The next research result is an interview with Mr. Boy Iskandar Warongan from PARTAI Amanat Nasional (PAN) as a member of the Pematangsiantar City legislative (DPRD). Research questions related to the Political Culture of Pematangsiantar City in Governor Election 2018 and Presidential Election 2019?

> *"In my opinion, the 2018 Governor Election and the 2019 President Election, we can say that there is an increase in the political participation of the Pematangsiantar City community because there is a 6% increase from the Pilgubsu which is 75% to 81% of the number of political participation using voting rights. Of course, this must be maintained and continued to be improved in the future. (interview with Mr. Boy Iskandar Warongan, member of legislative Local Pematangsiantar City).*

In Governor Election 2018 and Presidential Election 2019 is there friction in the community due to different choices?

> *"To say that friction is definitely yes. The name is a political situation but the friction is still in the category of political dynamics in my opinion. Yes, it's fine. It is not until there is anti-social situation, knowing chaos is still in a natural stage in a democratic real.* (*(interview with Mr. Boy Iskandar Warongan, member of legislative Local Pematangsiantar City)*

In Governor Election 2018 and Presidential Election 2019, does identity politics occur in Pematangsiantar City people in making choices?

> *"I see it this way. Identity politics cannot be separated from local politics. And that is a natural thing in democracy. Why is it because it is impossible for people to choose a candidate if there is a choice because of the same religion, because of the same ethnicity, from the region of origin. If the pair of candidates are two and have the same religion or ethnicity, then it is obvious that the vision is the missionary vision, the work program offered, the track record of the spouse and vice president. So in my opinion, identity politics can increase people's political participation. Delivered by himself during Governor Election 2018, this also happened. There are Mr Djarot and Mr Sihar (Muslim-Christian with Javanese-Batak). If we look at the Christian majority and Toba / Simalungun ethnic groups, we tend to choose the Djarot-Sihar pair. And it is proven that the Djarot-Sihar pair won a landslide victory in Siantar from the Edy-Ijek pair ((interview with Mr. Boy Iskandar Warongan, member of legislative Local Pematangsiantar City*

How do you see the Political Culture of the Pematangsiantar City Community in Governor Election 2018 and Presidential Election 2019?

> "*Political culture cannot be separated from voting behavior. For the last Pilgubsu in 2018, it is clear that there is identity politics in its political marketing, but besides that, the people of siantar, in my opinion, see the figure of the candidate, the vision and mission, the previous performance. (interview with Mr. Boy Iskandar Warongan, member of legislative Local Pematangsiantar City*

Discuss

Political Culture of the BSA Community / Owner Motorcycle (BOM'S) In Governor Election 2018 and Presidential Election 2019 is Participant Political Culture. This is inseparable from the reason for the founding of this BOM'S community. For more than 16 years, the BOM's

eISBN 978-967-2426-22-6
13th – 14th December 2020

community struggled to make the Siantar becak become a cultural heritage and tourist vehicle in Pematangsiantar City. Diplomacy has been carried out, community actions with demonstrations to the Pematangsiantar City Government and Pematangsiantar City Council (DPRD) have also been carried out. What's interesting is that in every Pematangsiantar Regional Head Election event since 2005, 2010, 2015 this community has always been visited by candidate pairs to ask for support by driving the Pedicab "becak" as an icon of Pematangsiantar City. Likewise with the Legislative Election and Presidential Election in 2019. The siantar pedicab has always been used as one of the symbols that was "sold" in the political campaigns of legislative members and winning team parties in both Governor Election 2018 and Presidential Election 2019.

This clearly makes the Pematangsiantar City BSA / Owner Motorcycle (BOM'S) community very close to politics and even politically literate, even though so far the community has not been able to directly achieve their demands due to its close relationship with Pematangsiantar City mayor officials, political party officials, members of the City DPRD. Pematangsiantar because it is only used as a campaign tool and spreads political promises during the Pematangsiantar City Pilkada, Governor Election, Legislative Election, as well as the presidential and vice presidential elections.

Political Culture Participants are clearly attached to this community, they are directly involved in the political process of the 2018 North Sumatra Governor Election and the 2019 Presidential Election. Political campaigns are scheduled activities of the BSA Owner Motorcycle Siantar (BOM'S) community of siantar rickshaws with Birmingham Small motorbikes. Arm (BSA) and Birmingham Small Arm (BSA) motorbikes have always enlivened political campaign activities, becoming iconic campaign tools in Pematangsiantar City during the 2018 Governor Election by one of the candidate pairs and a political party success team during the 2019 Presidential Election In addition to enlivening the campaign, the routine of the BSA Owner Motorcycle Siantar (BOM'S) community in social service activities, caring for Pematangsiantar City residents is also carried out by compiling the programs of one of the candidate pairs and success teams of political parties and legislative candidates in Legislative Election 2019.

On the one side, members of this community feel happy with the campaign activities involving the siantar pedicab with a Birmingham Small Arm (BSA) motorbike, because in addition to participating in political activities or campaigns, community members also get benefits that strengthen and raise members of the community, among others, are community members becoming more routine for gathering together or ground coffee and carrying out routine community agenda activities such as touring together, cultural festivals, the siantar becak campaign to become a cultural heritage in Pematangsiantar City and other routines that have been scheduled. Because it cannot be denied that the activities of each member often make it difficult for them to gather. So, apart from the political culture of the participants, the BSA Owner Motorcycle Siantar (BOM'S) community can also strengthen the bonds of brotherhood among members of the community.

With the presence of one of the candidate pairs in the 2018 North Sumatra Governor Election, Mr. Djarot Saiful Hidayat, proves that the BSA Owner Motorcycle Siantar (BOM'S) community has power in political campaigns. This is evident from the busy campaign activities followed by the supporters of the candidate pair Djarot Saiful Hidayat-Sihar Sitorus while conducting a campaign in Pematangsiantar City with the support of the becak siantar brother, a member of the BSA Owner Motorcycle Siantar (BOM'S) community. This can be the legality of the Djarot Saiful Hidayat-Sihar Sitorus pair supported by the Pematangsiantar City

community, because they are also supported by the iconic City of Pematangsiantar, namely the Siantar Pedicab with a Birmingham Small Arm motorbike.

Participant Political Culture of the BSA Owner Motorcycle Siantar (BOM'S) community, has become a symbol for local politics of Mayor Election, Governor Election, Pematangsiantar City Legislative Election (DPRD) which is used by both political party officials who carry candidates and personally candidates for regional head. This can be seen from how to register with the Pematangsiantar City Election Commission by riding a Siantar becak and supported by the Siantar becak brothers, then a campaign activity featuring a Siantar becak as a symbol of support for a pair of candidates.

It is undeniable that the BSA Motorcycle Owner Siantar (BOM'S) Community has become a subscriber every time a Regional Head Election is held in Pematangsiantar City and in North Sumatra as well as the Presidential Election. This has formed the Political Culture of BSA Owner Motorcycle Siantar (BOM'S) Participants and made it strong for the purpose or interests of BSA Owner Motorcycle Siantar (BOM'S), namely the Siantar Pedicab, which is one of Cultural Heritage and becomes a tourist vehicle in Pematangsiantar City like other unique vehicles abroad such as "Tuk-Tuk" in Thailand, Jeepney in the Philippines and making Pematangsiantar City a tourist destination city to be reckoned with in North Sumatra, because so far Pematangsiantar City has only been a transit city for tourists who are going on vacation to Toba Lake Parapat.

Conclusion

The Political Culture of the Birmingham Small Army Owner Motorcycle Siantar (BOM'S) Community in the North Sumatra Governor Election 2018 and Presidential Election 2019 are Participant Political Culture.

Acknowledgments

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WELDING PLATE CLEANING MACHINE (WPCM)

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Abstrak: *Pelbagai kemudahan disediakan oleh Kementerian Pendidikan Tinggi umumnya dan Jabatan Pendidikan Politeknik terutamanya dalam menyediakan pembelajaran yang kondusif kepada para pelajar khusus dalam bidang kejuruteraan. Namun begitu, masalah membersih bahan kerja kimpalan dalam Amalan Bengkel Kejuruteraan secara manual masih lagi berlaku di mana ia memerlukan tenaga dan masa yang banyak di samping kedudukan postur badan yang tidak ergonomik boleh menyebabkan seseorang cepat merasa letih dalam melakukan sesuatu kerja. Bersesuaian dengan keadaan itu, projek inovasi iaitu Welding Plate Cleaning Machine telah dihasilkan bagi membantu para pelajar kejuruteraan untuk membersihkan bahan kerja. Mesin ini dikuasakan dengan motor elektrik berkuasa ¼ hp, single-phase motor, 1400 rpm, dengan voltan 230v dan 2.4A. Dengan berat mesin 20kg berukuran 65.8cm x 45.0cm x 106cm untuk kerangka. Pemerhatian keberkesanan penggunaan mesin ini telah dibuat terhadap pelajar kejuruteraan mekanikal, Politeknik Sultan Mizan Zainal Abidin, Dungun, Terengganu (PSMZA). Didapati mesin ini mampu membersihkan bahan kerja yang dengan purata masa 2 minit pada ketebalan 2mm berbanding 5 minit membersih secara manual. Manakala purata masa membersih menggunakan mesin bagi plat berketebalan 5 mm ialah 5minit berbanding purata masa 10 minit dengan menggunakan kaedah manual. Dalam penghasilan inovasi ini,maklumat berkaitan dengan minat dan keyakinan pelajar dalam mengoperasikan Welding Plate Cleaning Machine dikumpul dengan menggunakan borang soal selidik dan diedarkan kepada 243 orang pelajar semester 1,2 dan 3 kursus Diploma Kejuruteraan Mekanikal Am dan Diploma Kejuruteraan Mekanikal Pembuatan di PSMZA. Data dianalisis dengan menggunakan perisian SPSS versi 23 dan menggunakan skala Likert 4 mata bagi setiap pilihan soalan yang dikemukakan. Analisis data menunjukkan pelajar lebih minat dan berkeyakinan menggunakan inovasi ini. Selain itu, risiko kecederaan akibat kedudukan yang tidak ergonomik dapat dielakkan dan kerja dilakukan dengan lebih teratur dalam keadaan yang selamat. Oleh yang demikian penggunaan mesin ini seharusnya diperluaskan dan digunapakai di politeknik khususnya dan institusi-institusi yang lain amnya.*

Kata kunci: *Kimpalan, Mesin Pembersih, Plat Kimpalan*

Pengenalan

Amalan Bengkel Mekanikal adalah subjek wajib bagi semua pelajar jurusan kejuruteraan mekanikal semester 1,2 dan 3 Politeknik Malaysia. Subjek ini mengajar pelajar amalan asas di dalam bengkel seperti kimpalan. Proses kimpalan adalah aktiviti yang melibatkan penggunaan fizikal seperti berdiri lama, menunduk lama, dan pergerakkan pergelangan yang perlu sentiasa konsisten. Semua pergerakkan ini bila dilakukan dalam tempoh yang agak panjang akan memberikan kesan sakit belakang, dan sakit pada pergelangan tangan. Rajah 1 menunjukkan keadaan kerja yang tidak ergonomik yang menyumbangkan kepada faktor kesakitan yang lebih

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13th – 14th December 2020

teruk. Salah satu gerak kerja dalam kimpalan yang agresif adalah proses pembersihan (cleaning) plat sebelum sambungan kimpalan dibuat dan penyudahan (*finishing*) bagi hasil kerja kimpalan. Plat yang berkarat perlu dibersihkan terlebih dahulu kerana karat yang tidak dibersihkan akan menyebabkan kumai (*weld*) tidak melekat pada plat semasa proses penyambungan kimpalan dilakukan. Pembersihan plat adalah dengan menggunakan berus besi yang mempunyai dawai berus yang sangat keras. Kebiasaanya, kumai yang dihasilkan daripada *welding rode* akan terhasil juga bebola-bebola kecil di atas permukaan kumai atau di panggil sisa (*chip)* kumai. Sisa-sisa ini adalah susah untuk ditanggalkan kerana ia memerlukan tenaga dan masa yang lebih untuk menghilangkannya serta boleh mendatangkan kecedaraan pada anggota tangan jika ia tidak dikendalikan dengan betul. Pembersihan yang tidak menyeluruh boleh memberi kesan pada proses kerja akhir dan pemarkahan hasil kerja.

Rajah 1

Objektif Inovasi

Objektif kajian ini ialah untuk merekabentuk dan menghasilkan *Welding Plate Cleaning Machine* dan mengenal pasti tahap minat dan keyakinan pelajar terhadap *Welding Plate Cleaning Machine.*

Skop Inovasi

Antara kebolehan dan kemampuan yang boleh dijalankan dengan projek ini ialah dapat membersihkan kepingan logam sehingga ketebalan 5mm. Motor elektrik berkuasa ¼ hp,*single-phase motor*, kelajuan 1400rpm, bervolt 230v dan 2.4A digunakan pada produk inovasi ini. Saiz kerangka ialah 65.8cm x 45.0cm x 106cm.

Kajian Literatur

Kimpalan adalah satu proses penyambungan atau pencantuman sesuatu bahan logam atau bukan logam menggunakan haba atau tekanan.Terdapat beberapa proses kimpalan dipraktik kan dalam kursus amalan bengkel kejuruteraan mekanikal di Politeknik Malaysia seperti *Oxyacetylene Welding, Shielded Metal Arc Welding* (SMAW), *Gas Metal Arc Welding* (GMAW) dan *Gas Tungsten Arc welding* (GTAW)

Kimpalan Arka

Kimpalan arka merupakan satu proses menyambung kekal dua atau lebih logam. Proses penyambungan dijalankan dengan mengalirkan arus elektrik daripada elektrod ke logam asas. Tenaga elektrik ini ditukarkan kepada tenaga haba yang tinggi. Haba yang tinggi ini akan

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13th – 14th December 2020

meleburkan hujung elektrod dan bahagian logam asas yang hendak disambung. Kedua-dua logam ini menjadi sebati lalu menghasilkan satu sambungan yang kuat. Kimpalan arka digunakan dalam kerja fabrikasi logam seperti pembinaan kapal, dandang, jambatan, dan struktur bangunan. Arka elektrik terbentuk apabila terdapat perbezaan voltan antara elektrod dengan logam asas. Kejadian mi menghasilkan haba yang tinggi untuk meleburkan hujung elektrod dan sebahagian daripada logam asas. Satu kolam leburan terhasil daripada peleburan logam asas. Logam lebur dan elektrod dipindah ke kolam leburan melalui arka elektrik. Cairan logam ini akan dilindungi oleh satu lapisan jermang yang terhasil daripada pembakaran salutan elektrod. Apabila logam lebur membeku, satu sebatian yang kuat dihasilkan iaitu kumai.

Kimpalan Gas

Kimpalan gas adalah proses penyambungan logam dengan kaedah memanaskan kedua-dua bahagian logam yang hendak disambung sehingga cair dan bercantum menjadi satu. Terdapat dua jenis kimpalan gas iaitu kimpalan gas tekanan rendah dan kimpalan gas tekanan tinggi .Kimpalan tekanan rendah menerima bekalan gas asetilina dari janakuasa gas asetilina yang mempunyai tekanan kurang daripada 1.0 Psi atau 1.0 Bar. Manakala kimpalan gas tekanan tinggi menerima bekalan gas dari janakuasa gas asetilina yang mempunyai tekanan dari 1-15 Psi atau 1-15 Bar. Dalam bidang perindustrian, kimpalan gas banyak digunakan dalam kerja fabrikasi logam yang melibatkan kepingan logam yang ketebalannya melebihi daripada 1.0 mm sehingga 3.0 mm. Contohnya, dalam kerja-kerja membaik pulih badan kenderaan yang melibatkan kerja-kerja mengetuk dan menampal bahagian-bahagian badan kenderaan yang rosak. Dua jenis gas yang biasa digunakan dalam kerja kimpalan gas adalah oksigen dan asetilina. Campuran kedua-dua gas menghasilkan haba yang paling tinggi berbanding gas-gas bahanapi yang lainnya. Suhunya boleh mencapai sehingga 3316°C.

Dalam proses kimpalan adalah penting untuk pengimpal menggunakan logam asas yang bersih. Logam dengan karat permukaan, kotoran, jelaga dan bentuk kotoran lain boleh menjadikan tugas pengimpal menjadi lebih sukar serta menghasilkan kimpalan yang lemah. Perlu mengambil masa untuk membersihkan permukaan logam asas untuk membuat sambungan kimpalan paling kuat dan tahan lama. Kekotaran pada permukaan logam asas atau bahan pengisi boleh meningkatkan keliangan dan retak. Selain memastikan permukaaan bahan kerja kimpalan bebas daripada pelbagai kotoran, ia juga perlu bebas dari oksida untuk mengelakkan berlaku keliangan.

Penting untuk membersihkan semua permukaan, bukan hanya permukaan kerja, kerana kimpalan dapat menarik kekotoran dari sisi lain bahan. Pengimpal juga harus menghindari penggunaan pelincir yang tidak perlu, terutama pelincir berasaskan petroleum, yang terurai dalam proses kimpalan dan memasukkan hidrogen ke dalam sambungan kimpalan.

Setelah sambungan dikimpal, jangan gunakan udara termampat untuk menghilangkan lebihan bahan daripadan hasil sambungan. Ia mengandungi bahan cemar kelembapan dan minyak yang akan menghasilkan kotoran baru ke permukaan bahan kerja kimpalan. Sebaliknya, pelarut lain harus digunakan dan kemudian berus dawai keluli tahan karat harus digunakan untuk membersihkan kimpalan. Berus ini hanya boleh dikhaskan untuk logam asas.

Kaedah Pembersihan Bahan Kerja Secara Manual

Pembersihan bahan kerja secara manual sudah menjadi kebiasaan kepada pelajar kejuruteraan semasa melakukan latihan. Pelajar akan menggunakan berus dawai untuk membersihkan bahan kerja sebelum atau selepas proses kimpalan. Berus dawai biasa untuk membersihkan kesan-kesan percikan api logam serta jermang kumai yang terhasil pada permukaan bahan logam yang dikimpal. Berus dawai seperti ditunjukkan dalam Rajah 2 adalah alat yang sesuai

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13th – 14th December 2020

digunakan kerana ianya murah dan senang didapati. Berus dawai juga mempunyai kelemahan dimana ianya senang haus dan cepat rosak. Bukan itu sahaja, kecederaan juga boleh berlaku disebabkan tidak ergonomik. Pembersihan secara manual dengan berus dawai secara tidak ergonomik boleh mencederakan sendi badan, seperti pada pengelangan tangan, sakit belakang, dan lain-lain. Seterusnya kecederaan yang serius boleh berlaku jika melakukan pembersihan secara manual tidak ergonomik berterusan (*The System Training Concept* ,1964). Risiko luka pada tangan akibat terkena dawai adalah tinggi dan menghasilkan kekemasan akhir plat yang tidak memuaskan.

Rajah 2

Kaedah Pembersihan Bahan Kerja Menggunakan Cecair Pembersih Karat

Pembersihan pelarut adalah alternatif yang boleh digunapakai. Cecair pembersih karat boleh digunakan secara langsung ke atas permukaan logam untuk menukarkan karat menjadi kimia penghalang karat diatas logam tersebut. Cecair ini akan menyingkirkan karatan dan menambah lapisan baru yang lebih tahan terhadap kelembapan sekaligus dapat melindungi permukaan daripada berkarat. Cecair ini berasaskan air dan mengandungi dua bahan aktif utama iaitu asid tannic dan asid fosforik. Walau bagaimanapun, semua penukar karat tidak berfungsi dengan baik, terutamanya dalam jangka masa yang panjang. (Materials Research Program Begins Rust Remover Study,2010). Disebabkan cecair pembersih karat ini terdiri daripada bahan kimia langkah keselamatan haruslah diutamakan. Jika langkah keselamatan diabaikan kecederaan seperti kerosakan kulit, kecederaan mata, radiasi dan lain-lain.

Ergonomik

Dalam penghasilan produk inovasi ini, faktor ergonomik juga diambil kira. Ergonomik bermaksud hubungan sistem kerja dengan keupayaan manusia bekerja dengan penyesuaian persekitaran kerja, organisasi, pengaturan tempat kerja, peralatan, mesin atau jentera yang digunakan. Kewajipan mengurus ergonomik sangat penting kerana penyakit yang disebabkan oleh masalah ergonomik adalah penyakit yang dikenali sebagai '*musculoskeletal disorders*' (MSDs). Pertubuhan Keselamatan Sosial (PERKESO) melaporkan statistik peningkatan kes MSDs daripada 675 kes pada tahun 2014 kepada 708 kes pada 2015, 1,006 kes pada 2016 seterusnya 1,354 kes pada 2017 dan 1,151 kes pada 2018. Rajah 3 menunjukkan cara yang betul untuk menghalang berlakukan kecederaan apabila memberus dawai pada pengguna, ruang kerja yang ergonomik dapat memastikan pengguna dalam keadaan selesa. *(Fitting the Task to the Man: An Ergonomic Approach).*

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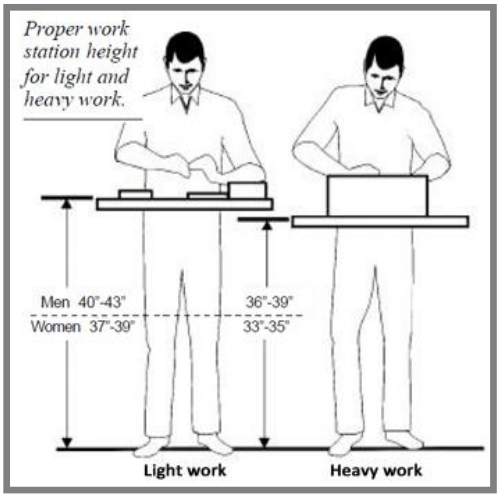
13th – 14th December 2020



Rajah 3

Metodologi

Aspek dan kaedah bagi menyiapkan sesebuah sistem adalah dengan mengetahui peralatan dan komponen yang diperlukan semasa melaksanakan kerja pembuatan sistem. Bagi memastikan penghasilan sistem ini berjalan dengan baik tanpa berlakunya sebarang masalah, proses pembuatan telah dibahagikan kepada beberapa peringkat mengikut tahap serta ketetapan masa yang ditetapkan. Ini adalah bertujuan untuk proses pelaksanaannya berjalan dengan baik. Kaedah kerja yang dirancang adalah merangkumi kerja-kerja perancangan yang mengandungi rekabentuk, kerja-kerja pemasangan dan pengubahsuaian serta analisis dan ujikaji. Carta alir kaedah pelaksanaan projek inovasi boleh merujuk pada Rajah 4.

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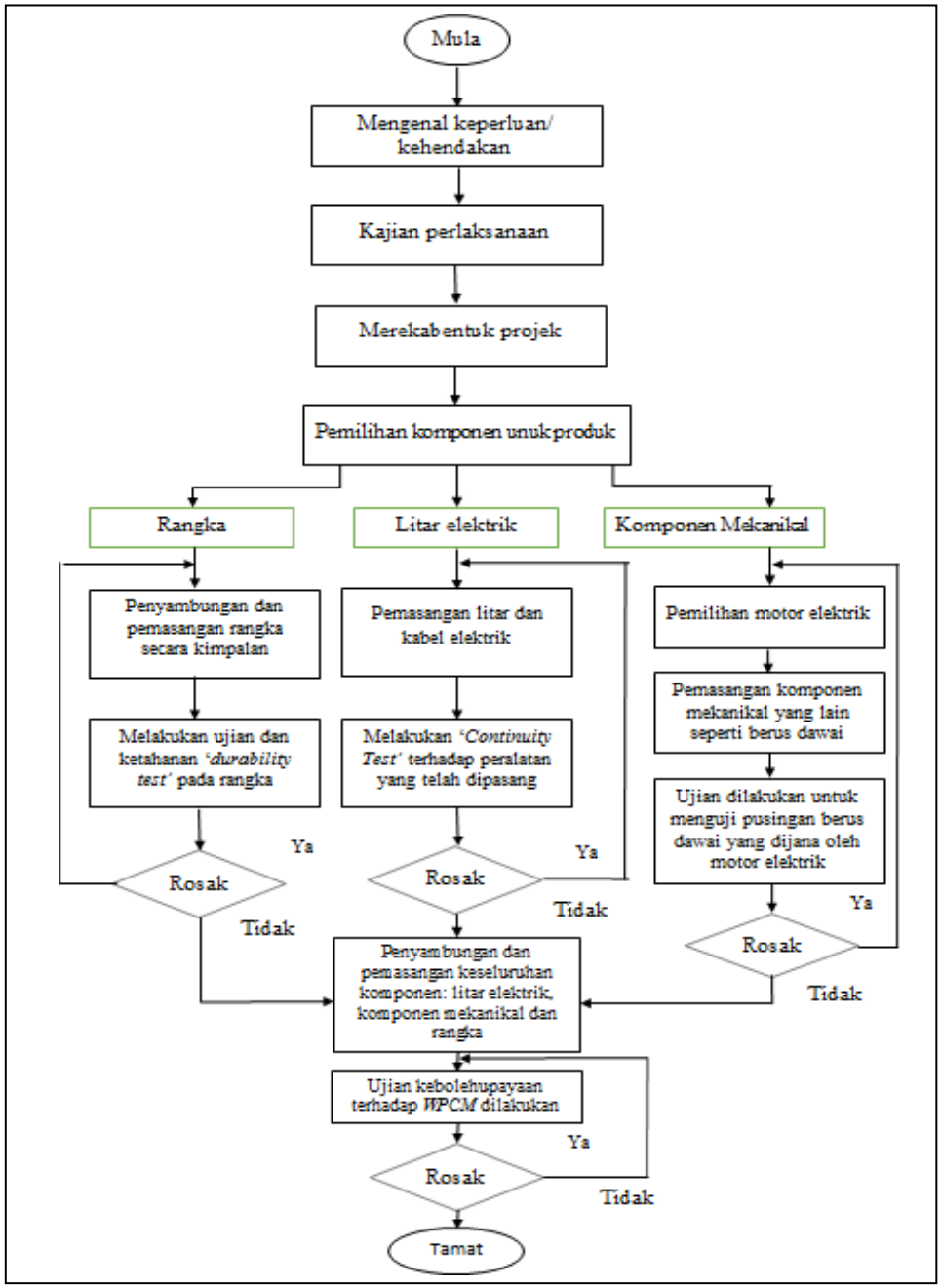
13th – 14th December 2020



Rajah 4

Dalam penghasilan inovasi ini, maklumat berkaitan dengan minat dan keyakinan pelajar dalam mengoperasikan *Welding Plate Cleaning Machine* data dikumpul dengan menggunakan borang soal selidik dan diedarkan kepada 243 orang pelajar semester 1,2 dan 3 kursus Diploma Kejuruteraan Mekanikal Am dan Diploma Kejuruteraan Mekanikal Pembuatan di PSMZA. Seramai 143 orang pelajar dijadikan sampel kajian mengikut Jadual Penentuan saiz sampel kajian yang telah disediakan oleh Cohen (2011). Instrumen yang digunakan dalam kajian ini ialah satu set soal selidik yang terbahagi kepada dua bahagian iaitu bahagian A da B. Bahagian A merangkumi latar belakang responden iaitu umur, jantina, bangsa, aliran sekolah dahulu dan semester pengajian. Bahagian B pula terdiri dari item-item berkenaan dua komponen yang mempengaruhi proses pembelajaran pelajar iaitu meningkatkan

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13th – 14th December 2020

minat untuk belajar dan meningkatkan keyakinan pelajar untuk mengoperasikan *Welding Plate Cleaning Machine* setelah diberi penerangan oleh pensyarah. Bagi komponen minat untuk belajar terdapat 5 item manakala komponen peningkatan keyakinan proses pembelajaran pelajar terdapat 5 item untuk tujuan responden memberi maklum balas. Instrumen ini menggunakan Skala Likert Empat Mata bagi memudahkan responden membuat pilihan yang tepat terhadap setiap persoalan yang dikemukakan (Cohen, 2011). Jadual 1 di bawah menunjukkan skala empat mata yang digunakan dalam soal selidik ini.

Jadual 1 : Jadual Skala Likert Empat Mata (Cohen 2011)

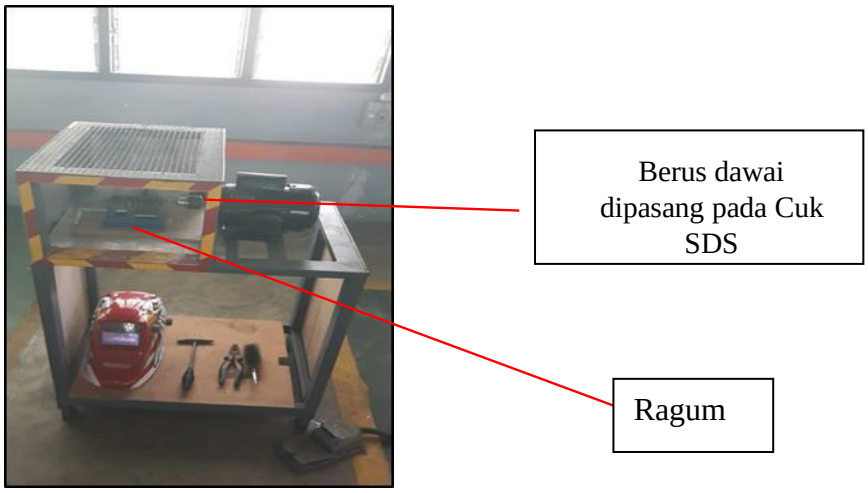
Peringkat	Singkatan	Skor
Sangat Setuju	SS	4
Setuju	S	3
Tidak Setuju	TS	2
Sangat tidak Setuju	STS	1

Data yang diperolehi dikumpulkan dan dianalisis menggunakan *Statistical Packages for Social science (SPSS) version 23.0*. Jadual 2 menunjukkan panduan menginterpretasi min bagi empat skala daripada sumber penilaian skor min yang digunapakai oleh Ghani Haji Taib (1966) dalam kajian Rabiatul Adawiyah, et al., (2014).

Jadual 2: Jadual interpretasi Skor Min Empat Skala

Selang skala	Interpretasi Tahap
1.00 – 2.00	Rendah
2.01 – 3.00	Sederhana
3.01 – 4.00	Tinggi

Hasil Inovasi



Rajah 5

Rajah 5 menunjukkan hasil inovasi yang dihasilkan. Ukuran kerangka asas mesin ini ialah panjang(65.8cm),lebar(45.0cm) dan tinggi (106cm).Cuk jenis SDS dipilih bagi mesin ini bagi memudahkan berus dawai ditukar ganti jika sudah haus atau rosak.Mesin ini juga dilengkapi dengan roda supaya mudah di alih dan tidak terikat di satu- satu kawasan kerana kebanyakan bengkel adalah mempunyai keluasaan yang besar.

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13th – 14th December 2020

Dapatan Dan Perbincangan

Analisis terhadap masa pembersihan bahan kerja seperti dalam Jadual 3 telah diambil mengikut kaedah yang berbeza. Perbezaan dilakukan menggunakan 2 kaedah yang berbeza, iaitu kaedah manual dan kaedah *Welding Plate Cleaning Machine* (WPCM). Masa akan direkod selepas bahan kerja telah dibersihkan dengan baik dan teliti. Dengan menggunakan kepingan bahan kerja yang sama, proses rekod pengambilan masa dilakukan dalam jadual seperti berikut:

Jadual 3: Masa Pembersihan Bahan Kerja Berketebalan 2mm

Pelajar / Masa(min)	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Purata masa
Manual	5	4	5	5	4	5	4	5	4	5	4.6
WPCM	2	3	2	2	2	2	2	2	2	3	2.2

Seramai 10 orang pelajar dipilih untuk melaksanakan pengujian masa bagi membersihkan bahan kerja yang berketebalan 2mm. Purata masa yang diambil oleh pelajar yang menggunakan kaedah pembersihan secara manual ialah 4.6 minit ≈ 5 minit. Manakala purata masa yang diambil oleh pelajar yang sama untuk membersihkan bahan kerja menggunakan *Welding Plate Cleaning Machine* ialah 2.2 minit ≈ 2 minit.

Jadual 4: Masa Pembersihan Bahan Kerja Berketebalan 5 mm

Pelajar / Masa(min)	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Purata masa
Manual	10	9	10	10	9	9	10	9	10	9	9.5
WPCM	4	5	5	4	4	5	5	4	4	5	4.5

Pelajar yang sama juga dipilih untuk melaksanakan pengujian masa bagi membersihkan bahan kerja yang berketebalan 5mm. Purata masa yang diambil oleh pelajar yang menggunakan kaedah pembersihan secara manual ialah 9.5 minit ≈ 10 minit.Manakala purata masa yang diambil oleh pelajar yang sama untuk membersihkan bahan kerja menggunakan *Welding Plate Cleaning Machine* ialah 4.5minit ≈ 5 minit.

Analisis terhadap minat dan keyakinan pelajar juga di jalankan terhadap mesin ini dengan mengedarkan borang soal selidik. Hasil analisis dinyatakan dalam Jadual 5 dan Jadual 6. Majoriti pelajar menunjukkan minat dan keyakinan terhadap *Welding Plate Cleaning Machine.*

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 5: Analisis Tahap Minat Pelajar Kejuruteraan PSMZA Terhadap *Welding Plate Cleaning Machine*

NO	ITEM SOALAN	KEKERAPAN PERATUSAN				SKOR MIN	TAFSIRAN
		STS(1)	TS(2)	S(3)	SS(4)		
		ELEMEN KESEDARAN					
1	Proses pembersihan bahan kerja tidak memenatkan saya	0	0	36	104	3.61	Tinggi
		0%	0%	24.83%	75.17%		
2	Proses pemotongan dapat dilakukan dengan cepat	0	0	45	100	3.68	Tinggi
		0%	0%	31.03%	68.97%		
3	Proses pemotongan dapat dilakukan kemas	0	0	36	104	3.61	Tinggi
		0%	0%	24.83%	75.17%		
4	Kerja-kerja kimpalan lebih menyeronokkan	0	0	20	125	3.86	Tinggi
		0%	0%	29%	71%		
5	Meminimumkan kecacatan hasil kimpalan	0	0	30	115	3.79	Tinggi
		0%	0%	20.68%	79.31%		

Jadual 6: Analisis Tahap Keyakinan Pelajar Kejuruteraan PSMZA Terhadap *Welding Plate Cleaning Machine*

NO	ITEM SOALAN	KEKERAPAN PERATUSAN				SKOR MIN	TAFSIRAN
		STS(1)	TS(2)	S(3)	SS(4)		
		ELEMEN KESEDARAN					
1	Mesin ini mudah dikendalikan	0	0	10	135	3.93	Tinggi
		0%	0%	6.89%	93.10%		
2	Mesin ini mempunyai ciri-ciri keselamatan berbanding kaedah sebelum ini	0	0	20	125	3.86	Tinggi
		0%	0%	13.79%	86.21%		
3	Saya boleh kendalikan mesin ini tanpa bantuan rakan	0	0	30	115	3.79	Tinggi
		0%	0%	20.68%	79.31%		
4	Apabila mesin dihidupkan ia berfungsi seperti yang diharapkan	0	0	30	115	3.79	Tinggi
		0%	0%	20.68%	79.31%		
5	Saya bersedia membantu kawan saya menggunakan mesin ini	0	0	20	125	3.86	Tinggi
		0%	0%	13.79%	86.21%		

Impak inovasi

Impak daripada inovasi ini ialah dapat membantu pelajar mencapai CLO 1 kursus DJJ 1032, DJJ2032, DJJ3032 iaitu "*Perform fitting, machining and welding works according to Standard Operating Procedures"*. Selain daripada itu, ia juga dapat membantu dalam pengajaran dan pembelajaran pensyarah kursus Amalan Bengkel Kejuruteraan. Masa yang diambil dalam proses kerja-kerja pembersihan juga dapat dipercepatkan dan pelajar dapat meningkatkan kebolehan dalam kerja-kerja kimpalan.

Kesimpulan

Welding Plate Cleaning Machine ini dihasilkan untuk membantu dalam melakukan kerja pembersihan dan penyudahan (*finishing*) bagi hasil kerja kimpalan dengan lebih berkesan. Kerja pembersihan plat yang agak panjang akan menyebabkan pelajar kepenatan seterusnya

hilang fokus. Penghasilan mesin ini juga dapat membantu mencapai objektif pembelajaran dengan menarik minat pelajar dan keyakinan untuk menguasai kaedah penyambungan kimpalan adalah lebih tinggi. Pembaharuan atau inovasi yang dilakukan dalam pendidikan akan memberi kesan ke atas kecekapan, kesesuaian dan keberkesanan atas sesuatu kriteria yang dibangunkan. Selain itu, risiko kecederaan akibat kedudukan yang tidak ergonomik dapat dielakkan dan kerja dilakukan dengan lebih teratur dalam keadaan yang selamat. Proses pembelajaran dan pengajaran untuk praktikal atau amali dengan menggunakan mesin yang ringkas adalah sesuai untuk digunakan di politeknik serta institusi yang lain.

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13th – 14th December 2020

PORTABLE PLASMA CUTTER TABLE

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Abstrak: *Pemotongan plasma merupakan satu proses yang memotong melalui bahan-bahan pengalir elektrik melalui suatu jet dipercepatkan oleh plasma panas. Bahan-bahan yang biasa dipotong oleh proses ini adalah keluli, aluminium, dan tembaga. Portable Plasma Cutter Table (PLACUTA) merupakan satu projek yang dilaksanakan bertujuan untuk membantu dalam menghasilkan pemotongan asas seperti lurus,melengkung dan bulat dengan menggunakan mesin pemotong plasma jenis Miller Spectrum 2050. Meja yang dihasilkan adalah berketinggian 1035mm, lebar 755mm dan panjang 1800mm yang mana menggunakan keluli karbon jenis berlubang dan bersudut serta plat besi. Jig dan landasan yang mempunyai ruang untuk meletakkan nozel yang mana jig tersebut boleh dilaraskan pada ukuran maksimum berdiameter 110mm dan minimum 25mm bagi bentuk bulat dan 500mm bagi pemotongan lurus. Bahan yang digunakan pada jig ialah plat rata, galas dan batang benang skru. Reka bentuk meja yang dilengkapi roda bagi memastikan ia mudah alih, mempunyai ruang untuk meletakkan barang dan juga mempunyai tempat untuk meletakkan mesin pemotong plasma jenis Miller Spectrum 2050. Idea tersebut diperolehi setelah melihat kerja-kerja pemotongan menggunakan mesin pemotong plasma secara kendalian tangan. Masalah yang dikenalpasti bagi penggunaan mesin pemotong plasma secara konvensional adalah pengguna mestilah memiliki kemahiran yang tinggi untuk menghasilkan pemotongan yang berkualiti. Bagi pengguna yang kurang berkemahiran pula,akan mengambil masa yang lama untuk melakukan pemotongan. Penggunaan Portable Plasma Cutter Table dapat membantu proses pemotongan yang menggunakan mesin pemotong plasma. Masa pemotongan juga dapat dikurangkan dan hasil kerja juga lebih kemas dan menepati saiz yang dikehendaki. Maklum balas oleh pelajar dan pensyarah di Jabatan Kejuruteraan Mekanikal Politeknik Sultan Mizan Zainal Abidin,PSMZA,Terengganu, diperolehi dengan mengedarkan borang soal selidik. Didapati 76% pelajar dan 80% pensyarah sangat bersetuju terhadap ciri-ciri inovasi ini. Ini menunjukkan satu respon yang positif daripada pelajar dan pensyarah untuk digunakan dalam proses pengajaran dan pembelajaran .*

Kata kunci: *Plasma;Plasma Cutter;Metal Cutter;Portable Cutter*

Pengenalan

Perkembangan dunia industri saat ini tidak terlepas dari perang teknologi yang terus maju dan berkembang pesat se-arah dengan perkembangan zaman. Semua jenis material baik logam mahupun bukan logam dapat digunakan oleh industri setelah mengalami berbagai proses pengolahan seperti; peleburan, pengecoran, pencetakan, pengelasan, perlakuan permukaan, pengerjaan panas, pengerjaan dingin, dan pemotongan. Salah satu proses pengolahan bahan industri tersebut iaitu dengan proses pemotongan. Selain secara pemotongan konvensional, proses pemotongan boleh dilakukan dengan memanafaatkan teknologi. Pemotongan plasma ialah satu proses yang memotong melalui bahan-bahan pengalir elektrik melalui suatu jet

eISBN 978-967-2426-22-6
13th – 14th December 2020

dipercepatkan oleh plasma panas. Pemotongan plasma berfungsi dengan mencairkan bahan kerja dan kemudian meniup leburan keluar dari potongan oleh tekanan jet plasma. Asap dan bunyi dihasilkan ketika memotong plat yang lebih tebal. Walau bagaimanapun, ini dapat dikurangkan dengan memotong logam di atas meja pemotong, dengan logam itu sendiri berada di dalam air

Bagi pemotong jenis plasma, ia adalah sejenis mesin yang digunakan untuk memotong logam dari ketebalan yang berbeza dengan menggunakan *torch* plasma. Suhu plasma yang tinggi memberikan pemotongan cepat dengan herotan tahap rendah. Udara dibekalkan dari pemampat ke *torch*.

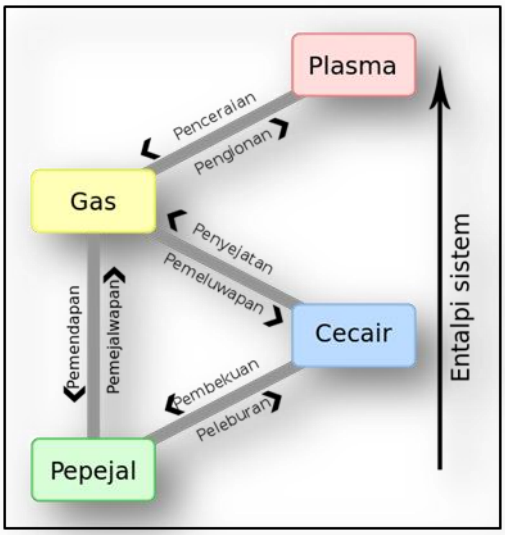
Berdasarkan pemerhatian ke beberapa bengkel di Politeknik Sultan Mizan Zainal, Terengganu, Bengkel Afiqa Energy Enterprise dan di sekitar kawasan perindustrian di Dungun, secara majoritinya pengguna menggunakan kaedah manual iaitu memotong dan membentuk secara kendalian tangan untuk memotong plat logam mengikut bentuk-bentuk tertentu. Kaedah pemotongan secara manual/konvensional boleh menyumbang kepada penghasilan bahan kerja yang kurang berkualiti. Selain itu, ia menyukarkan pengguna untuk menghasilkan bentuk-bentuk kompleks seperti bulat dan lengkung. Pengguna terpaksa mengambil masa yang agak panjang bagi menghasilkan sesuatu pemotongan. Oleh yang demikian sebuah meja beserta jig direkabentuk bagi mesin pemotongan plasma untuk membantu proses pemotongan lurus,melengkung dan bulatan.

Kajian Literatur

Plasma adalah substansi yang seakan-akan atau mirip dengan gas dan bertindak dengan kuat terhadap medan elektromagnet. Oleh itu plasma memiliki sifat-sifat yang unik berbeza dengan cairan mahupun gas. Mirip dengan gas, plasma tidak memiliki bentuk yang tetap dan berbeza dengan gas, plasma membentuk struktur seperti filamen, pancaran dan lapisan-lapisan jika dipengaruhi medan elektromagnet (Thonk, 1967). Maksud yang lainnya, plasma adalah di definasikan sebagai gas terionisasi dan dikenali sebagai fasa yang ke empat selepas fasa padat, cair dan gas.(Arifin,et al.2009).

Plasma adalah suatu bentuk fasa zat ke-4 setelah fasa padat, cair, dan gas. Jika ditingkatkan haba ke atasnya, ia akan berubah fasa dari padat ke cair, dan jika diberikan haba yang berlebih maka zat cair tersebut akan berubah menjadi wap. Jika wap tersebut ditambahkan lagi haba maka ia akan berubah. Jika air ditambah sejumlah tenaga haba maka air tersebut akan menguap dan mengurai menjadi dua gas iaitu oksigen dan hidrogen (Rajah 1). Dengan menambah sejumlah lagi tenaga pada fasa wap air tersebut, akan terhasil sejenis fasa yang mudah terpengaruh terhadap suhu dan elektrik. Proses ini disebut proses Ionisasi, iaitu terjadinya ion dan elektron bebas melalui atom gas. Jika keadaan ini terbentuk maka fasa zat tersebut telah berubah menjadi Plasma.(Akhmad, 2009: 51-52)

eISBN 978-967-2426-22-6
13th – 14th December 2020



Rajah 1

Pemotongan plasma pula berkembang pada tahun 1960 dan muncul sebagai cara yang berkesan dan produktif untuk proses-proses pemotongan logam. Ini adalah disebabkan pemotongan plasma dapat memotong dengan kecekapan yang tepat.

Pemotongan plasma angin pula, adalah satu proses berkesan untuk memotong kelajuan tinggi pada kedua-dua logam (feros dan bukan ferous). Pra-panas tidak diperlukan dan herotan adalah pada kadar yang minima semasa pemotongan dilakukan. Keluli karbon dapat dipotong dengan 10 kali lebih pantas dari gas oksi-asitilin. Ia hanya lebih ekonomi dan lebih berkualiti pemotongannya. Angin yang dibekalkan ditingkatkan suhunya menjadi gas plasma yang mengandungi paduan ion positif, atom neutral dan letron negatif dimana menjadikan suhu dapat ditingkatkan sehingga 27000 Celcius untuk plasma angin.

Plasma angin lebih berkesan dari lain-lain plasma arka. Ia adalah gabungan ringkas mengunakan tekanan angin (compressor) bersama aliran arus letrik untuk menjadi plasma. Dengan suhu yang tinggi bolih mencairkan semua logam dimana apa yang diperlukan ialah potongan hendaklah dapat mengalirkan arus elektrik. Dengan meniup dan menyebur leburan logam, semburan plasma yang kuat akan membentuk potongan (kerf).

Konsep pemprosesan bahan pepejal di bawah tindakan arka plasma-udara telah wujud selama beberapa dekad yang lalu. Beberapa tahun kebelakangan ini, para teknologi telah dapat mencapai mutu pemotongan yang belum pernah terjadi sebelumnya. Reka bentuk moden pemotong plasma membolehkan ia digunakan dalam operasi fabrikasi logam. Peralatan berfungsi menumpukan pada memastikan keselamatan pengguna dan meningkatkan ketepatan pemprosesan. Kaedah pemotongan secara konvensional atau kendalian tangan selalunya akan bergantung kepada teknik dan pengalaman pengguna itu sendiri.

Melalui pengendalian mesin pemotong plasma dengan kaedah manual iaitu secara kendalian tangan, pengguna mengambil masa yang lama untuk menghasilkan bentuk yang dikehendaki terutamanya bagi pengguna-pengguna yang kurang berkemahiran. Hal ini kerana pengguna perlu berhati-hati ketika melakukan pemotongan bagi mendapatkan hasil pemotongan yang baik. Namun begitu, kebanyakan hasil kerja terutamanya bagi pengguna yang kurang berkemahiran adalah tidak kemas serta tidak mencapai ketepatan saiz yang dikehendaki, sekaligus menyumbang kepada pembaziran produk yang akan dibuat.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Rajah 2

Rajah 3

Rajah 2 menunjukkan kaedah kendalian tangan tanpa alat bantuan. dan memerlukan kemahiran pemotongan yang tinggi Rajah 3 adalah kaedah kendalian tangan dengan bantuan alat tambahan untuk membuat bentuk bulatan.

Rajah 4

Rajah 4 menunjukkan kaedah kendalian tangan dengan pelbagai alat bantuan tambahan untuk membuat pemotongan yang mempunyai corak tertentu.

Pada asasnya, meja adalah sebuah perabot yang mempunyai permukaan mendatar pada bahagian atas dan disokong oleh beberapa kaki. Bagi pemotongan plasma, terdapat bahagian yang berjarak pada permukaan atas meja tersebut bagi mengelakkan permukaan meja dipotong sekali apabila proses pemotongan dilakukan. Ia juga direka agar serpihan yang berlebihan hasil dari proses pemotongan akan terus jatuh ke bawah. Pada kebiasaannya, meja pemotongan plasma direka dengan menggunakan besi kerana ia lebih kukuh dan dapat memastikan proses pemotongan dapat dilakukan dengan lancar.

Rajah 5

Rajah 6

Rajah 5 merupakan meja asas pemotongan jenis plasma yang dilengkapi landasan untuk memegang *torch.* Hasil pemotongan lurus lebih baik kerana pergerakan torch yang sekata. Mesin ini tidak dapat menghasilkan pemotongan melengkung. Rajah 6 merupakan meja pemotong plasma dengan kendalian mesin. Sistem pemotongan adalah secara automatik atau

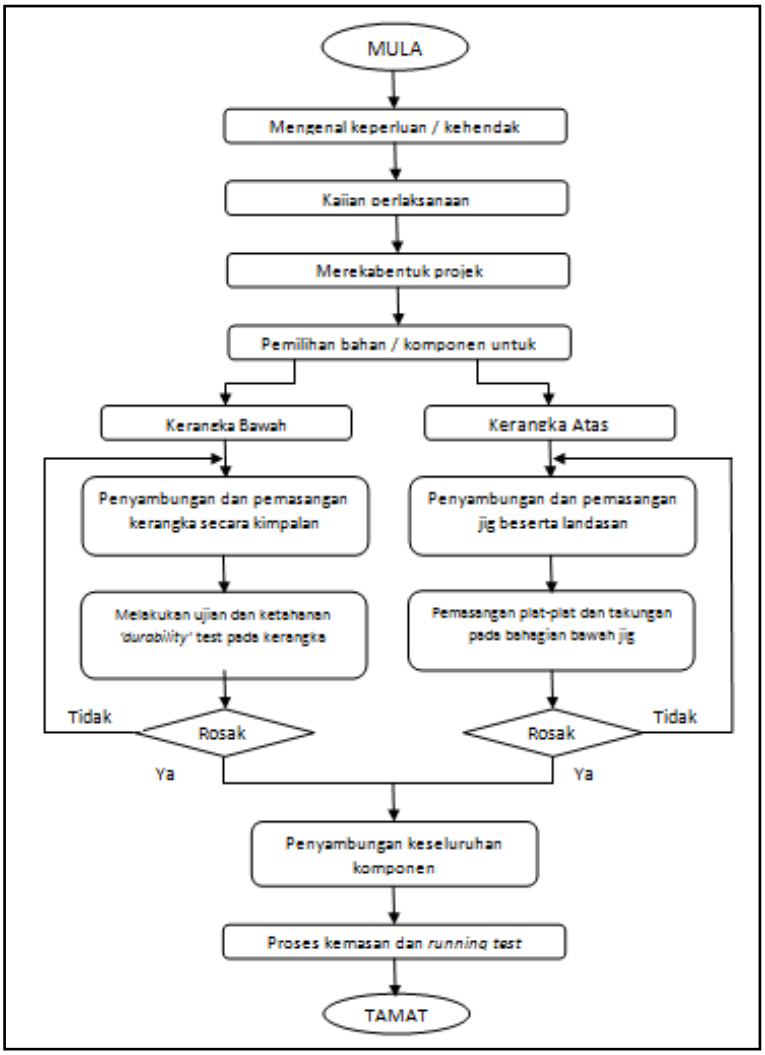
eISBN 978-967-2426-22-6
13th – 14th December 2020

kendalian mesin. Mesin ini mampu melakukan pelbagai bentuk pemotongan seperti lurus, melengkung serta berbentuk. Kos penghasilan yang agak mahal.

Metodologi

Pembangunan rekabentuk merupakan penerangan berkaitan dengan peralatan, komponen, serta kaedah-kaedah yang digunakan bagi melaksanakan sistem ini. Bagi menjalankan serta menjayakan sesuatu projek dengan berkesan, beberapa aspek dan kaedah perlu dititik beratkan. Oleh yang demikian, aspek dan kaedah bagi menyiapkan sesebuah sistem adalah dengan mengetahui peralatan dan komponen yang diperlukan semasa melaksanakan kerja pembuatan sistem.

Bagi memastikan penghasilan sistem ini berjalan dengan baik tanpa berlakunya sebarang masalah, proses pembuatan telah dibahagikan kepada beberapa peringkat mengikut tahap serta ketetapan masa yang ditetapkan. Ini adalah bertujuan untuk proses pelaksanaannya berjalan dengan baik. Kaedah kerja yang dirancang adalah merangkumi kerja-kerja perancangan yang mengandungi rekabentuk, kerja-kerja pemasangan dan pengubahsuaian serta analisis dan ujikaji. Carta alir kaedah pelaksanaan projek inovasi boleh merujuk pada Rajah 7



Rajah 7

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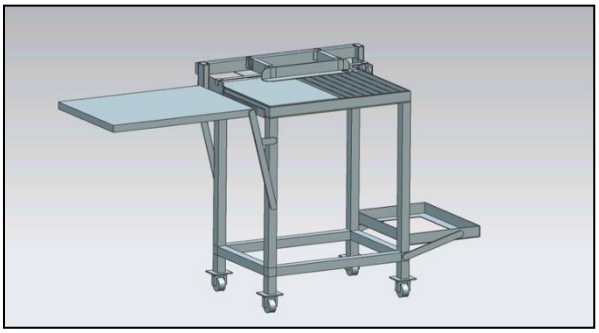
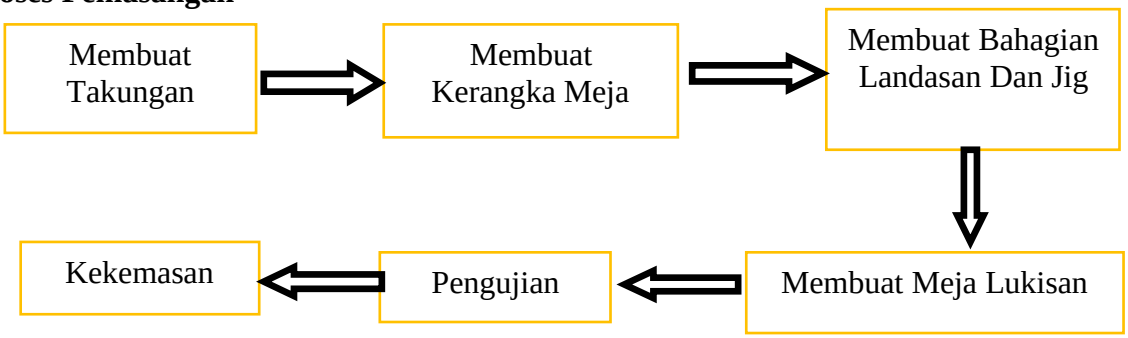
13th – 14th December 2020



Rajah 8: Lakaran Reka Bentuk Konsep

Proses Pemasangan



Proses membuat takungan adalah menggunakan besi bersudut yang telah dipotong mengikut saiz dan disambung menggunakan sambungan jenis kimpalan arka MIG *(Metal Inert Gas)*. Plat besi dikimpal pada bahagian bawah untuk membentuk takungan. Seterusnya, besi berlubang yang telah siap dipotong membentuk bahagian slot dikimpal pada bahagian dalam takungan. Setelah proses kimpalan selesai, proses mencanai dilakukan untuk membuang kumai pada permukaan besi dan bagi mendapatkan hasil kimpalan yang baik. Plat besi rata diletakkan pada bahagian takungan tersebut.

Penghasilan rangka kerja adalah dengan menggunakan besi berlubang yang telah dipotong dan disambungkan dengan takungan menggunakan sambungan jenis kimpalan arka MIG. Setelah proses mengimpal selesai, proses kemasan iaitu proses mencanai dilakukan untuk membuang kumai.

Proses membuat bahagian landasan dan jig dengan menggunakan besi bersudut dipotong mengikut saiz yang dikehendaki. Seterusnya, ditebuk untuk membuat sambungan dengan plat besi rata menggunakan skru dan nat. Galas dipasang pada plat kemudian plat tersebut dikimpal pada bahagian hujung berlubang yang telah dipotong meggunakan mesin kimpalan MIG sebagai sokongan galas pada landasan.

Bagi proses membuat meja lukisan, plat besi dipotong mengikut saiz yang dikehendaki. Seterusnya plat tersebut dipasang pada bahagian slot. Proses pengujian dilakukan untuk memastikan pergerakan dan kedudukan torch berada pada jarak yang sesuai dengan bahan yang hendak dipotong seperti didalam Rajah 9. Ini bertujuan supaya hasil pemotongan adalah baik. Seterusnya proses membuat kemasan dilakukan seperti ditunjukkan dalam Rajah 10. Kesemua bahagian besi dibersihkan daripada sebarang bendasing. Proses mengecat dilakukan bagi mengelakkan berlaku pengaratan dan untuk tujuan kemasan

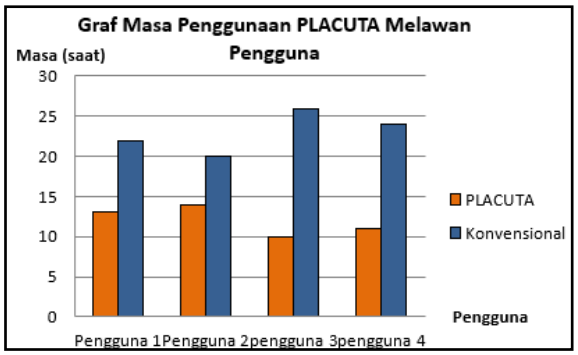
eISBN 978-967-2426-22-6
13th – 14th December 2020

Rajah 9: Proses pengujian

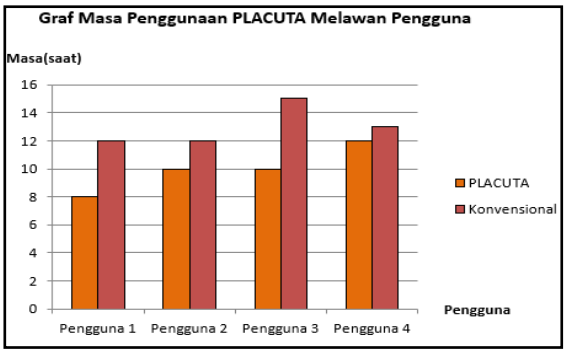
Rajah 10: Kemasan Projek

Pengujian Dan Keberkesanan

Dalam pembinaan PLACUTA,lukisan reka bentuknya dihasilkan menggunakan perisian NX 10.0. Lukisan reka bentuk ini dihasilkan dengan penuh sistematik seiring dengan pembinaan PLACUTA yang sebenar. Meja ini dihasilkan dengan gabungan meja dan jig bagi membuat gerakan. PLACUTA ini mempunyai jig bagi menghasilkan beberapa bentuk pemotongan berbentuk asas seperti lurus,melengkung dan bulatan.



Rajah 11



Rajah 12

Rajah 11 merupakan graf bagi masa penggunaan PLACUTA dan penggunaan mesin pemotong plasma secara konvensional bagi pemotongan plat berketebalan 2mm bagi diameter 110mm. Rajah 12 pula merupakan graf bagi masa penggunaan PLACUTA dan penggunaan pemotong plasma secara konvensional bagi pemotongan plat 2mm yang diameter 25mm. Analisa ini adalah gabungan hasil ujian yang dilakukan kepada empat orang responden.

Maklum balas oleh pelajar dan pensyarah di politeknik diperolehi dengan mengedarkan borang soal selidik untuk mengenalpasti tahap persepsi pelajar terhadap plasma cutter table ini. Jumlah sampel sebanyak 68 0rang pelajar yang mengambil menjalankan projek akhir dan 10 orang pensyarah di Jabatan Kejuruteraan Mekanikal Politeknik Sultan Mizan Zainal Abidin,PSMZA,Terengganu.

Dapatan keseluruhan tahap respon pelajar semester lima Jabatan Kejuruteraan Mekanikal PSMZA yang dipilih terhadap pengunaaan *Portable Plasma Cutter Table* menunjukkan purata 76% pelajar sangat bersetuju manakala 23% yang setuju dengan inovasi yang dihasilkan. Sebanyak 80% menunjukkan pensyarah sangat bersetuju terhadap ciri-ciri inovasi ini. Ini menunjukkan satu respon yang positif daripada pelajar dan pensyarah untuk digunakan dalam proses pengajaran dan pembelajaran .

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kesimpulan

Kebanyakan alat pemotongan di institusi pengajian menggunakan menggunakan kaedah manual/konvensional untuk memotong dan membentuk plat logam mengikut bentuk-bentuk tertentu. Hasil kerja melalui kaedah ini kurang berkualiti dan memerlukan masa yang lebih lama.

Portable Plasma cutter table ini akan dapat membantu dalam menghasilkan beberapa bentuk asas seperti lurus, melengkung dan bulatan. Masa pemotongan dapat dikurangkan. Kualiti kerja pemotongan dengan menggunakan *portable plasma cutter table* adalah lebih tepat dan kemas berbanding pemotongan dengan menggunakan kendalian tangan.

Daripada hasil analisa yang dibuat, didapati *Portable Plasma Cutter Table* mempunyai potensi untuk dikomersialkan serta ianya dapat berfungsi seperti mana yang dikehendaki. Dua cadangan penambahbaikan untuk meningkatkan lagi keupayaan sistem ini pada masa akan datang ialah reka bentuk tempat takungan diubah kepada bentuk corong dan menggunakan galas yang lebih berkualiti seperti *linear motion bearing.*

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PERTUBUHAN SILAT SENI GAYONG MALAYSIA SEBAGAI MEDIUM PEMBENTUKAN KEMAHIRAN INSANIAH: DARI PERSEPSI PELAJAR SEKOLAH MENENGAH DI MELAKA

Mohd Zamir Bin Hj Mohd Sharif

Sekolah Berasrama Penuh Integrasi Selandar (E-mail: mohdzamirmohdsharif@gmail.com)

Abstrak; *Pertubuhan Silat Seni Gayong Malaysia yang diasaskan oleh Allahyarham Dato' Meor Abdul Rahman bin Uda Mohd Hashim merupakan silat pertama yang didaftarkan secara rasmi di Malaysia. Silat telah diiktiraf oleh Kementerian Pendidikan Malaysia sebagai salah satu aktiviti kokurikulum di bawah Pasukan Badan Beruniform. Silat lebih dilihat sebagai satu medium untuk membina kekuatan fizikal berbanding sahsiah. Kajian ini bertujuan untuk melihat persepsi ahli Silat Seni Gayong Malaysia dalam kalangan pelajar sekolah menengah di Melaka tentang silat sebagai medium pembentukan kemahiran insaniah yang meliputi tiga dimensi iaitu Etika dan Kerohanian, Kemahiran Kerja Berpasukan dan Kemahiran Kepimpinan. Sampel kajian ini melibatkan 115 orang ahli Silat Seni Gayong Malaysia yang terdiri daripada pelajar sekolah menengah di Melaka. Kajian ini merupakan kajian berbentuk tinjauan dengan menggunakan analisis statistik deskriptif dengan menggunakan soal selidik sebagai instrumen kajian. Dapatan kajian menunjukkan bahawa persepsi ahli Silat Seni Gayong Malaysia adalah tinggi bagi ketiga-tiga dimensi. Secara keseluruhan persepsi ahli terhadap Pertubuhan Silat Seni Gayong Malaysia sebagai medium pembentukan sahsiah adalah tinggi dengan nilai min adalah 4.49. Implikasi daripada kajian ini membuktikan peranan Pertubuhan Silat Seni Gayong Malaysia sebagai salah satu aktiviti kokurkulum di bawah Pasukan Badan Beruniform medium kepada pembentukan kemahiran insaniah pelajar sekolah menengah di Melaka.*

Kata Kunci: *Dato'Meor Abdul Rahman, Silat Seni Gayong Malaysia, Kemahiran Insaniah, Etika dan Kerohanian, Kemahiran Kerja Berpasukan, Kemahiran Kepimpinan, Melaka*

Pengenalan

Silat merupakan salah satu cabang seni bela diri di Malaysia dan merupakan budaya bangsa Melayu yang sudah diiktiraf oleh badan dunia seperti Pertubuhan Saintifik Pertubuhan Bangsa-Bangsa Bersatu (UNESCO) sebagai warisan budaya Malaysia pada Disember 2019. Sebelum ini, Kementerian Pelancongan, Seni dan Budaya Malaysia melalui Jabatan Warisan Negara telah mewartakan silat sebagai Warisan Kebangsaan pada tahun 2009. Kementerian Pendidikan Malaysia pula telah mengiktiraf silat sebagai seni bela diri yang dijadikan sebagai salah satu aktiviti kokurikulum di bawah Pasukan Badan Beruniform (PBB) berdasarkan kepada Surat Pekeliling Ikhtisas Bilangan 2 tahun 1997: Pengiktirafan Persatuan Seni Bela Diri Sebagai Pasukan Pakaian Seragam Sekolah.

Dalam dunia yang moden ini, silat tidak lagi berperanan untuk mengangkat kedudukan seseorang di mata masyarakat. Tidak seperti zaman keagungan Kesultanan Melayu Melaka yang mana silat merupakan satu kewajipan kepada semua orang dan menjadi amalan dalam kehidupan seharian mereka. Hal ini berlaku kerana pada masakini tidak lagi wujud cabaran yang memaksa mereka menggunakan silat seperti dahulu. Penguatkasaan undang-undang telah wujud dan mengurangkan keperluan terhadap penggunaan silat. Malah silat pada masa sekarang hanya berfungsi sebagai aktiviti riadah dan juga aktiviti keseniaan.

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13th – 14th December 2020

Petubuhan Silat Seni Gayong Malaysia (PSSGM) merupakan silat yang diasaskan oleh Allahyarham Dato' Meor Abdul Rahman bin Daeng Uda Mohd Hashim dan mula berkembang seawal tahun 1956. Tanggal 22 haribulan Oktober 1963, Silat Seni Gayong Malaysia ini telah didaftarkan secara rasmi. Pembelajaran Silat Seni Gayong Malaysia adalah berteraskan latihan fizikal serta penerapan displin bagi melahirkan pesilat yang cemerlang dari segi fizikal dan juga sahsiah. Penerapan nilai-nilai murni adalah satu kemestian dalam pembelajaran Silat Seni Gayong Malaysia kepada ahli-ahlinya bersesuaian dengan Falsafah Pendidikan Kebangsaan untuk melahirkan insan yang harmoni dan seimbang dari segi jasmani, emosi, rohani dan intelektual.

Di dalam sistem pendidikan di Malaysia, Pertubuhan Silat Seni Gayong Malaysia (PSSGM) merupakan salah satu organisasi badan beruniform yang rasmi dalam aktiviti kokurikulum di sekolah. Badan beruniform dilihat sebagai salah satu medium untuk pembentukan kemahiran insaniah pelajar di sekolah-sekolah. Kemahiran insaniah amat penting kepada pelajar kerana kemahiran ini memberikan nilai tambah dalam pencapaian pelajar secara keseluruhan. Kebanyakan organisasi memerlukan pekerja yang mempunyai kemahiran insaniah yang cemerlang untuk bekerja di syarikat mereka. Oleh itu, pelajar perlu membentuk kemahiran insaniah mereka dari sekolah lagi dan diteruskan di peringkat institusi pengajian tinggi lagi supaya dengan kemahiran ini mereka akan mudah menyesuaikan diri dengan pekerjaan apabila mereka sudah menamatkan pengajian kelak. Kebanyakan mahasiswa sukar mendapat pekerjaan setelah tamat pengajian kerana mereka lemah dalam kemahirn insaniah walaupun mempunyai pencapaian akademik yang baik. Kemahiran memakan masa untuk dimahirkan dan perlu diterapkan seawal yang mungkin iaitu di zaman persekolahan lagi.

Kebanyakan individu berpendapat organisasi badan beruniform memainkan peranan yang penting dalam pembentukan personaliti pelajar yang baik di sekolah-sekolah. Mohd Salleh et.al (2010), menjelaskan bahawa kemahiran insaniah merupakan kemahiran tertentu yang perlu dimiliki oleh seseorang untuk digunakan semasa melakukan pekerjaan yang melibatkan kemahiran-kemahiran khusus dan ianya boleh berkembang melalui proses tumbesaran, kematangan. Oleh yang demikian dengan kewujudan Pertubuhan Silat Seni Gayong Malaysia (PSSGM) sebagai satu badan beruniform dilihat mampu membentuk kemahiran insaniah dalam kalangan ahlinya di sekolah-sekolah menengah di Melaka

Pernyataan Masalah

Pelbagai persepsi dikemukakan terhadap sumbangan silat dalam bidang pendidikan terutamanya dalam aktiviti kokurikulum di sekolah-sekolah. Terdapat pelbagai kajian dijalankan untuk melihat kesan silat terhadap pembentukan sahsiah tetapi tidak secara terperinci. Ini menyebabkan sumbangan silat menjadi kabur dan tidak jelas. Selain daripada itu, isi kandungan pengajaran dan pembelajaran silat yang tidak jelas dalam kalangan masyarakat menyebabkan wujudnya pandangan negatif terhadap silat dan kesan kepada pengamalnya terutama melibatkan pelajar-pelajar sekolah. Terdapat kajian yang mengkaji persepsi ahli terhadap Silat Seni Gayong Malaysia yang dijalankan di Universiti Kebangsaan Malaysia tetapi tiada kajian dilakukan ke atas pelajar sekolah menengah. Dalam kajian ini antara isu utama yang hendak dilihat adalah persepsi ahli Silat Seni Gayong Malaysia dalam kalangan pelajar sekolah menengah di Melaka mengenai pertubuhan silat tersebut terhadap sebagai medium kemahiran insaniah pengamalnya.

Selain daripada itu, pertubuhan silat dilihat sebagai satu badan beruniform yang berbeza dengan badan beruniform yang lain seperti Kadet Remaja Sekolah (KRS), Pengakap, Pandu Puteri, Puteri Islam, Bulan Sabit Merah Malaysia, Kadet Polis, Kadet Pertahanan Awam dan lain-lain. Kebanyakan badan beruniform ini dikenali kerana sukatannya yang hampir sama

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13th – 14th December 2020

tetapi pertubuhan silat mempunyai sukatan yang sama sekali berbeza dengan badan beruniform tersebut. Sukatan seperti kawad kaki dilihat sebagai satu sukatan yang boleh meningkatkan kemahiran insaniah seperti kemahiran kerja berpasukan dan kemahiran kepimpinan yang mana sukatan ini tidak terdapat dalam pertubuhan silat.

Selain daripada itu juga, dilihat pentadbir sekolah kurang berminat dengan badan beruniform silat ini untuk didaftarkan sebagai salah satu aktiviti kokurikulum di sekolah-sekolah. Ini mungkin terjadi disebabkan kurangnya kefahaman dalam kalangan pentadbir sekolah tentang peranan pertubuhan silat ini dalam membentuk peribadi pelajar-pelajar sekolah. Kebanyakan pentadbir masih lagi mempunyai tanggapan bahawa silat membawa unsur yang negatif dari segi tingkahlaku, kepercayaan kurafat dan sebagainya.

Oleh yang demikian perlunya satu kajian untuk membuktikan bahawa pertubuhan silat juga dengan menggunakan sukatannya yang tersendiri mampu untuk membentuk kemahiran insaniah dalam kalangan ahlinya terutama yang melibatkan pelajar-pelajar sekolah.

Objektif Kajian

Objektif kajian ini adalah untuk :

(i) Mengenalpasti persepsi ahli Silat Seni Gayong Malaysia dalam kalangan pelajar sekolah menengah di Melaka tentang PSSGM sebagai medium pembentukan kemahiran insaniah berdasarkan dimensi Etika dan Kerohanian, Kemahiran Kerja Berpasukan dan Kemahiran Kepimpinan.

(ii) Mengenalpasti persepsi ahli Silat Seni Gayong Malaysia dalam kalangan pelajar sekolah menengah di Melaka tentang PSSGM sebagai medium pembentukan kemahiran insaniah secara keseluruhan.

(iii) Melihat perbezaan persepsi ahli Silat Seni Gayong Malaysia berdasarkan jantina.

Persoalan Kajian

Terdapat lima persoalan kajian yang akan diselesaikan dalam kajian ini iaitu :

(i) Apakah tahap persepsi ahli Silat Seni Gayong Malaysia dalam kalangan pelajar sekolah menengah di Melaka tentang PSSGM sebagai medium pembentukan kemahiran insaniah dari dimensi Etika dan Kerohanian?

(ii) Apakah tahap persepsi ahli Silat Seni Gayong Malaysia dalam kalangan pelajar sekolah menengah di Melaka tentang PSSGM sebagai medium pembentukan kemahiran insaniah dari dimensi Kemahiran Kerja Berpasukan?

(iii) Apakah tahap persepsi ahli Silat Seni Gayong Malaysia dalam kalangan pelajar sekolah menengah di Melaka tentang PSSGM sebagai medium pembentukan kemahiran insaniah dari dimensi Kemahiran Kepimpinan?

(iv) Apakah tahap persepsi ahli Silat Seni Gayong Malaysia dalam kalangan pelajar sekolah menengah di Melaka tentang PSSGM sebagai medium pembentukan kemahiran insaniah secara keseluruhan?

(v) Adakah terdapat perbezaan persepsi ahli Silat Seni Gayong Malaysia berdasarkan jantina.

Kajian Literatur

Ilmu silat merupakan ilmu pengetahuan yang berhubung dengan kaedah tertentu untuk mempertahankan diri dari serangan musuh dengan menggunakan senjata atau tanpa senjata (Iswan, 2002). Eddie (1995) pula melihat seni silat sebagai gabungan mental-spiritual, bela diri, seni dan fizikal. Berdasarkan kepada tafsiran Eddie (1995) menunjukkan bahawa budi pekerti merupakan salah satu sumber pegangan seni silat itu. Wan Ahmad Fauzi (1995)

eISBN 978-967-2426-22-6
13th – 14th December 2020

menyatakan seni silat bukan sahaja mampu mempertahankan diri sahaja bahkan ia juga mampu untuk mendidik pengamalnya supaya menjadi insan yang berakhlak mulia.

Hasil kajian Wan Abdul Hadi (1996) mendapati bahawa amalan-amalan serta unsur kerohanian yang terdapat dalam Silat Seni Gayong Malaysia tidak bercanggah dengan agama Islam. Segala amalan yang dilakukan adalah berlandaskan Al-Quran dan Hadith serta bersandar sepenuhnya kepada Allah S.W.T. Menurut Wan Ahmad Fauzi (1995), pembelajaran Silat Seni Gayong Malaysia berasas kukuh di atas agama Islam dan berdasarkan akidah Islam.

Pertubuhan Silat Seni Gayong Malaysia adalah satu badan beruniform yang berdaftar secara rasmi melalui Pejabat Pendaftaran Pertubuhan. Menurut Juliza (2014), badan beruniform ialah satu kumpulan atau organisasi yang terdiri daripada gabungan keahlian dan mempunyai dasar-dasar tertentu untuk diikuti dan dipatuhi. Organisasi pula adalah satu sistem sosial yang merangkumi pelbagai aktiviti manusia seperti sumber semula jadi, modal dan bahan (Norazila et.al, 2018). Jaafar et.al (2002) pula mendefinisikan organisasi sebagai kumpulan dua orang atau lebih yang melakukan kerja bersama-sama secara berkoordinasi bagi mencapai sasuatu hasil atau objektif. Mohd. Tahir & Othman (2010) menyatakan bahawa dengan menyertai badan beruniform, pelajar pelajar dapat menambah ilmu pengetahuan, pengalaman dan kemahiran yang mengandungi unsur unsur intelek yang akan dapat membantu pelajar memiliki keyakinan tinggi dalam membuat keputusan. Di samping itu, badan beruniform menerapkan beberapa elemen penting seperti disiplin kendiri, kepimpinan, keusahawanan, kreatif, inovasi, dan kecintaan kepada alam semula jadi. Badan berunifrom ini juga boleh dijadikan alat untuk pembentukan semangat kewarganegaraan, kesetiaan kepada bangsa dan negara serta integrasi nasional. Mohktar et.al (1999) ada menyatakan bahawa aktiviti kokurikulum amat penting dalam membentuk sahsiah, perkembangan bakat, minat dan rohani pelajar. Kokurikulum merupakan aktiviti dan pengalaman pendidikan yang dilaksanakan di luar bilik darjah yang menekankan aspek aspek yang tersembunyi seperti nilai, bakat, peranan dan kepimpinan (Ab. Alim, 1999).

Kemahiran insaniah adalah sebahagian daripada kemahiran generik. Ia merujuk kepada penguasaan pelajar dalam kemahiran yang bersifat bukan akademik dan lebih terfokus kepada pembangunan ketrampilan diri, personaliti dan kemanusiaan. Kemahiran ini diperlukan oleh pelajar untuk berjaya dan cemerlang dari pelbagai aspek contohnya pekerjaan dan kehidupan. (Fauziah Esman & Rozita Mokhtar, 2014; Pua Poh Keong, 2014; Rodiah Idris, Siti Rahayah Ariffin, & Noriah Mohd Ishak, 2009).

Manakala Jain & Mehta (2011) mendefinisikan kemahiran insaniah merupakan sifat peribadi yang berupaya meningkatkan kemahiran interaksi individu, prestasi kerja dan prospek kerjaya. Ia ditafsirkan sebagai kompetensi tingkahlaku yang juga dikenali sebagai kemahiran interpersonal atau "*people skills*". Selain itu, Kementerian Pendidikan Tinggi mendefinisikannya sebagai gabungan kemahiran generik yang merangkumi kemahiran bukan akademik seperti kemahiran kepimpinan, kerja berpasukan, komunikasi dan pembelajaran sepanjang hayat (Roselina Shakir, 2009). Sehubungan itu, terdapat tujuh elemen utama kemahiran insaniah yang diguna secara umum iaitu:

i. Kemahiran Komunikasi
ii. Pemikiran Kritis Dan Kemahiran Menyelesaikan Masalah
iii. Kemahiran Kerja Berpasukan
iv. Pembelajaran Berterusan Dan Pengurusan Maklumat
v. Kemahiran Keusahawanan
vi. Etika dan Kerohanian
vii. Kemahiran Kepimpinan

eISBN 978-967-2426-22-6
13th – 14th December 2020

Bagi tujuan kajian ini, hanya tiga elemen sahaja yang dikaji berdasarkan kepada elemen-elemen yang terdapat dalam kemahiran insaniah iaitu Kemahiran Kerja Berpasukan, Etika dan Kerohanian dan Kemahiran Kepimpinan.

Metodologi

Kajian ini adalah kajian kuantitatif deskriptif yang menggunakan reka bentuk kajian tinjauan. Menurut Roselena (2007) soal selidik digunakan dalam kajian kerana pengumpulan data dapat dilakukan dengan lebih cepat dan meluas, sesuai dengan bilangan responden yang ramai. Penggunaan soal selidik juga dapat menjimatkan masa serta membolehkan responden menjawab soalan yang dikemukakan tanpa dikawal dan dipengaruhi oleh anasir-anasir luar seperti penyelidik dan sebagainya. Menurut pandangan Robson (1998) menyatakan bahawa soal selidik adalah instrumen yang bersesuaian dengan kajian tinjauan dan pendapat ini pula disokong pula oleh Mohd. Majid (2005) menyatakan bahawa soal selidik lebih praktikal digunakan untuk mendapatkan maklumat daripada saiz populasi yang besar. Data kajian ini diperolehi dengan mengedarkan borang soal selidik kepada pelajar-pelajar di sekolah di Melaka yang mendaftar sebagai ahli Pertubuhan Silat Seni Gayong Malaysia. Maklum balas yang diperoleh telah dianalisis dengan menggunakan program *Statistical Package for Social Science* (SPSS) Versi 22.0 secara deskriptif.

Populasi kajian ini adalah ahli Pertubuhan Silat Seni Gayong Malaysia dalam kalangan pelajar pelajar sekolah menengah di Melaka. Berdasarkan kepada rekod yang terkini Pertubuhan Silat Seni Gayong Malaysia Negeri Melaka, terdapat lima buah sekolah menengah yang berdaftar bagi tahun 2020 dengan keahlian seramai 150 orang. Pemilihan sampel telah dibuat melalui kaedah pensampelan berkelompok. Untuk menentukan bilangan responden, Jadual Penentuan Saiz Sampel Krejcie dan Morgan (1970) telah digunakan. Saiz sampel bagi kajian ini ialah 108 berdasarkan Jadual Penentuan Saiz Sampel Krejcie dan Morgan (1970). Untuk persampelan kajian ini, seramai 115 orang responden telah dipilih untuk mewakili keputusan ujian statistik yang akan dijalankan.

Instrumen soal selidik yang digunakan telah diadaptasi mengikut kesesuaian tujuan kajian daripada Iswan (2002). Soal selidik ini mengandungi empat bahagian iaitu Bahagian A bertujuan mendapatkan maklumat responden, Bahagian B pula terdiri daripada soalan-soalan untuk melihat tahap persepsi ahli berkaitan Pertubuhan Silat Seni Gayong Malaysia sebagai medium pembentukan kemahiran insaniah dari dimensi *Etika dan Kerohanian*, Bahagian C terdiri daripada soalan-soalan untuk melihat tahap persepsi ahli berkaitan pertubuhan Silat Seni Gayong Malaysia sebagai medium pembentukan kemahiran insaniah dari dimensi *Kemahiran Kerja Berpasukan* dan Bahagian D pula terdiri daripada soalan-soalan untuk melihat tahap persepsi ahli berkaitan Pertubuhan Silat Seni Gayong Malaysia sebagai medium pembentukan kemahiran insaniah dari dimensi *Kemahiran Kepimpinan*.

Min yang diperoleh akan diklasifikasikan berdasarkan 4 tahap iaitu lemah, rendah, sederhana dan tinggi. Mengikut Davis (1996), julat min setiap tahap ditentukan dengan menolak skor skala likert tertinggi (5) dengan skor skala likert terendah (1) kemudian membahagikan nilai tersebut kepada 4 tahap yang dikehendaki. Oleh itu, julat min setiap tahap adalah 1((5-1)/4). Untuk lebih jelas, maka tafsiran skor min seperti ditunjukkan dalam Jadual 1 berikut.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 1: Tafsiran Skor Min

Min Skor	Tafsiran Skor Min
1.00 – 2.00	Lemah
2.01 – 3.00	Rendah
3.01 – 4.00	Sederhana
4.01 – 5.00	Tinggi

Sumber: Davis (1996)

Dapatan Kajian

Bagi menghurai demografi responden, kekerapan serta peratus akan digunakan. Jadual 2 menunjukkan huraian demografi responden berdasarkan kekerapan dan peratusan.

Jadual 2: Kekerapan dan peratusan demografi responden

Demografi	Kekerapan	Peratus
Jantina Responden		
Lelaki	61	53.0
Perempuan	54	47.0
Jumlah	**115**	**100.0**
Umur Responden		
13 tahun	19	16.5
14 tahun	27	23.5
15 tahun	25	21.7
16 tahun	8	7.0
17 tahun	36	31.3
Jumlah	**115**	**100.0**
Tempoh pendaftaran ahli		
Kurang setahun	54	47.0
Setahun hingga tiga tahun	48	41.7
Lebih dari tiga tahun	13	11.3
Jumlah	**115**	**100.0**

Bagi menghuraikan tahap persepsi ahli terhadap Pertubuhan Silat Seni Gayong Malaysia sebagai medium pembentukan kemahiran insaniah mengikut dimensi, tafsiran skor min akan merujuk kepada Davis (1996). Jadual 3 menunjukkan nilai min, sisihan piawai dan tahap skor min persepsi ahli Silat Seni Gayong Malaysia mengikut dimensi dan secara keseluruhan.

Jadual 3: Nilai min, sisihan piawai dan interpretasi skor dimensi pembinaan sahsiah

Dimensi	N	Min	Sisihan Piawai	Tahap
Etika dan Kerohanian	115	4.52	0.43	Tinggi
Kemahiran Kerja Berpasukan	115	4.54	0.47	Tinggi
Kemahiran Kepimpinan	115	4.38	0.51	Tinggi
Keseluruhan	**115**	**4.49**	**0.41**	**Tinggi**

Berdasarkan kepada Jadual 3 di atas, menunjukkan min persepsi ahli dari dimensi Etika dan Kerohanian ialah 4.52 dan sisihan piawai ialah 0.43. Data ini menunjukkan persepsi ahli dari segi dimensi *Etika dan Kerohanian* adalah tinggi. Bagi dimensi *Kemahiran Kerja Berpasukan* pula, min persepsi ahli ialah 4.54 dan sisihan piawai ialah 0.47 yang menunjukkan pada tahap yang tinggi manakala dimensi *Kemahiran Kepimpinan* juga menunjukkan pada tahap yang tinggi dengan nilai min 4.38 dan sisihan piawai ialah 0.51. Secara keseluruhan persepsi ahli berkaitan dengan PSSGM sebagai medium pembentukan kemahiran insaniah pada tahap yang tinggi dengan nilai min 4.49 dan nilai sisihan piawai ialah 0.41.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Bagi melihat jika terdapat perbezaan persepsi ahli berdasarkan jantina, ujian-t bagi min tidak bersandar dijalankan. Ujian-t digunakan kerana terdapat dua pemboleh ubah yang tidak bersandar iaitu lelaki dan perempuan. Jadual 4 menunjukkan ujian-t persepsi ahli berdasarkan jantina.

Jadual 4: Keputusan ujian-t persepsi ahli mengikut jantina

Jantina	N	Min	s.p	dk	t	p
Lelaki	61	4.51	0.392	113	0.596	0.552
Perempuan	54	4.46	0.425			

Berdasarkan Jadual 4, statistik ujian-t ialah t(115) = 0.569, p = 0.552 (p>0.05) iaitu melebihi nilai aras signifikan 0.05. Oleh yang demikian hipotesis nol yang dibuat bagi menguji perbezaan persepsi ahli mengikut jantina gagal ditolak. Oleh yang demikian tidak terdapat perbezaan yang signifikan persepsi ahli tentang PSSGM sebagai medium pembentukan kemahiran insaniah berdasarkan jantina.

Perbincangan

Bidang pendidikan merupakan bidang yang sangat penting bagi merealisasikan hasrat negara untuk mencapai status sebuah negara maju dalam kalangan negara-negara di dunia ini. Dengan pendidikan, generasi muda negara kita dapat dididik dengan ilmu pengetahuan dan kemahiran yang tinggi serta berguna bagi menghasilkan modal insan yang dapat membantu negara dalam pelbagai sektor pekerjaan kelak. Modal insan berkualiti tinggi merupakan salah satu syarat bagi pembangunan sesebuah negara. Sistem pendidikan kita seharusnya mampu menghasilkan generasi muda yang berpengetahuan tinggi, berfikir secara kreatif dan kritis serta berupaya berkomunikasi dan secara keseluruhannya menghasilkan generasi yang berkualiti tinggi.

Kementerian Pendidikan Malaysia diberikan tugas yang berat sebagai pemimpin yang dapat menghasilkan generasi muda Malaysia berpotensi, mempunyai pelbagai kemahiran serta dapat membentuk ciri-ciri keperibadian dan perspektif hidup yang membolehkan mereka berjaya dalam kehidupan dan mampu memajukan lagi Negara di mata dunia, selari dengan hasrat dan Falsafah Pendidikan Negara. Antara kemahiran yang sangat penting dan sentiasa menjadi bahan perbincangan adalah kemahiran insaniah. Justeru kajian ini adalah bagi melihat sejauh mana Pertubuhan Silat Seni Gayong Malaysia sebagai satu badan beruniform di sekolah boleh menjadi satu medium pembentukan kemahiran insaniah ahli pertubuhan tersebut dalam kalangan pelajar sekolah menengah di Melaka.

Objektif pertama kajian ini adalah untuk mengenalpasti persepsi ahli Silat Seni Gayong Malaysia dalam kalangan pelajar sekolah menengah di Melaka tentang PSSGM sebagai medium pembentukan kemahiran insaniah berdasarkan dimensi *Etika dan Kerohanian*, *Kemahiran Kerja Berpasukan* dan *Kemahiran Kepimpinan*. Kajian mendapati bagi ketiga-tiga dimensi yang diuji menunjukkan tahap persepsi yang tinggi dalam kalangan pelajar sekolah menengah di Melaka. Pertubuhan Silat Seni Gayong Malaysia merupakan satu badan beruniform yang mana aktivitinya meliputi kemahiran insaniah seperti menitik beratkan unsur kerohanian dalam latihan, kerja berpasukan, berdisplin, mematuhi arahan gurulatih/jurulatih, menghormati gurulatih/jurulatih.

Objektif kedua kajian ini pula adalah untuk mengenalpasti persepsi ahli Silat Seni Gayong Malaysia dalam kalangan pelajar sekolah menengah di Melaka tentang PSSGM sebagai medium pembentukan kemahiran insaniah secara keseluruhan. Dapatan kajian membuktikan bahawa Pertubuhan Silat Seni Gayong Malaysia mampu menjadi satu medium

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13th – 14th December 2020

bagi pembentukan kemahiran insaniah ahli-ahlinya yang terdiri dalam kalangan pelajar sekolah menengah di Melaka. Dapatan kajian ini disokong dengan dapatan kajian oleh Norazila et.al (2017) yang mendapati bahawa aktiviti badan beruniform berupaya membentuk kemahiran insaniah pelajar di UKM.

Objektif ketiga dan terakhir kajian ini pula untuk melihat perbezaan persepsi ahli Silat Seni Gayong Malaysia berdasarkan jantina. Kajian menunjukkan bahawa tidak terdapat perbezaan persepsi tentang Pertubuhan Silat Seni Gayong Malaysia sebagai medium pembentukan kemahiran insaniah antara pelajar lelaki dan pelajar perempuan. Di sini juga dapat dilihat bahawa Pertubuhan Silat Seni Gayong Malaysia mampu menjadi medium pembentukan kemahiran insaniah pelajar tanpa mengira jantina walaupun banyak pandangan luar menyatakan aktiviti silat adalah lebih bersesuaian dengan pelajar lelaki berbanding dengan pelajar perempuan. Hasil dapatan ini disokong oleh dapatan kajian oleh Juliza (2014) yang menyatakan tiada perbezaan persepsi antara jantina berkaitan dengan aktiviti badan beruniform membentuk kemahiran insaniah pelajar di UTHM.

Rumusan

Kajian ini membawa satu penemuan yang penting tentang PSSGM sebagai badan beruniform di sekolah-sekolah mampu menjadi salah satu medium pembinaan kemahiran insaniah dalam kalangan pelajar sekolah menengah di Melaka tanpa mengira jantina. Kajian juga membuktikan dan mengesahkan dapatan daripada kajian-kajian lepas bahawa penyertaan pelajar dalam badan beruniform dapat membentuk kemahiran insaniah pelajar dengan berkesan. Ini terbukti dengan aktiviti-aktiviti yang dijalankan dalam PSSGM sememangnya menerapkan elemen-elemen kemahiran insaniah dalam diri pelajar. Oleh itu, dengan menyertai badan beruniform, pihak sekolah dapat melahirkan modal insan yang mempunyai personaliti yang baik serta menjadikan mereka mempunyai kemahiran yang pelbagai yang sangat diperlukan dalam membolehkan mereka melanjutkan pengajian mereka ke peringkat pengajian yang lebih tinggi disamping mempunyai nilai tambah kepada kecemerlangan akademik mereka yang semestinya membezakan mereka dengan pelajar yang lain.

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HUBUNGAN PENCAPAIAN MATEMATIK SPM TERHADAP KEPUTUSAN MATEMATIK KEJURUTERAAN 1- DBM1013 PELAJAR DKA DI POLITEKNIK KOTA BHARU

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Abstrak: *Pencapaian Sijil Pelajaran Malaysia (SPM) merupakan penentu bagi pelajar untuk menyambung pengajian dalam bidang yang berkaitan pada peringkat yang lebih tinggi. Pencapaian mata pelajaran yang berkaitan pengiraan seperti Matematik, Matematik Tambahan, Fizik, Prinsip Perakaunan dan Sains sering menjadi topik dan sering mendapat perhatian daripada kementerian dan juga masyarakat. Kajian ini dijalankan bertujuan untuk mengkaji tahap pencapaian pelajar Diploma Jabatan Kejuruteraan Awam Politeknik Kota Bharu bagi kursus Matematik Kejuruteraan 1 – DBM1013 berbanding pencapaian mata pelajaran Matematik di peringkat SPM. Analisis data dilakukan dengan menggunakan perisian SPSS versi 25.0 melalui analisis kolerasi Pearson. Dapatan kajian menunjukkan hubungan signifikan yang sederhana lemah antara pencapaian Matematik di peringkat SPM terhadap pencapaian Matematik Kejuruteraan 1 dan seterusnya mempengaruhi keputusan peperiksaan bagi kursus-kursus yang lain pada setiap semester. Sehubungan itu, kajian ini diharap akan dapat membantu pihak Politeknik dalam mengkaji dan membuat penambahbaikan yang berterusan dalam aspek pengurusan, pembelajaran dan pengajaran dan juga penilaian agar dapat melahirkan pelajar yang seimbang dari segi intelek, emosi, rohani dan jasmani.*

Katakunci: *Pencapaian Pelajar, Sijil Pelajaran Malaysia, Kursus Matematik, Peperiksaan Akhir Semester*

Pengenalan

Keupayaan pelajar untuk menguasai kemahiran mengira bukan sahaja tertumpu di sekolah. Namun usaha ini berterusan sehinggalah melanjutkan pelajaran ke peringkat pengajian yang lebih tinggi. Permasalahan yang melibatkan kemahiran berfikir secara kritikal dan kritis bermula dari kemampuan pelajar menjawab soalan yang berbentuk pernyataan dalam masa yang singkat dengan jawapan yang tepat. Dengan pencapaian cemerlang di peringkat SPM dalam mata pelajaran berasaskan pengiraan seperti Matematik Moden (MM), Matematik Tambahan (MT), Prinsip Perakaunan (PA), Sains Gunaan (SG) dan beberapa mata pelajaran lain akan memberi impak terhadap bidang pengajian pelajar pada masa akan datang.

Pada asasnya, syarat kemasukan ke bidang kejuruteraan di politeknik adalah mendapat lima kepujian termasuk Bahasa Melayu dan perlu lulus Matematik dengan keperluan minimum gred C. Calon juga perlu mendapat sekurang-kurangnya gred C bagi salah satu mata pelajaran

Matematik Tambahan / Kimia / Fizik. Calon juga perlu lulus sekurang-kurangnya dua (2) mata pelajaran dalam mana-mana mata pelajaran yang lain disamping lulus dengan memperolehi minimum gred E bagi matapelajaran Bahasa Inggeris (Informasi Politeknik, 2014).

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13th – 14th December 2020

Bagi membantu pelajar menguasai kemahiran dalam bidang pembelajaran, pelbagai kaedah pengajaran dan pembelajaran telah diperkenalkan serta diaplikasi oleh tenaga pengajar. Di peringkat politeknik contohnya, kaedah Pengajaran Berpusatkan Pelajar atau *Student Centered Learning (SCL*), Pembelajaran Teradun (*Blended Learning*), *Shareable Content Online Reference Model (*SCORM) dan beberapa kaedah lain telah dilaksanakan melalui portal *Curriculum Information Document On-line System* (*CIDOS*) bagi membolehkan interaksi antara pelajar dan pensyarah di luar waktu kuliah. Pelaksanaan kaedah ini sangat membantu pelajar dalam meningkatkan penguasaan dalam bidang pembelajaran, berkemahiran dan mempunyai kepakaran yang tinggi seiring dengan kehendak dan keperluan negara maju bagi mencapai wawasan 2020.

Secara khususnya, keputusan Matematik dan Matematik Tambahan di peringkat SPM menjadi penanda aras keupayaan intelektual seseorang sebelum memasuki sistem pengajian tinggi. Justeru, keupayaan yang tinggi dalam pengiraan akan membantu pelajar meneruskan kecemerlangan dalam bidang yang dipilih. Kajian ini dijalankan adalah untuk melihat sejauh mana hubungan di antara pencapaian pelajar semasa peringkat SPM dapat memberi impak terhadap pencapaian pelajar semasa mengikuti pengajian peringkat diploma kejuruteraan di Politeknik Kota Bharu. Pencapaian pelajar ini dapat dilihat melalui keputusan himpunan nilai mata (HPNM) yang diperolehi oleh pelajar pada setiap semester. Kajian ini memberi penekanan yang sangat khusus kepada pelajar semester 1 kerana pada masa ini merupakan fasa peralihan dari zaman persekolahan ke peringkat pendidikan yang lebih tinggi.

Sorotan Kajian Dan Pembinaan Hipotesis

Latar Belakang Kajian

Pencapaian akademik amnya didefinasikan sebagai suatu ujian yang berasaskan penilaian guru atau pendidik dalam sesuatu ujian yang dilakukan bagi mengukur tahap pencapaian seseorang pelajar. Kajian yang telah dilaksanakan oleh Nurfadzlina (2008), merumuskan pencapaian akademik pelajar dalam subjek yang mempunyai konsep pengiraan adalah didorong oleh faktor pencapaian dalam subjek matematik dan seterusnya ini akan mempengaruhi keputusan CGPA mereka. Oleh yang demikian, kegagalan pelajar dalam subjek Matematik akan memberi kesan kepada pengajian mereka sama ada gagal ataupun berjaya menamatkan pengajian.

Dalam menentu ukur pencapaian akademik pelajar, salah satu tugas utama pensyarah ialah melaksanakan penilaian kerja kursus yang telah ditetapkan oleh silibus Jabatan Pengajian Politeknik (JPP). Di samping penilaian berterusan , pelajar juga diuji dalam peperiksaan akhir semester. Dengan adanya penilaian berterusan ini, tenaga pengajar dapat mengenalpasti masalah atau kekangan yang dihadapi oleh para pelajar. Secara tidak langsung, tenaga pengajar dapat mencari alternatif atau kaedah lain dalam mengubahsuai aktiviti pengajaran mengikut kesesuaian pelajar. Apabila pelajar dapat memahami pembelajaran dengan baik, secara tidak langsung mereka dapat menjawab dengan baik dalam peperiksaan akhir.

Penilaian merupakan perihal atau perbuatan, menilai dan menaksir (Kamus Dewan,1994:930). Justeru penilaian ialah suatu proses yang berterusan bagi mendapatkan maklumat semula dengan tujuan supaya penggubahan kepada pelajar dalam aspek pemikiran, perasaan dan tingkahlaku dapat dilakukan dengan sempurna (Abu Bakar Nordin,1990:4). Proses ini amat penting bagi mengetahui kekuatan dan kelemahan dalam aspek pengajaran dan pembelajaran selain memastikan para pelajar tidak tergelincir daripada mengikuti sukatan mata pelajaran yang telah ditetapkan. Adalah penting usaha membentuk pelajar mencakupi segala aspek ini sentiasa dikaji bagi memastikan keberkesanan sukatan dan aktiviti yang dijalankan dapat memenuhi kehendak dan aspirasi Falsafah Pendidikan Kebangsaaan. Oleh itu penilaian

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13th – 14th December 2020

merupakan satu aktiviti yang amat bermakna dan bermanfaat yang perlu dilakukan seiring dengan proses Pengajaran dan Pembelajaran (PdP).

Permasalahan Kajian

Penilaian yang dijalankan sepanjang tempoh pengajaran dan pembelajaran akan memperlihatkan kemajuan pelajar dalam jangka masa tertentu. Pengesanan kemajuan pelajar secara berterusan ini akan memberi maklum balas kepada pensyarah tentang masalah yang dihadapi pelajar. Sekiranya pelajar menghadapi masalah dalam pembelajaran, pensyarah akan menyelidik punca masalah tersebut. Maklumat berkenaan akan digunakan oleh pensyarah untuk mengubah pendekatan pengajaran atau menyediakan latihan yang khusus supaya masalah yang dihadapi pelajar dapat diatasi.

Dalam pendidikan Matematik, semakin banyak topik yang dipelajari, semakin banyak aktiviti pengiraan yang perlu dilakukan oleh pelajar. Keputusan SPM bagi tahun 2018 menyaksikan bahawa prestasi subjek Matematik mengalami penurunan 5.03 mata (Gred Purata Mata Pelajaran – GPMP) berbanding 4.94 pada tahun 2017 berbanding subjek teras lain yang mengalami peningkatan (MOE, 2018). Bagi pelajar yang agak lemah dari segi pengiraan, mereka merasakan subjek yang melibatkan pengiraan semakin sukar dan kadangkala timbul rasa putus asa untuk menyelesaikan masalah dengan pengiraan. Pelajar mempelajari kemahiran mengira bukan sahaja untuk membuat pengiraan tetapi menggunakan kemahiran itu untuk menyelesaikan masalah dan meneroka idea baru dalam pengiraan (Noraini, 2002).

Dalam kajian yang dijalankan oleh Hasanah et. al (2013) mendapati terdapat hubungan yang lemah tetapi signifikan antara penilaian berterusan dengan pencapaian peperiksaan akhir bagi kursus Matematik Kejuruteraan 1 (BA101) di Politeknik Kota Bharu. Dapatan mereka menunjukkan bahawa markah penilaian berterusan tidak menyumbang kepada pencapaian pelajar dalam peperiksaan akhir.

Justeru, pensyarah perlu mengkaji semula faktor yang menyumbang kepada masalah tersebut dan membuat perubahan terhadap kaedah pengajaran dan penilaian untuk memperolehi keputusan yang lebih baik. Berbanding kajian yang dijalankan oleh Norazlina & Siti Nazura (2014) yang membuat kajian terhadap pencapaian Matematik Kejuruteraan bagi pelajar di tahun akhir di Politeknik Kota Kinabalu mendapati bahawa terdapat hubungan yang signifikan antara penilaian berterusan dan pencapaian peperiksaan akhir. Kaedah PdP yang dijalankan di samping proses penambahbaikkan yang berterusan sangat membantu pelajar untuk lulus dalam kursus Matematik dan seterusnya dapat menamatkan pelajaran dengan jayanya.

Objektif dan Hipotesis Kajian

Kajian ini memberi penekanan terhadap pencapaian pelajar semasa di awal peringkat diploma berbanding dengan pencapaian SPM khusus bagi subjek yang melibatkan pengiraan iaitu Matematik. Objektif utama kajian adalah untuk menilai kekuatan hubungan antara pencapaian Matematik di peringkat SPM dengan pencapaian peperiksaan akhir kursus Matematik Kejuruteraan 1 (DBM1013) bagi pelajar Diploma Kejuruteraan Awam (DKA) ambilan Jun 2016. Hipotesis yang dapat dibentuk berdasarkan kajian ini adalah seperti berikut:

H_0 : Tidak wujud hubungan antara pencapaian Matematik peringkat SPM dengan Matematik peringkat diploma kejuruteraan.

H_1 : Wujud hubungan antara pencapaian Matematik peringkat SPM dengan Matematik peringkat diploma kejuruteraan.

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13th – 14th December 2020

Metodologi Kajian

Kaedah Kajian

Kajian yang dijalankan ini adalah berbentuk kuantitatif iaitu melibatkan pengumpulan data yang diperolehi daripada Unit Peperiksaan dan Jabatan Hal Ehwal Pelajar di Politeknik Kota Bharu bagi pelajar semester 1 bagi program Diploma Kejuruteraan Awam (DKA) ambilan Sesi Jun 2016. Data yang digunakan ini dikenali sebagai data sekunder yang telah diperolehi dari dua sumber yang telah dinyatakan. Instrumen data sekunder ini merangkumi keseluruhan markah pencapaian setiap kursus bagi semua pelajar DKA semester 1.

Persampelan

Dalam kajian ini, responden adalah terdiri daripada pelajar-pelajar semester 1 Jabatan Kejuruteraan Awam di Politeknik Kota Bharu yang mengambil kursus DBM1013 Sesi Jun 2016 dan telah menduduki peperiksaan akhir bagi kursus tersebut. Jumlah sampel yang diambil ialah 161 orang pelajar yang sedang mengikuti pengajian di Politeknik Kota Bharu,Kelantan. Pemilihan sampel bagi pelajar DKA adalah kerana pengkaji terlibat secara langsung dengan sesi pengajaran dan pembelajaran bagi kursus *Engineering Mathematics* 1 – DBM1013 bagi kelas tersebut dan ingin mengetahui latarbelakang tahap pencapaian bagi subjek Matematik dan keberkesanan program-program yang telah dilaksanakan sepanjang tempoh pembelajaran.

Teknik Pengumpulan Data

Data ini dianalisis menggunakan perisian *Statistical Package for Social Science* (SPSS) versi 25.0 dengan menggunakan kaedah Kolerasi Pearson untuk mengetahui kekuatan hubungan antara pencapaian Matematik peringkat SPM dan pencapaian Matematik Kejuruteraan 1 (DBM1013) di peringkat awal pengajian diploma. Secara rasionalnya, kemampuan pelajar dalam Matematik di peringkat SPM juga mampu dilihat mempengaruhi pencapaian HPNM pada awal pembelajaran mereka di peringkat diploma politeknik.

Dalam kajian ini juga, satu bentuk piawaian telah ditetapkan yang merujuk kepada peratusan markah yang diperolehi oleh pelajar dan digunapakai dalam sistem penilaian politeknik dan pemarkahan penilaian peringkat SPM di Malaysia seperti yang dipaparkan menerusi Jadual 1 dan Jadual 2. Daripada paparan Jadual 1 yang merujuk kepada sistem penilaian di politeknik, terdapat 14 pecahan markah beserta gred dan nilai mata yang boleh diperolehi oleh pelajar bagi setiap kursus yang diambil. Manakala Jadual 2 merujuk kepada markah bagi peperiksaan SPM yang dibahagikan kepada 10 pecahan. Dalam sistem politeknik, penetapan nilai mata 2.00 dengan markah 50 - 54 merupakan aras kelulusan bagi sesuatu kursus dan dalam sistem penilaian SPM pula, gred E dengan markah 40 – 44 diambilkira sebagai lulus. Jika dibuat perbandingan, didapati markah lulus bagi kedua – dua sistem ini adalah berlainan setelah mengambil kira kepelbagaian aspek oleh pihak yang berkaitan.

Jadual 1: Sistem Pelaksanaan Penilaian Politeknik

Markah	0 - 19	20 - 29	30 - 39	40 - 43	44 - 46	47 - 49	50 - 54	55 - 59	60 - 64	65 - 69	70 - 74	75 - 79	80 - 89	90 - 100
Nilai Mata	0.00	0.33	0.67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.00
Gred	F	E-	E	D	D+	C-	C	C+	B-	B	B+	A-	A	A+

Sumber: Bahagian Penilaian dan Pentaksiran Politeknik, 2019

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 2: Sistem Pelaksanaan Penilaian SPM

Markah	0 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 - 69	70 - 79	80 - 89	90 - 100
Gred	G	E	D	C	C+	B	B+	A-	A	A+
Keputusan	Gagal	Lulus	Lulus	Baik	Baik	Kepujian	Kepujian	Cemer-lang	Cemer-lang	Sangat Cemerlang

Sumber: Lembaga Peperiksaan, 2009

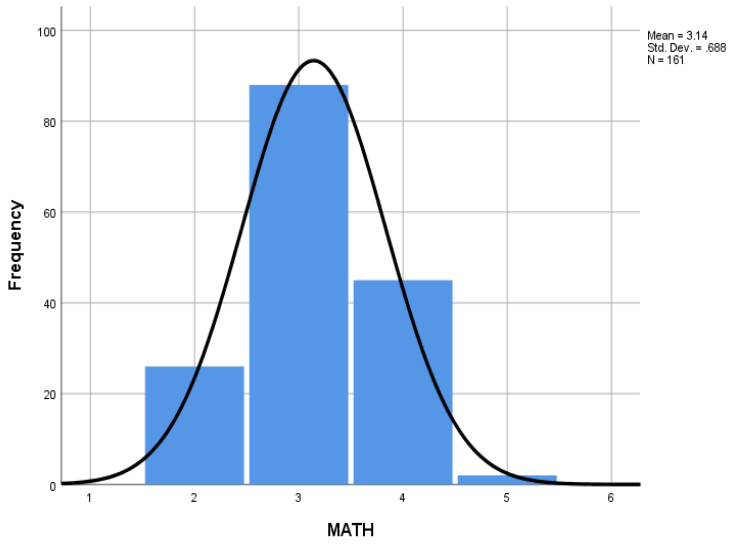
Keputusan Dan Analisis

Pencapaian Mata Pelajaran Matematik Peringkat SPM

Gred bagi matapelajaran Matematik di peringkat SPM bagi 161 orang pelajar program DKA yang diperolehi dari SPMP menerusi modul i-*Exam* telah direkodkan. Maklumat itu seterusnya dianalisis menggunakan graf palang seperti yang ditunjukkan menerusi Rajah 1. Daripada Jadual 3, didapati bahawa seramai 2 pelajar mendapat gred A+ dengan julat markah 90 – 100, gred A seramai 45 dengan julat markah 80 – 89, diikuti dengan gred B+, B dan A- seramai 88 orang. Manakala gred D, D+, C-, C, C+ dan B- pula dicapai oleh 26 orang pelajar. Tiada pelajar yang mendapat gred E yang direkodkan untuk pencapaian Matematik di peringkat SPM ini.

Jadual 3: Kekerapan Dan Peratus Pencapaian Matematik Di Peringkat SPM Bagi Pelajar DKA Sesi Jun 2016 Politeknik Kota Bharu

Gred	Kekerapan	Peratusan
D,D+,C-,C,C+,B-	26	16.1
B,B+,A-	88	54.7
A	45	28.0
A+	2	1.2
Jumlah	161	100.0



Rajah 1: Histogram Dan *Bell Curve* Dalam Ujian Normaliti Yang Bertaburan Secara Normal Bagi Keputusan SPM Dengan Keputusan Peperiksaan DBM 1013 Bagi Pelajar DKA Di Politeknik Kota Bharu Oleh Itu, Sebarang Ujian Inferensi Akan Menggunakan Statistik Parametrik.

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13th – 14th December 2020

Jadual 4: Nilai Min, Sisihan Piawai, Kepencongan (Skewness) Dan Kecerunan (Kurtosis) Bagi Subjek Matematik SPM Dan Subjek DBM 1013.

Item	Min	Sisihan Piawai	Pencongan(Skewness)	Kecerunan(Kurtosis)
Matematik SPM	3.14	.688	-.040	-.378
DBM1013	2.87	.624	-.097	-.463

Pencapaian Kursus Matematik Kejuruteraan 1 – DBM1013

Hasil kajian data yang diperolehi menerusi data dari SPMP melalui modul i-*Exam* bagi semester Jun 2016 telah dianalisis dan dipaparkan menerusi Jadual 5. Analisis graf mendapati gred B,B+ dan A- merupakan mod tertinggi dengan kekerapan 96 (59.6%) orang pelajar dengan julat markah 65 – 79. Ini diikuti dengan gred D,D+,C-,C,C+ dan B- seramai 43 orang dengan nilai peratus 26.7 dari keseluruhan pelajar dengan skor antara 40 hingga 64 .Bilangan pelajar yang memperoleh A adalah paling sedikit iaitu seramai 22 (13.7%) orang dengan julat markah 75 hingga 79. Tiada pelajar yang mendapat A+ bersamaan dengan 0 peratus dan tiada pelajar yang gagal.

Jadual 5: Kekerapan Dan Peratus Pencapaian Matematik Kejuruteraan 1 Di Peringkat Politeknik Bagi Pelajar DKA, Sesi Jun 2016

Gred	Kekerapan	Peratusan
D,D+,C-,C,C+,B-	43	26.7
B,B+,A-	96	59.6
A	22	13.7
A+	0	
Jumlah	161	100.0

Ujian Kesignifikan Pekali Kolerasi

Di dalam ujian korelasi, pekali korelasi, r digunakan untuk menunjukkan sejauh mana kekuatan atau keteguhan di antara satu pembolehubah dengan pembolehubah yang lain. Pekali korelasi mempunyai nilai di antara negatif satu dan positif satu ($-1 \leq r \leq 1$). Nilai sifar menunjukkan bahawa tidak wujud hubungan linear di antara pembolehubah-pembolehubah. Pekali korelasi yang menghampiri sifar menunjukkan bahawa hubungan antara pembolehubah-pembolehubah adalah lemah. Pekali korelasi -1 atau +1 pula menunjukkan hubungan yang sempurna di antara pembolehubah-pembolehubah yang dikaji. Hubungan antara pembolehubah-pembolehubah adalah sangat teguh sekiranya pekali korelasi menghampiri -1 atau +1. Nilai kolerasi bermakna perhubungan yang kukuh antara pembolehubah dan nilai kolerasi terbesar 'diagonal' adalah 1 kerana setiap pembolehubah mempunyai nilai '*positive linear'* yang kukuh terhadap hubungannya. Hasil dapatan bagi kajian ini yang dianalisis menggunakan ujian kolerasi dapat dipaparkan dalam Jadual 6.

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13th – 14th December 2020

Jadual 6: Analisis Kolerasi Pearson Terhadap Hubungan Yang Signifikan Antara Pencapaian Matematik Di Peringkat SPM Dengan Pencapaian Matematik DBM 1013 Bagi Pelajar DKA, Sesi Jun 2016

		Matematik SPM	DBM 1013
Matematik SPM	Korelasi *Pearson*	1	.495**
	Sig. (2-tailed)		.000
	N	161	161
DBM 1013	Korelasi *Pearson*	.495**	1
	Sig. (2-tailed)	.000	
	N	161	161

**. Correlation is significant at the 0.01 level (2-tailed).

Dalam Jadual 6 menunjukkan analisis sebagaimana prasyarat yang telah dipenuhi sebelum dijalankan analisis bagi mendapatkan hubungan yang signifikan antara Pencapaian Matematik di peringkat SPM dengan pencapaian matematik bagi subjek DBM 1013 pelajar DKA di Politeknik Kota Bharu.

Merujuk kepada Jadual 6, hasil analisis data adalah menggunakan kolerasi Pearson. Dapatan ini menghasilkan nilai pekali kolerasi antara pencapaian Matematik peringkat SPM dan pencapaian Matematik Kejuruteraan 1 peringkat diploma r(161) = .495; $\rho < 0.01$. Dari nilai pekali kolerasi tersebut, kolerasi penentuan, r^2 dapat dikira dan nilai yang diperolehi ialah 0.245. Ini bermaksud bahawa hanya 24.5 peratus pelajar mampu mengekalkan pencapaian Matematik Kejuruteraan berdasarkan pencapaian Matematik di peringkat SPM. Manakala 75.5 peratus pelajar mengalami perubahan pencapaian sama ada meningkat atau menurun tahap prestasi semasa di peringkat diploma yang mana terdapat faktor luar yang mempengaruhi pencapaian mereka. Melalui analisis ini juga dapat disimpulkan bahawa wujud hubungan signifikan sederhana lemah antara kedua- dua pembolehubah iaitu Sig.= .000 < 0.05. Dapatan ini menggambarkan pencapaian Matematik peringkat SPM membantu pelajar dalam meningkatkan pencapaian mereka dalam Matematik Kejuruteraan 1.

Berdasarkan kajian yang dijalankan oleh Mohd Zulfabli & Siti Salwa (2014) dalam membandingkan keputusan Matematik SPM dengan kursus bagi program Kejuruteraan Mekanikal iaitu Termodinamik 1 (JJ207) dan Mekanik Kejuruteraan (JJ205), analisis mendapati bahawa terdapat hubungan yang signifikan yang amat kuat bagi pemboleh yang dikaji. Nilai kolerasi yang diperolehi adalah sangat memberangsangkan iaitu r = 0.874 dengan r^2 = 0.765. Dapatan kajian mereka menggambarkan jika pelajar berupaya mencapai keputusan yang baik dalam Matematik SPM akan membantu menguasai kursus kejuruteraan di politeknik. Setelah perbandingan dibuat terhadap kedua-dua kajian, dapat disimpulkan bahawa pelajar yang memperolehi keputusan yang baik bagi subjek Matematik SPM akan dapat mengekalkan prestasi mereka dalam sebarang kursus yang melibatkan pengiraan semasa peringkat diploma.

Kesimpulan

Daripada kajian yang dilakukan terhadap 161 pelajar Diploma Kejuruteraan Awam Semester 1 sesi Jun 2016 ini menunjukkan terdapat hubungan yang signifikan antara pencapaian Matematik di peringkat SPM dan pencapaian pelajar dalam Peperiksaan Akhir bagi kursus Matematik Kejuruteraan 1 berdasarkan nilai hubungan yang positif namun sederhana lemah terhadap dua pembolehubah yang dikaji. Dapatan kajian mengatakan hipotesis nol ditolak dan hipotesis alternatif diterima.

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Hubungan yang sederhana lemah ini mungkin disebabkan oleh pelaksanaan kurikulum baharu bagi kursus DBM1013 berbanding silibus kursus BA101 sebelum ini, gaya pembelajaran pelajar, teknik pengajaran dan pembelajaran yang kurang berkesan, kekurangan sumber rujukan untuk membuat latihan dan lain-lain faktor termasuklah faktor dalaman pelajar itu sendiri. Kajian susulan terhadap faktor penyumbang kepada hubungan yang lemah ini akan dihuraikan dalam kajian yang akan datang dengan mengambil sampel yang sama dan merangkumi kursus yang melibatkan pengiraan termasuklah kursus teras di jabatan.

Kajian ini juga mencadangkan agar pihak pengambilan politeknik lebih peka terhadap kelayakan pelajar dengan menekankan pencapaian Matematik SPM khususnya bagi pelajar yang akan mengikuti program pengajian kejuruteraan mahupun perdagangan. Ini kerana pelajar bakal menghadapi bebanan dan tekanan sekiranya tidak menguasai subjek Matematik dengan baik.

Selain itu, para pensyarah perlu membuat penambahbaikan dari segi teknik pengajaran, memberi galakan kepada pelajar, memperbanyakkan latihan dan membina hubungan yang erat antara pensyarah dan pelajar. Pelaksanaan program/aktiviti yang dijalankan oleh pensyarah yang berpengalaman seperti mengamalkan konsep berpusatkan pelajar, pembelajaran interaktif, pra-ujian sebelum ujian berlangsung, bengkel dan klinik Matematik dan lain-lain program yang dapat memberi impak terhadap prestasi pelajar politeknik. Peranan pensyarah juga amatlah diperlukan bagi memantau semua tugasan yang diberikan kepada pelajar dapat dihantar mengikut masa yang telah ditetapkan dan dijawab dengan betul dan tepat di samping meneruskan aktiviti penambahbaikan yang telah dirancang dengan berkesan

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APLIKASI BUKU PANDUAN (MODUL): STRATEGIES TO COMPLETE YOUR PROJECT (SCYP) DALAM MENINGKATKAN KUALITI PROJEK AKHIR PELAJAR DIPLOMA PERKHIDMATAN MAKANAN AMALAN HALAL SEMESTER 4

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Abstract: *Alat berfikir merupakan instrument yang dapat membantu seseorang menggunakan minda dengan lebih sistematik dan berkesan. Namun demikian kekurangan kandungan dan susunan yang padat dan informatif menjadikan ia kurang efisien dalam membantu pemahaman dan pencapaian pelajar. Penggunaan Modul: Strategies to Complete Your Project (SCYP) merupakan satu alternatif dalam menambah baik pencapaian pelajar dalam kursus DTF5023: Design and Layout for Foodservice Facilities. Aktiviti pembelajaran secara bersiri dan sistematik membantu pelajar mencapai objektif pembelajaran dengan berkesan. Kajian ini dijalankan untuk menilai keberkesanan SCYP terhadap pelajar Diploma Perkhidmatan Makanan Amalan Halal Semester 4. Kajian tinjauan ini menggunakan soal selidik dengan skala likert sebagai instrument kajian. Data yang diperolehi dianalisis secara diskriptif dan inferensi. Dapatan menunjukkan tahap pencapaian markah Penilaian Kerja Kursus (PKK) bagi Kumpulan Rawatan (KR) pada sesi Dis 2019 adalah 100%, Jun 2019: 97% dan Dis 2018: 80% dan tahap pencapaian markah PKK bagi Kumpulan Kawalan (KK) pada sesi Jun 2018 adalah 73%. Analisis menunjukkan peningkatan yang baik apabila pelajar menggunakan modul SCYP berbanding dengan semester sebelumnya, sebelum diperkenalkan modul SCYP. Kesimpulannya penggunaan SCYP membantu meningkatkan tahap pencapaian akademik pelajar dengan menghasilkan projek akhir yang berkualiti dan berupaya memperoleh gred pencapaian yang baik, seterusnya menguasai Kursus DTF5023: Design and Layout for Foodservice Facilites.*

Keywords: *Pencapaian Akademik, Modul, Alat Berfikir, Perkhidmatan Makanan*

Pengenalan

Pembelajaran tidak hanya berkaitan dengan penambahan pengetahuan dan mengingat semula maklumat yang dipelajari tetapi merupakan aktiviti menguasai konsep dan memahami maklumat pengetahuan dan seterusnya dapat mengaplikasinya ke dalam kehidupan (Hargreaves, 1996). Alat berfikir berupaya menajamkan pemikiran dan melatih seseorang berfikir dengan baik (Sulaiman, Aziz & Mok, 2011). Selain itu, alat berfikir merupakan instrumen yang dapat membantu seseorang menggunakan minda dengan lebih sistematik dan berkesan (Nor & Mohd Ramli, 1998). Oleh itu, idea yang disampaikan akan menjadi lebih tersusun, jelas dan mudah difahami dengan menggunakan alat berfikir. Buku Panduan: Strategies to Complete Your Project (SCYP) adalah merupakan salah satu alat bantu mengajar (ABM) untuk kursus ini. Teknik SCYP membolehkan seseorang pelajar mengimbangi otak kiri

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13th – 14th December 2020

dan otak kanannya dalam proses pembelajaran, di samping berupaya mengimbas kembali ingatan dengan berkesan menerusi penekanan konsep hubung kait dan imaginasi (Wong & Sharaai, 2012; Tee et al., 2010; Harrison, 2007; Buzan, 2005). Ini kerana kandungan buku SCYP disokong oleh gambar, teks, arahan, rajah dan ilustrasi untuk meningkatkan keupayaan pembelajaran pelajar. Tambahan pula, pengkaji mendapati bahawa proses pembelajaran dan pengajaran (PdP) menggunakan SCYP membolehkan pemikiran seseorang individu kelihatan nyata (Şeyihoğlu & Kartal, 2010), menyeronokkan (Othman & Othman, 2012), menggambarkan, dan menyusun pembelajaran yang sistematik menerusi penterjemahan pemikiran ke atas helaian kertas. Semasa proses pembelajaran, penggunaan SCYP sangat berkesan dalam fungsi mengambil nota daripada buku rujukan, buku teks, tutorial, latihan dalam kelas, bahan kajian dan bacaan sendiri (Wong & Sharaai, 2012; Doss et al., 2010; Caviglioli, Harris & Tindall, 2002).

Latarbelakang Masalah

Modul merupakan satu bahan pengajaran yang telah dibahagikan kepada beberapa subtopik tertentu dan susunan setiap subtopik tersebut mempunyai perkaitan atau kesinambungan antara satu sama lain (Ngadirin, 2003). Modul berupa bahan kursus (mata pelajaran, latihan dan tutorial) yang dilaksanakan secara tersendiri untuk mencapai sesuatu kemahiran. Pengajaran menggunakan modul secara keseluruhan boleh dilaksanakan tanpa atau dengan kehadiran pengajar dan pelajar pada satu-satu masa (Mohd Zain, 2005).

Kursus DTF5023: Design and Layout for Foodservice Facilities yang diambil oleh pelajar semester 4, Diploma Perkhidmatan Makanan Amalan Halal akan diaplikasikan semasa Latihan Industri dan semasa bekerja.

SCYP ditulis oleh Elena Sabrina Ismail dan Hamidah Noor Md Yusoh dan diterbitkan bertujuan untuk menjadi sumber bacaan atau rujukan bagi profesional perhotelan yang terlibat dalam projek reka bentuk, untuk pelajar kolej dan universiti yang berkerjaya dalam pengurusan perkhidmatan makanan, dan untuk profesional reka bentuk yang ingin mengetahui lebih lanjut mengenai proses reka bentuk perkhidmatan makanan, dimulai dengan kajian pasaran dan kajian kemungkinan kewangan termasuk prinsip reka bentuk, pemilihan peralatan, dan kejuruteraan.

Pembelajaran tidak hanya berkaitan dengan penambahan pengetahuan dan mengingat semula maklumat yang dipelajari tetapi merupakan aktiviti menguasai konsep dan memahami maklumat pengetahuan dan seterusnya dapat mengaplikasinya ke dalam kehidupan (Hargreaves, 1996). Walaubagaimanapun, kemungkinan wujudnya pelajar yang berhadapan dengan konflik belajar apabila tidak memiliki gaya pembelajaran yang sesuai (Baharin et al., 2007). Masalah berlaku apabila gaya pembelajaran pelajar tidak dapat disesuaikan dengan aktiviti dan gaya pengajaran pensyarah. Akibatnya pelajar menjadi bosan dan tidak menumpukan perhatian; menyebabkan mereka gagal mendapat markah tinggi dalam peperiksaan, kurang berminat pada subjek tertentu dan seterusnya berputus asa. (Baharin Abu, 2000; Felder & Silverman, 1988; Godleski, 1984; Oxford et al., 1991; Smith & Renzulli, 1984).

Penyataan Masalah

Proses Pembelajaran dan Pengajaran (PdP) ialah proses dimana penyampaian maklumat daripada tenaga pengajar kepada pelajar. Pelbagai kaedah atau teknik boleh digunakan semasa PdP. Sesi pengajaran merangkumi aktiviti perancangan, pelaksanaan, penilaian dan maklum balas.

Idris (2001) menyatakan bahawa terdapat beberapa keperluan untuk menghasilkan pengajaran yang berkesan. Antaranya ialah pemahaman yang mendalam terhadap proses

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13th – 14th December 2020

pembelajaran, ciri-ciri pelajar yang berada pada tahap perkembangan yang berbeza serta faktor-faktor yang mempengaruhi motivasi.

Berdasarkan pemerhatian markah Penilaian Kerja Kursus (PKK) pelajar sesi Jun 2018 hingga Disember 2019, didapati hasil akhir projek pelajar hanya mencapai tahap minimum berpandukan skala yang digunakan di dalam rubrik kursus DTF5023: Design and Layout for Foodservice Facilities.

Tujuan Kajian

Tujuan utama kajian ini dijalankan untuk menambah baik hasil akhir projek pelajar melalui penggunaan SCYP. Berpandukan modul ini, pelajar dapat mempelajari konsep utama reka bentuk dan susun atur untuk kemudahan perkhidmatan makanan.

Objektif Kajian

Objektif kajian ini dijalankan adalah bertujuan untuk meninjau:

1. Keberkesanan penggunaan SCYP dalam meningkatkan kualiti projek akhir pelajar
2. Perbezaan pencapaian pelajar bagi sesi Jun 2018 hingga Dis 2019

Skop Kajian

Kajian ini dijalankan kepada pelajar Diploma Perkhidmatan Makanan Amalan Halal Semester 4, Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka. Kajian ini fokus kepada faktor yang mempengaruhi perbezaan pencapaian akademik kursus DTF5023: Design and Layout for Foodservice Facilities.

Metodologi Kajian

Kajian ini menggunakan pendekatan kuantitatif.

Persampelan Kajian

Kajian ini melibatkan empat kumpulan iaitu Kumpulan Rawatan (KR): Pelajar Sesi Dis 2019, Jun 2019 dan Dis 2018 dan Kumpulan Kawalan (KK): Pelajar Sesi Jun 2018

Instrumen Kajian

1. Rubrik markah projek akhir bagi kursus DTF5023: Design and Layout for Foodservice Facilities untuk meninjau keberkesanan penggunaan SCYP dalam membantu meningkatkan kualiti projek akhir pelajar
2. Rekod markah PKK digunakan untuk menganalisa perbezaan markah projek akhir pelajar bermula sesi Jun 2018 hingga Disember 2019

Kumpulan Rawatan diberikan modul SCYP dan Kumpulan Kawalan menjalankan pembelajaran secara tradisional.

Jadual 1 menunjukkan bahawa kedua-dua kumpulan diberikan Penilaian Kerja Kursus (PKK) yang terdiri daripada projek akhir kursus DTF5023: Design and Layout for Foodservice Facilities. Semasa menjalankan PKK, kumpulan rawatan diberikan rawatan dengan menggunakan SCYP dan kumpulan kawalan tanpa sebarang rawatan.

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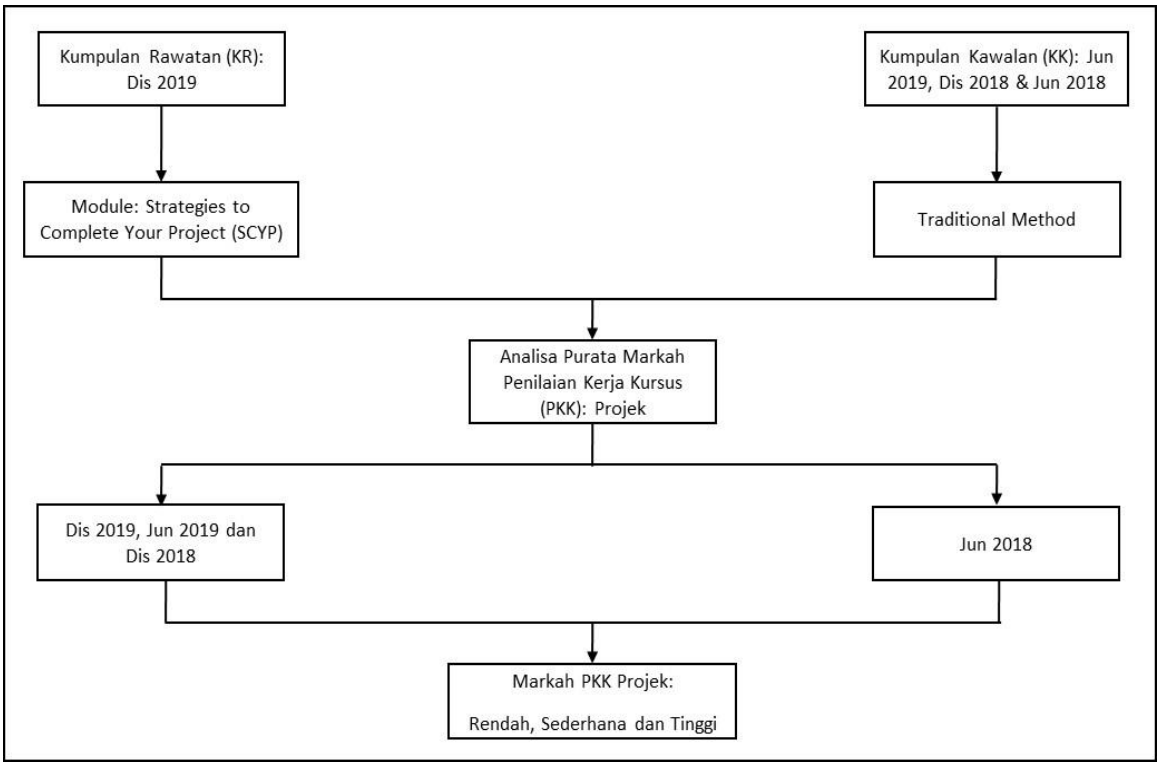
13th – 14th December 2020

Jadual 1: PKK Pencapaian dan Rawatan

Kumpulan	PKK	SCYP
Kumpulan Rawatan (KR): Dis 2019	X	X
Kumpulan Rawatan (KR): Jun 2019	X	X
Kumpulan Rawatan (KR): Dis 2018	X	X
Kumpulan Kawalan (KK): Jun 2018	X	-

Sumber: Data Penilaian Kerja Kursus Politeknik Merlimau Melaka



Rajah 1: Aliran Kaedah Persampelan

Rajah 1 menunjukkan kaedah persampelan yang telah dilakukan ke atas keempat-empat kumpulan pelajar. Kumpulan Rawatan terdiri daripada sesi Dis 2019, Jun 2019 dan Dis 2018 yang diberi rawatan dengan modul SCYP sebagai bahan pemudahcara belajar dan Kumpulan Kawalan Jun 2018 dijalankan secara kaedah tradisional tanpa bantuan modul. Hasil dapatan dari sampel diambil dari Analisa Purata Markah Penilaian Kerja Kursus (PKK) bagi Projek Akhir pelajar. Markah PKK Projek akhir pelajar dilihat dan dibandingkan mengikut tahap rendah, sederhana dan tinggi.

Dapatan kajian

Perbezaan purata markah penilaian PKK antara Kumpulan Rawatan (KR) dengan Kumpulan Kawalan (KK).

Jadual 2 menunjukkan purata markah PKK bagi Projek Akhir secara keseluruhan mengikut kumpulan. Secara keseluruhan, ujian pencapaian bagi KR adalah berada pada tahap tinggi, manakala ujian pencapaian bagi KK adalah berada pada tahap sederhana. Tahap markah PKK bagi KR adalah Dis 2019:100%, Jun 2019: 97% dan Dis 2018: 80% dan tahap markah PKK bagi KK adalah Jun 2018: 73%. Dapatan ini menunjukkan peningkatan yang baik apabila menggunakan modul SCYP berbanding dengan semester sebelumnya.

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13th – 14th December 2020

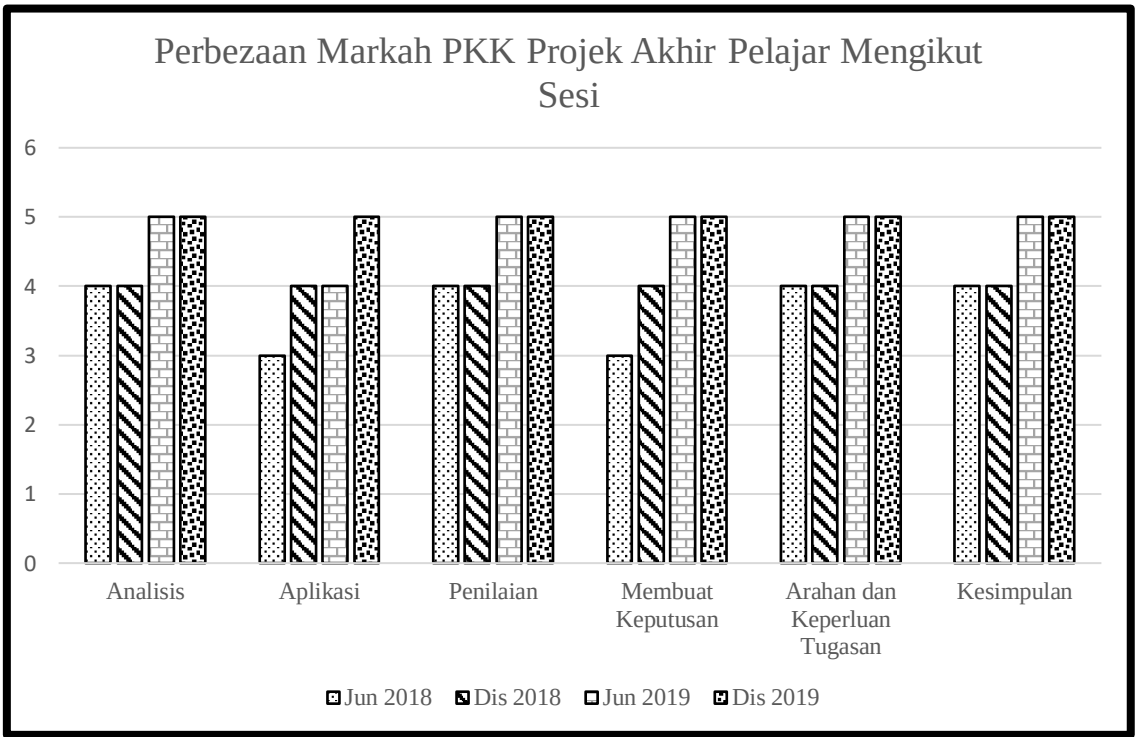
Jadual 2: Purata Markah PKK Bagi Pra Dan Pos Penggunaan SCYP

Kumpulan	PKK	SCYP	Purata PKK
Kumpulan Rawatan (KR): Dis 2019	X	X	100%
Kumpulan Rawatan (KR): Jun 2019	X	X	97%
Kumpulan Rawatan (KR): Dis 2018	X	X	80%
Kumpulan Kawalan (KK): Jun 2018	X	-	73%

Sumber: Data Penilaian Kerja Kursus Politeknik Merlimau Melaka

Dapatan Kajian Keberkesanan Penggunaan SCYP

Perbezaan purata markah penilaian PKK antara Kumpulan Rawatan (KR) dengan Kumpulan Kawalan (KK).



Rajah 2: Menunjukkan Perbezaan Markah PKK Projek Akhir Pelajar Mengikut Sesi.

Sumber: Data Penilaian Kerja Kursus Politeknik Merlimau Melaka

Rajah 2: Graf menunjukkan perbezaan markah PKK Projek Akhir Pelajar mengikut pecahan criteria yang diperlukan di dalam rubrik. Kriteria rubrik dipecahkan kepada enam (6) iaitu analisis, aplikasi, penilaian, membuat keputusan, arahan dan keperluan tugasan dan kesimpulan.

Bagi graf analisis iaitu kemampuan pelajar menyusun menganalisis data dan penerangan punca masalah. Pelajar kumpulan kawalan iaitu pelajar sesi Jun 2018 mendapat markah 4/5, manakala bagi pelajar kumpulan rawatan dengan bantuan modul SCYP: bagi permulaan semester sesi Dis 2018 pelajar mendapat markah sekitar 4/5 dan untuk pelajar semester Jun 2019 dan Dis 2019 kesemua mereka mendapat markah penuh 5/5. Ini bermakna dengan bantuan SCYP pelajar mampu menyusun dan menganalisis maklumat yang dikumpulkan, menerangkan faktor yang menyumbang kepada masalah atau isu dan berjaya menjelaskan punca sesuatu masalah.

Seterusnya bagi graf aplikasi iaitu kemampuan pelajar berfikir dengan cara pengaplikasian idea atau pengetahuan baru untuk sesuatu masalah. Pelajar kumpulan kawalan

eISBN 978-967-2426-22-6
13th – 14th December 2020

iaitu pelajar sesi Jun 2018 mendapat markah 3/5 iaitu markah yang sederhana bagus, manakala bagi pelajar kumpulan rawatan dengan bantuan modul SCYP: bagi permulaan semester sesi Dis 2018 pelajar mendapat markah sekitar 4/5 dan untuk pelajar semester Jun 2019 dan Dis 2019 kesemua mereka mendapat markah penuh 5/5. Ini bermakna dengan bantuan SCYP pelajar mampu mengaplikasikan idea tersendiri dengan pengetahuan baru untuk masalah tertentu dan dapat mencadangkan aplikasi alternative kepada sesuatu masalah.

Graf ketiga adalah tafsiran ke atas penilaian pelajar terhadap pengumpulan maklumat, dan bertanggungjawab untuk memberikan bukti yang menyokong kesimpulan penilaian projek. Pelajar kumpulan kawalan iaitu pelajar sesi Jun 2018 mendapat markah 4/5, manakala bagi pelajar kumpulan rawatan dengan bantuan modul SCYP: bagi permulaan semester sesi Dis 2018 pelajar mendapat markah sekitar 4/5 dan untuk pelajar semester Jun 2019 dan Dis 2019 kesemua mereka mendapat markah penuh 5/5. Ini bermakna dengan bantuan SCYP pelajar mampu mengumpul dan menilai maklumat, memilih tafsiran yang jelas, dan memberikan bukti yang mencukupi darisegi kualiti dan kuantiti untuk menyokong kesimpulan projek akhir pelajar.

Graf seterusnya adalah graf membuat keputusan iaitu kemampuan pelajar membuat keputusan yang baik berdasarkan perbandingan antara maklumat, idea dan penyelesaian yang sedia ada. Pelajar kumpulan kawalan iaitu pelajar sesi Jun 2018 mendapat markah 3/5 iaitu markah yang sederhana bagus, manakala bagi pelajar kumpulan rawatan dengan bantuan modul SCYP: bagi permulaan semester sesi Dis 2018 pelajar mendapat markah sekitar 4/5 dan untuk pelajar semester Jun 2019 dan Dis 2019 kesemua mereka mendapat markah penuh 5/5. Ini bermakna dengan bantuan SCYP pelajar mampu membuat keputusan yang sangat baik berdasarkan perbandingan dan kontras antara maklumat, mengenal pasti masalah dan penyelesaian yang ada.

Bagi graf arahan dan keperluan tugasan, pelajar dinilai melalui ketepatan arahan tugasan diikuti dan dilaksanakan. Pelajar kumpulan kawalan iaitu pelajar sesi Jun 2018 mendapat markah 4/5, manakala bagi pelajar kumpulan rawatan dengan bantuan modul SCYP: bagi permulaan semester sesi Dis 2018 pelajar mendapat markah sekitar 4/5 dan untuk pelajar semester Jun 2019 dan Dis 2019 kesemua mereka mendapat markah penuh 5/5. Ini bermakna dengan bantuan SCYP pelajar dapat menyediakan laporan sepenuhnya mematuhi arahan dan keperluan rubrik markah.

Graf yang terkahir sekali mengambil nilai bahagian kesimpulan, pelajar dapat menyatakan semula laporan tersebut melalui interpretasi lukisan dengan maklumat yang diperlukan untuk kursus DTF5023: Design and Layout for Foodservice Facilities. Pelajar kumpulan kawalan iaitu pelajar sesi Jun 2018 mendapat markah 4/5, manakala bagi pelajar kumpulan rawatan dengan bantuan modul SCYP: bagi permulaan semester sesi Dis 2018 pelajar mendapat markah sekitar 4/5 dan untuk pelajar semester Jun 2019 dan Dis 2019 kesemua mereka mendapat markah penuh 5/5. Ini bermakna dengan bantuan SCYP pelajar dapat menyediakan kesimpulan yang menarik dan dapat menceritakan rekaan restoran dengan baik.

Perbincangan

Keputusan analisis data menunjukkan bahawa terdapat perbezaan di antara markah pencapaian PKK antara KR dan KK secara keseluruhan, iaitu markah KR adalah lebih tinggi berbanding dengan KK (Jadual 2). Keputusan kajian memperlihatkan bahawa pendedahan SCYP pada KR memberi kesan dalam membantu peningkatan pencapaian markah projek akhir pelajar kepada yang lebih baik berbanding KK yang tidak menerima sebarang rawatan. Hal ini disokong kerana SCYP adalah alat berfikir yang menekankan pengetahuan psikomotor iaitu darisegi

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13th – 14th December 2020

istilah psikologi, iaitu pergerakan tubuh yang berkaitan dengan aktiviti mental. Kognitif pula berkaitan dengan kognisi, iaitu proses mental untuk mentafsir, mempelajari, dan memahami sesuatu (Dewan Bahasa dan Pustaka). Alat berfikir merupakan instrumen yang dapat membantu seseorang menggunakan minda dengan lebih sistematik dan berkesan (Anderson & Krathwohl, 2001).

Berdasarkan analisis data, terdapat hubungan positif yang baik di antara tahap penguasaan SCYP dengan markah PKK Projek Akhir Pelajar. Hasil dapatan ini menunjukkan bahawa pelajar dapat menghasilkan projek akhir yang berkualiti dan memperoleh gred pencapaian yang lebih baik selepas menerima rawatan. Hal ini kerana pelajar yang mendapat rawatan SCYP menunjukkan dirinya berupaya menguasai kriteria rubrik yang diperlukan dari tugasan yang diberikan, seterusnya memperoleh gred pencapaian yang lebih baik. Selain itu, proses pembacaan nota dan aktiviti kumpulan dengan menggunakan SCYP membolehkan pemikiran pelajar menterjemahkan ke atas helaian kertas. Majoriti pelajar berupaya melukis reka bentuk dan susun atur untuk kemudahan perkhidmatan makanan menunjukkan pelajar faham topik yang telah dipelajari (Oh et al., 2006) dan memperoleh pencapaian akademik yang baik.

Kesimpulan

Secara kesimpulannya, SCYP dapat membantu pelajar menguasai dan meningkatkan pencapaian akademik bagi Kursus DTF5023: Design and Layout for Foodservice Facilities. Terdapat peningkatan peratusan markah penilaian projek akhir pelajar yang konsisten daripada sesi Jun 2018 sehingga sesi Disember 2019. Tahap penguasaan SCYP menunjukkan bahawa pelajar dapat menghasilkan projek akhir yang berkualiti serta berupaya memperoleh gred pencapaian yang baik. Maka, ini dapat disimpulkan bahawa alat berfikir SCYP memainkan peranan penting dalam peningkatan tahap pencapaian akademik dengan penghasilan projek akhir yang berkualiti bagi kursus ini. Implikasinya, pembelajaran teknik SCYP memberikan dua kebaikan serentak bagi pelajar dari aspek penguasaan rekabentuk dan pencapaian akademik.

Cadangan

SCYP sesuai digunakan sebagai satu pendekatan alternatif dalam pembelajaran kursus bagi tujuan penguasaan pencapaian akademik dalam pelaksanaan Kursus DTF5023: Design and Layout for Foodservice Facilities.

Pengiktirafan

Penulis mengucapkan terima kasih kepada Politeknik Merlimau Melaka kerana menyokong kajian penyelidikan ini.

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SIKAP PELAJAR TERHADAP MATA PELAJARAN STATISTIK DALAM KALANGAN PELAJAR POLITEKNIK: PERBANDINGAN DI ANTARA JANTINA DAN BIDANG PENGKHUSUSAN

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Abstract: *Kajian ini bertujuan mengenalpasti sikap pelajar melalui pembelajaran statistik melalui perbandingan antara jantina dan juga bidang pengajian yang diambil oleh pelajar di politeknik. Kajian ini menggunakan kaedah persampelan bertujuan yang terdiri daripada 152 pelajar politeknik dari bidang pedagagan iaitu diploma pemasaran, akauntasi, pengurusan peruncitan dan perniagaan. Kajian ini menggunakan instrumen Survey of Attitude towards Statistics (SATS) yang mengandungi 36 item positif dan negatif serta terdiri daripada enam dimensi sikap terhadap statistik. Dapatan kajian menunjukkan sedikit perbezaan skor min sikap pelajar berdasarkan jantina bagi pelajar perempuan (min = 98.40) dan pelajar lelaki (min = 98.05) terhadap mata pelajaran statistik. Berdasarkan keputusan daripada ujian-t sampel bebas yang dijalankan, perbezaan min di antara pelajar lelaki dan pelajar perempuan ini adalah tidak signifikan, t(150) = -0.263, ρ =0 .793). Hasil perbandingan sikap terhadap statistik berdasarkan bidang pengajian di politeknik didapati pelajar Diploma Pengajian Perniagaan menunjukkan min skor yang paling tinggi (100.49), manakala pelajar dari Diploma Pengurusan Peruncitan menunjukkan min skor yang paling rendah (96.61). Namun begitu, berdasarkan keputusan daripada ujian analisis varians satu hala yang dijalankan, perbezaan yang ditunjukkan dalam min skor ini adalah tidak signifikan, F(3, 148) = 2.546, ρ = 0.058. Hasil perbandingan ini di dapati tiada perbezaan dari segi minat terhadap satatistik antara jantina pelajar dan perbandingan untuk bidang pengajian yang berbeza. Oleh itu, para pensyarah boleh melaksanakan strategi pengajaran dan pembelajaran yang dirasakan berkesan dan tiada keperluan untuk mengadakan sesi pengajaran dan pembelajaran yang berasingan mengikut jantina dan tiada keperluan untuk mengadakan sesi pengajaran dan pembelajaran yang berasingan mengikut bidang pengajian di politeknik.*

Keywords: *sikap terhadap statistik, pelajar politeknik, Survey of Attitude towards Statistics*

Pengenalan

Statistik merupakan cabang ilmu matematik yang penting dalam kehidupan seharian. Menurut Sudjana (2005) menyatakan penggunaan istilah statistik bagi bilangan dan non bilangan sesuatu kumpulan data sering disusun dalam bentuk diagram dan jadual bagi memudahkan inteprestasi sesuatu persoalan. Terdapat taksiran lain bagi statistik yang digunapakai adalah ‘ukuran’ bagi mewakili kumpulan data bagi sesuatu perkara. Ukuran adalah perhitungan

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13th – 14th December 2020

penggunaan sebahagian kumpulan data yang dikaji dari keseluruhan persoalan yang berkaitan. Sudjana (2000) menyatakan statistik merupakan ilmu berkaitan untuk mengumpul, mengolah, menganalisis dan membuat kesimpulan hasil dari data kajian.

Kebiasaan kajian statistik cenderung terhadap hubungkait pencapaian pelajar. Sikap merupakan suatu faktor dalam memainkan peranan penting bagi menentukan kejayaan pelajar dalam menyelesaikan sesuatu masalah. Namun masih ada kekurangan bahawa adakah jantina lelaki dan perempuan pelajar politeknik ini mempengaruhi sikap terhadap statistik. Selain itu juga adakah perbandingan bidang pengajian yang diambil di politeknik akan memberi kesan dalam menentukan sikap terhadap statistik. Kebanyakan pelajar selalu mengeluh kerana kurang berkeyakinan bagi menyelesaikan masalah pembelajaran mereka. Berdasarkan keprihatinan pentingnya sikap, maka kajian ini dijalankan bagi menganalisis sikap pelajar politeknik terhadap pembelajaran statistik bagi menentukan ianya memberi kesan terhadap jantina atau bidang pengajian yang dipilih terhadap pengaruh sikap terhadap pencapaian statistik.

Sorotan Kajian

Peranan sikap dalam menentukan kejayaan pelajar adalah merupakan satu elemen yang penting dalam penyelesaian masalah. Menurut Noor Erma & Leong (2014) dan Arumugam (2014) pembolehubah-pembolehubah yang selalu dihubungkaitkan dengan sikap adalah pencapaian matematik pelajar dan juga proses pembelajaran pelajar bagi mendalami statistik (Schau, 2003).Banyak kajian peyelidikan dari luar dan dalam negara mengkaji hubungkait sikap pelajar terhadap matematik. Kajian Moodaley, Grobler & Lens (2006) menunjukan terdapat hubungan positif di antara sikap terhadap matematik melalui motivasi, jangkaan dan minat pelajar. Motivasi ialah merupakan kesanggupan memberi tumpuan, masa, tenaga dan ketekunan untuk belajar. Jangkaan pula merujuk kepada pembelajaran matematik yang bermakna seperti memahami konsep, mengetahui teorem, formula, strategi dan teknik penyelesaian untuk cemerlang dalam ujian atau peperiksaan (Steyn & Maree, 2002). Manakala, minat pula merujuk kepada keseronokan, keyakinan, bakat dan faedah pembelajaran matematik kepada kehidupan.

Matematik seringkali dikaitkan dengan komponen statistik dan ianya dianggap satu mata pelajaran yang tidak digemari. Pengaruh sikap terhadap statistik menurut kajian Nguyen, Charity & Robson (2016) menyatakan bahawa sikap adalah pembolehubah yang penting bagi memudahkan intepretasi data dalam mempersembahkan dapatan yang lebih mudah dan saintifik. Prayoga dan Abraham (2017) menambah bahawa, pembelajaran statistik dapat membina dan mengenali tatacara, faktor hubungan, ramalan keputusan kepada masalah yang dikaji dengan lebih mudah difahami. Dari sudut pasaran buruh, pemilihan pekerja yang berpotensi tinggi adalah pekerja yang mempunyai pengetahuan dalam bidang numerikal seperti statistik (Wellman, 2010).

Sorotan kajian menunjukkan bahawa faktor yang mempengaruhi sikap terhadap statistik adalah faktor guru seperti kaedah pengajaran dan persekitaran pembelajaran. Selain itu, latar belakang keluarga dan juga faktor pelajar itu sendiri, contohnya seperti kebimbangan, motivasi dan pengalaman dengan subjek statistik juga sedikit sebanyak mempengaruhi sikap terhadap statistik (Chiesi & Primi, 2010). Bagi kajian-kajian yang lepas, faktor pelajar dilihat sebagai fokus utama. Sebagai contoh, pengalaman lepas merupakan peramal yang dominan bagi sikap terhadap statistik (Coetzee & van der Merwe, 2010; Tempelaar & Schim van der Loeff, 2011). Pelajar yang mempunyai pencapaian yang baik dalam statistik pada masa lepas dilihat mempunyai sikap yang lebih positif terhadap statistik berbanding pelajar lain.

Sikap terhadap statistik juga merupakan peramal yang signifikan kepada pencapaian dalam kursus statistik (Carlson & Winquist, 2011; Emmioğlu, 2011; Verhoeven, 2011).

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13th – 14th December 2020

Sikap yang positif akan membantu pelajar untuk melihat kebaikan yang ada dalam subjek statitistik terutamanya untuk kursus-kursus akan datang. Sebaliknya, sikap yang negatif akan menghadkan peluang pembelajaran dan seterusnya akan menghalang perkembangan pelajar. Satu perkara yang perlu diambil perhatian ialah sikap merupakan pembolehubah yang boleh berubah. Justeru itu amatlah penting untuk para guru dan pensyarah membantu mengubah sikap terhadap statistik dalam kalangan pelajar mereka.

Oleh itu, kajian ini dijalankan bertujuan untuk mengkaji perbezaan dalam sikap terhadap statistik berdasarkan jantina dan bidang pengkhususan pengajian. Kajian berbentuk deskriptif ini memerihalkan perkara berkaitan aspek-aspek yang sukar dikuasai oleh pelajar dalam mempelajar statistik. Para pensyarah statistik boleh menggunakan maklumat dari kajian ini bagi menambah baik pengajaran mereka, terutamanya dalam meningkatkan minat terhadap subjek statistik.

Metodologi Kajian

Kajian ini menggunakan kaedah persampelan bertujuan (purposive sampling) digunakan untuk mendapatkan maklumat berkaitan sikap terhadap statistik. Kaedah persempelan bertujuan dipilih untuk kajian ini kerana ciri-ciri sampel yang terlibat adalah berfokus kepada pelajar yang mengambil matapelajaran statistik di politeknik. Sampel kajian terdiri daripada 152 orang pelajar politeknik yang terdiri dari 41 orang lelaki dan 111 orang perempuan. Pecahan dari segi bidang pengkhususan pula, taburannya seperti berikut iaitu Diploma Pemasaran seramai 30 orang, Diploma Akauntasi terdiri seramai 34 orang, Diploma Pengurusan Peruncitan pula terdiri seramai 49 orang dan Diploma Pengajian Perniagaan adalah seramai 39 orang. Maklumat berkaitan sampel diberikan di dalam Jadual 1 di bawah.

Jadual 1: Maklumat Sampel

Maklumat	Bilangan	Peratus
Jantina		
Lelaki	41	27.0
Perempuan	111	73.0
Umur		
18 tahun	6	3.9
19 tahun	105	69.1
20 tahun	28	18.4
21 tahun	10	6.6
Bidang		
Diploma Pemasaran	30	19.7
Diploma Akauntasi	34	22.4
Diploma Pengurusan Peruncitan	49	32.2
Diploma Pengajian Perniagaan	39	25.7

Kajian ini menggunakan instrumen Survey of Attitudes Towards Statistics (Schau, 2003). Instrumen ini terdiri 36 item yang mengukur enam dimensi sikap terhadap statistik, iaitu dimensi pertama ialah perasaan pelajar mengenai statistik, dimensi kedua pula ialah sikap pelajar mengenai pengetahuan dan kemahiran intelektual mereka apabila menggunakan statistik, dimensi ketiga sikap pelajar tentang kegunaan, kaitan, dan nilai statistik dalam kehidupan peribadi dan profesional, dimensi keempat sikap pelajar tentang kesukaran statistik sebagai subjek, dimensi kelima tahap minat individu dalam statistik, dan dimensi terakhir ialah jumlah masa pelajar habiskan untuk belajar statistik. Pelajar perlu memilih salah satu daripada empat respons iaitu sangat tidak setuju, tidak setuju, setuju atau sangat setuju bagi setiap pernyataan di dalam instrumen ini. Terjemahan ke dalam Bahasa Melayu dilakukan oleh

seorang pensyarah bahasa dan seorang pensyarah bidang pengukuran pendidikan daripada Universiti Sains Malaysia.

Dapatan Kajian

Kajian ini mengukur dua keadaan berkaitan sikap terhadap statistik iaitu pertama perbandingan sikap statistik antara jantina lelaki dan perempuan dan kedua ialah perbandingan sikap statistik terhadap bidang pengajian yang diambil oleh pelajar di politeknik.

Berdasarkan perbandingan sikap terhadap Statistik berdasarkan jantina lelaki dan perempuan didapati nilai statistik deskriptif menunjukkan pelajar perempuan (min = 98.40) mempunyai skor min yang sedikit lebih tinggi berbanding dengan pelajar leleki (min = 98.05). Jadual 2 menunjukkan perbandingan nilai statistik deskriptif antara lelaki dan perempuan.

Jadual 2: Perbandingan nilai statistik deskriptif antara lelaki dan perempuan.

Jantina	N	Min	Sisihan Piawai
Lelaki	41	98.05	9.74
Perempuan	111	98.40	6.47

Walau bagaimanapun, berdasarkan keputusan daripada ujian-t sampel bebas yang dijalankan, perbezaan min di antara pelajar lelaki dan pelajar perempuan ini adalah tidak signifikan, t(150) = -.263, p = .793). Jadual 3 menunjukkan hasil ujian-t yang telah dijalankan.

Jadual 3:Ujian-t sampel bebas perbandingan sikap terhadap statistic.

Sikap	t	df	Sig.	Beza min
	-.263	150	.793	-.350

Perbandingan berkaitan sikap terhadap statistik diukur berdasarkan bidang pengajian di politeknik iaitu bidang Diploma pemasaran, Diploma Akauntasi, Diploma Pengurusan Peruncitan dan Diploma Pengajian Perniagaan. Hasil perbandingan sikap terhadap statistik berdasarkan bidang pengajian di politeknik didapati statistik deskriptif menunjukkan pelajar terdapat perbezaan di antara min skor sikap terhadap statistik di antara pelajar dari bidang-bidang yang dikaji. Pelajar Diploma Pengajian Perniagaan menunjukkan min skor yang paling tinggi (100.49), manakala pelajar dari Diploma Pengurusan Peruncitan menunjukkan min skor yang paling rendah (96.61). Jadual 4 menunjukkan perbandingan nilai statistik deskriptif antara bidang yang dikaji.

Jadual 4: Perbandingan nilai statistik deskriptif antara bidang yang dikaji.

Bidang	N	Min	Sisihan Piawai
Diploma Pemasaran	30	99.47	5.73
Diploma Akauntasi	34	97.25	6.38
Diploma Pengurusan Peruncitan	49	96.61	7.13
Diploma Pengajian Perniagaan	39	100.49	9.07

Namun begitu, berdasarkan keputusan daripada ujian analisis varians satu hala yang dijalankan, perbezaan yang ditunjukkan dalam min skor ini adalah tidak signifikan, F(3, 148) = 2.546, p = .058. Jadual 5 menunjukkan hasil dapatan ujian analisis varians satu hala.

Jadual 5: Keputusan ujian analisis varians satu hala.

	Sum of Squares	df	Mean Squares	F	Sig.
Between Groups	405.507	3	135.169	2.546	.058
Within Groups	7858.961	148	53.101		
Total	8264.467	151			

Perbincangan Dan Kesimpulan.

Kajian ini mengukur dua keadaan berkaitan sikap terhadap statistik di kalangan pelajar politeknik iaitu pertama perbandingan sikap statistik antara jantina pelajar lelaki dan pelajar perempuan dan kedua ialah perbandingan sikap statistik terhadap bidang pengajian yang diambil oleh pelajar di politeknik.

Hasil dapatan yang diterima didapati tiada perbezaan dari segi minat terhadap satatistik di antara pelajar lelaki dan pelajar perempuan. Oleh itu, para pensyarah boleh melaksanakan strategi pengajaran dan pembelajaran yang dirasakan berkesan dan tiada keperluan untuk mengadakan sesi pengajaran dan pembelajaran yang berasingan mengikut jantina.

Melalui Hasil dapatan dari segi minat terhadap satatistik di antara pelajar untuk bidang pengajian yang berbeza pula didapati tiada perbezaan. Oleh itu, para pensyarah boleh melaksanakan strategi pengajaran dan pembelajaran yang dirasakan berkesan dan tiada keperluan untuk mengadakan sesi pengajaran dan pembelajaran yang berasingan mengikut bidang pengajian di politeknik.

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13th – 14th December 2020

TAHAP PENERIMAAN PELAJAR DIPLOMA PERKHIDMATAN MAKANAN AMALAN HALAL TERHADAP APLIKASI TEMPLATE SKRIP TEKS UCAPAN PERASMIAN (T-OS) DI DALAM MENYEDIAKAN TEKS UCAPAN PERASMIAN MAJLIS

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Abstract: *Kajian ini dijalankan untuk mengenalpasti tahap penerimaan penggunaan Template Teks Ucapan Perasmian (T-OS) di dalam menyediakan teks ucapan perasmian sesebuah majlis. Kajian tinjauan melibatkan seramai 32 orang pelajar semester 4 Diploma Perkhidmatan Makanan Amalan Halal (DHF) Politeknik Merlimau Melaka yang mengambil kursus DTM5033: Event Operation and Management. Salah satu kemahiran yang harus dikuasai oleh pelajar di dalam kursus ini adalah menyediakan teks ucapan perasmian majlis. Justeru, objektif kajian adalah mencadangkan template yang boleh membantu para pelajar bagi menyediakan teks ucapan perasmian dengan mudah. Dapatan kajian mendapati, 52% responden bersetuju bahawa aplikasi T-OS memudahkan penyediaan teks ucapan perasmian, 48% bersetuju bahawa template ini membantu responden menyusun senarai keutamaan tetamu, 48% bersetuju mereka mampu mengarang isi kandungan teks ucapan dan 52% bersetuju mereka mampu menulis isi kandungan penutup. Seterusnya, 41% bersetuju bahawa template ini membantu mereka menyediakan teks ucapan perasmian dengan pantas dan 41% lagi bersetuju bahawa mereka lebih yakin untuk menyiapkan teks ucapan perasmian. Cadangan penambahbaikkan adalah membina template yang boleh digunakan di telefon bimbit dan mempelbagaikan bahasa perantaraan di dalam aplikasi tersebut. Hasil kajian menunjukkan bahawa kebanyakkan responden menerima baik cadangan T-OS sebagai alat bantu mengajar yang baru. Kesimpulannya, template T-OS memberi impak positif di dalam membantu Pembelajaran dan Pengajaran (PdP) di dalam kursus ini.*

Keywords: *Tahap Penerimaan, Template, Teks Ucapan, Pembelajaran dan Pengajaran*

Pengenalan

Pada masa kini, kebanyakan pelajar menggunakan bahan-bahan bacaan di internet sebagai bahan rujukan. Apabila pelajar tidak merujuk kepada sumber yang tepat, ia boleh menyebabkan pelajar keliru dengan format dan isi kandungan sesebuah skrip teks ucapan perasmian. Malah pelajar juga tidak dapat belajar dengan betul cara penulisan skrip untuk sesuatu majlis. Oleh itu, kajian ini telah dijalankan untuk mengatasi masalah pelajar menulis mengikut format penulisan skrip selaras seperti yang diguna pakai di jabatan seperti darisegi susunan ayat dan susunan senarai salutasi. Selain itu, template ini juga dapat membantu pelajar menulis skrip teks ucapan dengan pantas dan baik.

Penggunaan T-OS sebagai alat bantu mengajar (ABM) dalam teknik Pembelajaran dan Pengajaran (PdP) di dalam kelas menyokong pengajaran secara kontekstual iaitu

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13th – 14th December 2020

menghubungkaitkan pelajaran di dalam kelas serta mempraktikkan dengan menulis skrip teks ucapan perasmian majlis menggunakan pengapplikasian T-OS, secara tidak langsung pelajar memindahkan pengetahuan mereka melalui penulisan.

Penyataan di atas menyokong pernyataan Hull (1997) iaitu:

> *"Students' involvement in their schoolwork increases significantly when they are taught why they are learning the concepts and how those concepts can be used outside the classroom. And most students learn much more efficiently when they are allowed to work cooperatively with other students in groups or teams"*

Jadual 1: Contoh Penulisan Skrip Secara Manual

Format	Keterangan
 TEKS UCAPAN PERASMIAN "SPEAKERS CORNER" YANG BERBAHAGIA BRIG. JEN.PROF. DATUK SERI PANGLIMA DR. KAMARUZAMAN BIN HJ. AMPON NAIB CANSELOR UNIVERSITI MALAYSIA SABAH Bismillahir Rahmanir Rahim Assalamualaikum w.b.t dan salam sejahtera, Salam 1Malaysia Pegawai-Pegawai Utama Universiti Malaysia Sabah Barisan Kepimpinan Majlis Perwakilan Pelajar UMS Siswa Siswi Universiti Malaysia Sabah Tuan-tuan dan puan-puan, para hadirin sekalian. Terlebih dahulu marilah kita merafakkan rasa syukur ke hadrat Allah s.w.t kerana dengan limpah berkat dan keizinan daripada-Nya, dapatlah kita bersama-sama di majlis perasmian *Speakers Corner* yang diadakan buat julung-julung kalinya ini. Syabas dan tahniah kepada semua ahli jawatankuasa perlaksana yang bertekad dalam menjayakan penganjuran program ini yang sememangnya sangat signifikan dengan keperluan mahasiswa dan mahasiswi pada masa kini.	- Tajuk Perasmian - Susunan salutasi (protokol) - Ucap Selamat
 Bismillahir Rahmanir Rahim Assalamualaikum w.b.t dan salam sejahtera, Salam 1Malaysia Pegawai-Pegawai Utama Universiti Malaysia Sabah Barisan Kepimpinan Majlis Perwakilan Pelajar UMS Siswa Siswi Universiti Malaysia Sabah Tuan-tuan dan puan-puan, para hadirin sekalian. Terlebih dahulu marilah kita merafakkan rasa syukur ke hadrat Allah s.w.t kerana dengan limpah berkat dan keizinan daripada-Nya, dapatlah kita bersama-sama di majlis perasmian *Speakers Corner* yang diadakan buat julung-julung kalinya ini. Syabas dan tahniah kepada semua ahli jawatankuasa perlaksana yang bertekad dalam menjayakan penganjuran program ini yang sememangnya sangat signifikan dengan keperluan mahasiswa dan mahasiswi pada masa kini. Para hadirin sekalian, Masyarakat kini melabel mahasiswa sebagai golongan yang kian 'lesu'. Ini disebabkan mahasiswa kini kurang peka terhadap perkembangan isu-isu semasa yang melanda masyarakat dunia mahupun negara kita. Saya percaya ini disebabkan oleh tumpuan para pelajar yang terlalu memfokuskan kepada hal ehwal akademik semata-mata hingga melupakan isu-isu dan keadaan yang berlaku di persekitaran.	- Ucapan alu-aluan - Permulaan bicara

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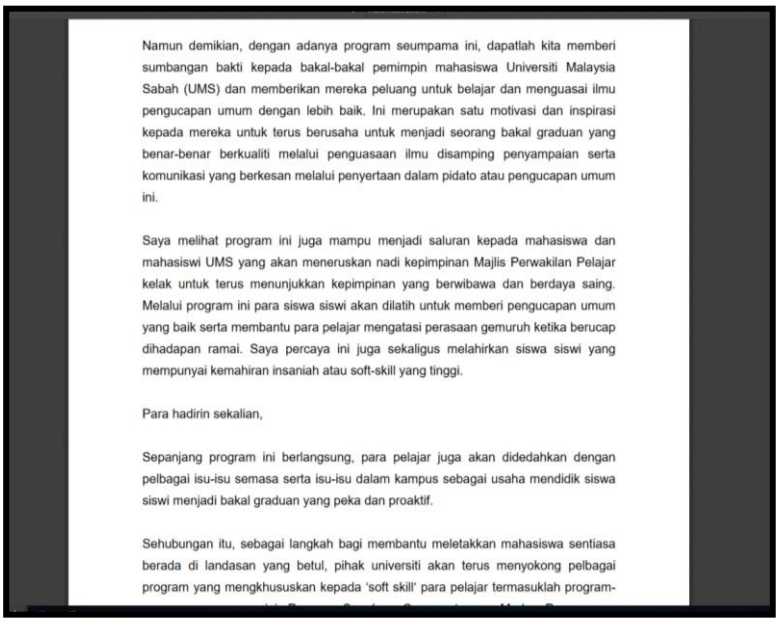
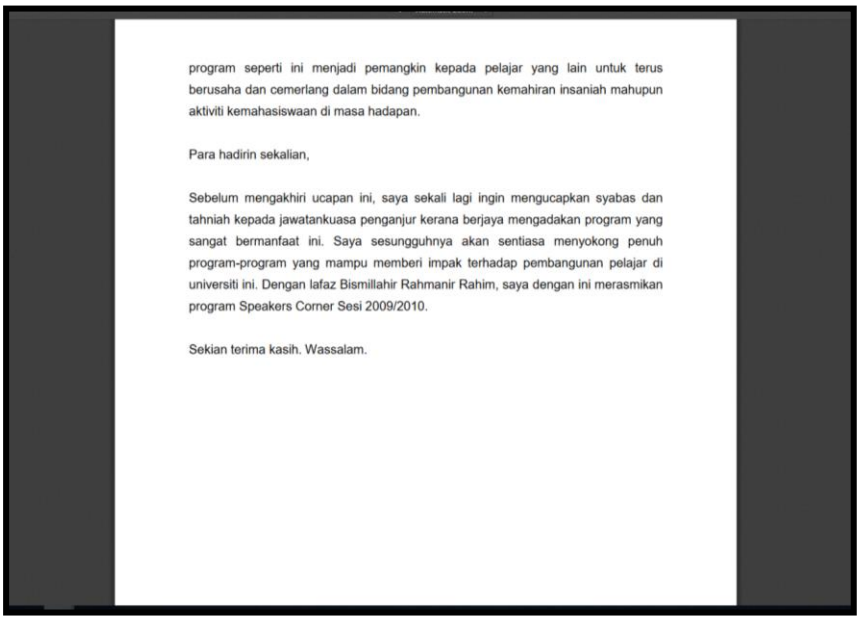
13th – 14th December 2020

Format	Keterangan
	- Isi kandungan - Bahan-bahan sokongan atau penambahbaikan
	- Kenyataan untuk diingati atau harapan - Ucapan tahniah dan lafaz perasmian majlis - Penutup bicara

Sumber: Kamaruzaman Hj. Ampon, Brig. Jen. Prof. Datuk Seri Panglima Dr. (2009)

Penyataan Masalah

Berdasarkan refleksi dan pemerhatian semasa PdP, sebuah template dicipta berkaitan dengan silibus DTM5033: Event Operation & Manegement sesuai untuk memudahkan proses pembelajaran dan pengajaran (PdP) kursus ini. Malah template ini juga untuk membantu pelajar dan pensyarah menulis skrip teks ucapan perasmian majlis. Selain itu, penggunaan template ini boleh mengurangkan kekeliruan pelajar dan pensyarah apabila menulis skrip teks ucapan perasmian majlis dari segi mengolah ucap selamat, susunan salutasi, susunan isi kandungan dan ucapan penutup. Template ini diwujudkan untuk kegunaan kursus DTM5033:

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13th – 14th December 2020

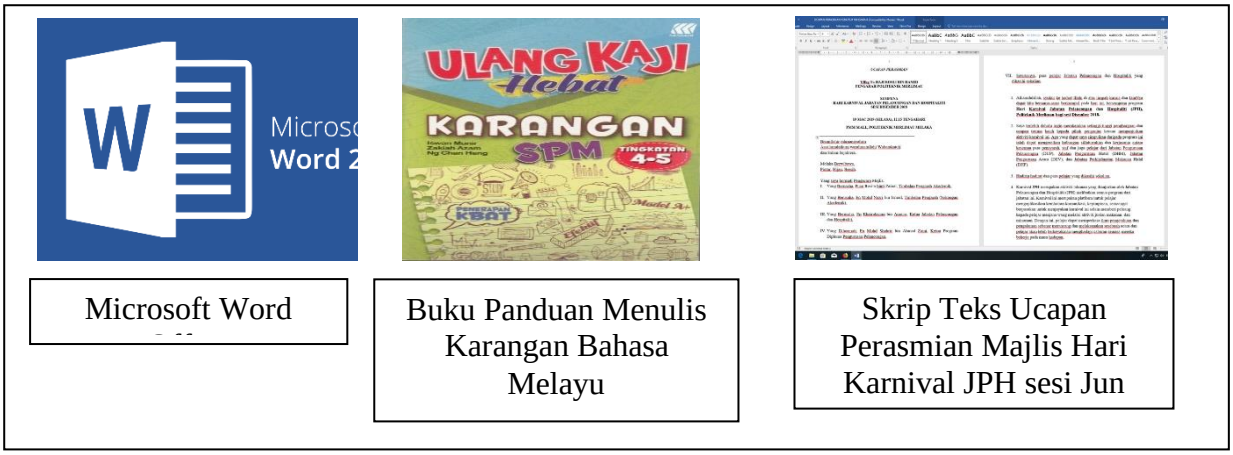
Event Operation & Manegement agar selaras kerana para pelajar terlalu banyak merujuk bahan bacaan di internet yang menyukarkan mereka untuk memahami cara penulisan skrip yang betul.

Objektif Inovasi

Objektif inovasi adalah mencadangkan template yang boleh membantu para pelajar bagi menyediakan teks ucapan perasmian dengan mudah.

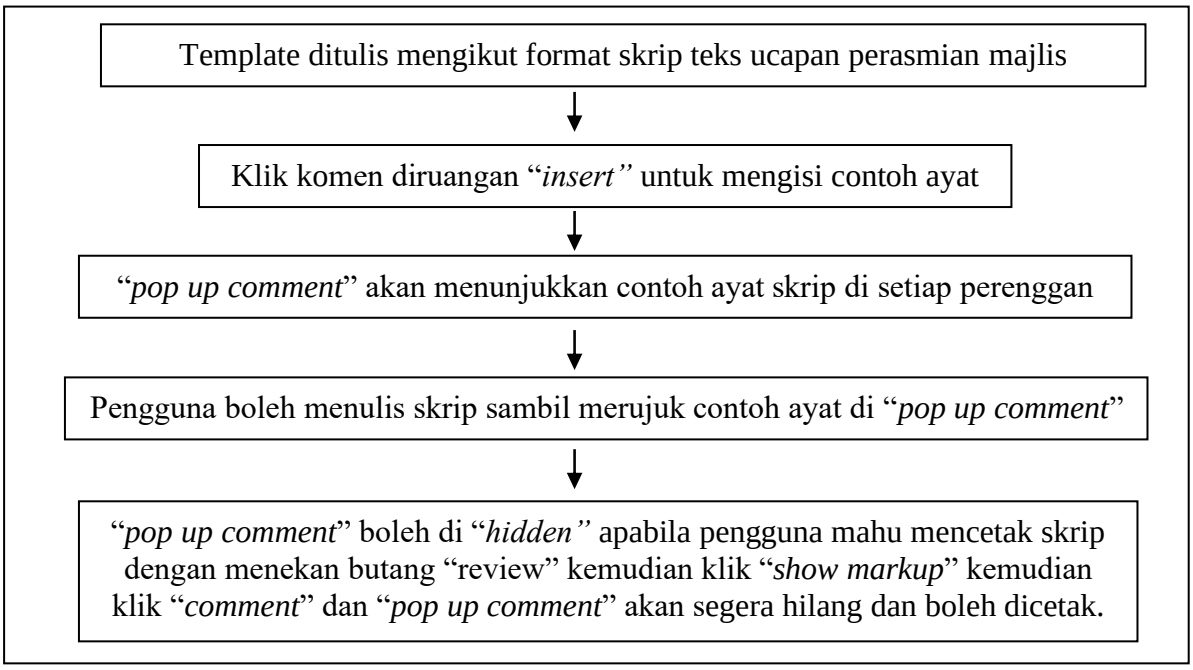
Ciri-ciri Inovasi

Bahan yang digunakan. *Microsoft Word Office* untuk membuat template. Bahan rujukan dari Buku Panduan Menulis Karangan dan Skrip Teks Ucapan Perasmian Majlis Hari Karnival JPH sesi Jun 2019.



Rajah 2.1: Bahan Yang Digunakan Untuk T-OS

Kerangka Teori: Rajah 2.2 Menunjukkan Proses Membuat Template T-OS.



Rajah 2.2: Carta Alir Membangunkan T-OS

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13th – 14th December 2020

Cara Operasi Penggunaan T-OS

Langkah-langkah menggunakan T-OS

Semasa menggunakan T-OS pelajar perlu:

1. Langkah 1 : Menulis Nama Perasmi Majlis sambil merujuk *"pop up comment"*
2. Langkah 2 : Menulis Tajuk Perasmian sambil merujuk "*pop up comment"*
3. Langkah 3 : Menulis Tarikh, Hari, Masa dan Lokasi sambil merujuk "*pop up comment"*
4. Langkah 4 : Menulis Ucap Selamat sambil merujuk "*pop up comment"*
5. Langkah 5 : Menulis Susunan Salutasi sambil merujuk "*pop up comment"*
6. Langkah 6 : Menulis Lafaz Kesyukuran sambil merujuk *"pop up comment"*
7. Langkah 7 : Menulis Ucapan Terima Kasih sambil merujuk "pop up comment"
8. Langkah 8 : Menulis Bicara Kata sambil merujuk *"pop up comment"*
9. Langkah 9 : Menulis Ucapan Alu-aluan sambil merujuk *"pop up comment"*
10. Langkah 10 : Menulis Permulaan Bicara sambil merujuk *"pop up comment"*
11. Langkah 11 : Menulis Ulasan Majlis sambil merujuk *"pop up comment"*
12. Langkah 12 : Menulis Isi Kandungan (isu atau laporan semasa) sambil merujuk *"pop up comment"*
13. Langkah 13 : Menulis Bahan Sokongan atau Penambahbaikan sambil merujuk *"pop up comment"*
14. Langkah 14 : Menulis Kenyataan Untuk Diingati atau Harapan sambil merujuk *"pop up comment"*
15. Langkah 15 : Menulis Ucapan Tahniah dan Lafaz Perasmian Majlis sambil merujuk *"pop up comment"*
16. Langkah 16 : Menulis Penutup Bicara sambil merujuk *"pop up comment"*

Tatacara mencetak T-OS

Semasa mencetak T-OS pelajar perlu:

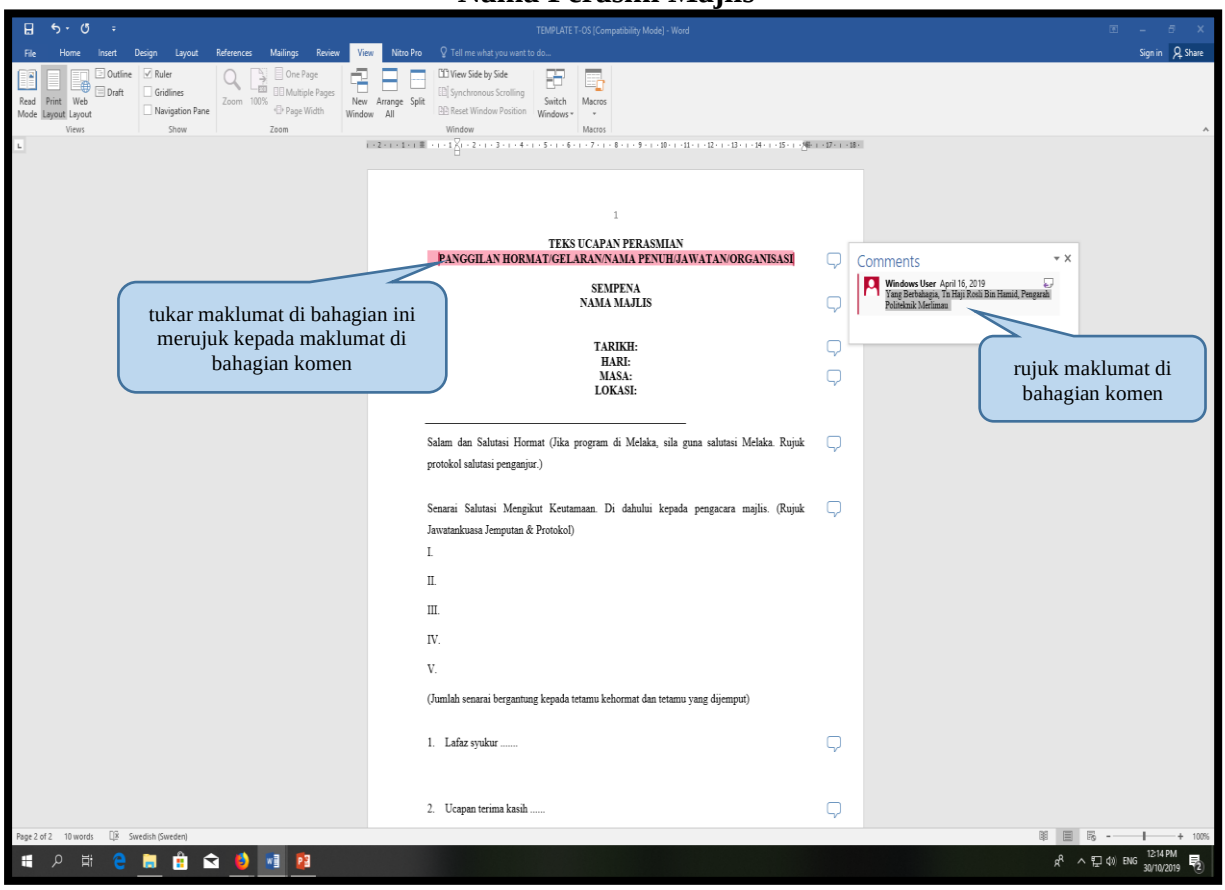
1. Langkah 1 : *"Pop up comment*" terpapar di template teks
2. Langkah 2 : Klik butang Review di Toolbars
3. Langkah 3 : Klik butang *"Review"* di *"Toolbars"*
4. Langkah 4 : Klik butang *"Show Markup"*
5. Langkah 5 : Klik butang *"Comment"* (*untick*)

Gambarajah Inovasi

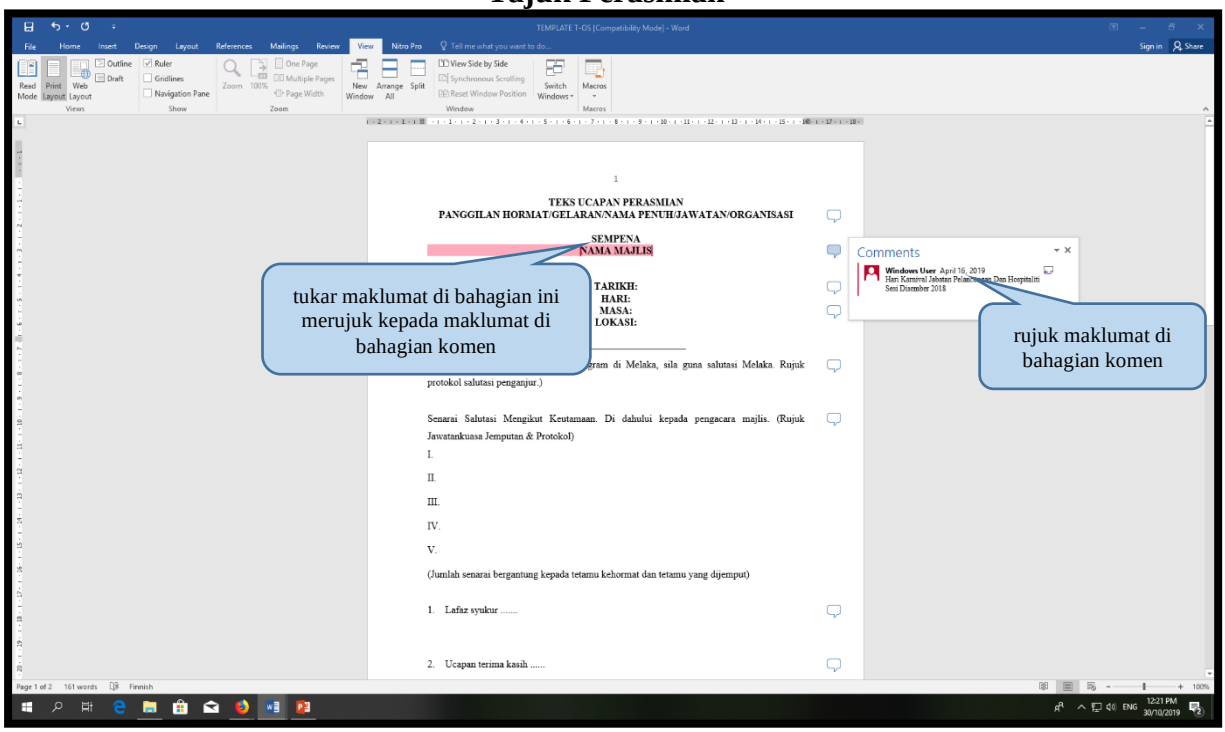
Berikut adalah langkah-langkah penggunaan template T-OS dengan menggunakan gambarajah sebagai panduan.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Nama Perasmi Majlis



Tajuk Perasmian



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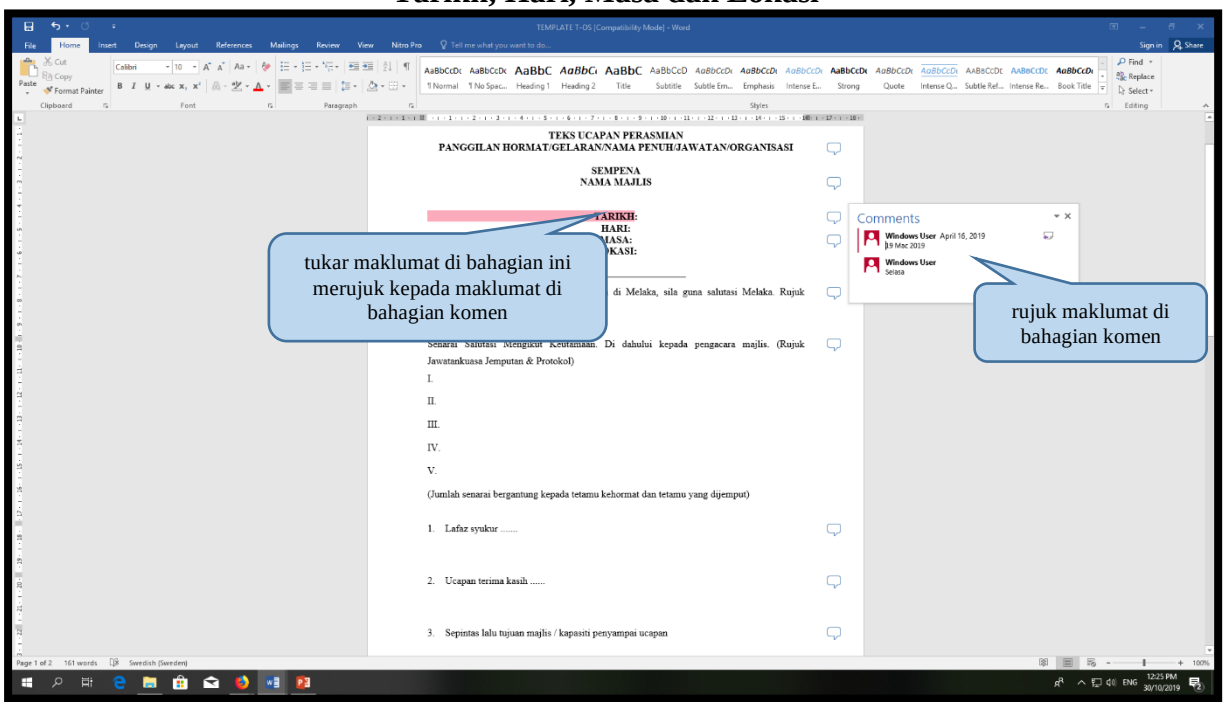
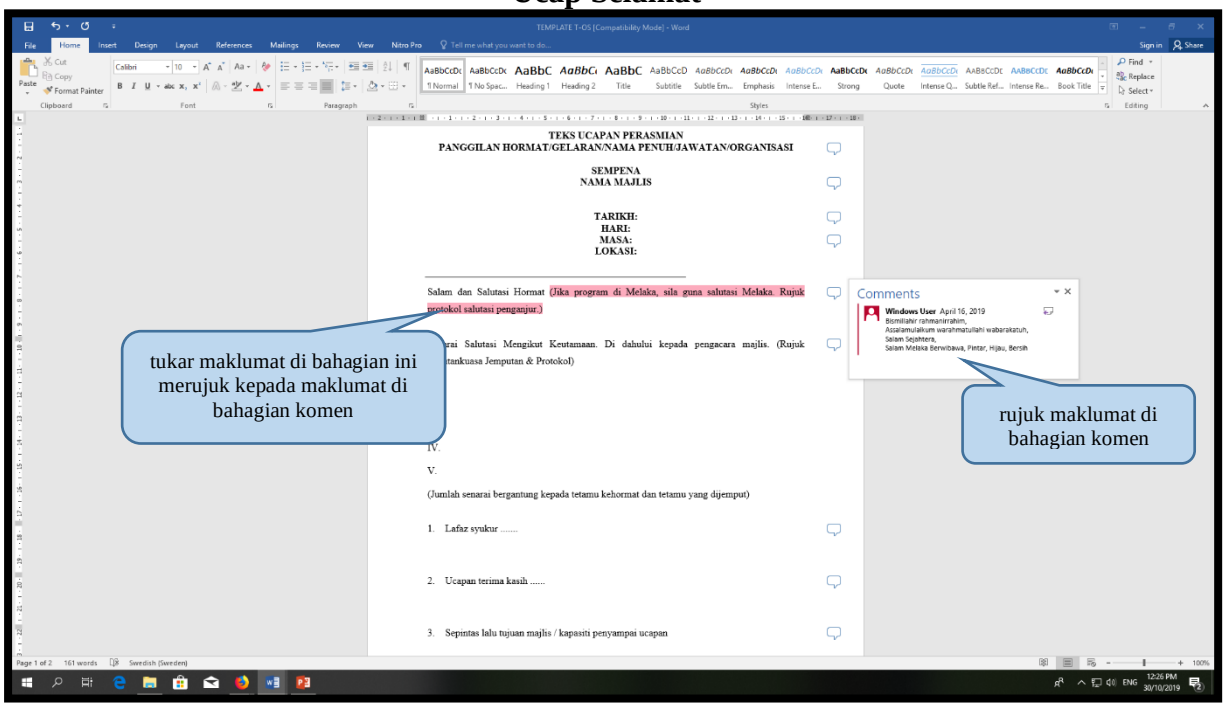
13th – 14th December 2020

Tarikh, Hari, Masa dan Lokasi



Ucap Selamat



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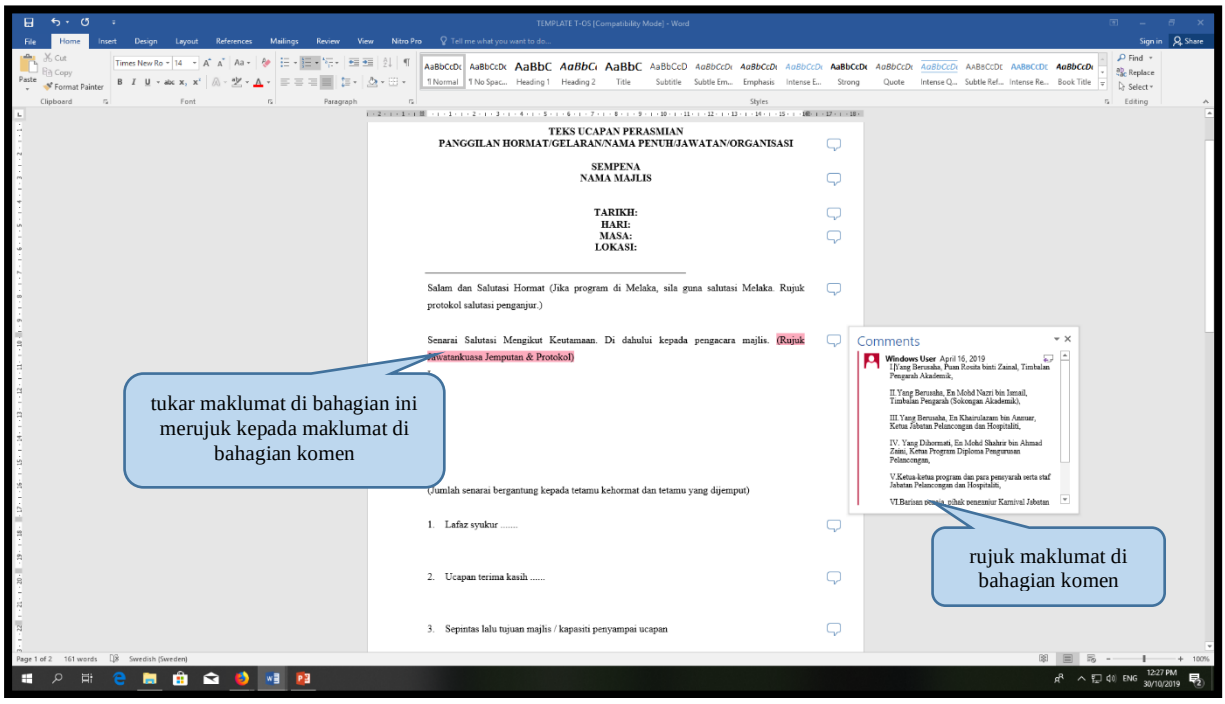
13th – 14th December 2020

Susunan Salutasi



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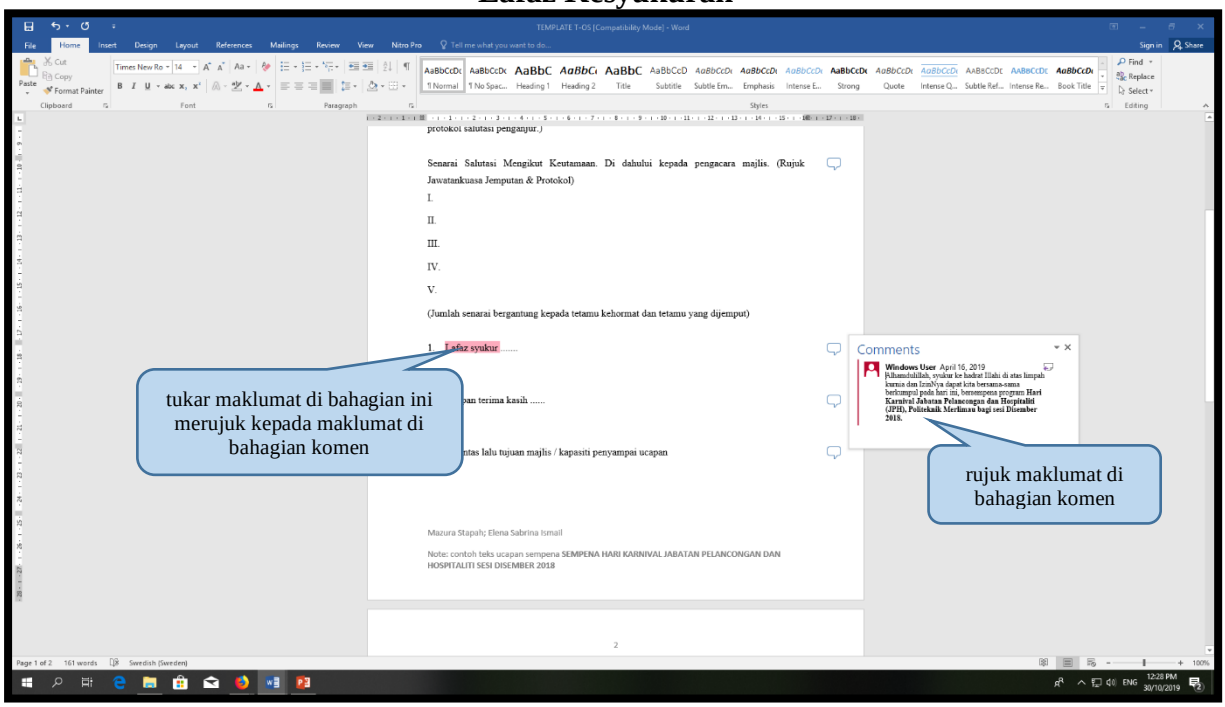

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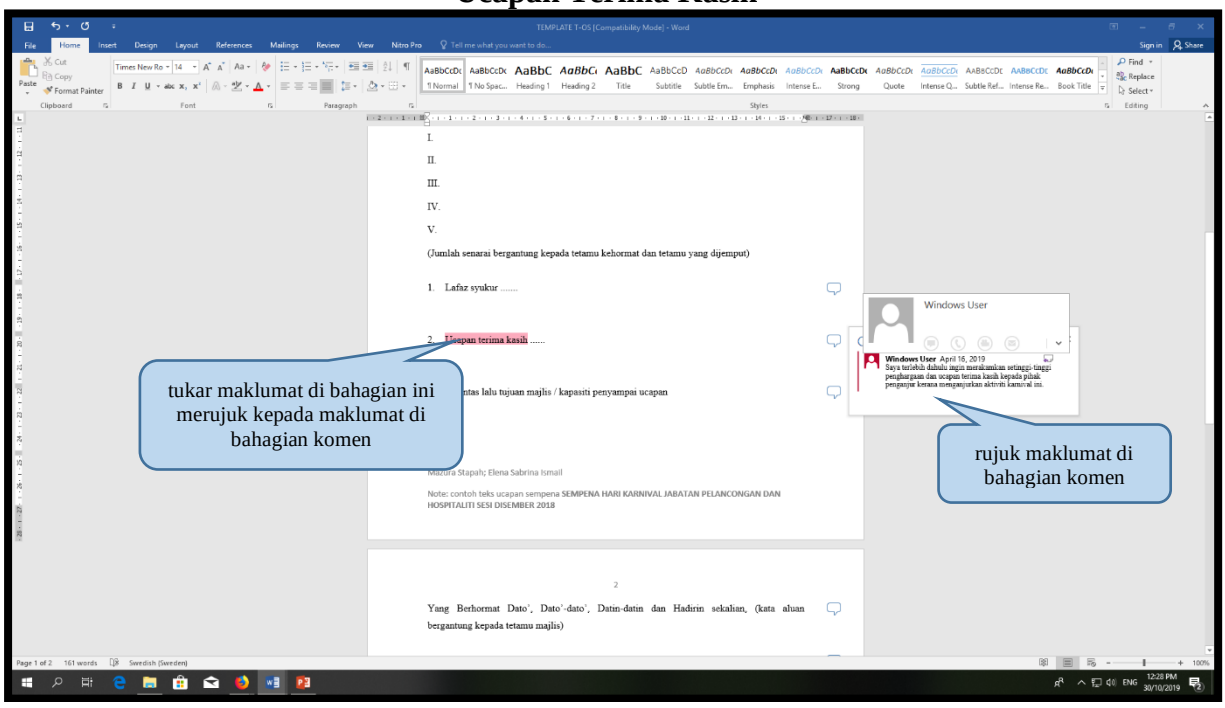
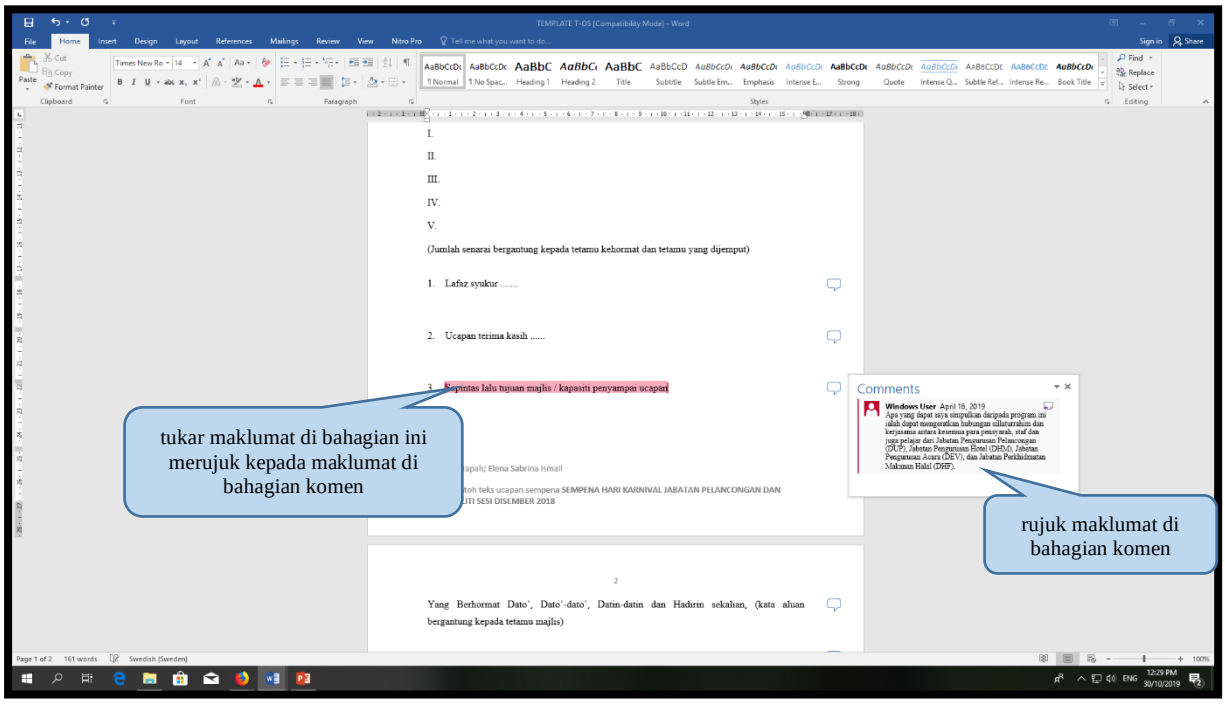
Ucapan Terima Kasih



Bicara Kata



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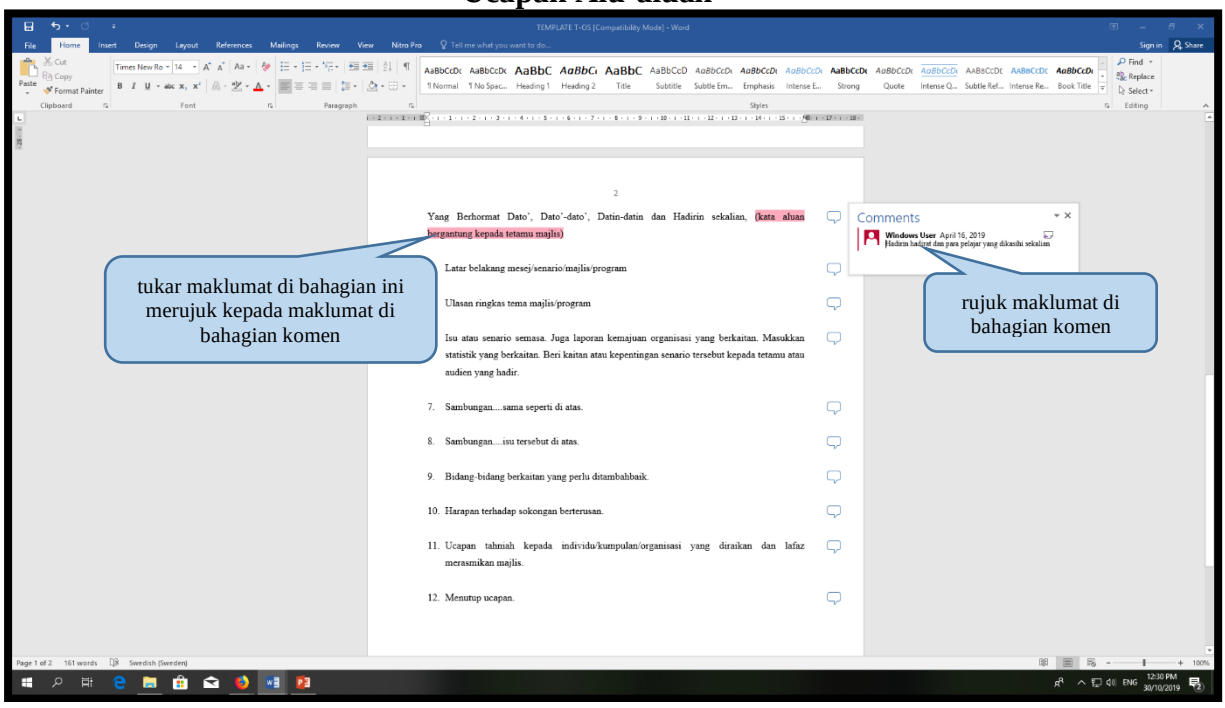
Ucapan Alu-aluan



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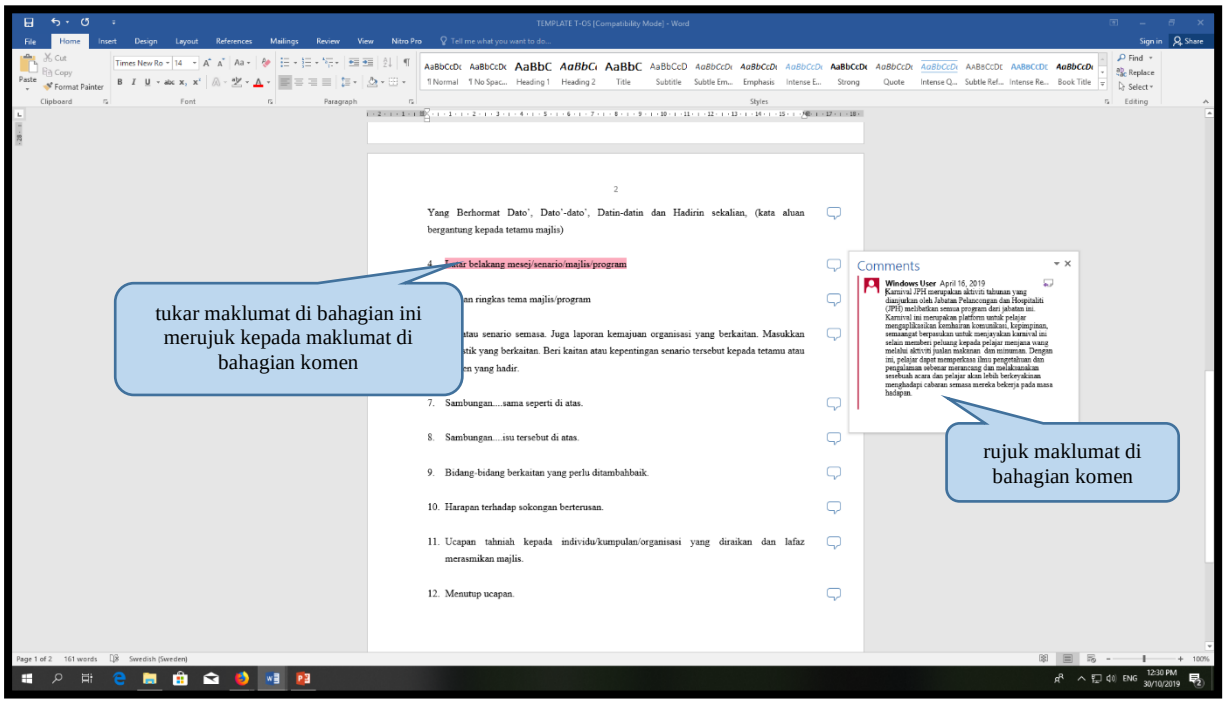

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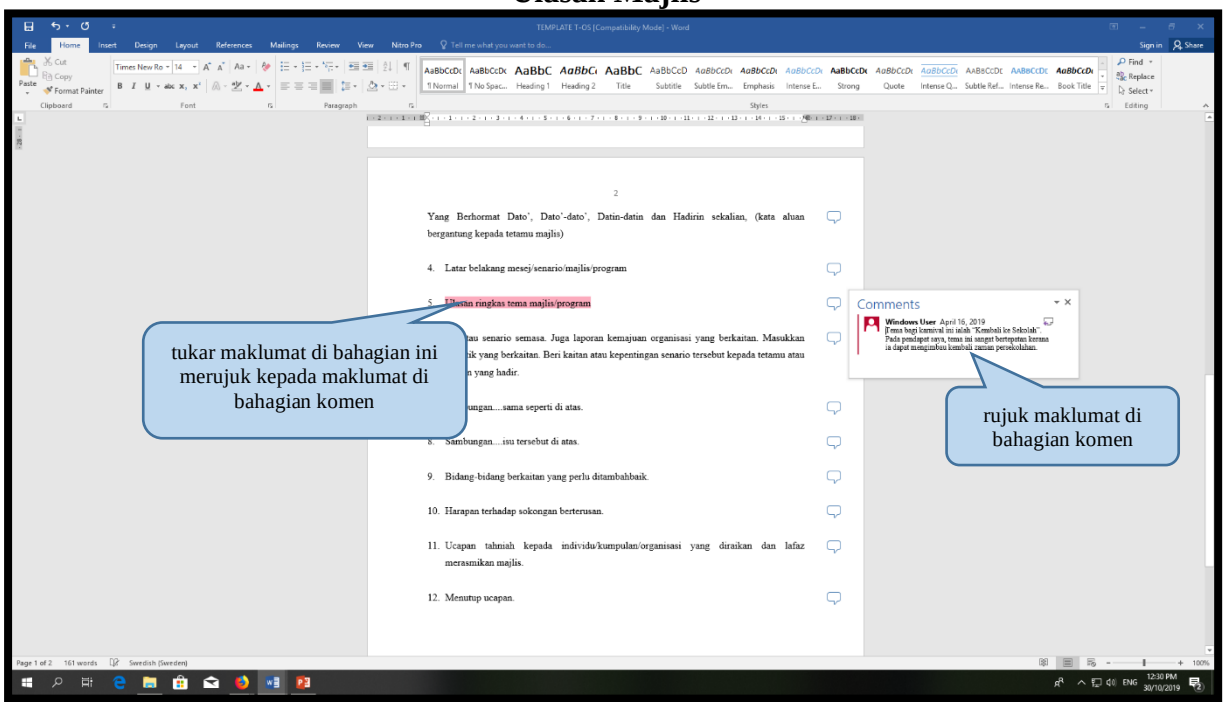
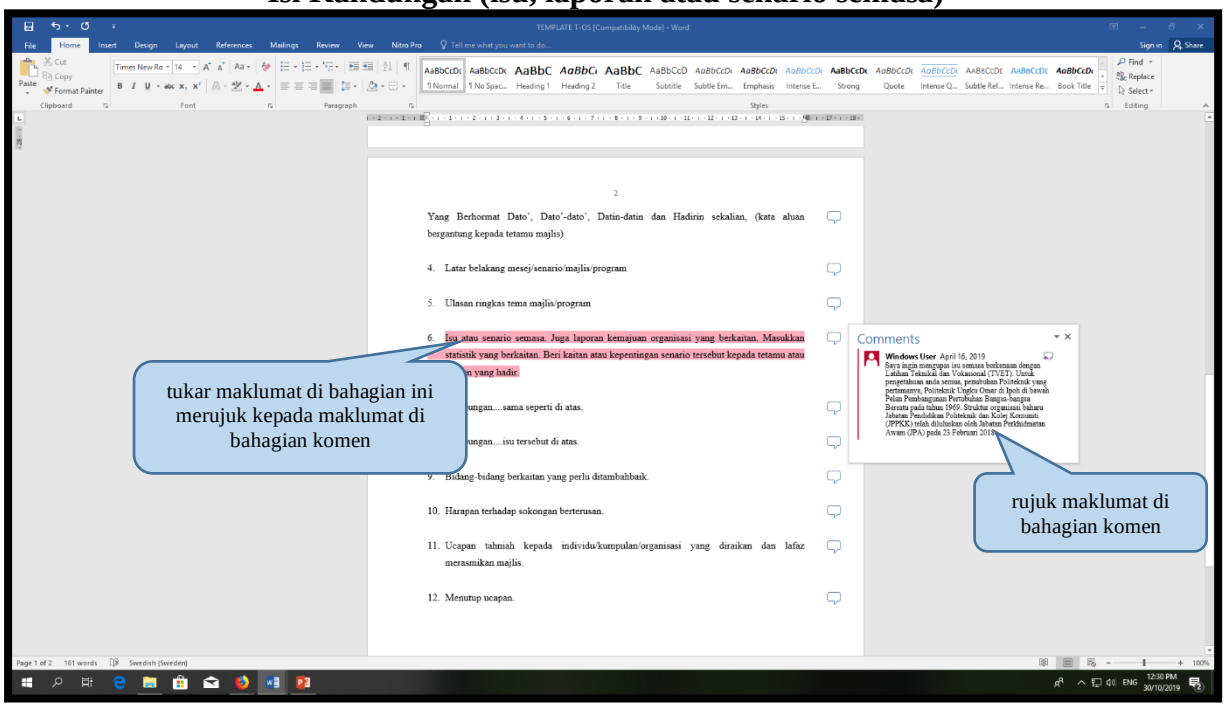
13th – 14th December 2020

Ulasan Majlis



Isi Kandungan (isu, laporan atau senario semasa)



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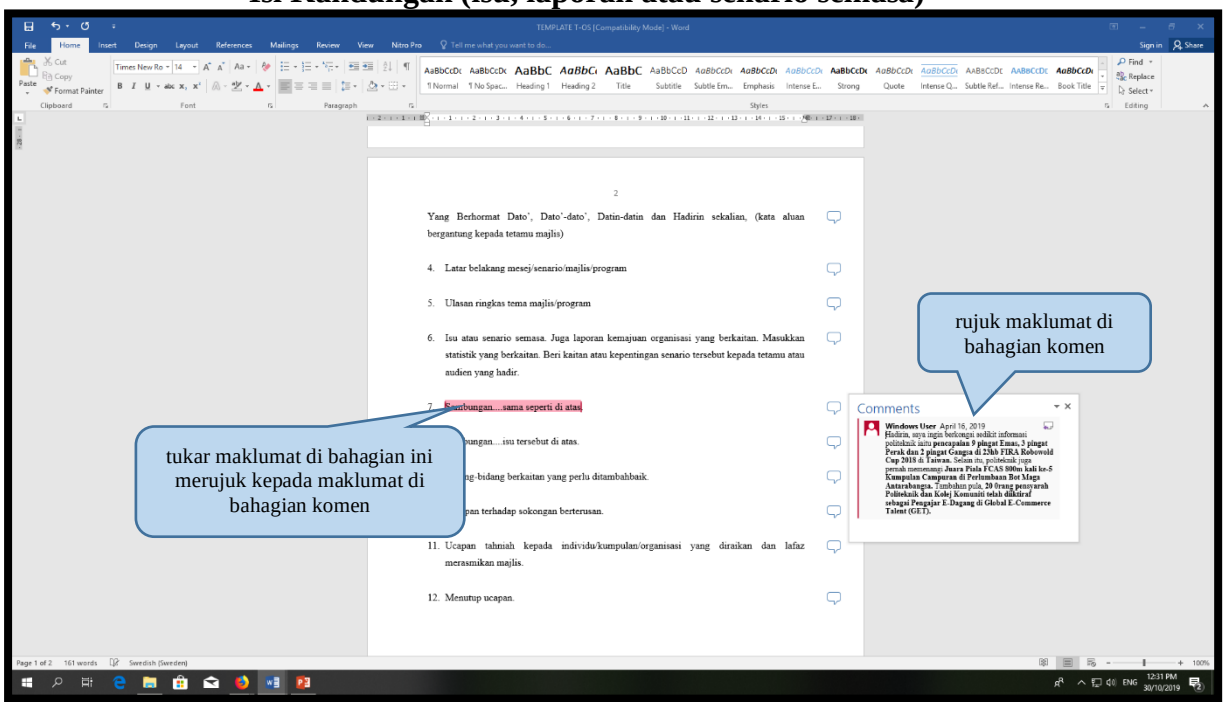
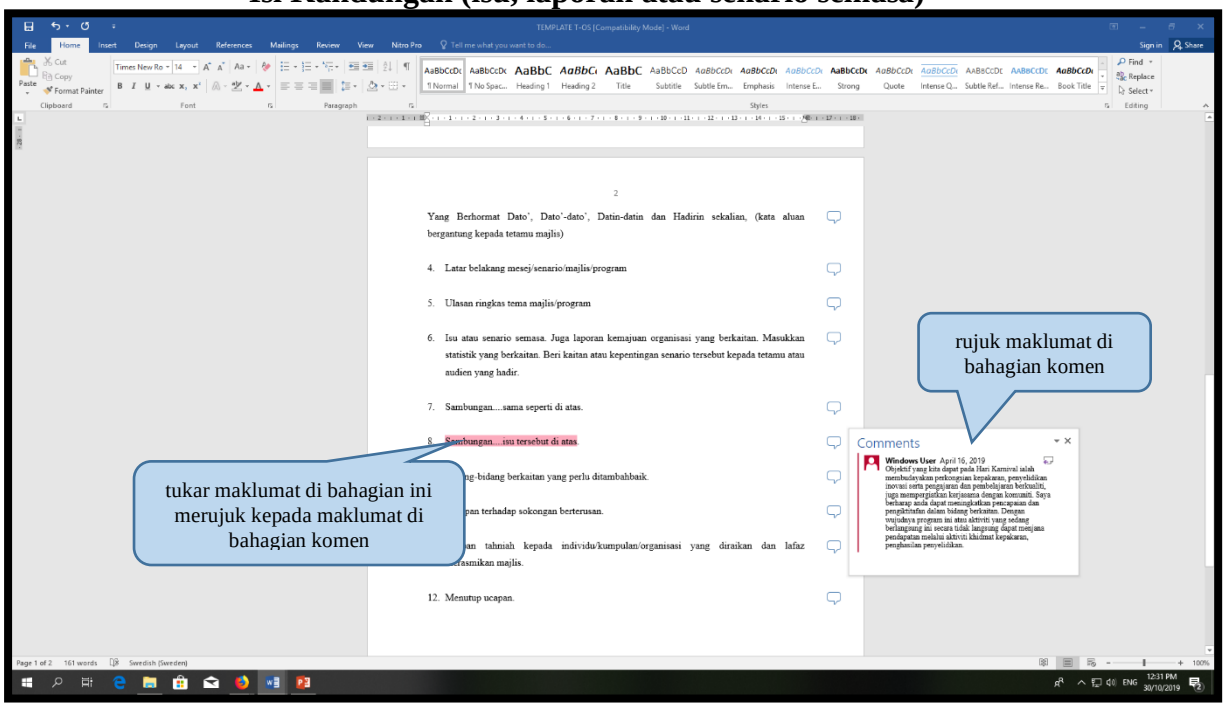
13th – 14th December 2020

Isi Kandungan (isu, laporan atau senario semasa)



Isi Kandungan (isu, laporan atau senario semasa)



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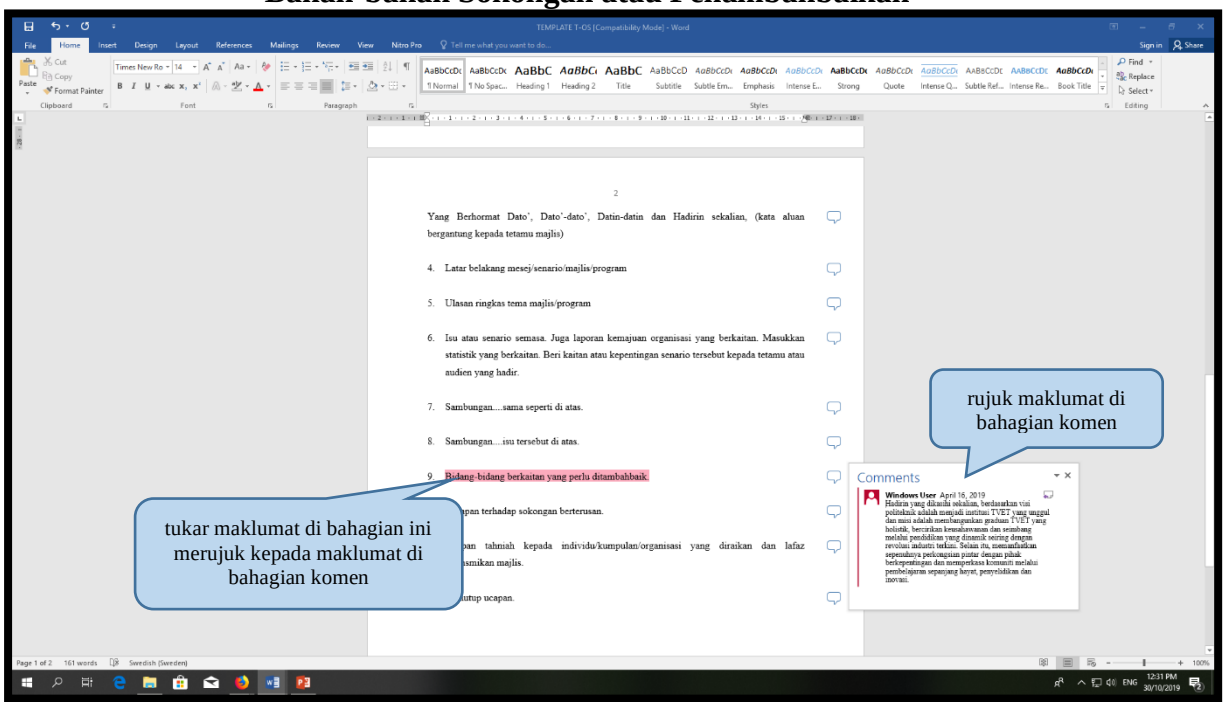
13th – 14th December 2020

Bahan-bahan Sokongan atau Penambahbaikan



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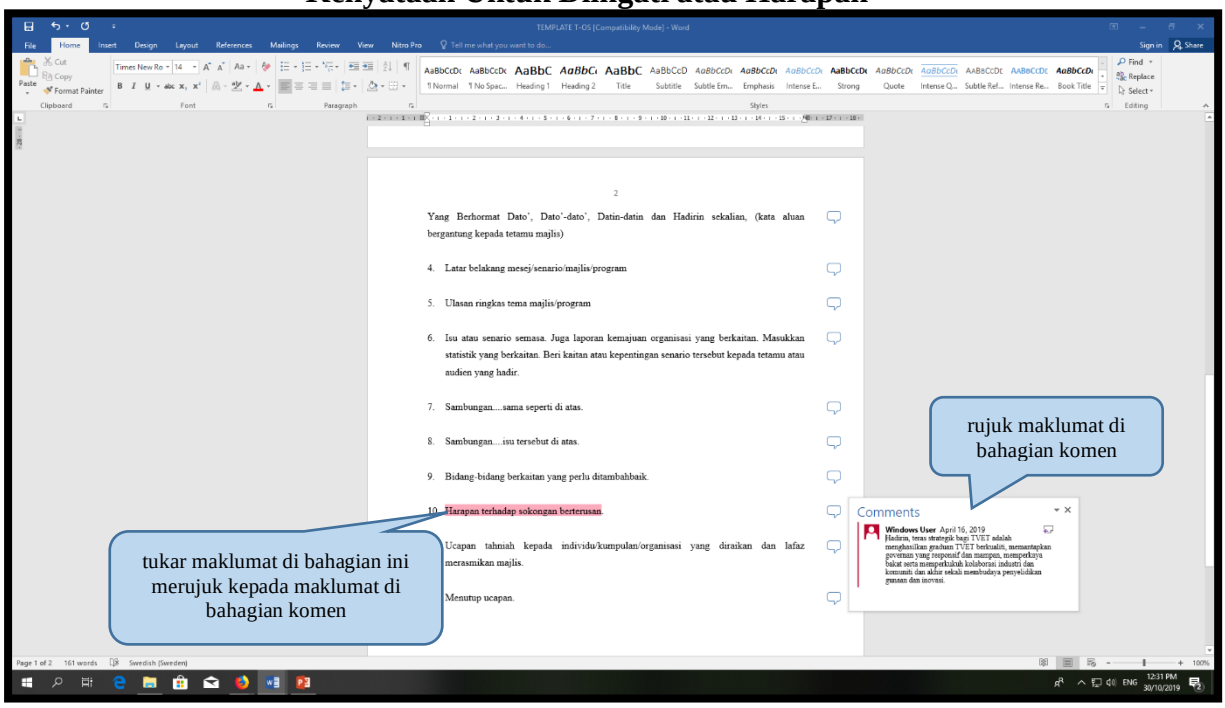

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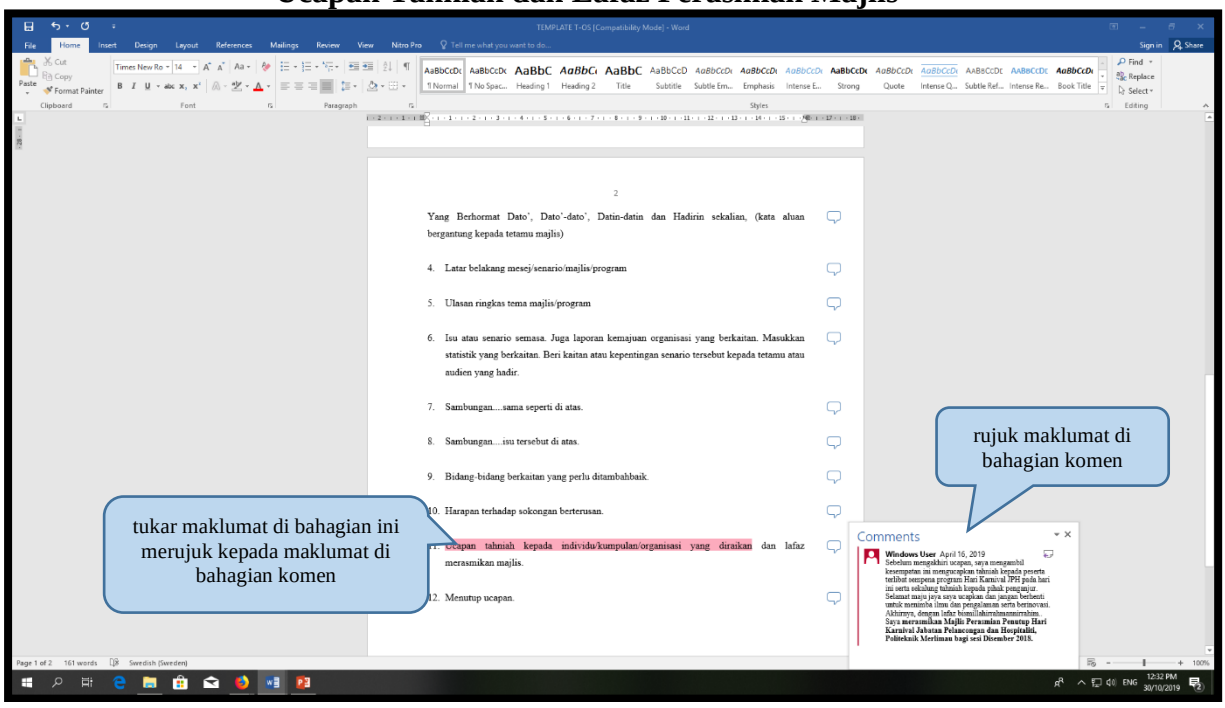
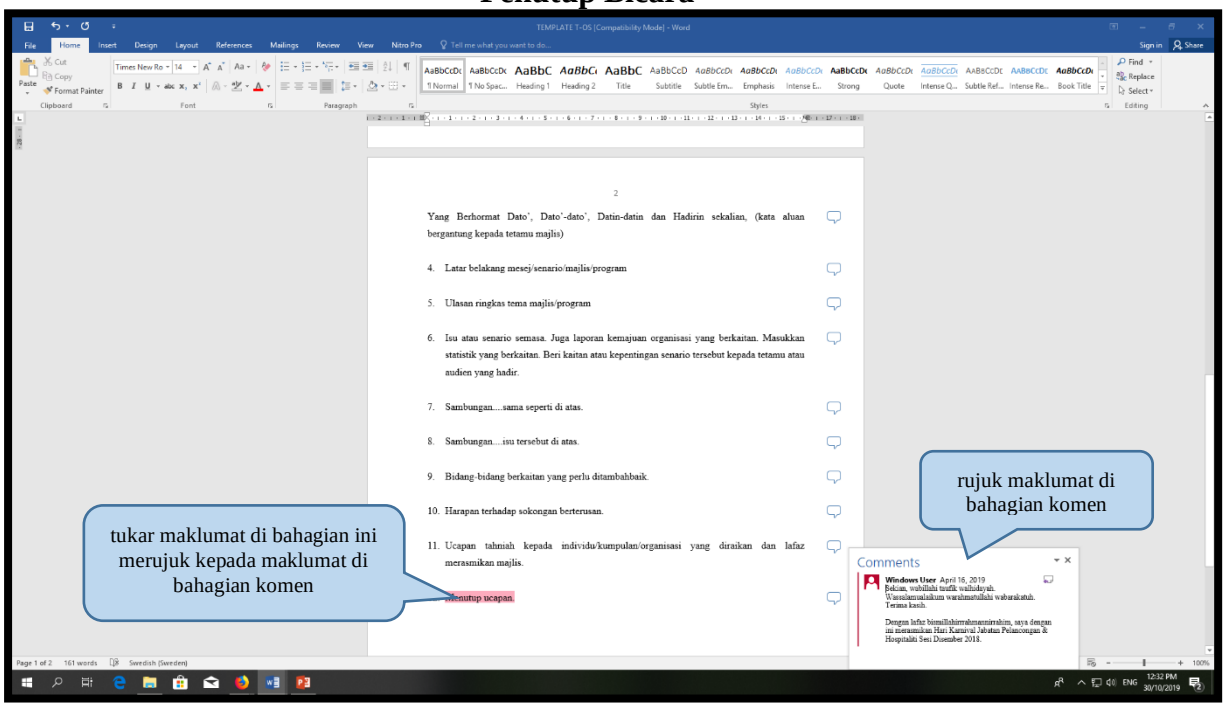
13th – 14th December 2020

Ucapan Tahniah dan Lafaz Perasmian Majlis



Penutup Bicara



Rajah 2.3: Langkah-Langkah Menggunakan T-OS

Sumber: Stapah, M. (2019)

Seterusnya adalah tatacara mencetak template T-OS dengan menggunakan gambarajah sebagai panduan.

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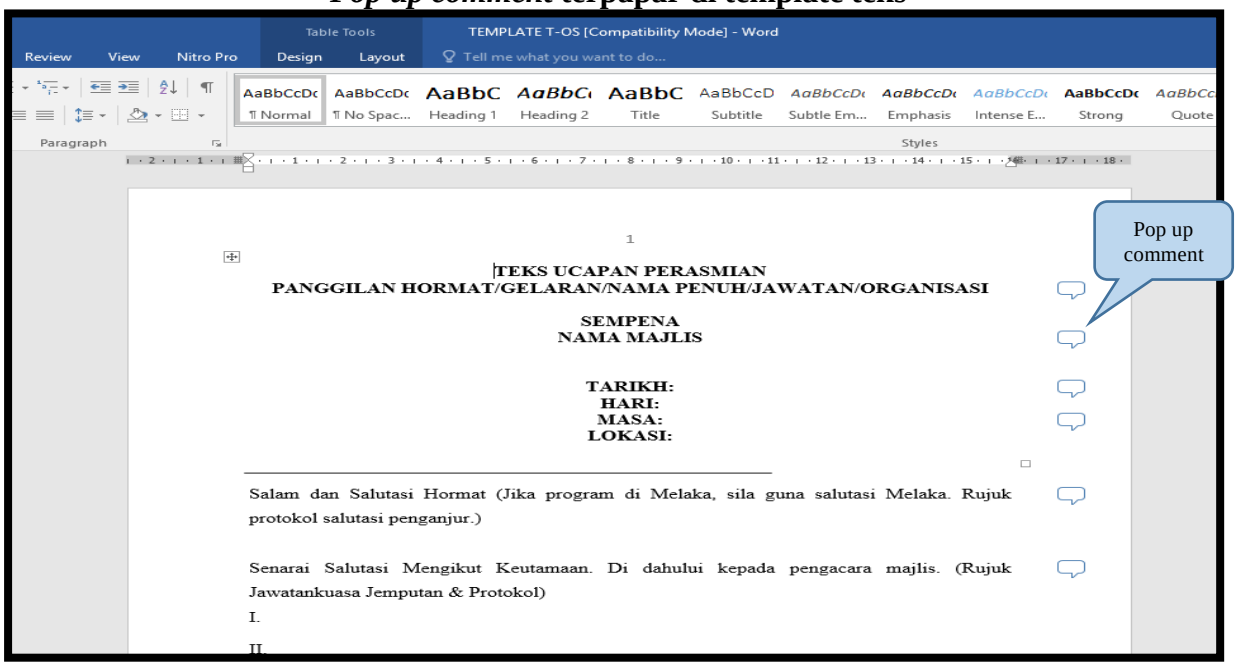
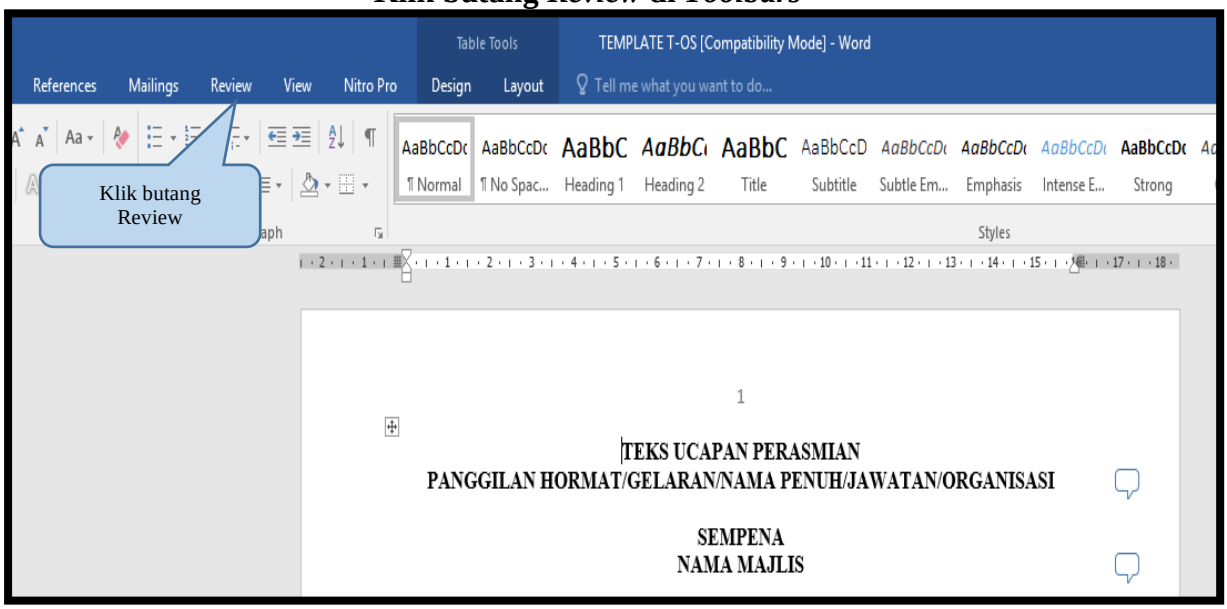
13th – 14th December 2020

Pop up comment terpapar di template teks



Klik butang *Review* di *Toolbars*



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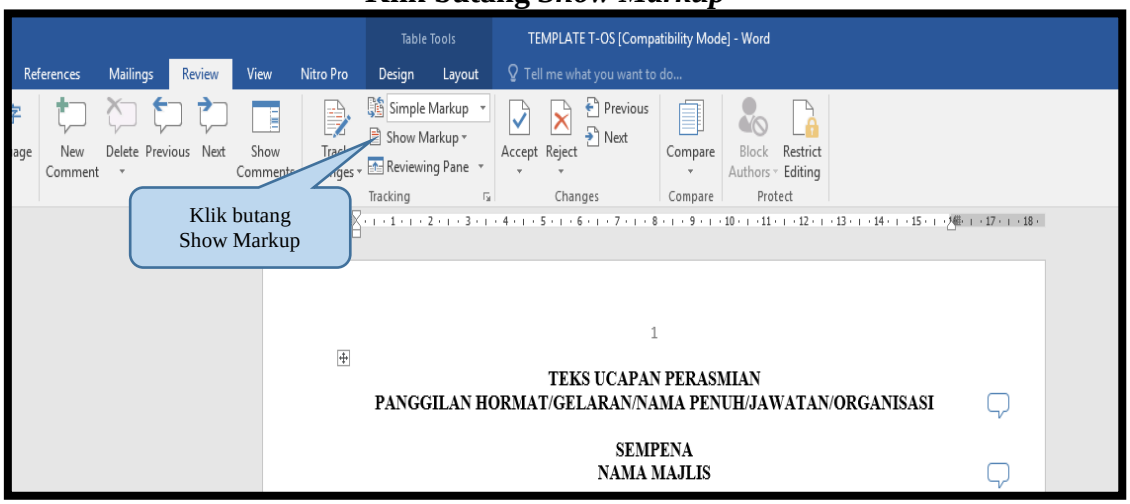
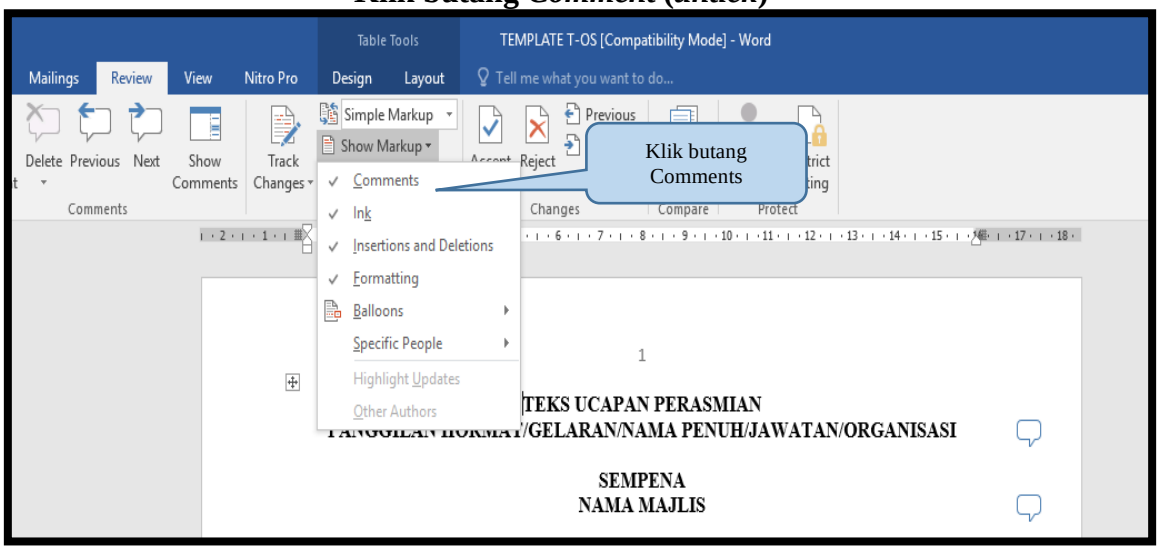
13th – 14th December 2020

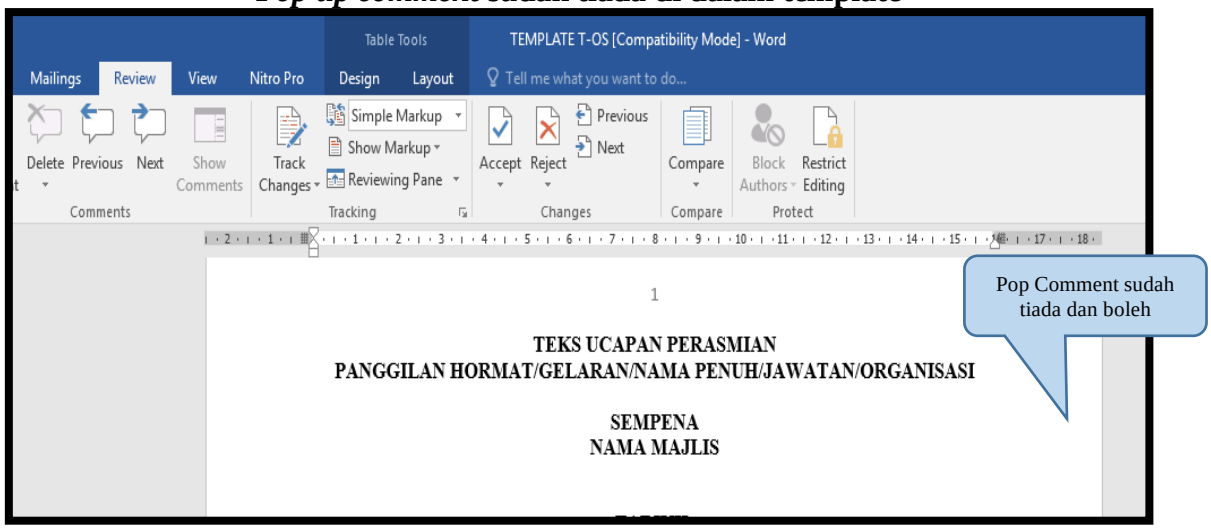
Klik butang *Show Markup*



Klik butang *Comment* (*untick*)



***Pop up comment* sudah tiada di dalam template**



Rajah 2.4: Tatacara Untuk Mencetak T-OS

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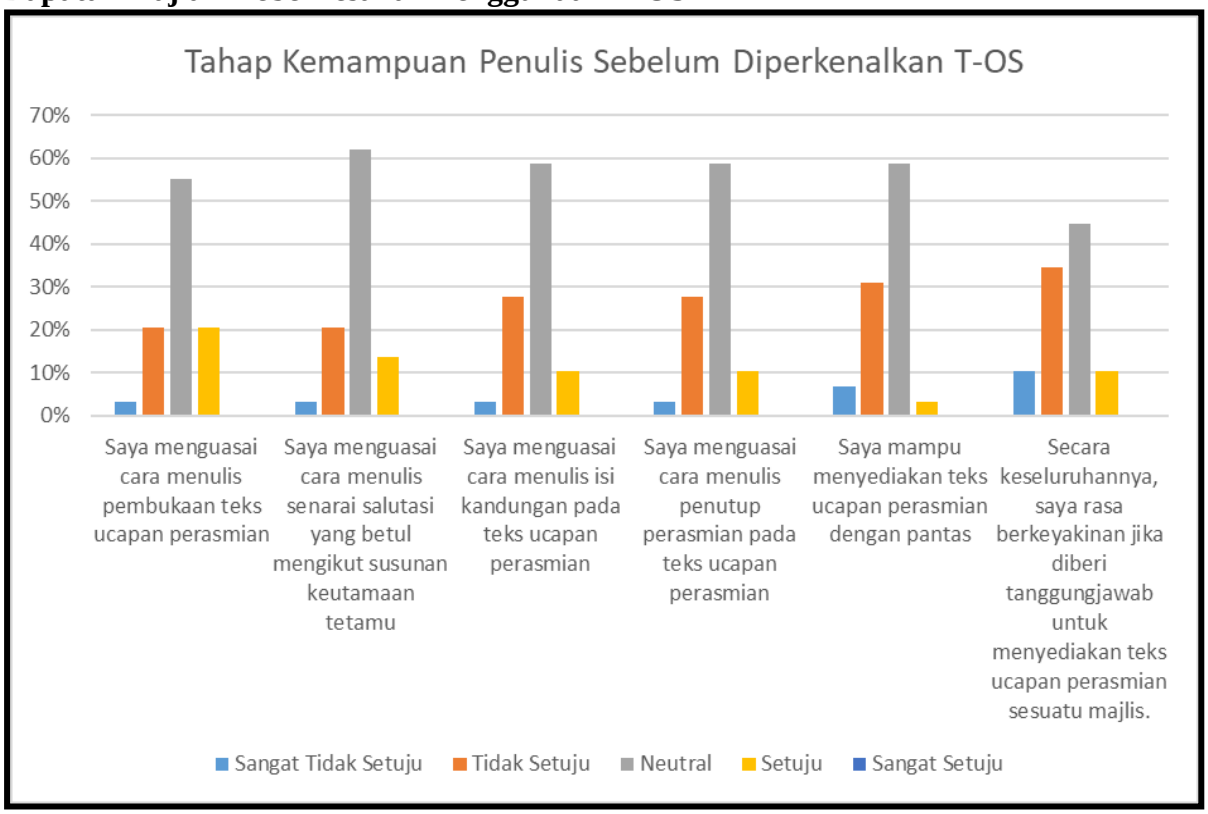
13th – 14th December 2020

Dapatan Kajian Keberkesanan Penggunaan T-OS



Rajah 7 (I) Menunjukkan Peratusan Tahap Kemampuan Penulis Menyediakan Skrip Ucapan Perasmian Sebelum Diperkenalkan T-OS Sebagai Alat Bantu Mengajar.

Rajah 7 (i). Sebelum T-OS diperkenalkan, graf berikut menunjukkan:

Graf pertama; bagi skor tahap kemampuan penulis menguasai cara menulis pembukaan teks ucapan perasmian, menunjukkan bahawa 3% respondent sangat tidak setuju, 21% respondent tidak setuju, 55% respondent neutral manakala 21% respondent lagi setuju bahawa mereka mampu menyediakan skrip teks ucapan perasmian majlis sebelum T-OS diperkenalkan.

Graf kedua; bagi skor tahap kemampuan penulis menguasai cara menulis senarai salutasi yang betul mengikut susunan keutamaan tetamu, menunjukkan bahawa 3% respondent sangat tidak setuju, 21% respondent tidak setuju, 62% respondent neutral manakala 14% respondent lagi setuju bahawa mereka mampu menyusun senarai salutasi mengikut keutamaan tetamu di dalam skrip teks ucapan perasmian sebelum T-OS diperkenalkan.

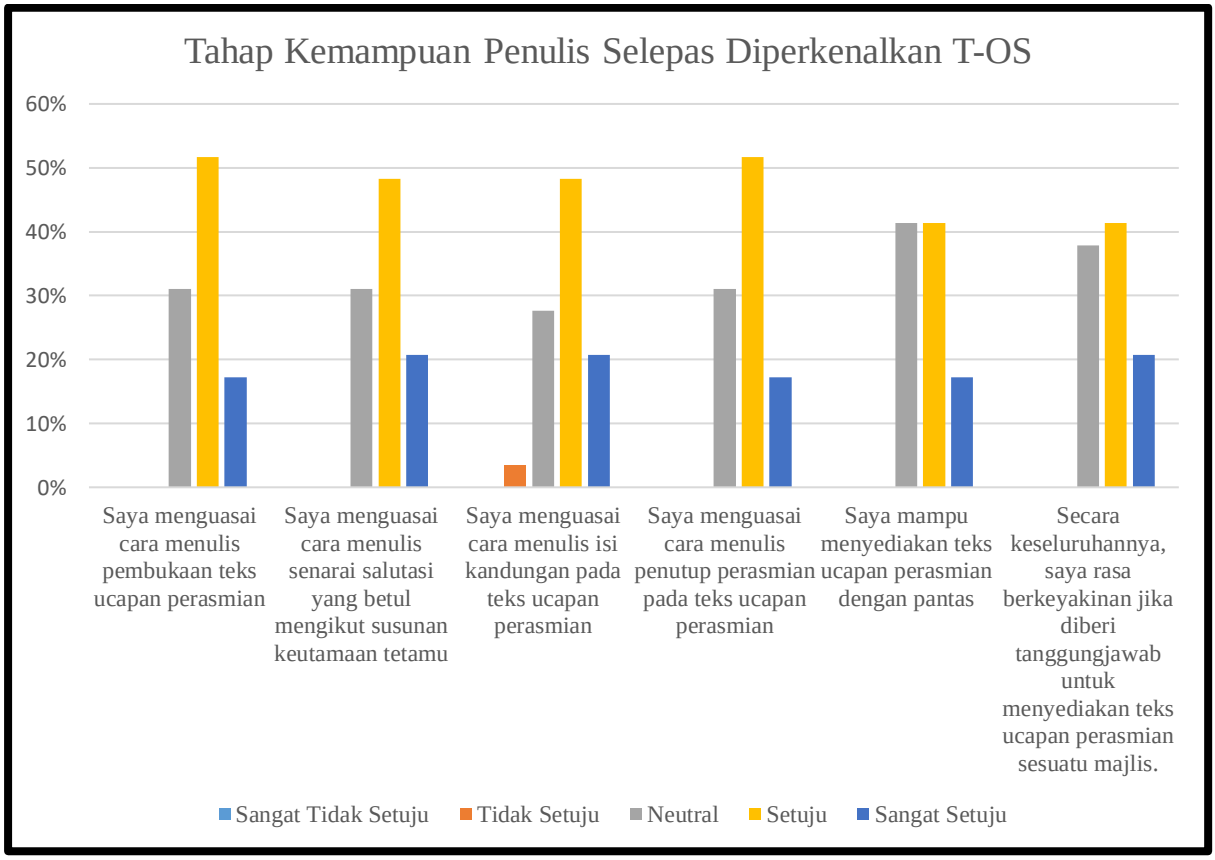
Graf ketiga; bagi skor tahap kemampuan penulis menguasai cara menulis isi kandungan pada teks ucapan perasmian, menunjukkan bahawa 3% respondent sangat tidak setuju, 28% respondent tidak setuju, 59% respondent neutral manakala 10% respondent lagi setuju bahawa mereka mampu menulis isi kandungan pada teks ucapan perasmian dengan betul sebelum T-OS diperkenalkan.

Graf keempat; bagi skor tahap kemampuan penulis menguasai cara menulis penutup perasmian pada teks ucapan perasmian, menunjukkan bahawa 3% respondent sangat tidak setuju, 28% respondent tidak setuju, 59% respondent neutral manakala 10% respondent lagi setuju bahawa mereka mampu menulis penutup perasmian pada teks ucapan perasmian sebelum T-OS diperkenalkan.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Graf kelima; bagi skor tahap kemampuan penulis menyediakan teks ucapan perasmian dengan pantas, menunjukkan bahawa 7% respondent sangat tidak setuju, 31% respondent tidak setuju, 59% respondent neutral manakala 3% respondent lagi setuju bahawa mereka mampu menyediakan teks ucapan perasmian dengan pantas sebelum T-OS diperkenalkan.

Graf keenam; bagi skor tahap kemampuan penulis berkeyakinan jika diberi tanggungjawab untuk menyediakan teks, menunjukkan bahawa 10% respondent sangat tidak setuju, 35% respondent tidak setuju, 45% respondent neutral manakala 10% respondent lagi setuju bahawa mereka berkeyakinan untuk menyediakan teks ucapan perasmian majlis sebelum T-OS diperkenalkan.



Rajah 7 (II) Menunjukkan Peratusan Tahap Kemampuan Penulis Menyediakan Skrip Ucapan Perasmian Selepas Diperkenalkan T-OS Sebagai Alat Bantu Mengajar.

Rajah 7 (ii). Setelah T-OS diperkenalkan, graf berikut menunjukkan:

Graf pertama; bagi skor tahap kemampuan penulis menguasai cara menulis pembukaan teks ucapan perasmian, menunjukkan bahawa 31% respondent neutral terhadap kajian, 52% respondent lagi setuju dan 17% respondent lagi sangat setuju bahawa mereka mampu menyediakan skrip teks ucapan perasmian majlis seperti di dalam template.

Graf kedua; bagi skor tahap kemampuan penulis menguasai cara menulis senarai salutasi yang betul mengikut susunan keutamaan tetamu, menunjukkan bahawa 31% respondent neutral terhadap kajian, 48% respondent lagi setuju dan 21% respondent lagi sangat setuju bahawa mereka mampu menyusun senarai salutasi mengikut keutamaan tetamu di dalam skrip teks ucapan perasmian seperti contoh di dalam template.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Graf ketiga; bagi skor tahap kemampuan penulis menguasai cara menulis isi kandungan pada teks ucapan perasmian, menunjukkan bahawa 3% respondent tidak setuju, 28% respondent neutral terhadap kajian, 48% respondent lagi setuju dan 21% respondent lagi sangat setuju bahawa mereka mampu menulis isi kandungan pada teks ucapan perasmian dengan betul mengikut contoh template yang diberikan.

Graf keempat; bagi skor tahap kemampuan penulis menguasai cara menulis penutup perasmian pada teks ucapan perasmian, menunjukkan bahawa 31% respondent neutral terhadap kajian, 52% respondent lagi setuju dan 17% respondent lagi sangat setuju bahawa mereka mampu menulis penutup perasmian pada teks ucapan perasmian merujuk contoh yang diberi di dalam template.

Graf kelima; bagi skor tahap kemampuan penulis menyediakan teks ucapan perasmian dengan pantas, menunjukkan bahawa 41% respondent neutral terhadap kajian, 41% respondent lagi setuju dan 17% respondent lagi sangat setuju bahawa mereka mampu menyediakan teks ucapan perasmian dengan pantas mengikut susunan template yang diberikan.

Graf keenam; bagi skor tahap kemampuan penulis berkeyakinan jika diberi tanggungjawab untuk menyediakan teks, menunjukkan bahawa 38% respondent neutral terhadap kajian, 41% respondent lagi setuju dan 21% respondent lagi sangat setuju bahawa mereka berkeyakinan untuk menyediakan teks ucapan perasmian majlis untuk akan datang.

Impak Inovasi

Berdasarkan pemerhatian dari penyataan masalah, satu kajian untuk mengenalpasti tahap penerimaan penggunaan Template Teks Ucapan Perasmian (T-OS) di dalam menyediakan teks ucapan sesebuah majlis telah dijalankan. Kesan kajian tinjauan ini mendapati Keberkesanan Penggunaan T-OS melalui dapatan kajian, sebanyak 52% responden bersetuju bahawa aplikasi T-OS memudahkan penyediaan teks ucapan perasmian, 48% bersetuju bahawa template ini membantu responden menyusun senarai keutamaan tetamu, 48% bersetuju mereka mampu mengarang isi kandungan teks ucapan dan 52% bersetuju mereka mampu menulis isi kandungan penutup. Seterusnya, 41% bersetuju bahawa template ini membantu mereka menyediakan teks ucapan perasmian dengan pantas dan 41% lagi bersetuju bahawa mereka lebih yakin menyiapkan teks ucapan perasmian.

Pelaksanaan inovasi T-OS tidak memerlukan pengeluaran kos kerana ia diwujudkan menggunakan applikasi sedia ada di dalam perisian computer iaitu Microsoft Word.

Cadangan Penambahbaikkan

Cadangan penambahbaikkan adalah membina template yang boleh digunakan di telefon bimbit dan mempelbagaikan bahasa perantaraan di dalam aplikasi tersebut.

Kesimpulan

Hasil kajian menunjukkan bahawa terdapat satu aplikasi alat bantu mengajar (ABM) yang baru untuk membantu dalam proses Pembelajaran dan Pengajaran (PdP) di dalam kelas. Oleh itu, melalui data analisis yang dilakukan, majoriti responden dengan kuat menerima fungsi penggunaan Template Skrip Teks Ucapan Perasmian (T-OS) sebagai alat bantu mengajar yang mudah, cepat dan sesuai untuk dikendalikan.

Kajian ini telah mencapai matlamat, (1) menguasai kemahiran bagi menyediakan skrip teks ucapan perasmian. (2) memudahkan pelajar untuk menulis skrip teks ucapan perasmian majlis yang mereka akan anjurkan (3) memudahkan proses pensyarah menyemak skrip teks ucapan pelajar. (4) Tahap skor mean kemampuan penulis menguasai cara menulis senarai salutasi yang betul mengikut susunan keutamaan tetamu, menunjukkan mean yang paling

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tinggi iaitu 3.90 di mana sebelum penggunaan T-OS skor mean pelajar adalah 2.86. Ini bermakna, sample pelajar bersetuju bahawa penciptaan T-OS ini sesuai digunakan untuk pelajar yang mengambil kursus DTM5033: Event Operation & Management di Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka.

Di samping itu, inovasi ini menyokong beberapa kursus dari Jabatan Pelancongan dan Pelancongan di Politeknik Merlimau Melaka seperti pelajar Diploma Pengurusan Acara (DEV) dan Diploma Pengurusan Pelancongan (DUP) yang memberi pengetahuan dan penggunaan yang mudah kepada pelajar tentang aplikasi T-OS.

Pengiktirafan

Penulis mengucapkan terima kasih kepada Politeknik Merlimau Melaka kerana menyokong kajian penyelidikan ini.

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KAJIAN MENGENAI PENGGUNAAN E-PEMBELAJARAN DIKALANGAN PELAJAR DI JABATAN PERDAGANGAN POLITEKNIK TUANKU SYED SIRAJUDDIN

Jamilah binti Hussain[1]
Shukeri bin Mohamad Ros[2]

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Abstract: *Kaedah e-pembelajaran semakin luas digunakan sejak dari wabak pandemik convid 19. Kajian ini dilakukan untuk meninjau tahap penerimaan para pelajar terhadap pembelajaran secara e-pembelajaran dalam proses pembelajaran dalam kalangan pelajar Jabatan Perdagangan Politeknik Tuanku Syed Sirajuddin (PTSS). Objektif kajian ini adalah untuk meninjau tahap penerimaan, keupayaan para pelajar dan impak pembelajaran secara e-pembelajaran. Kajian ini juga bertujuan untuk menganalisa kesediaan institusi menyediakan sumber-sumber bagi menjayakan e-pembelajaran. Analisa data berdasarkan maklum balas daripada 201 orang pelajar dari Jabatan Perdagangan bagi meninjau kesediaan, keupayaan dan pembelajaran secara e- pembelajaran dapat membantu pelajar Jabatan Perdangangan menguasai hasil pembelajaran mereka. Hasil kajian ini menunjukkan bahawa kebanyakan pelajar tahu dan peka tentang e-pembelajaran dan mengetahui kebaikan atau manfaat yang mereka perolehi daripada e-pembelajaran berbanding kaedah konvensional. Walau bagaimanapun kemudahan fasiliti dan kemudahan internet menjadi penghalang kepada usaha murni ini.*

Keywords: *e-pembelajaran, kesediaan dan keupayaan*

Pengenalan

Daya tarik pembelajaran berasaskan internet tidak boleh dinafikan. E-pembelajaran membantu perkongsian maklumat dengan lebih berkesan dengan penggunaan kaedah yang meluas di internet seperti forum, email, video dan 'chatting'. Pengetahuan dalam e-pembelajaran juga dapat disebarkan secara serentak di mana pelajar dapat mencapai maklumat dari laman web yang berkaitan. E-pembelajaran telah diperkenalkan sebagai satu strategi baru dalam kaedah pembelajaran dan menggantikan sistem pendidikan yang lama.

E-pembelajaran (e-learning) masih merupakan satu pendekatan yang agak baru dalam dunia pendidikan di Malaysia terutama dalam konteks pendidikan guru. Pada ketika ini tidak ada satu definisi yang boleh dikatakan diterima pakai secara menyeluruh. Bahkan definisi e-pembelajaran kerap dikelirukan dengan definisi lain seperti online learning, blended learning, distributed learning dan mobile learning. Kadangkala terdapat pertindihan makna, di antara istilah berikut misalnya, pembelajaran online, pembelajaran berasaskan Internet, pembelajaran berasaskan teknologi, pembelajaran berasaskan komputer, pembelajaran berasaskan web dan pembelajaran maya (Mishra, 2009). Ada juga yang menyamakan definsi e-pembelajaran ini dengan Learning Management System (LMS) seperti Blackboard, WebCt, Moodle, MyGuru, MyLMs dan sebagainya (Yusup, et al., 2008).

Sistem Pengurusan Pembelajaran berasaskan-web pula merupakan program aplikasi internet yang pesat digunakan oleh syarikat-syarikat perisian komputer dan institusi pendidikan sebagai infrastruktur kepada perlaksanaan program e-pembelajaran. Sistem ini berkembang

eISBN 978-967-2426-22-6
13th – 14th December 2020

dengan cepat dan digunakan dengan meluas sebagai sistem maklumat dan sistem pangkalan data untuk mengurus dan mengendalikan aktiviti pengajaran dan pembelajaran.

E-pembelajaran adalah konsep yang mengintegrasikan teknologi maklumat di dalam sistem pengajaran dan pembelajaran. Konsep pengajaran dan pembelajaran ini adalah penting kepada institusi pendidikan untuk memperluaskan lagi metodologi pengajaran dan pembelajaran. Secara umumnya, e-pembelajaran adalah sebarang pengajaran dan pembelajaran yang menggunakan rangkaian elektronik untuk menyampaian isi kandungan,interaksi atau pemudahcaraan.

Kajian-kajian awal mengenai kesediaan pelajar di IPT Malaysia untuk mengikuti m-pembelajaran melaporkan keputusan daripada pelbagai sudut kajian. Analisis maklum balas 2,837 pelajar Universiti Terbuka Malaysia (OUM) yang mengikuti pengajian secara terbuka dan jarak-jauh (ODL) di 31 Pusat Pembelajaran di seluruh negara mendapati hanya 64 peratus (%) bersedia untuk mengikuti m-pembelajaran (Zoraini Wati, Chng & Norziati 2009). Kajian yang dilakukan oleh Supyan, Mohd Radzi, Zaini dan Pramela (2012) secara atas-talian terhadap 91 pelajar di dua buah universiti awam mendapati para pelajar memiliki kemahiran pengkomputeran dan mengalu-alukan integrasi m-pembelajaran dalam pendidikan.

Kajian yang lebih spesifik dilakukan oleh Tze, Dewika dan Devandran (2014) yang mendapati penggunaan media sosial seperti facebook berjaya meningkatkan komunikasi berkesan antara pelajar dan pensyarah seterusnya menggalakkan penyertaan dan penglibatan pelajar di dalam kelas. Mereka juga berpendapat penggunaan facebook kemungkinantidak sesuai pada masa akan datang apabila aplikasi lain yang lebih menarik diperkenalkan. Keputusan kajian yang hampir sama dilaporkan oleh Norbayah dan Norazah (2010) yang mengkaji penggunaan teknologi mudah-alih sebagai medium pembelajaran melibatkan 74 pelajar program Seni Reka dan Seni Lukis di Universiti Malaysia Sabah (UMS).

Di samping memiliki tenaga akademik yang cemerlang dan berkelayakan, institusi harus mempunyai prasarana yang terbaik seperti bilik kuliah, makmal, perpustakaan, asrama, komputer dan pelbagai kemudahan pembelajaran yang lain (Jamilah, 2006). Oleh itu, kajian ini dijalankan bertujuan untuk melihat sejauh manakah kesediaan pelajar menerima e-pembelajaran dalam aktiviti pengajaran mereka dan apakah faktor yang menjadi penyebab penerimaan E-pembelajaran.

Pernyataan Masalah.

Pendidikan hari ini bersifat global dan sering dikaitkan kepada pencapaian hasil pembelajaran dan kebolehpasaran graduan. Kemajuan teknologi komunikasi dan maklumat (ICT) menjadikan masyarakat dunia dan sesebuah organisasi semakin terkait antara satu sama dalam satu perkampungan dunia tanpa sempadan. Pendidikan wajar menyediakan pengetahuan dan kemahiran untuk melahirkan masyarakat dunia generasi akan datang. Pendidikan melalui e-pembelajaran merupakan antara alternatif yang tidak dapat ditolak oleh IPT sesuai dengan gaya hidup hari ini yang bersifat paperless, wifi dan terlalu bergantung kepada smartphone.

Keberkesanan penggunaan laman web bagi tujuan pembelajaran diakui efektif dan efisien (Lim, 2002; Fahkrul Anuar Aziz, 2002). Laman web berpotensi memberikan kesan perubahan dalam proses pendidikan. Ia boleh membentuk semula era pendidikan yang memerlukan konsep baru dan menarik. Kesannya, penggunaan laman web sebagai medium pembelajaran amat luas digunakan. Pada awal 2001, statistik penggunaan komputer dan latihan berasaskan web boleh diperolehi datanya di Amerika. Laporan menunjukkan 80 peratus kolej dan universiti di negara tersebut menawarkan penggunaan web dalam kurikulum mereka (Lynch, 2002).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Menurut Roger, C. Schank (2002) konsep e-pembelajaran kini menjadi medium utama bidang pendidikan yang tidak terhad kepada pendidikan berbentuk klasik yang disediakan di sekolah, kolej atau universiti. e-pembelajaran boleh merentasi masa dan kekangan ruang malahan mampu menyediakan penyelesaian yang sesuai mengikut keperluan pelajar dalam situasi yang berbeza. Kini, e-Pembelajaran dilengkapi dengan system pembelajaran elektronik yang biasanya dikenali sebagai Sistem Pengurusan Pembelajaran, Sistem Pembelajaran Virtual, atau Sistem Pengurusan Kandungan, dan disokong juga dengan kandungan pembelajaran dan sumber infrastruktur. Kemudahan infrastruktur dalam sistem epembelajaran membolehkan kandungan pembelajaran dimuat naik, disimpan, diakses dan dihantar yang memperlihatkan proses pembelajaran berlaku dan diuruskan.

Dalam perlaksanaan e-pembelajaran, tidak kurang juga yang menyatakan kelemahan dan kekangannya. Menurut Urdan & Weggen (2000), walaupun banyak usaha yang dilakukan untuk memperkembangkan e-pembelajaran, tetapi hanya sebahagian keterangan yang menyokongbahawa e-pembelajaran untuk pelajar pendidikan teknikal dan vokasional adalah efektif. Oleh yang demikian, kajian ini adalah sangat perlu untuk mengetahui kecekapan terhadap penggunaan e-pembelajaran, halangan-halangan dalam menggunakan e-pembelajaran dan hubungan antara kecekapan diri menggunakan e-pembelajaran dengan halangan penggunaan e-pembelajaran di kalangan siswazah pendidikan teknikal dan vokasional.

Objektif Kajian

Objektif kajian ini adalah untuk meninjau tahap penerimaan para pelajar terhadap e-pembelajaran serta melakukan pembelajaran kendiri. Kajian ini juga bertujuan untuk menganalisa kesediaan institusi menyediakan sumber-sumber bagi menjayakan e-pembelajaran serta mengesan faktor-faktor yang mempengaruhi pelaksanaannya.

Persoalan Kajian

Kajian ini diharapkan dapat menghuraikan keperluan atau persediaan apabila pendekatan pengajaran dan pembelajaran (PdP) dilaksakana secara e-pembelajaran. Perkara-perkara yang ingin diketahui adalah:

1. Bagaimanakah kesediaan pelajar Jabatan Perdagangan menerima e-pembelajaran?
2. Bagaimanakah keupayaan pelajar Jabatan Perdagangan mengikuti e-pembelajaran?
3. Adakah pengajaran dan pembelajaran secara e- pembelajaran dapat membantu pelajar Jabatan Perdangangan menguasai hasil pembelajaran?

Kepentingan Kajian

Hasil kajian ini diharap dapat membantu pihak Politeknik dalam perlaksanaan e-pembelajaran bagi mengenalpasti keberkesanan perlakasanaan dalam membantu perkembangan ilmu. Kajian ini mempunyai kepentingan kepada pelbagai pihak iaitu jabatan, pensyarah, pengkaji dan pelajar dan khususnya politeknik sendiri dalam membangunkan proses pembelajaran terutama e-pembelajaran lebih berkesan.

Hasil kajian ini dapat membantu jabatan yang terlibat untuk mempergiatkan lagi penglibatan pelajar-pelajar dan pensyarah dalam proses e-pembelajaran ini supaya menjadi lebih aktif dan pensyarah dapat melengkapkan diri dengan perubahan baru dalam aspek pengajaran dan pembelajaran yang seiring dengan perkembangan teknologi pendidikan terkini.

Tinjauan Literatur

Buku Dasar e-pembelajaran Negara yang digubal oleh Kementerian Pendidikan Tinggi Malaysia (KPTM, 2011) mendefinisikan e-pembelajaran sebagai penggunaan teknologi

eISBN 978-967-2426-22-6
13th – 14th December 2020

maklumat dan komunikasi untuk memudah cara proses pembelajaran dan pengajaran. Para penyelidik bagaimanapun memberikan definisi yang berbeza-beza. Supyan (2008) memberikan definisi operasian yang menarik iaitu e-pembelajaran dirujuk kepada proses pembelajaran dalam persekitaran yang menggunakan teknologi elektronik sama ada in-network based (LAN, WAN) atau *non-networked*, iaitu menggunakan pemain CD, DVD, MP3 dan MP4. Amnya e-pembelajaran merujuk kepada program pembelajaran atas talian menggunakan infrastruktur teknologi. Pembelajaran atas talian adalah pembelajaran menggunakan komputer berteknologi internet dengan melayari sesawang tertentu. Perbezaan definisi e-pembelajaran dalam kalangan para penyelidik adalah didorong oleh perbezaan bidang pengkhususan dan minat para penyelidik serta perbezaan pendekatan pengajaran akibat daripada perubahan pesat teknologi komunikasi (Valentina & Nelly 2014).

Menurut Fry (2002), e-pembelajaran dimaksudkan sebagai penyampaian latihan dan pendidikan melalui interaksi berangkaian dan pengumpulan serta penyebaran teknologi. Rosenberg (2001) pula mendefinisikan e-pembelajaran sebagai berangkaian, mampu mengumpul dan menyebar maklumat serta membolehkan jejakan maklumat melalui komputer disamping memfokus kepada persekitaran yang luas dalam pendidikan. Ia jauh berbeza daripada paradigma latihan tradisi. Namun dalam konteks yang lebih umum, epembelajaran lebih mudah diertikan sebagai kaedah yang secara mutlak atau kolaboratif menggunakan komputer yang berangkaian dengan sistem dan/atau internet secara cepat dan berkesan.

Walaupun e-pembelajaran menawarkan pelbagai kelebihan (Munirah, Issham, Azidah & Hanysah 2012; Valentina & Nelly 2015), namun ia belum tentu dapat membantu proses pembelajaran bagi bidang pengajian tertentu dan tahap pengajian yang tertinggi. Wong (2011) yang melakukan kajian secara kualitatif terhadap beberapa pelajar peringkat kedoktoran yang mengikuti pengajian secara terbuka dan jarak jauh (ODL) melibatkan universiti di Malaysia dan Australia mendapati para pelajar berkenaan bersetuju bahawa modul yang terdapat dalam.

Menurut Al-Mobaideen, Allahawiah, & Alkhawaldeh (2012), revolusi dalam pembelajaran dan aplikasi pendidikan komputer dan juga penggunaan komputer dalam pendidikan adalah masih baru dan berkembang dari hari ke hari sehingga akhirnya konsep E-Pembelajaran (E-Learning) berpandukan teknikal diperkenalkan untuk membekalkan ilmu pendidikan kepada pelajar melalui cara yang efektif.

Sebagaimana era lain yang baru mendapat perhatian di peringkat awal, e-pembelajaran juga menghadapi cabaran tersendiri. Meskipun e-pembelajaran mampu memberikan pulangan yang berkesan, faktor penyumbang tetap memainkan peranan penting. Ledakan teknologi pasti perlu memberi fokus utama terhadap keterlibatan manusia sebagai kayu ukur dan penentu pencapaian (Rosenberg, 2001).

E-Pembelajaran merujuk kepada penggunaan teknologi dalam pembelajaran termasuk menggunakan peralatan digital, kelas secara maya, pembelajaran secara web dan penggunaan komputer (Hodgins & Cornner, 2000 dlm. Khairul Hamimah, 2007). Internet, intranet, satelit, pita audio video, TV interaktif dan CD-ROM merupakan sebahagian dari media elektronik yang digunakan untuk mempraktikkan e-pembelajaran.

Mengikut Rosenberg (2001), penggunaan teknologi internet untuk menyalurkan maklumat pembelajaran atau sebarang instrumen yang boleh digunakan bagi meningkatkan lagi pengetahuan, pencapaian dan kemahiran berdasarkan kepada tiga kriteria:

i. e-Pembelajaran mestilah menggunakan capaian rangkaian yang boleh menerima dan menyimpan data, menyalur dan berkongsi informasi serta boleh diperbaharui atau dikemas kini dengan segera.
ii. e-Pembelajaran perlu disalurkan kepada pengguna melalui komputer yang menggunakan teknologi internet semasa.

eISBN 978-967-2426-22-6
13th – 14th December 2020

iii. e-Pembelajaran perlu memfokuskan gambaran jelas pengajaran terkini, iaitu bentuk penyelesaian yang berpandukan proses pengajaran dan pembelajaran tradisional.

Nichos (2003) berpendapat bahawa e-pembelajaran ialah penggunaan pelbagai alat teknologi yang berasakan web yang bertujuan untuk pendidikan. E-pembelajaran adalah merujuk kepada komunikasi dalam talian yang memberi banyak peluang dan pilihan untuk berinteraksi serta komunikasi dalam pembelajarandan pembelajaran. Komunikasi dalam talian membolehkan pelajar lebih bebas untuk berinteraksi. Pembelajaran menjadi lebih fleksible dimana pelajar-pelajar dan pensyarah-pensyarah serta kakitangan politeknik boleh belajar di mana-mana tempat tanpa sekatan geografi dan masa. E-pembelajaran telah mendapat perhatian di kebanyakan instutusi pengajian tinggi sebagai satu cara alternatif pembelajaran untuk berinteraksi dengan pelajar tanpa bersemuka.

Dapat disimpulkan bahawa konsep e-pembelajaran yang popular kini berteraskan penggunaan sistem berasaskan web (komputer, internet dan pangkalan data) dan kandungan bahan yang menepati ciri-ciri Pengajaran dan Pembelajaran (P&P) tradisional yang melibatkan penyediaan kurikulum dalam sesuatu kursus atau mata pelajaran.

Metodologi

Pengkaji menggunakan kajian tinjauan deskriptif dengan menggunakan soal selidik sediada yang dibangunkan semula. Struktur borang soal-selidik terbahagi dua, iaitu Bahagian A (Maklumat Responden) dan Bahagian B (Pengalaman Pembelajaran). Terdapat 11 item di Bahagian A yang mencakupi maklumat diri. Maklum balas pelajar terhad kepada pilihan jawapan yang disediakan bagi setiap item soalan. Bahagian B dibina daripada 40 item soalan yang terbahagi kepada 10 topik berkaitan pengalaman pembelajaran, iaitu: (a) Penerimaan terhadap e-pembelajaran, (b) Pendedahan kepada e-pembelajaran, (c) Status pemilikan telefon pintar di kalangan pelajar, (d) FasilitiICT dan capaian internet yang disediakan (e) Persediaan pembelajaran, (f) Impak penggunaan e-pembelajaran terhadap persediaan pembelajaran, (g) Pencapaian objektif pembelajaran (h) Penilaian hasil pembelajaran, dan (i) Perbandingan dengan pembelajaran konvensional, (j) Penerimaan pelajar terhadap masa depan berdasarkan impak e-pembelajaran.

Maklum balas pelajar untuk Bahagian B (Pengalaman Pembelajaran) adalah berdasarkan pilihan jawapan pada skala Likert, iaitu sangat tidak setuju, tidak setuju, agak setuju, setuju dan sangat setuju. Penggunaan lima skala Likert untuk merekod maklum balas responden.

Menurut Mohd Najib (2003) pula, terdapat tiga tahap kecenderungan bagi skor min iaitu tahap rendah, sederhana dan tinggi. Jika nilai skor min 1.00 – 2.33 maka tahap kecenderungan adalah rendah dan skor min 2.34 – 3.66 adalah tahap sederhana. Selain itu, skor min 3.67 – 5.00 maka tahap kecenderungan adalah tahap tinggi. Skor min ini adalah untuk menentukkan faktor yang mana paling mempengaruhi penggunaan dalam e-pembelajaran

Jadual a: Jadual Skor Min (Mohd Najib, 2003)

Skor Min	Tahap Kecenderungan
1.00 – 2.33	Rendah
2.34 – 3.66	Sederhana
3.67 – 5.00	Tinggi

eISBN 978-967-2426-22-6
13th – 14th December 2020

Dapatan Kajian

Profil Responden

Kajian ini melibatkan 201 responden Jabatan Perdagangan, Politeknik Tuanku Syed Sirajuddin (PTSS) yang terdiri daripada 16 orang pelajar Diploma Akauntasi (DAT), 72 orang pelajar Diploma Pengurusan Perniagaan (DPM) dan 113 orang pelajar Diploma Sains Kesetiusahaan (DSK)

Jadual 1. Taburan Responden Yang Terlibat Dengan Kajian

Program	Frekuensi	Peratusan
DAT	16	8.0
DPM	72	36.0
DSK	113	56.0
Jumlah (%)	**201**	**100.0**

Jadual 2. Penerimaan Pelajar Terhadap E-Pembelajaran

Bil	Item Soalan	Peratusan Setuju	Nilai min	Sisihan Piawai	Tahap Min
1	Sedia maklum keperluan portal e-pembelajaran dalam kerja kursus	54.7%	3.60	0.75	Sederhana
2	Aktif menggunakan e-pembelajaran	58.3%	3.59	0.82	Sederhana
3	E-pembelajaran membantu mengikuti kursus dengan lebih baik	38.3%	3.21	0.94	Sederhana
4	Mempunyai perspektif postif terhadap e-pembelajaran	42.8%	3.31	0.92	Sederhana
Purata Keseluruhan		**48.5%**	**3.42**	**0.86**	**Sederhana**

Jadual 2 menunjukkan analisa berkaitan dengan penerimaan pelajar terhadap e-pembelajaran. Purat min yang diperolehi untuk bahagian ini ialah 3.42 iaitu peratus setuju adalah 48.5% dengan sisihan piawai 0.86. Ini menunjukkan pelajar rata-rata menerima e-pembelajaran. Peratus setuju yang tertinggi adalah 58.7% iaitu item 2 (aktif menggunakan e-pembelajaran). Peratusan setuju yang paling rendah adalah item 3 iaitu e-pembelajaran membantu mengikuti kursus dengan lebih baik dengan skor min 3.59 dengan sisihan piawai 0.82 dan tahap min adalah sederhana. Rumusan yang boleh dibuat adalah sebahagian pelajar dapat menerima e-pembelajaran namun begitu e-pembelajaran kurang membantu mereka mengikuti kursus dengan lebih baik.

Jadual 3. Pendedahan Yang Diterima Pelajar Berkaitan E-Pembelajaran

Bil	Item Soalan	Peratusan Setuju	Nilai min	Sisihan Piawai	Tahap Min
1	Terdapat hebahan yang mencukupi berkaitan e-pembelajaran	44.3%	3.36	0.80	Sederhana
2	Mengetahui e-pembelajaran melalui buku/ suratkhabar/ berita tv	44.3%	3.35	0.82	Sederhana
3	Mengetahui e-pembelajaran daripada pensyarah	58.9%	3.67	0.78	Tinggi
4	Sedia maklum e-pembelajaran menguna CIDOS, ZOOM, MEET	62.7%	3.75	0.80	Tinggi
Purata Keseluruhan		**52.6%**	**3.53**	**0.8**	**Sederhana**

Item 1 hingga 4 dalam jadual 3 di atas pula bertujuan meninjau pendedahan yang diterima oleh pelajar berkaitan dengan e-pembelajaran. Purata skor min keseluruhan ialah 3.53 iaitu setuju dengan sisihan piawai 0.80. Peratusan setuju tertinggi ialah item 4 (Sedia maklum e-pembelajaran menggunakan CIDOS, ZOOM dan MEET) dengan skor min 3.75. Ini

eISBN 978-967-2426-22-6
13th – 14th December 2020

menunjukkan tahap pendedahan yang diterima oleh pelajar berkaitan dengan e-pembelajaran adalah pada tahap yang sederhana.

Jadual 4. Status Pemilikan Telefon Pintar Dalam Kalangan Pelajar

Bil	Item Soalan	Peratusan Setuju	Nilai min	Sisihan Piawai	Tahap Min
1	Berpuashati dengan *smartphone* yang dimiliki	54.7%	3.61	0.94	Sederhana
2	Aktif menggunakan *smartphone*	54.7%	3.74	0.84	Tinggi
3	Saya tidak menghadapi masalah talian (kredit yang mencukupi)	38.3%	3.23	1.06	Sederhana
4	Smart phone digunakan dengan baik untuk e-pembelajaran	53.2%	3.55	0.95	Sederhana
Purata Keseluruhan		**50.2%**	**3.53**	**0.95**	**Sederhana**

Jadual 4 di sebelah menunjukkan analisa berkaitan dengan status pemilikan telefon pintar dalam kalangan pelajar. Purat min yang diperolehi untuk bahagian ini ialah 3.53 iaitu peratus setuju adalah 50.2% dengan sisihan piawai 0.95. Ini menunjukkan pelajar rata-rata berpuashati denga *smartphone* yang dimiliki dan aktif menggunakan *smartphone*. Rumusan yang boleh dibuat adalah sebahagian pelajar berpuashati dengansmartphone yang dimiliki namun hanya 53.2 % sahaja yang bersetuju bahawa *smartphone* digunakan dengan baik untuk e-pembelajaran.

Jadual 5. Fasiliti ICT Dan Capaian Internet Yang Disediakan

Bil	Item Soalan	Peratusan Setuju	Nilai min	Sisihan Piawai	Tahap Min
1	Kemudahan mengikuti e-pembelajaran ada disediakan	42.2%	3.31	0.92	Sederhana
2	Pakej internet yang digunakan adalah baik	40.8%	3.24	1.02	Sederhana
3	Capaian wifi mudah diperolehi	24.9%	3.01	1.04	Sederhana
4	Capaian internet memuaskan	36.8%	3.18	1.05	Sederhana
Purata Keseluruhan		**36.2%**	**3.19**	**1.01**	Sederhana

Item 1 hingga 4 dalam jadual 5 di atas pula bertujuan meninjau fasiliti ICT dan capaian internet yang disediakan oleh pelajar berkaitan dengan e-pembelajaran. Purata skor min keseluruhan ialah 3.19 iaitu setuju dengan sisihan piawai 1.01. Peratusan setuju tertinggi ialah item 1(Kemudahan mengikuti e-pembelajaran ada disediakan) dengan skor min 3.31 dan peratusan setuju 42.2%. Peratusan setuju terendah adalah capaian wifi mudah diperolahi adalah 24.9%. Ini menunjukkan tahap fasiliti ICT dan capaian internet yang disediakan kurang baik dan berada pada tahap min yang sederhana.

Jadual 6. Impak Penggunaan E-Pembelajaran Terhadap Persediaan Pembelajaran

Bil	Item Soalan	Peratusan Setuju	Nilai min	Sisihan Piawai	Tahap Min
1	Meningkatkan motivasi untuk mengikuti sesuatu kursus	39.8%	3.29	0.91	Sederhana
2	Mendorong lebih berinteraksi dengan rakan-rakan sekuliah	37.4%	3.29	0.91	Sederhana
3	Membantu lebih berdikari untuk akses info kursus	48.7%	3.52	0.86	Sederhana
4	Membantu lebih bersedia untuk mengikuti sesuatu kursus	39.8%	3.37	0.91	Sederhana
Purata Keseluruhan		**41.4%**	**3.37**	**0.90**	**Sederhana**

Jadual 6 di atas menunjukkan impak penggunaan e-pembelajaran dalam persediaan pembelajaran. Purata min yang diperolehi untuk bahagian ini ialah 3.37 iaitu peratus setuju adalah 41.4 % dengan sisihan piawai 0.950. Ini menunjukkan impaknya adalah pada tahap min sederhana dan peratusan tertinggi adalah item 2 iaitu membantu lebih berdikari untuk akses info kursus iaitu 48.7% dengan nilai min 3.52 dan sisihan piawai 0.86.

Jadual 7. Impak Pembelajaran Melalui E-Pembelajaran Terhadap Pencapaian Objektif Dan Hasil Pembelajaran

Bil	Item Soalan	Peratusan Setuju	Nilai min	Sisihan Piawai	Tahap Min
1	Kefahaman terhadap objektif & hasil pembelajaran Kursus	32.4%	3.16	0.84	Sederhana
2	Pembelajaran melalui e-pembelajaran membantu saya lebih memahami Objektif dan Hasil Pembelajaran Kursus	31.4%	3.07	0.92	Sederhana
3	E-pembelajaran mendorong saya melakukan inisiatif sendiri demi untuk mencapai Objektif dan Hasil Pembelajaran Kursus	41.8%	3.35	0.88	Sederhana
4	Perkongsian maklumat melalui pembelajaran e-pembelajaran membantu saya lebih memahami Objektif dan Hasil Pembelajaran Kursus	41.8%	3.19	0.92	Sederhana
Purata Keseluruhan		**36.9%**	**3.19**	**0.89**	**Sederhana**

Item 1 hingga 4 dalam jadual 7 di atas pula bertujuan meninjau impak pembelajaran melalui e-pembelajaran terhadap pencapaian objektif dan hasil pembelajaran. Purata skor min keseluruhan ialah 3.19 iaitu setuju dengan sisihan piawai 0.89. Peratusan setuju tertinggi ialah item 3 & 4 (E-pembelajaran mendorong saya melakukan inisiatif sendiri demi untuk mencapai Objektif dan Hasil Pembelajaran Kursus dan Perkongsian maklumat melalui pembelajaran e-pembelajaran membantu saya lebih memahami Objektif dan Hasil Pembelajaran Kursus) dan peratusan setuju 41.8%. Peratusan setuju terendah adalah pembelajaran melalui e-pembelajaran membantu saya lebih memahami objektif dan hasil pembelajaran kursus adalah 31.4%. Ini menunjukkan tahap impak pembelajaran melalui e-pembelajaran terhadap pencapaian objektif dan hasil pembelajaran adalah pada tahap kecenderungan min sederhana.

Jadual 8. Penilaian Hasil Pembelajaran Berdasarkan Penggunaan E-Pembelajaran

Bil	Item Soalan	Peratusan Setuju	Nilai min	Sisihan Piawai	Tahap Min
1	Memahami struktur penilaian	35.4%	3.29	0.79	Sederhana
2	Memahami kaedah penilaian	34.4%	3.28	0.82	Sederhana
3	Penilaian tugasan sesuai dengan hasil pembelajaran	37.4%	3.36	0.76	Sederhana
4	Berpuashati dengan markah yang diterima	34.4%	3.30	0.78	Sederhana
Purata Keseluruhan		**35.4%**	**3.31**	**0.79**	**Sederhana**

Jadual 8 pula menunjukkan penilaian hasil pembelajaran berdasarkan penggunaan E-pembelajaran. Purata min yang diperolehi untuk bahagian ini ialah 3.31 iaitu peratus setuju adalah 35.4 % dengan sisihan piawai 0.79. Ini menunjukkan penilaian hasil pembelajaran berdasarkan e-pembelajaran adalah pada tahap min sederhana.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 9. Perbandingan Dengan Pembelajaran Konvensional

Bil	Item Soalan	Peratusan Setuju	Nilai min	Sisihan Piawai	Tahap Min
1	Saya lebih bersedia menghadiri kuliah setelah mengikuti pembelajaran melalui e-pembelajaran berbanding kuliah sepenuhnya secara konvensional	29.8%	2.91	1.06	Sederhana
2	Lebih banyak maklumat dapat dipelajari dan dikongsi melalui e pembelajaran berbanding pembelajaran konvensional.	61.7%	3.00	1.10	Sederhana
3	E- Pembelajaran lebih mudah diikuti berbanding kuliah secara konvesional	25.4%	3.29	0.79	Sederhana
4	Saya berharap lebih ramai pensyarah menggunakan E-pembelajaran dalam pengajaran	31.4%	3.28	0.85	Sederhana
Purata Keseluruhan		**37.1%**	**3.12**	**0.95**	**Sederhana**

Jadual 9 di atas menunjukkan tinjauan tentang perbandingan e-pembelajaran dan pembelajaran konvensional. Purata min yang diperolehi untuk bahagian ini ialah 3.12 iaitu peratus setuju adalah 37.1 % dengan sisihan piawai 0.950. Peratus setuju tertinggi adalah 61.7% bagi item 2 iaitu lebih banyak maklumat dapat dipelajari dan dikongsi melalui e-pembelajaran berbanding pembelajaran konvensional. Peratusan setuju yang paling rendah adalah 25.4% di mana responden kurang setuju dengan kenyataan bahawa e-pembelajaran lebih mudah diikuti berbanding kuliah secara konvensional. Rumusan yang boleh dibuat adalah apabila perbandingan dibuat sebahagian responden lebih berminat dengan kaedah pembelajaran secara konvensional berbanding dengan e-pmbelajaran.

Jadual 10. Penerimaan Pelajar Terhadap Masa Depan Berdasarkan Impak E-Pembelajaran

Bil	Item Soalan	Peratusan Setuju	Nilai min	Sisihan Piawai	Tahap Min
1	Politeknik perlu lebih proaktif untuk memperkenalkan pelbagai kaedah pembelajaran atas talian.	48.7%	3.54	0.93	Sederhana
2	Pembelajaran dalam talian dapat meningkatkan imej politeknik kepada masyarakat dan industri	47.3%	3.53	0.93	Sederhana
3	Pembelajaran dalam talian membantu meningkatkan daya saing dan kebolehpasaran graduan	44.8%	3.44	0.98	Sederhana
Purata Keseluruhan		**46.9%**	**3.50**	**0.95**	**Sederhana**

Item 1 hingga 3 dalam jadual 10 di atas pula bertujuan meninjau penerimaan pelajar terhadap masa depan berdasarkan impak e-pembelajaran. Purata skor min keseluruhan ialah 3.50 iaitu setuju dengan sisihan piawai 0.95. Peratusan setuju tertinggi ialah item 1 (Politeknik perlu lebih proaktif untuk memperkenalkan pelbagai kaedah pembelajaran atas talian.) dengan peratusan setuju 47.3%. Ini menunjukkan bahawa pihak institusi perlu lebih proaktif untuk memperkenalkan pelbagai kaedah pembelajaran atas talian.

Perbincangan

Kajian ini menunjukkan pengajaran e-pembelajaran berpotensi untuk meningkatkan kemampuan pelajar menguasai hasil pembelajaran. Namun bagitu kemudahan capaian fasiliti dan internet perlu dipertingkatkan terlebih dahulu sebelum pendekatan e-pembelajaran di adakan. Pensyarah masih memerlukan masa untuk meneroka bahan e-pembelajaran. Menurut Hashim etal (2013) menyarankan agar setiap pensyarah perlu meningkatkan kecekapan mereka kerana kemahiran asas teknikal dan operasi merupakan elemen penting dalam perlaksanaan

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13th – 14th December 2020

proses pengajaran dalam talian. Para pelajar mempunyai perspektif sederhana positif terhadap e-pembelajaran, tetapi kesediaan mereka untuk terlibat dengan e-pembelajaran bergantung kepada inisiatif pensyarah untuk mebimbing dan kemudahan fasiliti yang ada. Keupayaan pelajar untuk memberikan maklumbalas yang berkualiti memberi harapan bahawa e-pembelajaran boleh berlaku dengan baik.

Kesimpulan

Dapatan kajian jelas menunjukkan bahawa kebanyakan pelajar tahu dan peka tentang e-pembelajaran dan menerima bentuk pembelajaran sebegini. Pelajar juga mengetahui kebaikan atau manfaat yang mereka perolehi daripada e-pembelajaran berbanding kaedah konvensional. Walau bagaimanapun kemudahan fasiliti dan kemudahan internet menjadi penghalang kepada usaha murni ini kerana rata-rata pelajar mengatakan mereka menghadapi masalah capaian internet. Sungguhpun terdapat segelinir pelajar yang kurang mahir menggunakan e-pembelajaran usaha dan minat yang ditunjukkan untuk mempelajari kaedah tersebut boleh membanggakan.

Rumusan yang boleh dibuat dari segi penerimaan pula ialah majoriti pelajar menggunakan e-pembelajaran walaupun mereka kurang minat melakukannya. Pelajar bersetuju dengan pendapat e-pembelajaran mendatangkan banyak manfaat atau faedah. Usaha yang ditunjukkan oleh pelajar untuk menggunakan e-pembelajaran membuktikan keseluruhannya pelajar menerima pelaksanaan e-pembelajaran dengan baik. Usaha-usaha yang mantap perlu diteruskan khususnya dalam mereka bentuk e-pembelajaran dengan cara meningkatkan kemahiran para pensyarah sebagai pereka bentuk pengajaran disamping penilaian perlu dijalankan dari masa ke semasa untuk proses penambahbaikan seiring dengan memastikan bahawa para pelajar mendapat kemudahan capaian internet.

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KEBERKESANAN PENGGUNAAN DIGITAL MULTIMEDIA COURSEWARE (DMC) DALAM KURSUS DIGITAL MULTIMEDIA (DFT3063)

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Abstrak: *Terdapat pelbagai teknik yang digunakan dalam proses pengajaran dan pembelajaran. Penggunaan teknologi merupakan salah satu teknik pengajaran yang penting pada masa kini. Oleh itu, kajian bertajuk Keberkesanan Penggunaan Digital Multimedia Courseware (DMC) dalam Kursus Digital Multimedia (DFT3063) ini dilaksanakan bertujuan untuk mengkaji keberkesanan penggunaan Digital Multimedia Courseware(DMC) untuk kursus Digital Multimedia (DFT3063) di Jabatan Teknologi Maklumat & Komunikasi, Politeknik Sultan Mizan Zainal Abidin. Koswer ini dibangunkan sebagai salah satu alat bahan bantu mengajar kepada para pelajar dan para pensyarah yang mengajar kursus Digital Multimedia (DFT3063). Responden kajian terdiri daripada para pelajar semester empat Diploma in Digital Technology (DDT). Kaedah kajian yang digunakan adalah borang soal selidik dan analisa keputusan telah dianalisis untuk mendapatkan peratusan dan skor min bagi setiap item. Berdasarkan hasil kajian menunjukkan nilai min bagi tahap penerimaan pelajar terhadap penggunaan Digital Multimedia Courseware (DMC) adalah 3.98 manakala tahap pemahaman pelajar terhadap penggunaan Digital Multimedia Courseware (DMC) bagi Kursus Digital Multimedia (DFT3063) adalah 4.20. Berdasarkan keputusan yang diperolehi didapati bahawa nilai min yang diperolehi berada tahap tinggi. Melalui kajian ini juga didapati Digital Multimedia(DMC) dapat membantu para pelajar menerima dan memahami konsep serta kemahiran berkaitan Kursus Digital Multimedia (DFT3063). Digital Multimedia Courseware (DMC) ini juga membantu memberikan kefahaman kepada para pelajar kerana menyediakan bahan pembelajaran yang mudah dicapai dan digunakan, proses pengajaran lebih sistematik kerana semua bahan pembelajaran terdapat dalam koswer serta membolehkan para pelajar mencapai hasil yang dirancangkan.*

Keywords: *Digital Multimedia Courseware, Penerimaan, Keberkesanan, Pelajar*

Pengenalan

Bidang pendidikan kini dalam proses mengadaptasikan era teknologi maklumat. Pendidikan memainkan peranan yang penting dalam pembangunan dan kemajuan negara. Oleh itu, kepelbagaian kaedah pengajaran dan pembelajaran diperlukan supaya pembelajaran pelajar lebih berkesan dan bermakna. E-pembelajaran merupakan salah satu kaedah yang telah diketengahkan bagi tujuan pendidikan. Diantara tujuan e-pembelajaran adalah untuk membantu pelajar memperolehi maklumat, menyesuaikan maklumat dan mengaplikasikannya. Menurut Zamri dan Nur Aisyah (2011), strategi yang diterapkan dalam perisian dapat membantu pelajar menguasai pembelajaran secara dua hala tanpa bergantung sepenuhnya

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13th – 14th December 2020

kepada guru. E-pembelajaran juga penting kerana dapat memberikan kemudahan kepada seseorang pelajar dalam memilih waktu dan tempat untuk mengikuti pelajaran.

Oleh itu, pelajar perlu bersedia menghadapi anjakan dalam bidang pendidikan seperti penggunaan koswer dalam strategi pembelajaran supaya berkesan dan bermakna. Selain itu, ianya juga boleh mengukuhkan proses pengajaran dan pembelajaran (P&P). Interaktiviti serta kawalan pengguna yang terdapat dalam koswer ini membolehkan pelajar mengawal, memanipulasi dan menjelajah maklumat di dalam perisian pendidikan dan perkara ini memberi kesan yang sangat positif terhadap pelajar. Penggunaan koswer dalam pendidikan juga adalah salah satu kaedah alternatif dalam mempelbagaikan kaedah pengajaran dan pembelajaran yang berkesan terhadap pelajar. Melalui penggunaan koswer juga membolehkan pembelajaran kendiri dilaksanakan. Menurut Kalbin (2015), peranan guru bukan sekadar penyampai maklumat tetapi juga sebagai pemudah cara dalam proses pembelajaran. Keupayaan pelajar belajar menguasai isi kandungan pembelajaran dengan lebih bermakna dan pensyarah hanya melibatkan diri sebagai fasilitator merupakan dua kelebihan koswer yang telah dibuktikan melalui kajian (Fazzlijan, 2014).

Penyataan Masalah

Kursus Digital Multimedia (DFT3063) merupakan salah satu kursus yang diajar di Jabatan Teknologi Maklumat dan Komunikasi untuk pelajar Diploma Digital Technology semasa semester empat. Di dalam kursus ini, pelajar diajar mengenai konsep dan aplikasi multimedia seperti teks, grafik, animasi, bunyi dan video. Terdapat lima topik yang diajar dalam kursus Digital Multimedia (DFT3063) iaitu Introduction To Multimedia, Working With Typography and Images, Enhancing Production With Audio, Video dan Multimedia Authoring Concepts and tools. Kursus ini menekankan aspek kemahiran iaitu sebanyak 90% dalam proses penilaian merangkumi *Practical Test*, *Practical Task* dan *Project*. Pendidikan konvensional yang menekankan penyampaian melalui cara syarahan dan penerangan guru sepenuhnya yang digunakan sebelum ini sudah tidak relevan dalam proses pengajaran dan pembelajaran moden. Ini kerana kaedah tersebut menyebabkan para pelajar mudah bosan, hilang tumpuan dan sukar untuk memahami sesuatu topik yang diajar.

Proses pelaksanaan transformasi pendidikan memerlukan pendekatan dan strategi baharu agar setiap pelajar mampu memiliki dan menguasai kemahiran yang diperlukan dalam abad 21. Oleh yang demikian, transformasi pendidikan bukan sekadar menambah bilangan kakitangan dan kemudahan, malah perlu menjurus kepada usaha untuk memahami dan menambah baik proses pengajaran dan pembelajaran. – (Pelan Pembangunan Pendidikan Malaysia, 2013).Kaedah konvensional juga menyebabkan pelajar hanya menghafal dan menggunakan teks untuk mengingati suatu fakta. Justeru, menurut Zain (2003) dan Tukiran (2004), amalan ini tidak dapat membentuk individu yang kreatif dan kritis dan kaedah ini sudah tidak relevan untuk diteruskan pada zaman serba maju ini. Tiada motivasi pelajar ke arah penerokaan isi pembelajaran juga menyebabkan hasil yang diperolehi kurang memberansangkan. Penggunaan koswer dapat membantu pensyarah dalam meningkatkan minat dan prestasi pelajar. Menurut Mohamed (2000), media digunakan semata-mata bertujuan untuk memudahkan guru dan pelajar berinteraksi atau berhubung, iaitu komunikasi dua hala yang dapat menarik minat penerima untuk menghasilkan tindak balas. Pelaksanaan pengajaran dan pembelajaran abad 21 ini bermatlamat untuk menganjak paradigma kehidupan masyarakat dan seterusnya menjadikan Malaysia sebagai pusat kecemerlangan pendidikan di rantau Asia dan juga di peringkat antarabangsa (Tan Sri Datuk Dr. Madinah Mohamad, 2014). Model Partnership for 21st Century Skills (2015) menggabungkan beberapa komponen keberhasilan pelajar dan sistem sokongan abad ke-21 iaitu kemahiran pemikiran kritikal, kemahiran

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13th – 14th December 2020

komunikasi, refleksi, kemahiran kolaborasi, pentaksiran, penyelesaian masalah, teknologi, kreativiti dan kemahiran inovasi. Bagi melihat sejauhmankah kesan penggunaan Digital Multimedia Courseware(DMC) membantu pelajar memahami dan menguasai kemahiran dalam kursus Digital Multimedia(DFT3063) menyebabkan kajian ini dilaksanakan.

Objektif Kajian

i. Mengenalpasti tahap penerimaan pelajar terhadap penggunaan Digital Multimedia Courseware (DMC).
ii. Mengenalpasti tahap pemahaman pelajar terhadap penggunaan Digital Multimedia Courseware(DMC) bagi Kursus Digital Multimedia(DFT3063).

Metodologi

Rekabentuk Kajian

Dalam kajian ini, kaedah kajian adalah berbentuk kaji selidik dan data dianalisa menggunakan statistik deskriptif untuk mendapatkan dan memperolehi maklumat yang dikehendaki. Menurut Mohd.Najib Abdul Ghafar (1999), ujian statistik deskriptif digunakan untuk menerangkan tentang pola sampel seperti kekerapan dan taburan min. Data yang diperolehi dianalisis untuk mendapatkan nilai min. Dengan menggunakan kaedah soal selidik juga setiap responden akan diberi soalan yang sama dengan itu penyelidik dapat membuat perbandingan antara seorang responden dengan responden yang lain. Justeru itu data yang dikumpul akan menjadi lebih mudah untuk diproses. Menurut Mohd Majid (2009), teknik soal selidik boleh digunakan dalam kajian bagi mendapatkan jawapan yang lebih konsisten. Selain itu penggunaan soal selidik juga lebih berkesan dari segi kos kerana ianya tidak memerlukan masa yang lama untuk dijawab (Mohd Nur Hafiz Fauzi, Azman Hassan, Noorazman Abd Samad & Mohd Jalil Ahmad, 2016). Kaedah ini juga akan mempercepatkan kajian mengumpul data dan memastikan data yang dikumpul dapat mencapai objektif iaitu untuk mengenalpasti tahap penerimaan pelajar terhadap penggunaan Digital Multimedia Courseware (DMC) dan mengenalpasti tahap pemahaman pelajar terhadap penggunaan Digital Multimedia Courseware (DMC) bagi Kursus Digital Multimedia (DFT3063).

Sampel kajian populasi yang diambil

Populasi yang diambil dalam kajian ini tertumpu kepada pelajar Diploma Teknologi Digital semester empat Politeknik Sultan Mizan Zainal Abidin. Bagi mendapatkan sampel kajian, seramai 66 orang pelajar yang terdiri daripada tiga seksyen yang berbeza telah diambil iaitu 22 orang daripada DDT4-S1, 22 orang daripada DDT4-S2, dan 22 orang daripada DDT4-S3. Menurut saiz sampel Krejcie dan Morgan (1981) menunjukkan saiz sampel seramai 66 orang sudah memenuhi keperluan kajian jika jumlah populasi sekitar 81 orang.

Instrumen Kajian

Di dalam kajian ini, borang soal selidik telah dipilih sebagai instrumen kajian yang mengandungi soalan yang diukur berdasarkan skala likert untuk mendapatkan respon daripada responden. Soal selidik ini terdiri daripada dua bahagian iaitu:-

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 1 : Maklumat Bahagian Kajian

Bahagian A	Latar belakang pelajar: jantina, tahap pengetahuan komputer, kesediaan menggunakan courseware.
Bahagian B	B1: tahap penerimaan pelajar terhadap Digital Multimedia Courseware (DMC) B2: tahap keberkesanan penggunaan Digital Multimedia Courseware (DMC) dalam meningkatkan pemahaman pelajar bagi Kursus Digital Multimedia (DFT3063).

Pengukuran bagi kaedah Skala Likert digunakan di mana responden memilih jawapan daripada satu pilihan. Skala Likert yang digunakan terdiri daripada lima peringkat iaitu 1 (sangat tidak setuju), 2 (tidak setuju), 3 (kurang setuju), 4 (setuju) dan 5 (sangat setuju). Penggunaan skala jenis ini adalah seperti dalam Jadual 2.

Jadual 2 : Skala Likert

Skor	Tahap Penerimaan
1	Sangat Tidak Setuju
2	Tidak Setuju
3	Kurang Setuju
4	Setuju
5	Sangat Setuju

Kajian Rintis

Kajian rintis dijalankan ke atas 10 orang pelajar sebelum kajian sebenar dilaksanakan bertujuan untuk menentukan kesahan dan kebolehpercayaan item-item dalam borang soal selidik. Di samping itu, ianya juga dapat menentukan sama ada soalan yang dikemukakan adalah sesuai mengikut susunan dan turutan yang logik serta dapat menjawab objektif kajian. Nilai Cronbach Alfa digunakan bagi menentukan kebolehpercayaan item di bahagian tahap penerimaan pelajar terhadap Digital Multimedia Courseware (DMC) adalah 0.906 dan tahap keberkesanan penggunaan Digital Multimedia Courseware (DMC) dalam meningkatkan pemahaman pelajar bagi Kursus Digital Multimedia (DFT3063) adalah 0.857. Menurut Hussein, Ali dan Zamzuri Noor (2004), pekali Alfa 0.8 atau lebih tinggi menunjukkan kebolehpercayaan alat ukur yang baik.

Tatacara Pengumpulan Data

Kaedah bagi pengumpulan data adalah dengan menggunakan satu borang soal selidik yang perlu dijawab oleh 66 orang respondan yang terdiri daripada para pelajar semester empat daripada empat seksyen yang berlainan. Menurut Nachmias & Nachmias (2000), teknik soal selidik adalah lebih praktikal dan memudahkan proses analisis. Teknik soal selidik juga mengukur ciri-ciri atau pemboleh ubah yang hendak diukur daripada saiz sampel. Tegas Nachmias & Nachmias (2000) lagi, teknik soal selidik lebih digemari oleh responden kerana memberi masa yang panjang di mana responden tidak perlu tergesa-gesa dalam menjawab soalan yang dikemukan. Data-data yang diperolehi dikumpulkan dan pengiraan dilakukan menggunakan peratusan dan nilai min yang tertinggi untuk memperolehi keputusan.

Seterusnya, bagi merumuskan jawapan responden pengkaji juga telah menyimpulkan jawapan dengan mengikut tahap kecenderungan terendah, sederhana dan tinggi. Jadual 3 di bawah pula merupakan Jadual Pentafsiran Skor Min yang diguna pakai bagi merumuskan dapatan kajian hasil adaptasi Landell(1997) daripada Noorsuriani (2001).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 3 : Pentafsiran Skor Min

Kod Kumpulan	Julat Skor	Tahap
1	1.00-2.33	Rendah
2	2.34-3.67	Sederhana
3	3.68-5.00	Tinggi

Analisis Data

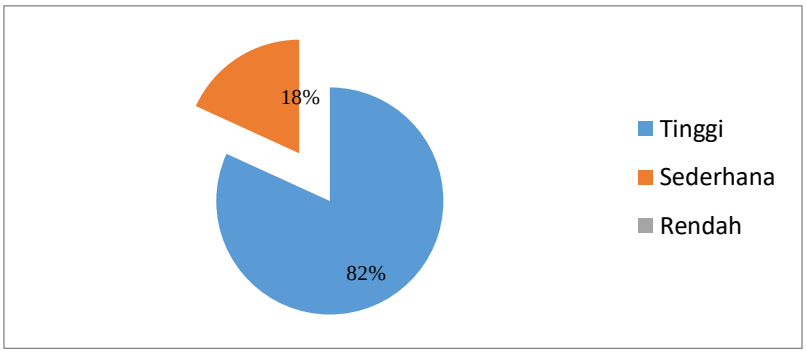
Latar Belakang Responden

Bahagian A digunakan untuk mendapatkan maklumat berkaitan latar belakang responden. Beberapa kriteria yang telah digunakan iaitu jantina, tahap pengetahuan komputer dan kesediaan menggunakan koswer. Jadual 4 di bawah menunjukkan bilangan dan peratusan responden yang telah menjawab soalan soal selidik mengikut jantina.

Jadual 4: Peratusan Bilangan Responden Mengikut Jantina

Pembolehubah	Opsyen	Jumlah Responden	Peratusan(%)
Jantina	Lelaki	30	45.4
	Perempuan	36	54.6

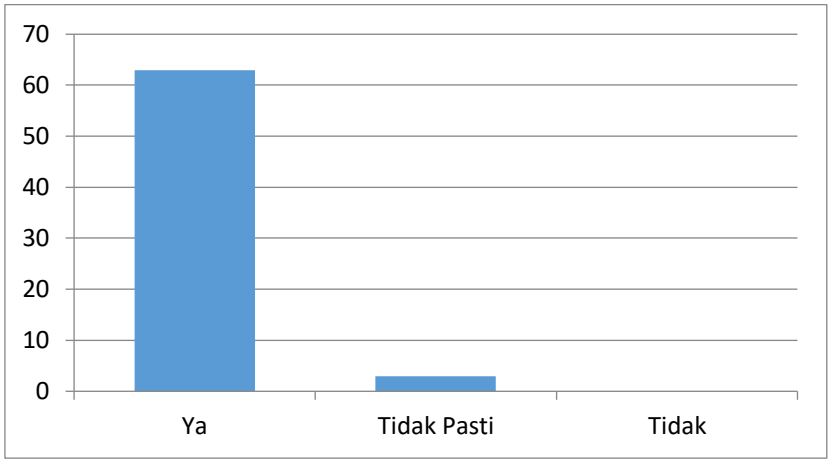
Berdasarkan Jadual 4 di atas, responden dipilih daripada pelajar semester empat Diploma Teknologi Digital. Jumlah soal selidik yang diedarkan sebanyak 66 merangkumi pelajar dari seksyen satu, seksyen dua dan seksyen tiga. Analisis terhadap kategori responden menunjukkan seramai 30 orang iaitu 45.4% responden terdiri daripada pelajar lelaki manakala 36 orang iaitu 54.6% adalah responden daripada pelajar perempuan.



Rajah 1: Peratusan Bilangan Responden Mengikut Tahap Pengetahuan Komputer

Berdasarkan Rajah 1, sebanyak 82% iaitu 54 orang berada di tahap tinggi bagi dapatan peratusan bilangan responden mengikut tahap pengetahuan komputer manakala 18% atau 12 orang berada pada tahap sederhana. Tiada responden yang mempunyai tahap pengetahuan yang rendah.

eISBN 978-967-2426-22-6
13th – 14th December 2020



Rajah 2: Bilangan Responden Mengikut Kesediaan Menggunakan Courseware

Berdasarkan Rajah 2 sebanyak 63 responden bersetuju untuk menggunakan koswer manakala 3 orang tidak pasti untuk menggunakan koswer sebagai salah satu alat bahan bantu mengajar. Terdapat pelajar yang memilih tidak pasti mungkin disebabkan pertukaran gaya proses pengajaran dan pembelajaran sebelum ini yang berpusatkan guru serta memerlukan masa untuk menyesuaikan diri dengan perubahan.

Tahap Penerimaan Pelajar Terhadap Penggunaan Digital Multimedia Courseware (DMC).

Daripada borang soal selidik yang telah digunakan , skala likert telah digunakan untuk mendapatkan maklumbalas daripada responden berkenaan dengan tahap penerimaan pelajar terhadap penggunaan Digital Multimedia Courseware (DMC). Skor min bagi setiap item seperti dalam Jadual 5 di bawah.

Jadual 5: Tahap Penerimaan Pelajar Terhadap Penggunaan Digital Multimedia Courseware (DMC).

Bil.	Item	Min	Aras
1.	Setiap antaramuka pengguna dihubungkan dengan sistematik.	4.02	Tinggi
2.	Warna yang digunakan sesuai dengan keperluan pengguna.	3.91	Tinggi
3.	Saiz tulisan yang digunakan adalah bersesuaian.	3.89	Tinggi
4.	Antaramuka courseware mudah digunakan.	**4.12**	Tinggi
5.	Antaramuka courseware mudah difahami.	4.02	Tinggi
6.	Bahan boleh diakses dengan mudah.	3.97	Tinggi
7.	Audio yang digunakan bersesuaian.	**3.86**	Tinggi
8.	Keseluruhan courseware ini adalah menarik	4.05	Tinggi
	Purata Skor Min	**3.98**	**Tinggi**

Jadual 5 di atas menunjukkan maklumbalas responden mengenai tahap penerimaan pelajar terhadap penggunaan Digital Multimedia Courseware (DMC). Berdasarkan jadual di atas, didapati bahawa 8 item digunakan untuk melihat bagaimana penerimaan pelajar terhadap penggunaan Digital Multimedia Courseware (DMC). Semua item berada pada tahap tinggi kerana nilai skor min berada diantara 3.86 – 4.12. Skor min yang tertinggi adalah item 4 iaitu 4.12. Ini menunjukkan ramai pelajar yang bersetuju bahawa antaramuka courseware mudah digunakan. Item 7 merupakan item yang memiliki skor min yang paling rendah iaitu 3.86. Walaubagaimanapun ianya masih lagi di tahap tinggi. Ini menunjukan pelajar berpendapat audio yang digunakan kurang bersesuaian.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Daripada jadual di atas juga menunjukkan nilai min keseluruhan adalah 3.98. Jadi takrifan skor min menunjukkan berada pada tahap tinggi. Secara keseluruhannya pelajar boleh menerima penggunaan Digital Multimedia Courseware (DMC) sebagai alat bahan bantu mengajar.

Tahap Keberkesanan Penggunaan Digital Multimedia Courseware (DMC) dalam Meningkatkan Pemahaman Pelajar Bagi Kursus Digital Multimedia (DFT3063).

Jadual 6 di bawah menunjukkan maklumbalas responden mengenai tahap keberkesanan penggunaan Digital Multimedia Courseware (DMC) dalam meningkatkan pemahaman pelajar bagi kursus Digital Multimedia (DFT3063). Daripada jadual di bawah terdapat 10 item yang digunakan untuk mengukur tahap keberkesanan kepada pelajar. Skor min juga ditunjukkan di dalam jadual di bawah.

Jadual 6: Tahap Keberkesanan Penggunaan Digital Multimedia Courseware (DMC) dalam Meningkatkan Pemahaman Pelajar Bagi Kursus Digital Multimedia (DFT3063)

Bil	Item	Min	Aras
1.	Saya mudah memahami isi pelajaran yang disampaikan.	4.41	Tinggi
2.	Saya mudah faham apabila tedapat courseware yang menggunakan video sebagai salah satu bahan dalam pembangunan.	**4.58**	Tinggi
3.	Saya memahami setiap langkah yang ditunjukkan semasa membuat latihan di dalam makmal.	4.17	Tinggi
4.	Penyampaian isi pelajaran dalam courseware teratur dan senang untuk diikuti.	4.08	Tinggi
5.	Saya dapat memahami konsep untuk setiap topik sebelum kelas bermula.	**4.02**	Tinggi
6.	Kandungan pelajaran dalam courseware adalah sesuai untuk saya belajar sendiri.	4.14	Tinggi
7.	Saya dapat belajar menggunakan courseware mengikut kemahuan	4.06	Tinggi
8.	Saya boleh memahami sesuatu pengajaran dengan cepat setelah mempelajarinya terlebih awal dengan menggunakan courseware..	4.09	Tinggi
9.	Saya mendapat pengalaman yang menyeronokkan apabila menggunakan courseware ini.	4.17	Tinggi
10.	Saya semakin berminat untuk belajar subjek Digtal Multimedia.	4.29	Tinggi
	Purata Skor Min	**4.20**	**Tinggi**

Jadual 6 di atas menunjukkan maklumbalas responden mengenai tahap keberkesanan penggunaan Digital Multimedia Courseware (DMC) dalam meningkatkan pemahaman pelajar bagi kursus Digital Multimedia (DFT3063). Daripada jadual di atas, didapati bahawa 10 item telah digunakan untuk melihat tahap keberkesanan penggunaan Digital Multimedia Courseware (DMC) dalam meningkatkan pemahaman pelajar bagi kursus Digital Multimedia (DFT3063). Semua item berada pada tahap tinggi memandangkan nilai skor min berada diantara 4.02-4.58. Item 2 merupakan item skor min yang tertinggi iaitu 4.58. Ini menunjukkan ramai pelajar yang bersetuju bahawa penggunaan video sebagai salah satu bahan yang digunakan dalam Digital Multimedia Courseware (DMC) memberikan kefahaman kepada pelajar. Item 5 merupakan item yang memiliki skor min yang paling rendah iaitu 4.02. Walaubagaimanapun ianya masih berada di tahap yang tinggi. Ini menunjukkkan bahawa pelajar berpendapat bahawa penggunaan koswer ini belum cukup untuk seseorang itu memahami konsep untuk setiap topik sebelum kelas bermula. Ini berkemungkinan terdapat beberapa topik yang sukar memerlukan bimbingan daripada pensyarah untuk memahaminya. Daripada jadual di atas juga menunjukkan nilai min keseluruhan adalah 4.20 dan ianya menunjukkan berada pada tahap tinggi. Secara keseluruhannya penggunaan Digital

eISBN 978-967-2426-22-6
13th – 14th December 2020

Multimedia Courseware (DMC) telah meningkatkan pemahaman pelajar bagi kursus Digital Multimedia (DFT3063) berdasarkan purata min yang berada pada kedudukan yang tinggi.

Kesimpulan

Penggunaan koswer dalam pengajaran dan pembelajaran dilihat sebagai suatu yang positif terutamanya untuk meningkatkan pemahaman para pelajar. Kaedah *chalk and talk* dan syarahan hanya membenarkan maklumat yang terhad untuk disampaikan. Berdasarkan analisis yang telah dibuat didapati bahawa tahap penerimaan pelajar terhadap penggunaan Digital Multimedia Courseware (DMC) yang baik menunjukkan para pelajar dapat menerima koswer yang dibangunkan. Selain daripada itu, tahap keberkesanan penggunaan Digital Multimedia Courseware (DMC) dalam meningkatkan pemahaman pelajar bagi kursus Digital Multimedia (DFT3063) juga adalah baik. Keadaan ini menunjukkan penggunaan koswer dapat memberi kefahaman kepada para pelajar dan boleh diaplikasikan untuk tujuan pengajaran dan pembelajaran di dalam kelas mahupun untuk kegunaan di luar waktu kelas. Para Responden bersetuju dengan kesesuaian penggunaan koswer dalam proses pengajaran dan pembelajaran dan dilihat releven untuk digunakan oleh para pelajar.

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13th – 14th December 2020

PERSEPSI PELAJAR KOLEJ KOMUNITI GERIK TERHADAP FAKTOR PEMILIHAN KERJAYA

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***Abstrak**: Kerjaya merujuk kepada istilah profesion dan perjalanan atau kemajuan seseorang dalam sesuatu lapangan. Pemilihan kerjaya yang tepat amat penting untuk memastikan ia bersesuaian dengan kelulusan dan kemahiran yang dimiliki serta minat dan keperibadian seseorang dalam menentukan kejayaan hidup. Justeru itu, satu kajian berkaitan faktor pemilihan kerjaya telah dijalankan. Tujuan kajian ini dijalankan untuk mengenalpasti persepsi pelajar Kolej Komuniti Gerik terhadap faktor-faktor pemilihan kerjaya. Antara faktor yang dikaji ialah faktor minat, faktor keluarga, faktor rakan sebaya dan faktor gaji. Kajian ini adalah kajian kuantitatif berbentuk deskriptif yang menggunakan soal selidik sebagai instrumen kajian. Seramai 68 pelajar Kolej Komuniti Gerik sesi Julai 2019 telah menjadi responden bagi kajian ini. Kajian menggunakan teknik persampelan rawak mudah untuk membuat pemilihan responden. Data kajian yang diperolehi menerusi borang soal selidik dianalisis dengan menggunakan Statistical Package for Social Science (SPSS) 23. Hasil analisis kajian mendapati bahawa kesemua faktor memperolehi skor min yang tinggi namun faktor keluarga merupakan faktor utama yang mempengaruhi pelajar dalam pemilihan kerjaya iaitu skor min 4.39. Analisis statistik menggunakan T-Test mendapati tidak terdapat perbezaan yang signifikan antara jantina dengan faktor-faktor yang dikaji. Sesungguhnya jantina pelajar tidak memainkan peranan dalam menentukan faktor pemilihan kerjaya bagi kajian ini.*

***Kata Kunci:** minat, keluarga, rakan sebaya, gaji, pemilihan kerjaya*

Pengenalan

Pendidikan Teknikal dan Latihan Vokasional (TVET) di Malaysia telah berkembang dan menwujudkan laluan kerjaya dan peluang pekerjaan dalam bidang kemahiran berbanding bidang akademik. Ini terbukti dengan peratusan kebolehpasaran graduan TVET menunjukkan sebanyak 88.9% (Sistem Kajian Pengesahan Graduan KPT, 2018). Pelajar lulusan TVET mempunyai ruang dan peluang untuk mendapatkan pekerjaan selepas tamat pengajian kerana sistem pendidikan TVET memenuhi kehendak industri di samping dapat menghasilkan tenaga kerja yang produktif dan berkemahiran (Suzana et al 2011). Namun begitu, kebolehpasaran graduan tidak menunjukkan graduan memiliki kerjaya berdasarkan bidang pengkhususan yang telah diikuti. Menurut Lichtenstein et al., (2009) bukan semua pelajar dalam bidang kejuruteraan akan berjaya menyandang jawatan jurutera sebagai karier mereka. Hal ini menunjukkan pemilihan kerjaya bukan hanya bergantung kepada bidang pengkhususan yang dipelajari tetapi juga dipengaruhi oleh pelbagai faktor lain yang menyebabkan graduan berarah kepada kerjaya lain. Tambahan juga, terdapat graduan yang kurang pengetahuan luas mengenai skop pengetahuan kerjaya dan mereka memilih kerjaya berdasarkan apa yang terdapat di persekitaran mereka sahaja. Sehubungan dengan itu graduan perlu membuat keputusan yang tepat dalam pemilihan kerjaya kerana kerjaya yang dipilih sedikit sebanyak akan menentukan corak peranan yang akan dimainkan oleh mereka dalam masyarakat kelak. Parson (1908) dalam

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13th – 14th December 2020

Sidek Mohd Noah (2005) menyatakan bahawa seseorang individu yang melangkah masuk ke alam pekerjaan berdepan dengan proses penting dalam kehidupan mereka.

Dalam kajian Zaliza et al. (2014) membuktikan bahawa tidak terdapat pengaruh yang signifikan di antara ciri-ciri pendidikan dan ciri-ciri pekerjaan terhadap kesepadanan di antara bidang pengajian yang diikuti dengan peluang pekerjaan yang diceburi. Dapatan kajian tersebut juga mengaitkan kualiti seseorang graduan tidak boleh diukur hanya berdasarkan kebolehan graduan berjaya menempatkan diri dalam sektor pekerjaan, tetapi yang lebih utama ialah graduan mampu mendapatkan pekerjaan yang sesuai dengan bidang pengajian yang diikuti serta kemahiran yang dimiliki. Selain itu juga, pemilihan kerjaya graduan dipengaruhi oleh pelbagai faktor seperti faktor lokus kawalan dalaman dan faktor lokus kawalan luaran. Lokus kawalan dalaman merujuk kepada individu yang mempercayai dirinya dipengaruhi dengan kebolehan sendiri manakala individu yang boleh dipengaruhi oleh persekitaran dikatakan mempunyai lokus kawalan luaran (Wan Abdul Kader,1994).

Penyataan Masalah

Mahasiswa yang telah berjaya menamatkan pelajaran pastinya akan menginginkan kerjaya yang baik kerana ianya jaminan masa hadapan yang selesa dan seterusnya mempunyai pendapatan yang baik juga. Namun begitu, bukan semua mahasiswa yang memperolehi kerjaya yang diinginkan berdasarkan pendidikan dan kelulusan yang dimiliki. Masalah ini juga turut dihadapi oleh pelajar Kolej Komuniti Gerik yang mana terdapat graduan memiliki kerjaya bukan berdasarkan bidang kemahiran yang dimiliki. Berdasarkan pemerhatian pengkaji, terdapat graduan yang bekerja sebagai juruwang di pasaraya sekitar Gerik walaupun memiliki Sijil Servis Kenderaan Ringan. Oleh itu, kajian ini dibuat untuk mengetahui persepsi pelajar Kolej Komuniti Gerik terhadap faktor-faktor pemilihan kerjaya. Dalam kertas kerja ini, pengkaji telah mengadaptasi kajian Yahya & khodijah (2010) yang mengkaji empat faktor dalam proses pemilihan kerjaya iaitu minat (faktor intrinsik atau kawalan lokus dalaman), pengaruh keluarga, rakan sebaya dan gaji (faktor ekstrinsik atau kawalan lokus luaran).

Objektif Kajian

i. Mengenal pasti persepsi pelajar terhadap faktor minat dalam pemilihan kerjaya.
ii. Mengenal pasti persepsi pelajar terhadap faktor keluarga dalam pemilihan kerjaya
iii. Mengenal pasti persepsi pelajar terhadap faktor rakan sebaya dalam pemilihan kerjaya
iv. Mengenal pasti persepsi pelajar terhadap faktor gaji dalam pemilihan kerjaya
v. Mengenal pasti perbezaan antara jantina dengan faktor-faktor yang mempengaruhi pelajar dalam pemilihan kerjaya.

Hipotesis Kajian

i. Ho1 - Tidak terdapat perbezaan antara jantina dengan faktor minat yang mempengaruhi pelajar dalam pemilihan kerjaya.
ii. Ho 2 - Tidak terdapat perbezaan antara jantina dengan faktor keluarga yang mempengaruhi pelajar dalam pemilihan kerjaya.
iii. Ho 3 - Tidak terdapat perbezaan antara jantina dengan faktor rakan sebaya yang mempengaruhi pelajar dalam pemilihan kerjaya.
iv. Ho 4 - Tidak terdapat perbezaan antara jantina dengan faktor gaji yang mempengaruhi pelajar dalam pemilihan kerjaya

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kajian Literatur

Pekerjaan merupakan suatu aktiviti yang penting dalam kehidupan manusia. Kita akan berasa puas apabila memiliki sesuatu pekerjaan yang tetap serta terjamin. Pekerjaan juga dapat memperlihatkan status masyarakat, tahap ekonomi dan pendapatan. Justeru, pemilihan kerjaya merupakan suatu perkara yang sangat penting dalam kehidupan seseorang insan. Hal ini kerana, kerjaya yang baik dapat memberikan jaminan masa hadapan yang selesa bagi seseorang. Oleh yang demikian, pemilihan kerjaya secara tidak langsung memerlukan faktor-faktor yang boleh mempengaruhinya agar seseorang mampu untuk memilih kerjaya yang bersesuaian dengan dirinya. Dalam kajian Mohd, Azman, Norhidayah dan Mohammad (2016) menyatakan faktor pemilihan kerjaya berbeza dan bergantung kepada bidang pengajian. Kajian mereka juga mendapati mahasiswa kurang dibekalkan dengan panduan dalam membuat keputusan berkaitan pemilihan kerjaya.

Faktor Minat

Faktor minat memainkan peranan penting dalam pemilihan kerjaya seseorang individu. Melalui minat pelajar akan lebih bersungguh-sungguh dalam apa jua bidang yang mereka ceburi. Minat juga merupakan satu elemen yang penting dalam mencapai kejayaan. Melalui minat juga pelajar akan lebih bermotivasi untuk terus berjaya dan mengharungi pembelajaran seterusnya menempuh alam pekerjaan kelak. Menurut Rohana (2010), minat kerjaya, efikasi kendiri keputusan kerjaya dan kemahiran pekerjaaan telah dikenal pasti ada hubungan dengan pilihan kerjaya. Pengetahuan dalam sesuatu bidang kerjaya akan membantu menambahkan minat terhadap kerjaya yang ingin diceburi. Masalah akan timbul pada masa akan datang apabila timbul faktor kurang minat terhadap sesuatu perkara dan seterusnya akan mengurangkan kualiti kerja (Syahida dan Mohd, 2018). Manakala kajian Maisarah (2012) mendapati faktor minat merupakan faktor dominan dalam pemilihan kerjaya berbanding faktor–faktor yang lain. Individu akan berasa puas apabila berjaya membuat pilihan berdasarkan minat dan sentiasa ingin memajukan diri sendiri dalam kerjaya yang dipilih.

Faktor Keluarga

Seterusnya, pengaruh keluarga terutamanya ibu bapa turut mampu mempengaruhi pemilihan kerjaya seseorang individu. Menurut Suhaila, Nor Ayuni dan Nuzul (2015) terdapat dua kemungkinan pemilihan kerjaya atas faktor keluarga iaitu kerja akan dilakukan dengan senang hati, gembira dan bersifat terbuka atau melakukan kerja dalam keadaan terpaksa dan kurang memberi komitmen terhadap kerja. Kajian mereka turut mendapati faktor pengaruh dari keluarga yang paling mempengaruhi kerjaya yang diceburi iaitu pada tahap sederhana berbanding faktor-faktor yang lain. Justeru, bagi menyokong pemilihan kerjaya anak-anak, ibu bapa boleh memperlengkapkan segala keperluan anak-anak dalam memenuhi kriteria yang diperlukan. Sebagai buktinya, ibu bapa boleh memberikan dorongan, semangat dan motivasi kepada anak-anak sama ada dalam bentuk material mahupun spiritual. Selain itu, Noor, Muhamad dan Siti (2017) telah menjalankan kajian mengenai hubungan antara gaya asuhan ibu bapa dengan pemilihan kerjaya. Kajian mendapati tiada hubungan yang signifikan antara gaya asuhan dengan pemilihan kerjaya. Namun pengkaji menyatakan bahawa hasil kajian ini dapat membantu ibu bapa untuk lebih memahami dan berusaha untuk memberikan keperluan yang terbaik kepada anak-anak mereka. Manakala kajian Halimah (2006) mendapati faktor keluarga iaitu ibu bapa dan suami merupakan pendorong terhadap pemilihan kerjaya. Dapatan kajian juga menunjukkan pemilihan kerjaya khususnya bagi wanita yang telah berkahwin adalah dipengaruhi oleh suami kerana beranggapan mereka ada masa terluang bersama anak dan keluarga.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Faktor Rakan Sebaya

Faktor seterusnya dalam pemilihan kerjaya ialah faktor rakan sebaya. Terdapat individu yang mengikut rakan sebaya tanpa membuat penilaian minat, kebolehan dan pencapaian diri yang akhirnya menimbulkan masalah di kemudian hari. Namun dalam kajian Arihasnida, Nora, Siti & Tamil (2018) mendapati faktor rakan sebaya tidak menyumbang kepada pemilihan kerjaya seseorang individu kerana pemilihan ini dibuat setelah mereka meningkat usia dan berupaya membuat pilihan sendiri.

Faktor Gaji

Ganjaran atau gaji merupakan elemen penting yang sering diberi perhatian sebelum sesuatu kerjaya dipilih. Dalam kajian Siriwan (2011) menyatakan:

> *"No, I do not intend to work in this industry. I personally like the job and I am passionate about customer service. However, during my co-op (work-placement) I have learned that working in this industry you have to work so hard but it is low pay. You have to put a lot of effort into the work but the level of appreciation from both your management and customers is low. Management did not put enough effort in creating a good team work environment, especially for shift work when sometimes staff have to cope with extensive work hours. I intend to work in real estate where I can still use my customer service skills but receive better pay"*
> (*Australian Business student-AB70*)

Kajian Suhaila et.al (2015) juga mendapati kualiti kehidupan yang lebih baik bergantung kepada faktor gaji. Terdapat hubungan yang positif antara faktor yang mempengaruhi kerjaya yang diceburi dengan faktor ganjaran. Individu lebih motivasi dalam kerjaya yang dipilih apabila ditawarkan ganjaran yang tinggi sesuai dengan kelayakan yang ada.

Metodologi

Kajian ini dijalankan dengan menggunakan pendekatan kaedah kuantitatif. Borang kaji selidik diadaptasi daripada Yahya dan Khodijah (2010) untuk mendapatkan maklumbalas daripada pelajar Kolej Komuniti Gerik. Soal selidik ini mengandungi dua bahagian iaitu bahagian A mengenai maklumat demografi responden dan bahagian B mengenai faktor-faktor pemilihan kerjaya. Dalam kajian ini, setiap responden dikehendaki memberikan maklumbalas mengenai faktor-faktor pemilihan kerjaya bagi 4 faktor utama iaitu minat, keluarga, rakan sebaya dan gaji. Sebanyak 68 soal selidik telah diedarkan yang melibatkan 3 program iaitu Sijil Servis Kenderaan Ringan, Sijil Fesyen dan Pakaian dan Sijil Teknologi Maklumat. Kajian ini telah menggunakan kaedah persampelan rawak mudah dalam membuat pemilihan responden. Maklumbalas responden dianalisa menggunakan program "*Statistical Package for Scocial Science*" (SPSS) 23. Analisis statistik dijalankan ke atas data bagi mengenalpasti perbezaan jantina dengan setiap faktor dalam mempengaruhi pemilihan kerjaya. Di samping itu juga pengkaji telah membuat pemeringkatan mengikut skor min sebagaimana yang ditunjukkan dalam Jadual 1 dengan menggunakan jadual interpretasi skor min yang dikemukan oleh Wiersma (1995). Ini bertujuan untuk memudahkan pertimbangan yang dibuat mengikut skor min yang diperolehi.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 1: Tafsiran tahap min

Tahap Keberkesanan	Sela Min
Tinggi	3.81-5.00
Sederhana	2.41-3.80
Rendah	1.00-2.40

Sumber: Wiersma, 1995

Dapatan Kajian

Demografi Responden

Dapatan kajian mengenai latarbelakang responden meliputi aspek jantina, umur dan program pengajian. Berdasarkan jadual 2, jantina responden menunjukkan jumlah bilangan responden perempuan seramai 50 orang dan lelaki seramai 18 orang sahaja. Jumlah keseluruhan responden adalah seramai 68 orang.

Jadual 2: Jantina Responden

Jantina	Kekerapan	Peratus
Perempuan	50	73.5
Lelaki	18	26.5
Jumlah	68	100.0

Berdasarkan jadual 3, majoriti responden berumur antara 18 – 19 tahun iaitu 45 orang (66.2%) diikuti dengan 18 orang (26.5%) responden berumur antara 20 – 21 dan 3 orang responden berumur 22 – 23 tahun. Manakala seorang responden berumur 24 -25 tahun dan lebih 27 tahun.

Jadual 3: Umur Responden

Umur	Kekerapan	Peratus
18 - 19 tahun	45	66.2
20 - 21 tahun	18	26.5
22 - 23 tahun	3	4.4
24 - 25 tahun	1	1.5
lebih 27 tahun	1	1.5
Jumlah	68	100.0

Jadual 4: Program Pengajian

Program Pengajian	Kekerapan	Peratus
Sijil Teknologi Maklumat	34	50.0
Sijil Fesyen dan Pakaian	24	35.3
Sijil Servis Kenderaan Ringan	10	14.7
Jumlah	68	100.0

Merujuk kepada program pengajian, jadual 4 menunjukkan majoriti responden terdiri daripada pelajar Sijil Teknologi Maklumat iaitu 34 orang (50%), ini diikuti dengan 24 orang (35.3) pelajar dari Sijil Fesyen dan Pakaian dan hanya 10 orang (14.7) pelajar Sijil Servis Kenderaan Ringan yang dipilih menjadi responden.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Faktor-Faktor Pemilihan Kerjaya

Hasil analisis bagi semua faktor pemilihan kerjaya menunjukkan faktor keluarga mempunyai nilai min yang tertinggi iaitu 4.391, faktor ini boleh dikatakan sebagai faktor utama yang mempengaruhi pelajar dalam membuat pemilihan kerjaya. Faktor kedua ialah faktor minat dengan nilai min 4.274, ini diikuti oleh faktor rakan sebaya 3.894 dan minimum kesannya ke atas pemilihan kerjaya ialah faktor gaji iaitu 3.821.

Jadual 5: Tahap Min Keseluruhan Bagi Faktor Pemilihan Kerjaya

Faktor	N	Minimum	Maximum	Mean	Std. Deviation
Minat	68	1.60	5.00	4.2735	.49463
Keluarga	68	2.00	5.00	4.3912	.49286
Rakan sebaya	68	1.80	5.00	3.8941	.71693
Gaji	68	1.00	5.00	3.8206	.68340

Berdasarkan Jadual 6, didapati tidak terdapat perbezaan yang signifikan terhadap faktor-faktor pemilihan kerjaya iaitu faktor minat (t=0.818, p>0.05), faktor keluarga (t=0.868, p>0.05), faktor rakan sebaya (t=1.673, p>0.05) dan faktor gaji (t=0.331, p>0.05). Oleh itu, semua hipotenis nul diterima. Faktor minat responden lelaki (min=4.3556) adalah sama dengan faktor minat responden perempuan (min=4.2440). Faktor keluarga lelaki (min=4.4778) adalah sama dengan faktor keluarga responden perempuan(min=4.3600). Faktor rakan sebaya responden lelaki (min=4.1333) adalah sama dengan faktor rakan sebaya respoden perempuan (min=3.8080) dan faktor gaji lelaki (min=3.8667) adalah sama dengan faktor gaji perempuan (min=3.8040)

Jadual 6: Perbezaan jantina dengan faktor-faktor pemilihan kerjaya

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
mean_minat	Equal variances assumed	.335	.565	.818	66	.416	.11156	.13630	-.16057	.38368
	Equal variances not assumed			.898	36.339	.375	.11156	.12428	-.14041	.36352
mean_keluarga	Equal variances assumed	.136	.714	.868	66	.389	.11778	.13572	-.15320	.38876
	Equal variances not assumed			.952	36.395	.347	.11778	.12367	-.13293	.36849
mean_rakan_sebaya	Equal variances assumed	1.910	.172	1.673	66	.099	.32533	.19447	-.06295	.71361
	Equal variances not assumed			1.852	37.094	.072	.32533	.17570	-.03065	.68131
mean_gaji	Equal variances assumed	1.562	.216	.331	66	.741	.06267	.18911	-.31490	.44023
	Equal variances not assumed			.278	22.936	.784	.06267	.22574	-.40438	.52971

Perbincangan

Kajian ini dijalankan bertujuan mengenalpasti faktor-faktor yang mempengaruhi pelajar Kolej Komuniti Gerik dalam pemilihan kerjaya. Secara amnya, kajian ini memfokuskan kepada empat faktor iaitu minat, keluarga, rakan sebaya dan gaji. Faktor-faktor ini dilihat penting kerana pelajar-pelajar masih dalam pengajian dan perlu menentukan hala tuju selepas ini. Dapatan kajian yang diperolehi akan memberikan panduan yang penting kepada unit-unit yang terlibat di Kolej Komuniti Gerik berkenaan harapan pelajar terhadap alam pekerjaan yang bakal ditempuh selepas tamat kelak. Berdasarkan dapatan kajian, faktor keluarga menunjukkan nilai

eISBN 978-967-2426-22-6
13th – 14th December 2020

min tertinggi bagi pemilihan kerjaya. Dapatan ini menyokong kajian yang telah dijalankan oleh Nur dan Nurul (2017) di mana kajian mereka mendapati semua bentuk pengaruh daripada keluarga memberi kesan kepada pelajar seperti nasihat, usul yang dicadangkan dan pendedahan kerjaya. Faktor keluarga merupakan faktor paling dominan dalam pemilihan kerjaya di kalangan responden. Namun begitu, dapatan ini tidak selari dengan kajian lepas sebagaimana yang dijalankan oleh Noor, Muhammad dan Siti (2017) yang mendapati pemilihan kerjaya tidak dipengaruhi oleh ibu bapa dengan dapatan skor berada pada tahap yang rendah. Kajian oleh Yahya dan Khotijah (2010) juga mendapati faktor minat merupakan faktor tertinggi bagi pemilihan kerjaya. Oleh itu dapat disimpulkan bahawa pelajar Kolej Komuniti Gerik cenderung memilih sesuatu kerjaya berdasarkan pendapat dan dorongan keluarga khususnya ibu bapa mereka. Walaupun di peringkat sijil, pelajar kolej komuniti mempercayai faktor keluarga akan dapat membantu dan membimbing mereka untuk menentukan hala tuju dalam kerjaya pada masa akan datang.

Selain itu, faktor minat juga dilihat penyumbang kepada faktor pemilihan kerjaya dalam kalangan pelajar Kolej Komuniti Gerik dengan skor min yang tinggi. Dengan adanya minat, proses pembelajaran lebih mudah dikuasai oleh pelajar dan berupaya merancang hala tuju seperti menyambung pengajian di peringkat diploma dan ijazah seterusnya memperolehi kerjaya dalam bidang yang sama. Kajian lepas oleh Nursyafiqah, Mohd dan Abu (2018) mendapati pengetahuan tentang minat kerjaya dan personaliti dalam diri pelajar adalah penting bagi membantu mereka memilih kerja yang bersesuaian. Justeru itu, faktor minat dalam kalangan pelajar Kolej Komuniti Gerik merupakan keinginan yang ada dalam diri mereka yang boleh dijadikan sebagai sumber motivasi untuk berjaya dalam proses mencapai kejayaan yang mereka inginkan khususnya apabila memasuki alam perkerjaan kelak. Sekiranya pelajar dapat menentukan minat mereka daripada awal, sudah pasti minat berkenaan akan dapat membantu pelajar untuk menumpukan perhatian kepada pelajaran di kolej dan bidang kerjaya yang bakal ditempuhi.

Faktor rakan sebaya dan gaji turut mendapat skor min yang tinggi tetapi tidak dominan berbanding faktor keluarga dan minat. Namun kajian lepas oleh Maziah (2005) mendapati kriteria terpenting dalam pemilihan kerjaya adalah faedah perkhidmatan, jaminan kerja, persekitaran kerja dan faedah kewangan. Kajian oleh Mohd, Azman, Norhidayah dan Mohammad (2016) juga mendapati faktor ganjaran yang lebih banyak adalah satu perkara yang dilihat oleh pelajar UKM dalam memilih kerjaya bertepatan dengan ijazah yang diperolehi. Secara kesimpulannya, faktor rakan sebaya dan gaji tidak dominan di kalangan pelajar peringkat sijil Kolej Komuniti mungkin kerana kerjaya yang bakal dipilih hanya sebagai batu loncatan semata-mata untuk mendapatkan pengalaman sebelum mendapat kerja lain yang bergaji lumayan. Kebanyakkan pelajar Kolej Komuniti boleh bekerja sendiri apabila tamat pengajian sekiranya menggunakan kemahiran yang dipelajari sebaik mungkin.

Dapatan kajian juga menunjukkan tiada perbezaan antara jantina dengan faktor minat, keluarga, rakan sebaya dan gaji. Kajian ini jelas menunjukkan wujudnya peluang yang sama rata untuk pelajar lelaki dan perempuan dalam meningkatkan kesedaran dalam pemilihan kerjaya. Peluang yang diberikan adalah dalam semua bidang yang diceburi dan di dalam program-program kerjaya yang dilaksanakan di Kolej Komuniti Gerik. Sebagai contoh, tiada syarat-syarat terhadap pengkhususan jantina yang ditetapkan untuk permohonan sesuatu bidang atau kursus. Selain itu, negara kita memberikan peluang sama rata di dalam bidang kerjaya antara lelaki dan perempuan. Justeru, pemilihan kerjaya yang bersesuaian dengan kehendak individu dilihat lebih penting bagi menjamin kualiti dan kredebiliti individu tersebut dalam kerjayanya. Apabila responden berminat ia secara tidak langsung menjadikan mereka lebih berusaha untuk memotivasikan diri. Di samping itu, faktor-faktor pendorong dalam

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13th – 14th December 2020

pemilihan kerjaya boleh dijadikan motivasi untuk mencapai kerjaya yang diimpikan. Dapatan kajian ini adalah selari dengan kajian lepas oleh Zairoslawanee (2014) yang menunjukkan tidak terdapat perbezaan minat kerjaya antara pelajar lelaki dan perempuan. Pelajar lelaki mahupun perempuan berupaya memilih kerjaya yang boleh memberikan kepuasan kepada diri mereka tanpa desakan dan paksaaan mana-mana pihak. Berbeza dengan dapatan kajian oleh Helmi et.al (2016) yang mendapati faktor pemilihan kerjaya di kalangan jantina menunjukkan perbezaan yang ketara berbanding pemilihan berdasarkan aspek bangsa. Separuh daripada faktor-faktor dinilai secara berbeza di kalangan mahasiswa dan mahasiswi UKM. Oleh itu, kajian ini jelas menunjukkan pelajar lelaki dan perempuan Kolej Komuniti Gerik memilih keempat-empat faktor sebagai panduan dalam memilih kerjaya yang bakal diceburi. Selain memerlukan dorongan dan motivasi berterusan dalam membuat keputusan, pelajar dilihat berupaya untuk menentukan hala tuju yang betul dengan memilih kerjaya bersesuaian dengan kelayakan dan kemahiran yang mereka perolehi.

Kesimpulan Dan Cadangan Kajian

Secara keseluruhannya, dapatan kajian ini mengesahkan terdapat 4 faktor utama pemilihan kerjaya dalam persepsi pelajar Kolej Komuniti Gerik iaitu keluarga, minat, rakan sebaya dan gaji di mana skor min yang diperolehi berada pada tahap tinggi. Faktor-faktor ini dianggap penting oleh pelajar kerana ianya perlu bagi mengelakkan kesilapan memilih kerjaya diluar bidang yang hanya akan merosakkan minat sendiri sekaligus tidak akan bertahan lama di alam pekerjaan itu nanti. Walaupun berada di peringkat sijil, pelajar boleh menjana gaji yang lumayan atas usaha dan niat masing-masing dengan syarat mengambil kira semua faktor tersebut sebagai panduan dalam memilih kerjaya. Oleh itu, kajian hadapan dicadangkan dengan menggunakan sampel yang lebih besar dengan melibatkan beberapa kolej yang terdapat di negeri Perak.

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HUBUNGAN KEMAHIRAN KOMUNIKASI INTERPERSONAL PENSYARAH DENGAN TAHAP MOTIVASI PELAJAR: KAJIAN DI JABATAN TEKNOLOGI MAKLUMAT & KOMUNIKASI, PSMZA

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Abstrak: *Kajian ini dijalankan bertujuan untuk mengkaji perhubungan di antara kemahiran komunikasi interpersonal pensyarah secara lisan dan bukan lisan dan tahap motivasi pelajar. Instrumen kajian yang digunakan dalam kajian ini ialah soal selidik. Satu set soal selidik yang mengandungi 30 item soalan dibina dan diambil daripada kajian yang terdahulu, telah digunakan untuk mengukur perhubungan tersebut. Kajian ini menggunakan pendekatan kuantitatif dalam bentuk tinjauan yang melibatkan 100 orang pelajar di Jabatan Teknologi Maklumat dan Komunikasi (JTMK), Politeknik Sultan Mizan Zainal Abidin (PSMZA). Kajian yang akan dilakukan ini adalah kajian deskriptif secara kuantitatif di mana soal selidik digunakan bagi memproses data yang diterima untuk menghasilkan rumusan. Nilai pekali Alpha Cronbach untuk kajian ini adalah 0.91. Data telah dianalisis dengan menggunakan perisian komputer melalui program Statistical Package for Social Science (SPSS) for Windows version 16.0 untuk memperolehi statistik deskriptif seperti skor min. Keputusan kajian mendapati terdapat perhubungan yang signifikan di antara kemahiran komunikasi interpersonal pensyarah secara bukan lisan dan tahap motivasi pelajar. Dapatan kajian juga menunjukkan tidak terdapat perhubungan yang signifikan di antara tahap kemahiran komunikasi interpersonal pensyarah secara lisan dan tahap motivasi pelajar.*

Kata Kunci*: Kemahiran; Komunikasi; Interpersonal; Motivasi; Lisan; Bukan Lisan*

Pendahuluan

Pengajaran merupakan aktiviti yang dirancang bagi meningkatkan lagi pengetahuan,kemahiran dan keupayaan ataupun mengubah sikap seseorang agar dapat meningkatkan lagi penguasaan dalam sesuatu bidang. Namun begitu tidak semua sesi pembelajaran itu berkesan kepada semua pelajar yang terlibat. Tetapi sekiranya pembelajaran itu dapat menambahkan penguasaan pelajar, maka pembelajaran itu di anggap berkesan kepada pelajar.

Pengajar perlu bersedia dan bersikap aktif sebagai penyampai dengan berkongsi pengalaman dalam penyampaian dan pelajar sebagai penerima. Pelajar juga perlu bersikap aktif semasa sesi Pengajaran dan Pembelajaran (PdP) berlangsung. Sekiranya mereka kurang aktif, pengajar perlu menyalurkan kaedah atau idea kepada mereka serta memupuk rasa suasana yang baik dan suka kepada pembelajaran.

Satu perhubungan telah dikenal pasti di antara pembelajaran, motivasi dan kesediaan pengajaran di mana apabila guru atau pengajar yang mengaplikasikan pendekatan pengajaran sama ada secara lisan atau bukan lisan terhadap pelajar, pembelajaran akan berlaku dan meningkat. Ini dapat diperhatikan di mana di samping pengajar menyebarkan atau

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mencurahkan ilmu pengetahuan kepada pelajar, terdapat tumpuan atau perhatian yang diberikan mengenai perhubungan di antara pelajar dan pengajar.

Pernyataan Masalah

Pengajaran yang berkesan seharusnya dapat membantu melahirkan pelajar dan seterusnya tenaga kerja yang berkualiti. Ianya bukan sahaja tertumpu kepada masa depan pelajar dan negara, ia juga dapat di aplikasikan dalam kehidupan seharian serta boleh memberi sumbangan kepada sosiologi masyarakat setempat. Untuk mendapat pengajaran yang berkesan biasanya berkait rapat dengan kemahiran yang perlu ada pada pensyarah sebagai contoh kemahiran komunikasi interpersonal.

Maimunah (2000) menyatakan bahawa pada amnya komunikasi dan perhubungan interpersonal mempunyai objektif mengurangkan sikap saling tidak mengenali dan tidak mempercayai antara satu sama lain. Dengan komunikasi yang baik, dapat merapatkan jurang perhubungan antara pensyarah dan pelajar sekaligus memudahkan proses Pengajaran dan Pembelajaran (PdP) berlangsung.

Menurut Ros Jay (1999) pula, Komunikasi yang baik dapat mendatangkan kebaikan atau faedah kepada sesiapa yang terlibat seperti pihak organisasi, pengurus, jabatan atau kumpulan dan kakitangan pekerja. Jadi komunikasi yang berkesan antara pensyarah dan pelajar amat penting untuk memastikan proses Pengajaran dan Pembelajaran(PdP) berjalan dengan lancar disamping mampu untuk menarik minat pelajar untuk memberi tumpuan di dalam bilik kuliah.

Menurut Janasz (2002), Komunikasi Interpersonal mempunyai 2 jenis iaitu komunikasi jenis lisan(*verbal*) dan juga bukan lisan(*nonverbal*). Komunikasi secara lisan adalah seperti percakapan atau penulisan kepada seseorang. Kebanyakkan Pengurus dapat berkomunikasi secara lisan dengan baik serta mampu untuk bercakap dan menulis dangan jelas tetapi kurang mempunyai kemahiran di dalam komunikasi bukan lisan seperti bahasa tubuh (*body language*) dan ekspresi muka (*facial expressions*).

Dengan itu, penyelidikan ini dijalankan bertujuan untuk mengkaji perhubungan di antara kemahiran komunikasi interpersonal pensyarah secara lisan dan bukan lisan dengan tahap motivasi pelajar.

Objektif Kajian

i. Mengenal pasti tahap kemahiran komunikasi interpersonal pensyarah secara lisan.
ii. Mengenal pasti tahap kemahiran komunikasi interpersonal pensyarah secara bukan lisan.
iii. Mengenal pasti perhubungan di antara kemahiran komunikasi interpersonal pensyarah secara lisan dan bukan lisan dengan tahap motivasi pelajar.

Skop Kajian

Kajian ini dibataskan kepada pelajar bagi program Diploma Teknologi Digital (DDT) dari Jabatan Teknologi Maklumat & Komunikasi (JTMK), Politeknik Sultan Mizan Zainal Abidin (PSMZA). Kajian ini dibataskan di Jabatan Teknologi Maklumat & Komunikasi (JTMK) bagi tujuan memudahkan penyelidik mendapatkan dan mengumpul data yang diperlukan dalam menjalankan kajian yang dirancang.

Segala proses penganalisisan data dan dapatan kajian adalah berdasarkan kepada kajian yang dibuat terhadap kumpulan ini. Penyelidik menganggap segala data yang diperolehi adalah benar dan ikhlas daripada responden untuk menggambarkan keadaan sebenar dalam usaha untuk mencapai objektif kajian.

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13th – 14th December 2020

Kepentingan Kajian

Kepentingan kepada Penyelidik

Kajian ini dijalankan untuk mengenal pasti tahap kemahiran komunikasi interpersonal pensyarah secara lisan dan bukan lisan serta tahap motivasi pelajar dan perhubungan tahap kemahiran komunikasi interpersonal pensyarah terhadap tahap motivasi pelajar terhadap diri dan pelajaran.

Kepentingan kepada Pensyarah

Kajian ini juga diharap akan dapat memberi kesedaran kepada semua pensyarah di JTMK, PSMZA akan kepentingan kemahiran komunikasi interpersonal lisan dan bukan lisan dan motivasi pelajar di dalam kelas yang merupakan antara agenda yang perlu ada ketika proses pengajaran dan pembelajaran (PdP) berlaku. Oleh itu, semua para pensyarah perlulah memastikan kemahiran komunikasi interpersonal lisan dan bukan lisan dapat dikuasai dengan baik oleh mereka bagi meningkatkan tahap motivasi pelajar supaya mereka dapat memberikan tumpuan dan berminat dalam proses pengajaran dan pembelajaran (PdP) yang dijalankan.

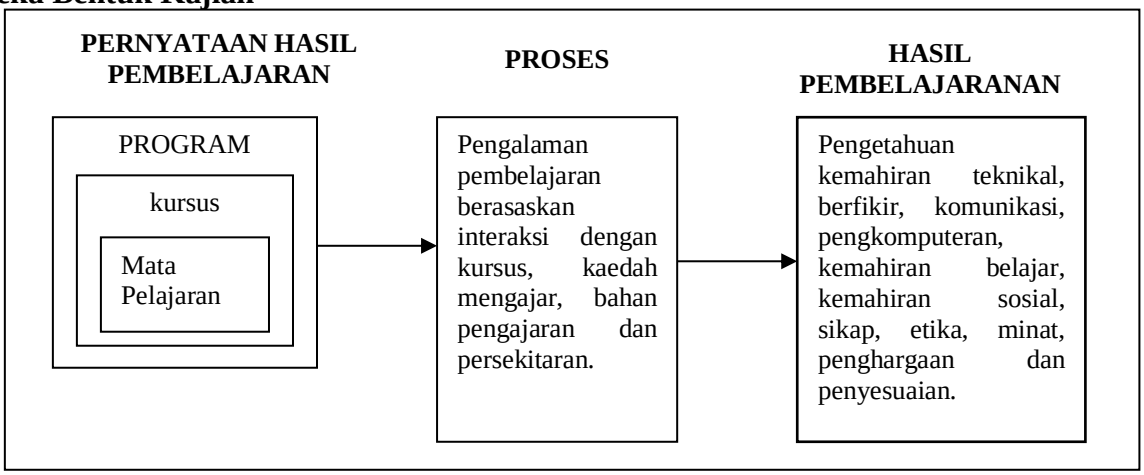
Kepentingan kepada Pihak Pengurusan Tertinggi Jabatan

Berdasarkan data-data yang dianalisis daripada kajian yang dijalankan, perhubungan di antara tahap kemahiran komunikasi interpersonal lisan dan bukan lisan para pensyarah JTMK dan tahap motivasi pelajar dapat diketahui. Justeru itu, hasil kajian ini dapat dimanfaatkan oleh pihak pengurusan jabatan untuk mengambil langkah yang sewajarnya dalam meningkatkan penguasaan kemahiran komunikasi interpersonal lisan dan bukan lisan pensyarah JTMK serta tahap motivasi pelajar dan seterusnya membantu pelajar untuk memperoleh pencapaian akademik yang cemerlang.

Kepentingan kepada Pelajar

Kajian ini juga memberi impak kepada pelajar dalam menilai diri mereka sendiri. Pelajar dapat menilai tahap motivasi mereka sekaligus membolehkan pelajar mengambil inisiatif yang perlu bagi meningkatkan tahap motivasi mereka seterusnya membantu pelajar untuk saling berdaya saing dan memperoleh pencapaian akademik yang cemerlang.

Reka Bentuk Kajian



Sumber: (Radin Umar, 2006)

Rajah 1: Kerangka Konsep Kajian

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13th – 14th December 2020

Rajah 1 menunjukkan kerangka konsep kajian yang mana menghubungkan di antara pernyataan hasil, proses dan hasil pembelajaran yang mana boleh dicapai melalui proses Pengajaran dan Pembelajaran (PdP). Daripada kerangka konsep ini, jelas menunjukkan tahap penguasaan kemahiran pelajar amat bergantung kepada proses Pengajaran dan Pembelajaran (PdP) di antara pelajar dan pensyarah.

Sampel Kajian

Kaedah persampelan yang digunakan dalam kajian ini adalah berdasarkan kepada persampelan rawak. Menurut Mohamad Najib Abdul Ghafar (1999) persampelan rawak adalah merupakan proses mengambil sampel daripada populasi yang dikaji di mana setiap individu dalam populasi tersebut mempunyai peluang yang sama untuk dipilih sebagai sampel dalam kajian ini.

Persampelan rawak jenis rawak mudah telah digunakan dalam kajian ini. Setiap sampel dipilih adalah berdasarkan kepada Program pengajian. Kumpulan sasaran kajian ini terdiri daripada pelajar sesi Jun 2020 bagi Program Diploma Teknologi Digital (DDT) di Jabatan Teknologi Maklumat & Komunikasi (JTMK), Politeknik Sultan Mizan Zainal Abidin (PSMZA). Responden diambil secara rawak seramai 20 orang bagi setiap semester di JTMK, PSMZA.

Instrumen Kajian

Kaedah kajian yang digunakan adalah secara kaedah kuantitatif melalui proses pengumpulan data soal selidik. Borang soal selidik diedarkan kepada 100 pelajar sesi Jun 2020 bagi Program Diploma Teknologi Digital (DDT) di Jabatan Teknologi Maklumat & Komunikasi (JTMK), Politeknik Sultan Mizan Zainal Abidin (PSMZA). Sebelum kajian sebenar dijalankan, satu kajian rintis telah dijalankan untuk mendapat kesahan dan kebolehpercayaan bagi setiap item dalam soal selidik. Borang soal selidik diedarkan kepada 15 orang pelajar JTMK, PSMZA. Nilai Alpha Cronbach yang diperolehi daripada kajian rintis ini ialah 0.91. Sulaiman Ngah Razali (2002) menyatakan soal selidik merupakan kaedah paling mudah untuk memperoleh maklumat. Selain itu, soal selidik selalu digunakan untuk mengukur sikap seseorang samada melalui soalan respon tetap, bebas (terbuka), senarai semak atau skala kadar. Dalam kajian ini, soal selidik berskala lima mata dipilih dengan responden kajian perlu memilih jawapan paling sesuai dengan pilihan diri. Jadual 1 menunjukkan skala lima mata yang digunakan.

Jadual 1: Skala Likert

Peringkat	Singkatan	Skor
Sangat tidak setuju	STS	1
Tidak setuju	TS	2
Tidak pasti	TP	3
Setuju	S	4
Sangat Setuju	SS	5

Soal selidik

Penyelidik telah menyediakan borang soal selidik untuk mengenalpasti Hubungan Kemahiran Pensyarah Dengan Tahap Motivasi Pelajar sesi Jun 2020, Jabatan Teknologi Maklumat & Komunikasi (JTMK), Politeknik Sultan Mizan Zainal Abidin (PSMZA). Borang soal selidik kajian mengandungi empat konstruk iaitu bahagian A untuk demografi, bahagian B untuk mengenalpasti Kemahiran Interpersonal Pensyarah Secara Bukan Lisan, bahagian C untuk mengenalpasti Kemahiran Interpersonal Pensyarah Secara Lisan dan bahagian D untuk

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13th – 14th December 2020

mengenalpasti Tahap Motivasi Pelajar terhadap diri dan pelajaran. Konstruk bahagian B, C dan D mengandungi 30 instrumen. Hasil yang diperolehi direkodkan dalam bentuk jadual untuk dianalisa.

Dapatan Kajian

Data yang diperolehi melalui soalselidik dari responden dikumpul dan dianalisis dengan menggunakan program Statistical Package for the Social Sciences (SPSS). Dapatan kajian bagi bahagian A iaitu faktor demografi dianalisis menggunakan kekerapan dan peratusan manakala soalan bagi bahagian B, C dan D dinyatakan dalam bentuk nilai min.

Jadual 2: Analisis Taburan Bilangan Dan Peratusan Responden Mengikut Jantina

Jantina	Bilangan	Peratus
Lelaki	43	43
Perempuan	57	57
Jumlah	100	100

Jadual 2 menunjukkan taburan bilangan dan peratusan responden mengikut jantina. Daripada analisa yang telah dibuat, seramai 43 orang bersamaan dengan 43% adalah daripada pelajar lelaki manakala seramai 57 orang responden bersamaan dengan 57% adalah daripada pelajar perempuan.

Jadual 3: Analisis Taburan Bilangan Dan Peratusan Responden Mengikut Bangsa

Bangsa	Bilangan	Peratus
Melayu	91	91
Cina	2	2
India	7	7
Jumlah	100	100

Jadual 3 menunjukkan taburan bilangan dan peratusan mengikut bangsa. Daripada analisa yang telah dibuat, seramai 91 orang bersamaan dengan 91% adalah daripada pelajar berbangsa Melayu, 2 orang bersamaan dengan 2% adalah daripada bangsa Cina dan 7 orang bersamaan dengan 7% adalah daripada bangsa India.

Jadual 4: Analisis Kemahiran Interpersonal Pensyarah Secara Bukan Lisan

Item	Penyataan Item	Min
1	Pensyarah memandang kepada pelajar ketika mengajar.	3.41
2	Pensyarah mempunyai gerak badan yang tenang ketika bercakap.	3.16
3	Pensyarah menggunakan pelbagai intonasi suara ketika bercakap di dalam bilik kuliah.	3.14
4	Pensyarah menggunakan pergerakan tangan ketika bercakap di dalam kelas.	3.26
5	Pensyarah memberikan ekspresi muka yang pelbagai semasa bercakap dengan pelajar.	3.12
6	Pensyarah menepuk bahu atau menyentuh tangan pelajar yang sama jantina sambal bercakap dengan mereka.	2.82
7	Pensyarah tidak bersandar berhampiran dengan pelajar semasa bercakap dengan mereka.	3.31
8	Pensyarah tidak duduk di atas meja atau kerusi ketika mengajar.	3.32
9	Pensyarah tidak menggunakan nada suara yang mendatar sepanjang mengajar di kelas.	3.17
10	Pensyarah tidak berdiri setempat sahaja ketika mengajar di dalam kelas.	3.25
	Jumlah Purata Min	**3.20**

Jadual 4 menunjukkan nilai min bagi Kemahiran Interpersonal Pensyarah Secara Bukan Lisan. Daripada dapatan kajian, purata keseluruhan nilai min bagi Kemahiran Interpersonal Pensyarah Secara Bukan Lisan adalah berada pada tahap sederhana iaitu dengan jumlah purata

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13th – 14th December 2020

min sebanyak 3.20. Nilai min Kemahiran Interpersonal secara bukan lisan yang paling tinggi adalah "Pensyarah memandang kepada pelajar ketika mengajar" iaitu sebanyak 3.41, manakala yang paling rendah adalah "Pensyarah menepuk bahu atau menyentuh tangan pelajar yang sama jantina sambal bercakap dengan mereka" dengan nilai min 2.82. Skor min yang sederhana dicatatkan menunjukkan bahawa rata-rata pensyarah JTMK, PSMZA belum menguasai dengan baik aspek kemahiran komunikasi bukan lisan terutama dari segi kaedah untuk mengeratkan hubungan antara pensyarah dengan pelajar dimana pensyarah kurang mengamalkan kaedah sentuhan dengan pelajar sama jantina untuk menunjukkan keprihatinan pensyarah.

Jadual 5: Analisis Kemahiran Interpersonal Pensyarah Secara Lisan

Item	Penyataan Item	Min
11	Pensyarah mengajukan pertanyaan atau menggalakkan pelajar untuk bercakap.	4.18
12	Pensyarah menggunakan contoh peribadi atau pengalaman yang diperolehinya ketika mengajar.	3.99
13	Pensyarah menyertai perbincangan bersama pelajar sebelum atau selepas kelas.	4.14
14	Pensyarah menggunakan jenaka ketika mengajar di dalam kelas.	3.89
15	Pensyarah bertanyakan kepada pelajar mengenai tugasan, tarikh hantar atau topik perbincangan.	4.31
16	Pensyarah memberi pujian terhadap kerja, tindakan atau pendapat pelajar.	3.88
17	Pensyarah memulakan perbualan umum dengan pelajar sebelum atau selepas kelas.	4.13
18	Pensyarah mengajak pelajar untuk berjumpa di luar waktu kelas sekiranya mempunyai pertanyaan atau ingin berbincang mengenai perkara lain.	3.96
19	Pensyarah sentiasa memberi dorongan dan galakan motivasi kepada pelajar di kelas.	4.06
20	Pensyarah mampu menjawab soalan pelajar dengan baik sama ada berkaitan dengan kursus ataupun tidak.	4.24
	Jumlah Purata Min	**4.08**

Jadual 5 menunjukkan nilai min bagi Kemahiran Interpersonal Pensyarah Secara Lisan. Daripada dapatan kajian, purata keseluruhan nilai min bagi Kemahiran Interpersonal Pensyarah Secara Lisan adalah berada pada tahap tinggi iaitu dengan jumlah purata min sebanyak 4.08. Nilai min Kemahiran Interpersonal secara lisan yang paling tinggi adalah "Pensyarah bertanyakan kepada pelajar mengenai tugasan, tarikh hantar atau topik perbincangan" iaitu sebanyak 4.31, manakala yang paling rendah adalah "Pensyarah memberi pujian terhadap kerja, tindakan atau pendapat pelajar" dengan nilai min 3.88. Skor min yang tinggi dicatatkan menunjukkan bahawa rata-rata pensyarah JTMK, PSMZA telah menguasai dengan baik aspek kemahiran komunikasi lisan. Walaubagaimanapun, masih ada penambahbaikan yang boleh dibuat seperti kerap memberi pujian terhadap hasil kerja yang baik bagi meningkatkan lagi tahap keyakinan pelajar terhadap pelajaran.

Jadual 6: Analisis Tahap Motivasi Pelajar terhadap diri dan pelajaran.

Item	Penyataan Item	Min
21	Pensyarah mengajukan pertanyaan atau menggalakkan pelajar untuk bercakap.	3.10
22	Pensyarah menggunakan contoh peribadi atau pengalaman yang diperolehinya ketika mengajar.	3.19
23	Pensyarah menyertai perbincangan bersama pelajar sebelum atau selepas kelas.	2.76
24	Pensyarah menggunakan jenaka ketika mengajar di dalam kelas.	3.35
25	Pensyarah bertanyakan kepada pelajar mengenai tugasan, tarikh hantar atau topik perbincangan.	3.09
26	Pensyarah memberi pujian terhadap kerja, tindakan atau pendapat pelajar.	3.19
27	Pensyarah memulakan perbualan umum dengan pelajar sebelum atau selepas kelas.	2.79
28	Pensyarah mengajak pelajar untuk berjumpa di luar waktu kelas sekiranya mempunyai pertanyaan atau ingin berbincang mengenai perkara lain.	3.10
29	Pensyarah sentiasa memberi dorongan dan galakan motivasi kepada pelajar di kelas.	3.12
30	Pensyarah mampu menjawab soalan pelajar dengan baik sama ada berkaitan dengan kursus ataupun tidak.	3.14
	Jumlah Purata Min	**3.08**

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 6 menunjukkan nilai min bagi Tahap Motivasi Pelajar terhadap diri dan pelajaran. Daripada dapatan kajian, purata keseluruhan nilai min bagi Tahap Motivasi Pelajar terhadap diri dan pelajaran adalah berada pada tahap sederhana iaitu dengan jumlah purata min sebanyak 3.08. Nilai min Tahap Motivasi Pelajar terhadap diri dan pelajaran yang paling tinggi adalah "Saya rasa seronok apabila dapat menjawab soalan dengan betul di dalam kelas" iaitu sebanyak 3.35 manakala yang paling rendah adalah "Saya menyediakan jadual waktu untuk mengulangkaji pelajaran" dengan nilai min 2.76. Skor min yang sederhana dicatatkan menunjukkan bahawa rata-rata pelajar JTMK, PSMZA mempunyai tahap motivasi yang kurang memuaskan terutama dari segi kesedaran untuk menyediakan jadual waktu pembelajaran bagi membolehkan mereka menguruskan masa belajar mereka dengan lebih teratur dan tersusun.

Perbincangan

Daripada analisa yang telah dibuat, walaupun nilai purata min bagi Kemahiran Interpersonal Pensyarah Secara Lisan tinggi tapi nilai purata min bagi Tahap Motivasi Pelajar terhadap diri dan pelajaran masih berada di tahap sederhana dimana bersamaan dengan nilai purata min bagi Kemahiran Interpersonal Pensyarah Secara Bukan Lisan yang juga berada di tahap yang sederhana. Oleh itu, boleh dikatakan tahap Motivasi Pelajar terhadap diri dan pelajaran lebih berkait rapat dengan tahap Kemahiran Interpersonal Pensyarah Secara Bukan Lisan. Pendapat ini selaras dengan Mohd Safiee, et al. (2008) yang menyatakan, komunikasi bukan lisan biasanya lebih kerap daripada komunikasi lisan. Ini kerana walaupun kita berhenti bercakap tapi kita tidak berhenti memberi signal secara bukan lisan seperti penampilan fizikal, pergerakan dan hubungan mata masih bergerak. Begitu juga dalam proses pengajaran dan pembelajaran, setiap tingkahlaku guru dan murid juga adalah bentuk komunikasi yang tidak nampak. Jadi kemahiran komunikasi bukan lisan lebih banyak mempengaruhi tahap motivasi pelajar. Sedangkan motivasi pelajar amat menyumbang kepada penguasaan pelajar terhadap pelajaran. Ini bertepatan dengan pendapat Abdul Hakim Abdullah (2015), yang menyatakan ketinggian tahap motivasi pelajar merupakan satu penyebab besar kepada kemajuan pencapaian pelajar. Semakin baik motivasi pelajar maka semakin meningkatlah pencapaian pelajar dalam pelajaran.

Berdasarkan kepada hasil daripada analisa yang telah dibuat, penyelidik mencadangkan beberapa tindakan yang boleh dilaksanakan bagi menyelesaikan masalah ini. Antaranya adalah:

i. Pensyarah perlu menguasai kemahiran komunikasi interpersonal bukan lisan dan memberi penekanan serta menitikberatkan dari segi aspek kemahiran Interpersonal bukan lisan semasa proses Pengajaran dan Pembelajaran (PdP) bersama pelajar.
ii. Pensyarah boleh menggalakkan pelajar menyediakan jadual waktu pembelajaran bagi membolehkan mereka menguruskan masa belajar mereka dengan lebih teratur dan tersusun.
iii. Pihak Pengurusan Jabatan boleh mengadakan kursus yang boleh membantu para pensyarah meningkatkan Kemahiran Interpersonal bukan lisan untuk diterapkan di dalam proses Pengajaran dan Pembelajaran (PdP).
iv. Pihak Pengurusan Jabatan perlu memperbanyakkan program yang boleh meningkatkan tahap motivasi pelajar terhadap pelajaran dan diri sendiri.

Kesimpulan

Berdasarkan kepada analisa dan perbincangan yang telah dibuat, penyelidik dapat membuat kesimpulan bahawa kebanyakkan pensyarah JTMK, PSMZA telah menguasai tahap kemahiran

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13th – 14th December 2020

komunikasi interpersonal secara lisan dengan baik. Walaubagaimanapun, tahap kemahiran komunikasi interpersonal secara bukan lisan pensyarah dan tahap motivasi pelajar terhadap diri dan pelajaran masih berada di tahap sederhana.

Menurut Mohammad Haafiz Ahmid (2018), pengajaran guru yang berkesan berupaya menentukan tahap kepercayaan motivasi seseorang pelajar sama ada semakin meningkat atau sebaliknya. Ia bergantung kepada cara guru menyampaikan pengajarannya. Selain daripada keputusan peperiksaan pelajar, pengajaran guru yang berkesan juga boleh diukur dengan kaedah penilaian daripada pelajar. Maizatulakma Abdullah (2016) menyatakan, meskipun sistem penilaian pelajar terhadap pensyarah sering dikritik, namun terdapat kajian lepas yang menyatakan bahawa penilaian ini adalah salah satu penunjuk yang sahih bagi mengukur keberkesanan pengajaran pensyarah. Menurutnya Salasiah Hanin (2012), terdapat tiga kepentingan utama penilaian pelajar terhadap prestasi pengajaran pensyarah. Pertama, adalah untuk menambahbaik kualiti pengajaran. Kedua, adalah untuk menilai prestasi pensyarah bagi tujuan kenaikan pangkat dan ganjaran. Ketiga, untuk menjadi bukti akauntabiliti universiti dalam menawarkan Pendidikan yang berkualiti kepada masyarakat.

Dengan itu, hasil kajian yang telah dibuat dikalangan pelajar ini perlu diambil tindakan yang sewajarkan oleh pihak terlibat terutama para pensyarah dan pihak pengurusan tertinggi jabatan agar prestasi pelajar dapat ditingkatkan terutama dari segi kekuatan motivasi mereka agar dapat melahirkan pelajar yang berdaya saing dan berkualiti tinggi dari segala aspek.

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PERSEPSI PELAJAR TERHADAP PENGAJARAN DAN PEMBELAJARAN MATEMATIK SECARA ATAS TALIAN SEMASA PERINTAH KAWALAN PERGERAKAN

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***Abstrak**: Keadaan paradigma pengajaran dan pembelajaran di Malaysia sewaktu COVID-19 telah mengubah norma PdP dalam kalangan pelajar. Para pendidik khususnya perlu mencari kaedah yang terbaik untuk mendidik para pelajar sewaktu norma baru ini. Kementerian pengajian Tinggi (KPT) juga telah mengarahkan PdP adalah secara atas talian tanpa perlu bersemuka. Oleh itu, kajian ini dijalankan adalah untuk mengkaji persepsi pelajar terhadap pengajaran dan pembelajaran matematik secara atas talian, mengenal pasti medium atas talian bagi PdP matematik yang disukai oleh pelajar dan mengenal pasti perbezaan persepsi pelajar lelaki dan perempuan terhadap pengajaran dan pembelajaran matematik secara atas talian semasa tempoh tempoh kawalan pergerakan (PKP). Kajian ini adalah kajian kuantitatif berbentuk deskriptif yang menggunakan soal selidik sebagai instrumen kajian. Analisis yang dijalankan berbentuk frekuensi, skor min dan t-test. Soal selidik telah diedarkan secara dalam talian menggunakan Google Form. Sebanyak 32 sampel telah digunakan dalam kajian ini melibatkan pelajar program Sijil Teknologi Maklumat Kolej Komuniti Gerik yang mengambil subjek matematik. Hasil dapatan kajian mendapati persep pelajar terhadap PdP matematik secara atas talian berada pada tahap tinggi. Pelajar juga menyukai pembelajaran menggunakan medium telegram berbanding Google Classroom. Ujian t-test mendapati tiada perbezaan signifikan di antara pelajar lelaki dan perempuan terhadap pembelajaran secara atas talian menggunakan telegram dan Google Classroom.*

***Kata Kunci**: Pembelajaran Atas Talian, Telegram, Google Classroom, Matematik*

Pengenalan

Pertubuhan Kesihatan Sedunia (WHO) telah mengisytiharkan situasi pandemik akibat penularan sejenis virus baharu jenis Korona yang menyebabkan wabak COVID19. Selaras dengan pengisytiharan wabak ini, semua negara telah menutup semua sektor termasuklah sektor pendidikan. Dalam usaha untuk memastikan semua pelajar tidak ketinggalan dalam mengikuti pembelajaran, warga pendidik mula menggunakan opsyen untuk menjalankan kelas secara atas talian. Kementerian Pengajian Tinggi (KPT) memaklumkan bahawa semua aktiviti Pengajaran dan Pembelajaran (PdP) perlu dilaksanakan secara dalam talian sehingga 31 Disember 2020 dan aktiviti PdP secara bersemuka adalah tidak dibenarkan (Kementerian Pengajian Tinggi).

Penggunaan teknologi dalam pendidikan pada masa kini adalah penting berikutan penularan wabak COVID19. Seiring dengan Perintah Kawalan Pergerakan (PKP) yang dilaksanakan oleh kerajaan Malaysia bagi membendung penularan wabak COVID-19, kaedah pembelajaran atas talian merupakan suatu keperluan. Pembelajaran secara atas talian dapat

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13th – 14th December 2020

membantu pembelajaran secara kendiri, meningkatkan keberkesanan pembelajaran dan mengoptimakan penggunaan sumber yang terhad. Dalam kajian Rubiah dan Jamilah (2009) mendapati tahap kefahaman responden terhadap konsep e-pembelajaran adalah salah satu usaha sejajar dengan perkembangan teknologi maklumat (IT). Kajian menyatakan bahawa ahli akademik sedar tentang konsep epembelajaran yang mana IT dimajukan sebagai alat utama bagi membolehkan ahli akademik melibatkan pelajar dalam pelbagai aktiviti pembelajaran di dalam kuliah. Kebanyakan IPT di Malaysia mengambil berat tentang kepentingan IT bagi memastikan ahli akademik dan pelajar dapat bersatu secara produktif dalam persekitaran pendidikan yang baru.

Terdapat pelbagai jenis pembelajaran digital yang berpotensi dan mempunyai banyak ruang untuk dieksplorasi seperti *Google Classroom*, telegram dan *whatsapp*. Melalui platform yang tersedia, pengajaran dan pembelajaran secara atas talian boleh dilaksanakan oleh semua pensyarah khususnya di Kolej Komuniti. Secara tidak langsung, ia membolehkan proses pembelajaran yang dilaksanakan tanpa mengira jarak dan bilangan ahli yang melayarinya. Pengajar juga boleh berinovasi dalam penyediaan platform kaedah pengajaran dan penyampaian maklumat yang lebih sistematik dan efisien. Kajian Zahiah dan Abdul Razaq (2010) menyatakan perkongsian maklumat melalui teknologi internet dapat membantu meningkatkan keupayaan pembelajaran dan perkembangan profesionalisme individu. Transformasi terhadap sistem pendidikan akan memberi kesan teknologi terhadap latihan teknikal, pedagogi dan infrastruktur baru yang diperlukan oleh warga pendidik.

Arus perubahan yang dialami oleh semua menuntut berlakunya proses transformasi yang pesat dalam semua bentuk proses pendidikan sama ada dari sudut kurikulum, komunikasi, kreativiti, kaedah pengajaran, gaya pembelajaran, bentuk bahan bantu mengajar mahupun rekabentuk pengajaran yang menggunakan pendekatan teknologi. Subjek matematik juga tidak ketinggalan perlu dilaksanakan secara atas talian. Cabaran kepada pensyarah dan pelajar pastinya terarah kepada capaian internet. Justeru, menjadi tanggungjawab pensyarah memikirkan kaedah terbaik dalam menyelesaikan PdP. Kajian oleh Azura, Zakaria , Mohd Hasan dan Bahaman (2009) mendapati tiada perbezaan pembelajaran matematik secara tradisional dan multimedia. Kajian ini menunjukkan penggunaan multimedia tidak semestinya berkesan secara menyeluruh bagi segenap lapisan pelajar di mana keberkesanannya adalah bergantung kepada perisian multimedia itu sendiri, kumpulan pelajar yang menggunakannya, kaedah pengajaran dan tempoh penggunannya.

Penyataan Masalah

Langkah penutupan sektor pendidikan semasa PKP menyebabkan semua sekolah dan pusat pengajian tinggi ditutup bagi memutuskan rantaian penularan wabak yang berbahaya ini. Akibatnya, proses pengajaran dan pembelajaran secara bersemuka yang telah diamalkan sejak dahulu lagi terpaksa dihentikan dalam tempoh Perintah Kawalan Pergerakan (PKP). Pengajaran dan pembelajaran juga perlu dilakukan secara atas talian menggunakan pelbagai platform yang tersedia. Oleh yang demikian, setiap pensyarah harus mengambil kira beberapa faktor yang perlu dilalui oleh realiti kebanyakan pelajar iaitu bukan semua pelajar mempunyai akses capaian internet yang baik dan pelajar yang berada di rumah di sepanjang tempoh PKP serta perlu membantu ibu-bapa menguruskan aktiviti harian. Bagi subjek matematik, kebanyakkan pelajar sudah terbiasa belajar secara kaedah bersemuka berbanding penggunaan teknologi. Pengaplikasian PdP secara atas talian memerlukan kemahiran dan pengetahuan dalam kalangan pensyarah mahupun pelajar. Realitinya, ada pensyarah sentiasa menggunakan kaedah ini, namun ramai juga yang menggunakannya apabila perlu sahaja. Justeru, kajian ini

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13th – 14th December 2020

dijalankan bagi mengenalpasti persepsi pelajar terhadap pembelajaran atas talian yang perlu dilaksanakan semasa perintah kawalan pergerakan.

Objektif

I. Mengenalpasti persepsi pelajar terhadap pengajaran dan pembelajaran matematik secara atas talian.
II. Mengenalpasti medium atas talian bagi PdP matematik yang disukai oleh pelajar.
III. Mengenalpasti perbezaan persepsi pelajar lelaki dan perempuan terhadap pengajaran dan pembelajaran matematik secara atas talian menggunakan telegram.
IV. Mengenalpasti perbezaan persepsi pelajar lelaki dan perempuan terhadap pengajaran dan pembelajaran matematik secara atas talian menggunakan *Google Classroom*.

Persoalan Kajian

I Apakah persepsi pelajar terhadap pengajaran dan pembelajaran matematik secara atas talian?
II Apakah medium atas talian bagi PdP matematik yang disukai oleh pelajar?
III Adakah terdapat perbezaan persepsi pelajar lelaki dan perempuan terhadap pengajaran dan pembelajaran matematik secara atas talian menggunakan telegram?
IV Adakah terdapat perbezaan persepsi pelajar lelaki dan perempuan terhadap pengajaran dan pembelajaran matematik secara atas talian menggunakan *Google Classroom*?

Kerangka Konsep

Rajah 1: Kerangka Konsep Kajian

Kerangka konsep pada Rajah 1 menerangkan bahawa pengkaji menggunakan pelajar Sijil Teknologi Maklumat sebagai sampel kajian bagi mengetahui persepsi mereka terhadap pembelajaran matematik secara atas talian. Terdapat dua medium yang digunakan semasa pembelajaran atas talian dilaksanakan iaitu *Google Classroom* dan telegram. Dalam kajian ini, pengkaji menggabungkan dua jenis teori bagi pembelajaran secara atas talian iaitu teori konstruktivisme dan teori kognitif. Teori ini saling diperlukan dan digunakan sebagai panduan pembelajaran secara atas talian. Teori konstruktivistik menyatakan pelajar akan belajar dengan baik apabila mereka dapat membawa pembelajaran tersebut ke dalam kehidupan seharian dan memberi manfaat kepada diri sendiri. Teori pembelajaran ini juga melihat pelajar sebagai pembina pengetahuan bukan sebagai penerima pengetahuan melalui proses saling pengaruh antara pembelajaran terdahulu dengan pembelajaran terbaru (Subadrah dan Malar, (2005).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Teori kognitif berpandangan pembelajaran yang melibatkan kemahiran pemprosesan maklumat yang melibatkan pemerolehan, penstrukturan semula dan pengaplikasian maklumat menyediakan murid dengan persekitaran pembelajaran yang aktif dan lebih bermakna. Murid akan membina kemahiran berfikir yang lebih saintifik dan rasional serta lebih inovatif (Sutarto, 2017).

Kajian Literatur

Kaedah pengajaran dan pembelajaran (PdP) di institusi pengajian tinggi (IPT) negara berubah wajah daripada pengajaran tradisional berbentuk kuliah kepada pembelajaran secara atas talian. Mulai 18 Mac 2020, kerajaan memperkasakan Perintah Kawalan Pergerakan (PKP) tahap pertama. Warga pendidik berasakan perubahan paradigma amalan yang sukar dilalui kerana wajib menggunakan pengajaran secara atas talian. Proses pedagogi dan andragogi berlaku apabila pelajar IPT belajar secara atas talian menggunakan manual sukatan pengajian ditentukan. Pelajar dan pensyarah mendapat pengalaman berinteraksi, berkomunikasi dan menonton video dalam membina pengajaran mantap dalam proses PdP yang berkesan. Medium pembelajaran dalam talian membantu pelajar bertukar idea, berkomunikasi dan menyelesaikan tugasan minggu mereka hingga akhir semester. Penggunaan aplikasi pembelajaran secara maya juga memerlukan kemahiran terutama pensyarah.

Pengajaran dan Pembelajaran Secara Atas Talian

Teknologi pendidikan turut membuka peluang dan platform baru bagi memperkasakan pembelajaran, mengubah bentuk penyampaian ilmu dan meningkatkan kreativiti dalam proses pdp bahkan turut mengubah ekosistem pendidikan di Malaysia. Penggunaan teknologi sememangnya memberi implikasi baru yang lebih efektif dalam pdp sekaligus akan menyumbang kepada kelancaran dalam pendidikan. Kajian Nurfazliah, Jamalludin, Shaharuddin dan Megat (1981) menyatakan pelajar perlu didedahkan dengan cara pengajaran yang dapat menjana pemikiran secara kreatif dan kritis. Matematik sendiri secara asasnya adalah subjek yang tergolong dalam subjek yang dapat meningkatkan kreativiti, namun cara pengajaran tidak menjana ke arah melahirkan pelajar yang kreatif. Penggunaan teknologi perlu bersesuaian agar penggunaannya dapat memberikan kesan bermakna kepada pelajar, bersifat interaktif dan dapat menarik minat pelajar.

Seterusnya, kajian oleh Zolkefli, Mohd Kasri dan Irdawati (2019) mendapati pelajar lebih berminat dan telah bersedia untuk penggunaan kaedah flipped classroom dalam PdP. Penggunaan kaedah flipped classroom didapati lebih berkesan berbanding dengan pengajaran konvensional dalam pembelajaran konsep Matematik. Ini menunjukkan pembelajaran secara atas talian merupakan satu cara yang baik dan berkesan untuk meningkatkan minat pelajar terhadap mata pelajaran yang diajar khususnya subjek Matematik. Dalam menyelesaikan masalah dalam matematik, pelajar perlu mempunyai minat dan motivasi yang tinggi agar mereka tetap berusaha mencari jalan penyelesaian.

Pembelajaran secara atas talian boleh dilakukan melalui pelbagai cara antaranya *Google Classroom* dan melalui rakaman video yang boleh dihantar kepada pelajar melalui WhatsApp atau telegram. Dapatan kajian Zulhanif dan Roslinda (2019) mendapati persepsi pelajar terhadap penggunaan aplikasi *WhatsApp* dalam pembelajaran kendiri pelajar bagi subjek Matematik Tambahan adalah sangat positif. Pelajar merasakan bahawa penggunaan teknologi seharusnya dioptimumkan bagi mendapat hasil yang terbaik dalam proses pembelajaran mereka. Kesediaan pelajar untuk terlibat dengan e-pembelajaran bergantung kepada inisiatif pensyarah untuk membimbing serta fasiliti yang disediakan (Syed, 2017). E-

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13th – 14th December 2020

pembelajaran membantu pelajar untuk lebih memahami hasil pembelajaran, meningkatkan imej universiti, daya saing dan kebolehpasaran graduan.

Cabaran Pembelajaran Matematik Secara Atas Talian

Semua IPT mempunyai platform pembelajaran dalam talian namun isu utama yang dihadapi ialah capaian internet dalam kalangan pelajar. Keterbatasan dan kekangan pasti wujud khususnya kepada pelajar yang mempunyai kadar capaian internet yang lemah terutamanya mereka yang tinggal di kawasan luar bandar atau daripada keluarga yang kurang berkemampuan. Mereka juga masih belum dapat menyesuaikan diri memasuki kelas maya seperti ini kerana suasananya yang berbeza daripada kuliah harian biasa, Walaubagaimanapun, tahap kualiti capaian internet memainkan peranan penting bagi memastikan keberkesanan pembelajaran dalam talian pelajar berjalan dengan lancar. Kajian yang dijalankan oleh Zahiah dan Abdul (2010) menyatakan internet hanyalah teknologi yang memudahkan proses pencarian ilmu pengetahuan dan kemahiran. Namun jika capaian internet dan individu tidak komited, maka internet akan gagal meningkatkan kualiti pembelajaran itu sendiri.

Sebelum memulakan pembelajaran secara atas talian, pensyarah memainkan peranan yang penting dalam memastikan pembelajaran berjalan dengan lancar. Ini supaya pelajar dapat menerima segala maklumat yang berkaitan dengan baik sama seperti kaedah secara bersemuka. Dalam kajian Ahmad, Wan dan Nor (2019) menyatakan pembelajaran secara atas talian seperti portal membantu dan memberi kesan terhadap pembelajaran pelajar. Justeru menjadi tanggungjawab semua pihak terutama warga pendidik dan pembangun teknologi pendidikan untuk terus memperkembangkan lagi penggunaannya.

Seterusnya, masalah kecelaruan komunikasi mungkin boleh berlaku akibat kesilapan melakukan pentafsiran disebabkan cara gaya sesuatu isu atau komen ditulis semasa PdP atas talian dijalankan. Ini menyebabkan kekurangan maklumbalas dari pensyarah sehingga boleh menyebabkan pembelajaran tidak mempunyai haluan yang kukuh antara kedua-dua pihak. Kajian Norazah dan Nordin (2008) menyatakan guru patut menilai pengetahuan selepas pelajar mendapat informasi. Ini menunjukkan sebagai seorang pendidik mereka perlu menjelaskan dengan terperinci agar pelajar tidak menjadikan ini sebagai alasan untuk tidak menyiapkan tugasan yang diberi.

Perbandingan Kekuatan dan Kelemahan Kajian

Menerusi kajian literatur di atas, terdapat kekuatan dan kelemahan yang boleh dipertimbangkan oleh pengkaji menerusi kajian ini. Pembelajaran matematik secara atas talian merupakan perkara baru yang perlu dihadapi oleh pensyarah dan pelajar Kolej Komuniti Gerik. Kekuatan kajian ini terletak kepada sejauh mana persepsi dan penerimaan pelajar terhadap pembelajaran dari kaedah bersemuka kepada secara atas talian. Dapatan kajian ini dilihat penting untuk membantu meningkatkan mutu pengajaran pensyarah menggunakan aplikasi *Google Classroom* dan telegram khususnya di musim pendemik COVID19 ini. Kajian terhadap penerimaan pembelajaran secara atas talian oleh Mahizer (2007) menyatakan pensyarah perlu merancang dengan teliti setiap perbincangan yang dijalankan dan memberi maklumbalas yang tepat serta sesuai dengan kehendak pelajar semasa pembelajaran atas talian dijalankan. Penggunaan jaringan teknologi terutamanya internet adalah satu evolusi yang menjana kekayaan maklumat dalam pembelajaran dengan kuasa membawa maklumat dan kemahiran tertentu untuk mengupaya pekerja, pelajar dan setiap individu yang benar-benar memerlukannya (Zahiah dan Abdul, 2010).

Sementara itu, kelemahan kajian ini dilihat dari aspek penggunaan medium pembelajaran secara atas talian. Dalam kajian ini, pelajar hanya diberi dua pilihan untuk

eISBN 978-967-2426-22-6
13th – 14th December 2020

menyatakan persepsi mereka. Pembelajaran atas talian boleh dikategorikan kepada beberapa jenis seperti *Google apps*, telegram, *whatsapp*, sidang video, e-mail, multimedia dan lain-lain lagi. Justeru, terdapat pelbagai medium secara atas talian yang boleh digunakan bagi proses PdP. Menurut Nor (2020), kebanyakan institusi pengajian tinggi mempunyai platform pembelajaran atas talian yang tersendiri seperti CIDOS yang digunakan oleh politeknik Malaysia. Platform lain seperti Google Class Room, Whatsapp, Telegram, Zoom, YouTube, Webex dan lain-lain juga boleh diakses dan digunakan sebagai medium PdP secara atas talian. Hal ini turut dinyatakan dalam kajian Fariza, Md Yusoff dan Aidah (2015) mendapati aplikasi yang sering digunakan untuk bertukar maklumat dan berkolaborasi ialah WhatsApp, Facebook, Blog, mel elektronik dan google. Namun, kajian juga menyatakan pensyarah tidak boleh bersikap autokratik dengan menentukan apa pelantar yang perlu digunakan oleh pelajar. Oleh yang demikian, adalah perlu untuk kita memahami tingkahlaku pembelajaran para pelajar iaitu tentang apakah pola pemilihan aplikasi teknologi yang dirasakan berkesan dalam membantu PdP mereka dan faktor kenapa aplikasi-aplikasi tersebut menjadi pilihan.

Metodologi

Kajian yang dijalankan adalah kajian kuantitatif berbentuk deskriptif dengan menggunakan reka bentuk kajian secara tinjauan dengan menggunakan borang soal selidik. Soal selidik telah diedarkan secara dalam talian menggunakan *Google Form*. Populasi dalam kajian ini adalah terdiri daripada pelajar-pelajar semester 1 program Sijil Teknologi Maklumat di kolej komuniti Gerik yang mengambil subjek Matematik. Bilangan sampel adalah seramai 32 orang. Pembinaan instrumen kajian dibina sendiri oleh pengkaji berdasarkan konsep dan pandangan yang dikemukan penyelidik terdahulu. Soal selidik ini mengandungi 2 bahagian iaitu Bahagian A mengandungi maklumat demografi responden dan bahagian B mengandungi item-item pengajaran dan pembelajaran matematik secara atas talian. Pelajar-pelajar Kolej Komuniti Gerik perlu bertukar kepada medium PdP secara atas talian semasa minggu ke 12 daripada 14 minggu PdP. Bagi menganalisis dapatan kajian, interpretasi skor min mengikut pandangan Pallant (2007) telah digunakan.

Jadual 1: Tafsiran Min Tahap

Min	Tahap
0.00-1.66	Rendah / Tidak Memuaskan / Tidak Perlu
1.67 – 3.33	Sederhana / Agak memuaskan / Agak Perlu
3.34 – 5.00	Tinggi / Sangat memuaskan/Sangat Perlu

Dapatan Kajian Dan Perbincangan

Analisis yang dijalankan berbentuk frekuensi, skor min dan *T-Test*. Objektif 1 ialah untuk mengenalpasti persepsi pelajar terhadap pengajaran dan pembelajaran matematik secara atas talian. Berdasarkan skor min dalam Jadual 2 menunjukkan semua item mendapat skor min tinggi kecuali bagi item 4. Item 4 adalah berkaitan soalan Matematik di dalam *Google Classroom* menyebabkan saya ingin menyiapkan latihan dengan pantas dengan skor min yang rendah iaitu 1.00.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 2: Skor Min Kelebihan *Google Apps* Semasa Menjalankan PdP Atas Talian

ITEM KELEBIHAN GOOGLE APPS	MIN PURATA
1.Google Meet meningkatkan penglibatan saya dalam menjawab soalan Matematik	3.74
2.Google Classroom memudahkan saya menyiapkan tugasan dan latihan Matematik	3.89
3.Google Classroom mudah diakses melalui telefon memudahkan saya belajar matematik	4.15
4.Soalan Matematik di dalam Google Classroom menyebabkan saya ingin menyiapkan latihan dengan pantas	1.00
5.Bahan pengajaran subjek Matematik yang disediakan dalam Google Classroom memudahkan saya membuat ulangkaji	3.93
6.Saya mendapat maklumbalas markah latihan subjek Matematik lebih pantas dengan menggunkan Google Classroom	3.92
7.Google Meet meningkatkan keyakinan saya dalam mengutarakan pendapat dalam subjek Matematik	4.04
8.Kerja secara berkumpulan subjek Matematik lebih mudah melalui Google Meet	4.19

Pengkaji melihat pelajar berasa yakin untuk belajar matematik secara atas talian berbanding secara tradisional iaitu bersemuka. Pelajar lebih cenderung melibatkan diri dalam menjawab soalan matematik secara atas talian mungkin disebabkan mereka berasa lebih yakin untuk bertanya dan bebas berkomunkasi tanpa ada perasaan takut. Kajian oleh Ahmad Zaki, Ahmed Thalal, Ahmad, Nor dan Mohd Shahriman (2014) turut mendapati pembelajaran secara atas talian menggunakan aplikasi berteknologi dalam PdP memberi ruang yang lebih luas kepada para pelajar untuk menggunakannya dan boleh diakses di mana-mana sahaja asalkan mempunyai sambungan internet. Kajian Noriyani (2017) juga mendapati penggunaan pembelajaran *mobile* sesuai digunakan terutama bagi peringkat pengajian tinggi untuk memudahkan dalam menyampaikan maklumat, membuat tugasan dan ujian.

Google Classroom merupakan aplikasi pembelajaran percuma yang telah dibangunkan oleh pihak *Google* bagi memudahkan para pendidik merancang, melaksanakan dan mentaksir tugasan ataupun hasil kerja murid secara pendekatan *paperless*, di samping menggalakkan proses perkongsian bahan-bahan pengajaran dan pembelajaran. Penerimaan pelajar terhadap penggunaan *Googgle Classroom* dan telegram bagi kajian ini berada pada tahap tinggi memandangkan pelajar merupakan generasi yang sememangnya menggunakan teknologi seiring dengan peredaran masa. Dapatan kajian adalah tidak selari dengan kajian M. Kaviza (2020) yang mendapati tahap kesediaan pelajar terhadap penggunaan aplikasi *Google Classroom* sebagai *platform* pembelajaran berada pada tahap sederhana. Namun, kajian ini adalah selari dengan dapatan kajian oleh Nor Zanira dan Hafizul (2019) iaitu tahap kesediaan dan penerimaan pelajar terhadap penggunaan aplikasi *Google Classroom* dalam proses pembelajaran berada pada tahap tinggi. Ini menunjukkan penggunaakan aplikasi atas talian sedikit sebanyak memerlukan para pendidik untuk merancang dan mengingtegrasikan penggunaan aplikasi Google Classroom dan telegram dengan lebih meluas dan berkesan.

Dengan *Google Classroom*, pensyarah boleh menggunakan *Google Meet*, *Google Doc* dan lain-lain untuk memberi latihan atau tugasan matematik kepada pelajar. Pensyarah juga boleh menghantar mesej secara peribadi kepada mana-mana pelajar sekiranya pelajar mempunyai masalah dalam menyelesaikan permasalahan matematik. Hal ini sangat membantu pensyarah dalam memberikan perhatian khusus kepada pelajar tertentu. Oleh yang demikian pelajar memberi respon yang sangat baik dengn skor min tinggi berkaitan dengan *Google Meet*, *Google Doc* dan lain-lain dalam kajian ini. Kajian ini adalah seiring dengan dapatan Rini (2019) yang mendapati pelajar menerima baik pembelajaran menggunakan *Google Classroom* kerana mereka boleh mengeksesnya menggunakan komputer, laptop atau *smartphone*. Pelajar

eISBN 978-967-2426-22-6
13th – 14th December 2020

berasa senang untuk belajar matematik secara atas talian dan boleh mengulangkaji nota berulang kali dengan mudah dan cepat. Namun dalam kajian ini pelajar memberikan respon rendah dengan skor min1.00 bagi item 4. Pelajar menunjukkan kurang minat dalam menghantar tugasan dengan pantas. Ini mungkin disebabkan pelajar lebih banyak meluangkan masa di rumah dan menyelesaikan tugasan harian yang lain. Menyelesaikan masalah dalam matematik memerlukan pelajar memberi tumpuan dan berpemikiran secara kritis. Ia disokong oleh kajian Azura et.al (2009) yang mendapati tiada perbezaan sikap antara pembelajaran secara tradisional atau menggunakan teknologi dalam pembelajaran matematik. Sikap pelajar itu sendiri memainkan peranan penting khususnya sepanjang tempoh PKP memandangkan pensyarah berusaha untuk mengajar dan membantu pelajar secara optimum. Pelajar seharusnya memberi komitmen dalam menyiapkan tugasan bagi mengelakkan kerja tertangguh dan berlaku kelewatan dalam menghantar tugasan.

Sementara itu, dapatan kajian bagi kelebihan PdP melalui telegram menunjukkan skor min tinggi bagi semua item soalan dengan skor min melebihi 4.00. Perincian setiap cabaran mengikut ranking adalah seperti dalam Jadual 3.

Jadual 3: Skor Min Kelebihan Telegram Semasa Menjalankan Pdp Atas Talian

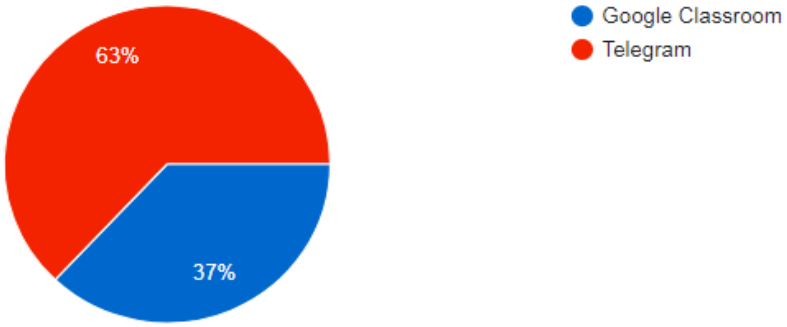
ITEM KELEBIHAN TELEGRAM	MIN PURATA
1. Interaksi antara saya dan pensyarah Matematik lebih mudah dan mesra melalui Telegram	4.07
2. Telegram membantu saya lebih berdikari dalam mencari info latihan/tugasan Matematik	4.04
3.Kerja secara berkumpulan subjek Matematik lebih mudah melalui Telegram	4.00
4.Telegram memudahkan saya menghantar latihan / tugasan Matematik	4.19
5. Akses soalan masih boleh didapati melalui Telegram walaupun saya tidak hadir ke dalam kelas Matematik	4.26
6. Telegram tidak memerlukan akses internet yang kuat	4.15
7. Saya boleh menjawab pertayaan pensyarah melalui audio,video,teks,gambar dan sticker melalui Telegram	4.35
8. Pengajaran Matematik mudah diakses kerana Telegram boleh dibuka di smartphone,tablet,komputer dan laptop	4.33

Pelajar Kolej Komuniti menyedari e-pembelajaran dapat meningkatkan keberkesanan proses pembelajaran walaupun ada kalanya merasa terganggu akibat kekurangan kemudahan dan capaian kepada internet. Aplikasi telegaram mempunyai ciri-ciri istimewa yang mampu menggantikan penggunaan email dan tidak terdapat dalam aplikasi *WhatsApp*. Hampir keseluruhan pelajar yang mengambil subjek matematik mempunyai akses yang baik pada telegram berbanding *Google Classroom*. Sebelum PKP pelajar juga sememangnya menggunakan telegram dalam subjek matematik sebagai medium untuk menghantar tugasan dan berkomunikasi. Justeru, skor min yang diperolehi bagi penggunaan telegram berada pada tahap tinggi. Kajian oleh Syed (2017) mendapati pelajar mengetahui penggunaan WhatsApp dan Telegram dalam pembelajaran. Pelajar juga bersetuju penggunaan medium ini membantu mereka untuk lebih memahami hasil pembelajaran matematik dengan lebih baik.

Penggunaan telegram secara efektif oleh pensyarah membuatkan pelajar berasa senang menggunakan medium ini semasa PKP. Pelajar berasa amat selesa untuk menghantar tugasan melalui telegram mengikut masa yang ditetapkan. Mungkin ini disebabkan telegram tidak memerlukan akses internet yang kuat. Aplikasi ini juga tidak menyebabkan peranti telefon bimbit menjadi berat walaupun menyimpan banyak fail. Oleh itu, pelajar akan berasa selamat dan yakin media yang dihantar dalam telegram akan tersimpan sebagai rujukan pada masa hadapan. Kajian ini disokong dengan dapatan kajian oleh Mohd Zainudin (2017) yang

eISBN 978-967-2426-22-6
13th – 14th December 2020

mendapati kesan penggunaan aplikasi telegram memberi kesan yang positif dengan skor min berada pada tahap tinggi. Ini membuktikan pelajar mendapat pengalaman pembelajaran yang lebih menarik khususnya dalam subjek matematik. Kajian oleh Rinasih (2015) juga menyatakan PdP menggunakan teknologi seperti telegram dapat memberikan hasil pembelajaran yang lebih baik kerana aplikasi ini mempunyai akses yang lancar dan efisyen.
Seterusnya, objektif 2 adalah untuk mengenalpasti medium atas talian bagi PdP matematik yang disukai oleh pelajar. Rajah 1 menunjukkan medium PdP yang paling disukai oleh pelajar ialah aplikasi telegram berbanding *Google Classroom*. Hasil kajian menunjukkan 63 % pelajar menyukai telegram dan 37% menyukai *Google Glassroom.*



Rajah 1 : Medium PdP Yang Disukai Oleh Pelajar

Pada pendapat pengkaji, pelajar menjadikan telegram sebagai medium pembelajaran dalam talian kerana ahli kumpulan boleh memasukkan rakan mereka ke dalam kumpulan telegram, tidak membebankan memori telefon, sesuai digunakan di telefon pintar android mahupun desktop dan saiz pemindahan fail adalah besar. Pelajar juga akan mendapat kualiti nota dan video dari penyarah dengan sangat baik di telegram. Dapatan ini disokong oleh kajian Mujahidah, Hanady dan Faisal (2020) yang mendapati penggunaan telegram dan *whatsapp* merupakan medium yang sangat diterima baik dn digunakan oleh pelajar-pelajar dalam pembelajaran bahasa arab. Penggunaan medium ini sebagai medium pembelajaran memberikan pengaruh terhadap kemahiran menulis, membaca, mendengar dan berkomunikasi. Selain itu, kajian oleh Siti dan Muniroh (2020) menyatakan peratusan penerimaan pelajar terhadap pembelajaran dalam talian berada pada tahap memuaskan. Pensyarah telah menetapkan kaedah yang bersesuaian dengan kehendak dan latar belakang pelajar-pelajar sebelum berkongsi bahan pengajaran iaitu video pengajaran, nota ringkas, jalan kerja tutorial dan juga perbincangan mengenai topik yang kurang faham di dalam telegram, *Google Classroom, whatsapp* dan lain-lain. Ini seterusnya memudahkan pelajar mendapatkan input pembelajaran dengan lancar.

Objektif 3 adalah untuk mengenalpasti perbezaan persepsi pelajar lelaki dan perempuan terhadap pengajaran dan pembelajaran matematik secara atas talian. Jadual 3 menunjukkan tidak terdapat perbezaan persepsi pelajar lelaki dan perempuan terhadap pengajaran dan pembelajaran matematik secara atas talian menggunakan telegram.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 3: Data Analisis T-Test Bagi Telegram

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
telegram	Equal variances assumed	.708	.407	-.155	28	.878	-.04282	.27627	-.60873	.52308
	Equal variances not assumed			-.154	25.086	.879	-.04282	.27867	-.61667	.53102

Objektif 4 adalah untuk mengenalpasti perbezaan persepsi pelajar lelaki dan perempuan terhadap pengajaran dan pembelajaran matematik secara atas talian menggunakan *Google Classroom*. Jadual 4 menunjukkan tidak terdapat perbezaan persepsi pelajar lelaki dan perempuan terhadap pengajaran dan pembelajaran matematik secara atas talian menggunakan *Google Classroom*.

Jadual 4: Data Analisis T-Test Bagi *Google Classroom*

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
google	Equal variances assumed	.170	.683	1.145	28	.262	.28289	.24699	-.22305	.78882
	Equal variances not assumed			1.182	27.940	.247	.28289	.23936	-.20746	.77324

Melalui uji kaji t-test didapati nilai Sig t-test adalah melebihi 0.05 maka dapat disimpulkan Ho diterima. Pada pendapat pengkaji, pelajar sangat menitik berat pembelajaran walaupun terpaksa belajar secara atas talian. Ini kerana pelajar masih ada keinginan untuk mendapatkan keputusan yang cemerlang dalam subjek matematik. Walaupun terdapat banyak cabaran yang perlu ditempuhi seperti capaian internet, pelajar tetap memberikan komitmen yang amat baik dalam menyiapkan tugasan yang diberikan serta kehadiran juga mencapai 90% setiap kali kelas dilakukan secara atas talian. Ini selari dengan kajian Norasyikin dan Mohd Isa (2016) yang menunjukkan pelajar telah bersedia untuk mengikuti pembelajaran berasaskan blended learning tanpa mengira perbezaan jantina dan program. Selain itu,dapatan juga medapati pihak institusi dan tenaga pengajar bahawa para pelajar sebenarnya telah bersedia untuk mengikuti pembelajaran berasaskan *blended learning* ini. Justeru pengkaji berpendapat pembelajaran secaraatas talian boleh ditambah baik sekiranya pensyarah diberi latihan dan pendedahan yang secukupnya bagi memastikan pelaksanaan pembelajaran atas talian ini mencapai matlamatnya.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kesimpulan

Secara keseluruhannya, kajian ini telah dapat mengenalpasti persepsi pelajar terhadap pengajaran dan pembelajaran matematik secara atas talian. Dapatan kajian menunjukkan skor min yang tinggi terhadap medium *Google Clasroom* dan telegram. Walaupun terdapat cabaran dan kelemahan, ia tidak seharusnya dilihat sebagai batu penghalang bagi melaksanakan sepenuhnya kaedah moden ini. Seterusnya, dapatan kajian juga menjawab kepada objektif yang kedua iaitu medium atas talian bagi PdP matematik yang disukai oleh pelajar adalah telegram. Penggunaan telegram adalah lebih mudah untuk diakses mungkin kerana tidak menggunakan data yang kuat. Pengkaji melihat pelajar lebih mudah dan selesa untuk merujuk, membuat tugasan dan melihat nota melalui video berulang kali dengan menggunakan telegram berbanding *Google Classroom*.

Selain itu, kajian ini turut mendapati tiada perbezaan persepsi pelajar lelaki dan perempuan terhadap pengajaran dan pembelajaran matematik secara atas talian menggunakan telegram dan *Google Classrom*. Pengkaji berpendapat pembelajaran di luar kelas ini juga dilihat dapat membantu pelajar untuk meneroka segala maklumat yang mereka ingin tahu. Pembelajaran secara atas talian akan memberikan kebebasan kepada pelajar untuk meneroka perkara di luar kelas seperti kebiasaannya. Ia secara tidak langsung dapat meningkatkan kemahiran, membina karakter serta memastikan pembelajaran yang menyeluruh tetap berlangsung walaupun berada di rumah.

Kajian ini diharapkan dapat membantu pihak pengurusan Kolej Komuniti Gerik dan pensyarah dalam menstruktur semula pembelajaran dari kaedah bersemuka kepada secara atas talian yang lebih mudah diikuti oleh semua pelajar. Bengkel berkaitan PdP atas talian perlu dijalankan secara berkala agar pensyarah dan pelajar tidak ketinggalan dengan perkembangan teknologi semasa. Pengkaji juga mengesyorkan untuk kajian hadapan agar dapat meluaskan bilangan sampel dan melihat kepada cabaran yang dihadapi oleh pelajar dan pensyarah apabila menjalankan PdP secara atas talian.

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eISBN 978-967-2426-22-6
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KEBERKESANAN INOVASI *SMART INFOBOARD PC COMPONENTS* SEBAGAI ALAT BANTU MENGAJAR TEKNOLOGI *AUGMENTED REALITY* BAGI KURSUS PENGENALAN SISTEM KOMPUTER DI KALANGAN PELAJAR POLITEKNIK PANTAI TIMUR

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Abstract: *Konsep AR telah diperluaskan dalam pendidikan secara inovatif yang berpotensi mengubah kelas biasa menjadi pengalaman yang menarik memandangkan terdapat pelbagai perisian dan perkakasan yang boleh diperolehi dan digunakan untuk menghasilkan aplikasi AR. Kursus Pengenalan Sistem Komputer merupakan kursus yang ditawarkan di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Sultan Mizan Zainal Abidin (PSMZA), Dungun Terengganu bertujuan memperkenalkan pelajar kepada konsep asas komputer, pemasangan perkakasan dan instalasi perisian. Tujuan kajian ini dijalankan adalah untuk mengenalpasti tahap persepsi pelajar terhadap penggunaan SIPC sebagai alat bantu mengajar dan mengenalpasti tahap keberkesanan penggunaan SIPC sebagai alat bantu mengajar dalam Kursus Pengenalan Sistem Komputer. Seramai 36 orang pelajar terlibat sebagai responden. Borang soal selidik digunakan sebagai instrumen kajian. Kaedah analisis kuantitatif digunakan bagi menghuraikan skor min dengan menggunakan SPSS versi 26.0. Hasil dapatan menunjukkan tahap persepsi pelajar terhadap penggunaan SIPC sebagai alat bantu mengajar adalah pada tahap julat skor min tinggi iaitu 4.51 dan tahap keberkesanan penggunaan SIPC sebagai alat bantu mengajar juga adalah pada tahap julat skor min tinggi iaitu 4.51. Secara keseluruhannya, hasil kajian yang dijalankan mendapati bahawa tahap keberkesanan inovasi SIPC sebagai alat bantu mengajar teknologi augmented reality bagi Kursus Pengenalan Sistem Komputer di kalangan pelajar PSMZA adalah pada tahap tinggi. Ini menunjukkan bahawa kesemua item yang dikaji menyokong bahawa SIPC sebagai alat bantu mengajar adalah sangat berkesan.*

Kata Kunci: *inovasi, augmented reality, alat bantu mengajar*

Pengenalan

Penggunaan teknologi *Augmented Reality* (AR) berasaskan multimedia berpotensi besar digunakan dalam dunia pendidikan. AR kini menjadi trend dalam bidang pendidikan kerana mampu mengubah kelas biasa menjadi pengalaman yang menarik. AR menggunapakai paparan skrin sesebuah komputer atau tablet untuk mewujudkan objek maya dan menambahkan elemen multimedia untuk menyokong bahan buku teks statik. Hasilnya, kelas menjadi lebih interaktif, menarik, seronok dan efektif yang bukan hanya sekadar membaca tentangnya. AR dapat membantu pelajar mengingati maklumat yang baru mereka pelajari dengan lebih baik.

Konsep AR telah diperluaskan secara inovatif memandangkan terdapat pelbagai perisian dan perkakasan yang boleh diperolehi dan digunakan untuk menghasilkan aplikasi AR.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Secara umumnya, peralatan asas aplikasi AR memerlukan penanda atau label tertentu yang kebiasaannya sebuah buku AR atau kad AR berbentuk segiempat dan kamera web atau kamera telefon pintar. Dengan mengesan penanda atau label AR menerusi rakaman kamera, elemen maya kemudiannya akan dijanakan oleh perisian AR dan dipaparkan di skrin monitor. Kelebihan penggunaan AR ialah ianya boleh dimainkan berulang kali penggunaannya, mudah, cepat dan efektif.

Sebahagian besar kajian lain berkenaan teknologi AR menunjukkan bahawa pelajar teruja dan berminat untuk belajar menggunakan teknologi AR. Sebagai contoh Cai, Wang & Chiang (2014) dan Sampaio & Almeida (2016) menyatakan bahawa strategi pembelajaran menggunakan AR mewujudkan persekitaran pembelajaran baru kepada pelajar, mewujudkan ruang kerjasama di kalangan pelajar dan guru serta berpotensi meningkatkan motivasi belajar serta keinginan untuk melibatkan diri dalam persekitaran pembelajaran. Tambahan lagi, AR menciptakan pengalaman pembelajaran yang dihubungkan dengan kelas formal, supaya pelajar dapat belajar di luar waktu kelas dan di luar waktu persekolahan (Burton et al., 2011). Melalui AR, pendidik dapat meningkatkan hasil pembelajaran melalui peningkatan kebolehan pembelajaran seperti penyelesaian masalah dan kolaborasi.

Kursus Pengenalan Sistem Komputer merupakan kursus untuk pelajar semester pertama politeknik yang diajar oleh pensyarah di Jabatan Teknologi Maklumat dan Komunikasi. Tempoh kursus DFC10033 adalah selama empat bulan. Matlamat kursus ini adalah untuk memperkenalkan pelajar kepada konsep asas komputer, pemasangan perkakasan dan instalasi perisian. Kursus ini melibatkan sesi kuliah secara teori serta sesi amali demonstrasi pemasangan perkakasan komputer dan instalasi perisian oleh pensyarah sebelum pelajar memulakan amali yang diberikan.

Masalah utama pensyarah adalah kekangan masa pertemuan untuk sesi amali dan penggunaan lokasi makmal yang terhad. Berdasarkan pemerhatian yang telah dibuat, terdapat sebilangan pelajar yang tidak dapat memahami proses amali demonstrasi yang telah dibuat oleh pensyarah secara terus dan memerlukan kepada demonstrasi ulangan. Ini menunjukkan bahawa tahap kefahaman pelajar adalah berbeza. Pelajar sukar untuk memberi tumpuan dan minat dalam mengikuti aktiviti pengajaran dan pembelajaran terutamanya pengajaran yang melibatkan kaedah berpusatkan guru. Disebabkan tempat dan masa yang terhad, maka sesi demonstrasi ulangan tidak dapat dilakukan.

Namun begitu, kaedah penggunaan bahan rujukan pelajar yang biasa digunakan dalam sesi pengajaran dan pembelajaran adalah berbentuk statik dan kompleks. Pelajar terikat kepada modul yang dibekalkan oleh pensyarah semata-mata. Sedangkan, kursus ini lebih menjurus kepada pembelajaran berbentuk fizikal dan teknikal iaitu pelajar perlu memerhatikan demonstrasi pemasangan komputer sebelum mereka memulakan amali yang diberikan. Pembelajaran melalui bahan rujukan sahaja adalah kurang efektif untuk meningkatkan kefahaman pelajar kerana pelajar tidak dapat melihat dengan jelas kaedah pemasangan komputer dan sistem operasi komputer yang sebenar.

Malahan pula, kaedah demonstrasi menggunakan perkakasan komputer yang sebenar berulang-kali juga kurang sesuai kerana boleh mengakibatkan kerosakan terhadap perkakasan tersebut. Kekangan kewangan daripada pihak pengurusan institusi juga berlaku kerana tidak dapat membuat pembelian penggantian perkakasan komputer yang mudah rosak. Pihak pengurusan institusi terikat dengan komitmen mengambil langkah-langkah penjimatan dalam perbelanjaan tahunan. Ini mengakibatkan proses pengajaran dan pembelajaran terganggu akibat kekurangan alatan dan bahan untuk melakukan kerja-kerja amali pemasangan komputer.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kajian Literatur

Pengenalan Augmented Reality (AR)

Keperluan pendidikan abad ke-21 menggalakkan pelbagai inovasi dan ciptaan baharu alat bantu mengajar (ABM) yang sesuai dengan corak pemikiran pelajar dalam usaha membantu guru menyampaikan maklumat serta pengetahuan kepada pelajar khususnya bagi mengimbangi potensi dan kemahiran dalam diri pelajar dengan pengetahuan yang dicambah melalui kaedah teknologi pendidikan. *Augmented Reality* (AR) diakui sebagai salah satu perkembangan teknologi pendidikan interaktif. Kelebihan AR dilihat sebagai cabang pendidikan efektif yang mempunyai potensi besar dalam memperkayakan pembelajaran secara lebih bermakna kerana penerangan dan gambaran secara realiti dan jelas dapat divisualkan kepada pelajar. AR menggunapakai paparan skrin sesebuah komputer atau tablet untuk mewujudkan objek maya dan menambahkan elemen multimedia untuk menyokong bahan buku teks statik. Hasilnya, kelas menjadi lebih interaktif, menarik, seronok dan efektif yang bukan hanya sekadar membaca tentangnya. AR dapat membantu pelajar mengingati maklumat yang baru mereka pelajari dengan lebih baik.

Penggunaan Aplikasi AR Sebagai Alat Bantu Mengajar

AR dalam pendidikan dapat mengubah cara guru menyampaikan pengajaran lebih interaktif. AR membantu guru mendapatkan perhatian pelajar dalam masa yang singkat dan juga meningkatkan tahap penglibatan pelajar dalam aktiviti pembelajaran. Kajian daripada Nugraha et al. (2014) dan Haryanto et al. (2017) menyatakan bahawa aplikasi AR bermanfaat sebagai alat bantu mengajar yang menyenangkan dan mudah berbanding penggunaan buku. Pengujian kepuasan penggunaan AR dari segi kegunaan dan manfaat aplikasi AR sebagai alat bantu mengajar telah dijalankan menunjukkan bahawa 88.75% responden bersetuju bahawa aplikasi AR bermanfaat sebagai alat bantu mengajar, 92.5% responden bersetuju bahawa aplikasi AR mudah digunakan dan 92.5% responden bersetuju bahawa aplikasi AR menarik untuk digunakan sebagai alat bantu mengajar (Nugraha et al., 2014).

Selain itu, kaedah penggunaan aplikasi AR memberikan pengetahuan dan pengalaman pengajaran dan pembelajaran yang berbeza berbanding penggunaan buku. Berdasarkan dapatan kajian lepas yang telah dijalankan oleh Haryanto et al. (2017) melalui kaedah pengujian ujian pra dan ujian pasca pada kelompok kumpulan yang menggunakan aplikasi AR, keputusan menunjukkan peningkatan nilai min yang tinggi iaitu terdapat perbezaan ketara daripada hasil pembelajaran sebelum dan selepas menggunakan aplikasi AR. Berbanding dengan pengujian ujian pra dan ujian pasca pada kelompok kumpulan yang hanya menggunakan buku rujukan, keputusan menunjukkan peningkatan nilai min yang rendah iaitu perbezaan yang minima. Ini kerana kaedah pembelajaran menggunakan aplikasi AR sebagai alat bantu mengajar memberikan pengetahuan yang berbeza dan mudah diingati berbanding penggunaan buku.

Manakala, dalam kajian oleh Saltan & Arslan (2016) dan Wang et al. (2014) menunjukkan bahawa terdapat peningkatan motivasi, penglibatan dan kepuasan pelajar semasa menggunakan aplikasi AR sebagai alat bantu mengajar, malahan meningkatkan kemahiran berfikir aras tinggi pelajar seperti penyelesaian masalah, pemikiran kreatif atau pemikiran kritis. Aplikasi AR menyokong persekitaran pembelajaran autentik di mana guru atau pendidik dapat merekabentuk aktiviti pembelajaran kolaboratif berasaskan inkuiri untuk pelajar dengan mengambilkira dapatan kajian bahawa aplikasi AR mampu menyokong pembelajaran berpusatkan pelajar berbanding pembelajaran tradisional berpusatkan guru Wang et al. (2014).

Begitu juga dalam bidang pendidikan sains komputer. Menurut Abd Majid et al. (2015), hasil dapatan kajian untuk mengenal pasti persepsi pelajar dalam mempelajari komponen dan

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13th – 14th December 2020

sistem operasi komputer dalam Kursus Sains Komputer menunjukkan bahawa kebanyakan pelajar terdorong untuk menggunakan AR dalam pembelajaran dan berpendapat bahawa aplikasi itu berguna dan menarik.

Berdasarkan sintesis daripada kajian-kajian lepas, jelas menunjukkan terdapat perbezaan tahap keberkesanan penggunaan AR sebagai alat bantu mengajar dalam proses pengajaran dan pembelajaran berbanding pendekatan secara tradisional sebelumnya. AR terbukti dapat meningkatkan kerjasama antara guru dan pelajar. AR berpotensi memberi manfaat untuk diterapkan ke persekitaran pengajaran dan pembelajaran. AR menggalakkan pembelajaran berpusatkan pelajar di mana pelajar dapat belajar melalui pembelajaran berdasarkan pengalaman dengan mencuba beberapa visual 3D dalam aplikasi AR untuk mewujudkan rasa ingin tahu dalam proses pembelajaran.

Keberkesanan Penggunaan Aplikasi AR Sebagai Alat Bantu Mengajar

Kebanyakan kandungan aplikasi AR dibangunkan merangkumi pelbagai topik sesuatu mata pelajaran. Penggunaan aplikasi AR meningkatkan prestasi pembelajaran yang ketara berbanding dengan kaedah tradisional. Aplikasi AR memberi peluang pembelajaran visual secara alternatif menjadikan kitaran pembelajaran pelajar meningkat dan mengekalkan pengetahuan dari masa ke masa.

Hasil dapatan kajian daripada Westerfield et al. (2015) menunjukkan penilaian terhadap pelajar yang berlatarbelakang pengalaman minimum dengan amali pemasangan perkakasan komputer mendapati bahawa aplikasi AR meningkatkan skor ujian sebanyak 25% dan prestasi tugas 30% lebih cepat berbanding kaedah tradisional. Ini dapat disimpulkan bahawa aplikasi AR meningkatkan hasil pembelajaran yang jauh lebih baik. Ciri-ciri aplikasi AR yang mengandungi elemen objek 3D, animasi, audio dan video yang interaktif mendorong guru atau pendidik untuk menarik perhatian pelajar.

Penggunaan AR dalam pendidikan mewujudkan keseronokan pembelajaran bagi pelajar, malahan pelajar bermotivasi untuk terlibat dalam proses eksperimen dan demonstrasi sambil menggunakan telefon pintar atau tablet. Penggunaan peranti mudah alih seperti telefon pintar dan tablet dapat memudahkan pelajar belajar melalui aplikasi AR menjadikan pengalaman belajar lebih bermakna. Pelajar menjadi teruja untuk belajar dan pelajar dapat mengembangkan kemampuan berfikir secara kreatif dan kritis. Oleh itu, adalah amat penting kajian tentang bagaimana teknologi AR membantu pembelajaran bidang Sains Komputer perlu dibincangkan meluas.

Terdapat banyak kajian bidang lain yang membuktikan bahawa terdapat peningkatan dari segi prestasi pelajar sebelum dan selepas mereka menggunakan aplikasi AR sebagai alat pembelajaran. Dalam kajian lepas daripada Saundarajan et al. (2020), data dikumpulkan daripada pelajar menengah rendah melalui ujian pra dan pasca untuk meneliti prestasi pelajar setelah penerapan aplikasi AR dalam pelajaran Matematik algebra. Hasil keputusan kajian mendapati bahawa penggunaan aplikasi AR meningkatkan pembelajaran secara signifikan di kalangan pelajar. Begitu juga dengan kajian daripada Zulfabli et al. (2019), ujian pra telah dilaksanakan kepada pelajar semester 1 politeknik zon utara untuk latihan amali bengkel mekanikal sebelum diperkenalkan aplikasi pembelajaran AR dan hasil kajian mendapati markah ujian pra adalah tidak memuaskan (min 37.5%). Kemudian, pelajar didedahkan dengan pembelajaran aplikasi AR dan ujian pasca dilaksanakan menunjukkan terdapat peningkatan terhadap prestasi penilaian pelajar (min 70.83%). Perbezaan antara markah ujian pra dan pasca menunjukkan bahawa pembelajaran aplikasi AR amat membantu pelajar untuk mudah memahami latihan amali mereka. Tambahan lagi, kajian daripada Yuliono et al. (2018) terhadap para pelajar amali perubatan menunjukkan bahawa data yang diperolehi hasil

eISBN 978-967-2426-22-6
13th – 14th December 2020

keputusan ujian pra (sebelum menggunakan AR) memperolehi nilai min yang rendah berbanding dengan ujian pasca (selepas menggunakan AR dalam pembelajaran) yang memperolehi nilai min yang tinggi. Nilai statistik deskriptif ini, menunjukkan bahawa dengan menggunakan AR, para pelajar amali perubatan dengan mudah dapat membayangkan secara visual apa yang dipelajari dan memahami konsep yang kompleks, sehingga dapat meningkatkan proses pembelajaran serta hasil pembelajaran.

Berdasarkan huraian di atas membuktikan bahawa proses pembelajaran menggunakan media teknologi AR sangat penting untuk meningkatkan pemahaman pelajar terhadap sesuatu bidang kursus. Aplikasi AR yang dihasilkan tidak hanya memaparkan elemen multimedia saja, tetapi juga memuatkan elemen susunan kandungan AR yang mampu menarik minat pelajar untuk mencuba aplikasi AR, arahan yang sangat jelas dan menarik serta konteks hubungan di antara pelajar dan imej visual AR tersebut yang mempengaruhi gaya penyampaian kandungan AR.

Pengurangan Perbelanjaan Pendidikan

Menyedari hakikat bahawa potensi AR kian meluas, maka penggunaan AR disasarkan seiring dengan ledakan teknologi pendidikan kini dan sekaligus membantu mengurangkan kos perbelanjaan sektor pendidikan secara signifikan. Menurut El Sayed et al. (2010), aplikasi pendidikan menggunakan AR mewujudkan pengurangan perbelanjaan pendidikan di sekolah atau institusi dan dapat meningkatkan keupayaan pembelajaran pelajar dengan hanya menggunakan alat bantu mengajar yang minimum. Ini juga disokong oleh kajian daripada Ishak &Yamin (2020) bahawa pelbagai kelebihan penggunaan alatan ICT boleh dinikmati seperti pengurangan kos, peningkatan kecekapan organisasi, kecekapan dalam membuat keputusan dan meningkatkan daya saing organisasi. Bagi mencapai matlamat ini, industri memerlukan kemahiran yang mampu mengaplikasikan dan mengendalikan alatan ICT seiring dengan keperluan dan kehendak semasa industri.

Objektif

1. Mengenalpasti tahap persepsi pelajar terhadap penggunaan *Smart Info Board: PC Components (SIPC)* sebagai alat bantu mengajar dalam Kursus Pengenalan Sistem Komputer.
2. Mengenalpasti tahap keberkesanan penggunaan *Smart Info Board: PC Components (SIPC)* sebagai alat bantu mengajar dalam Kursus Pengenalan Sistem Komputer.

Metodologi Kajian

Kajian ini menggunakan analisis deskriptif untuk membantu dalam menentukan objektif kajian tercapai. kaedah kajian yang dirangka adalah melibatkan reka bentuk kajian, populasi dan sampel kajian, instrumen kajian, kajian rintis serta kaedah analisa data.

Rekabentuk Kajian

Kaedah tinjauan dilaksanakan dengan menggunakan borang soal selidik sebagai instrumen utama kajian. Soal selidik dipilih untuk memperolehi maklumat secara kuantitatif dan ianya juga merupakan satu cara yang tepat, cepat dan menjimatkan masa. Borang soal selidik ini mengandungi Bahagian A, Bahagian B dan Bahagian C.

Populasi Dan Sampel Kajian

Populasi sasaran kajian ini merupakan pelajar semester 1 program Diploma Teknologi Maklumat (Teknologi Digital) bagi sesi Disember 2019 dan sampel kajian seramai 36 orang

eISBN 978-967-2426-22-6
13th – 14th December 2020

daripada jumlah 40 populasi yang diperolehi (Krejcie dan Morgan, 1970). Ia terdiri daripada 22 orang lelaki (61.1%) dan 14 orang perempuan (38.9%).

Instrumen Kajian

Borang soal selidik digunakan sebagai instrumen utama kajian. Instrumen soal selidik dipilih untuk memperolehi maklumat secara kuantitatif dan ianya juga merupakan satu cara yang tepat, cepat dan menjimatkan masa. Borang soal selidik yang dikemukakan kepada responden terbahagi kepada tiga bahagian iaitu Bahagian A, B dan C. Bahagian A mengandungi soalan yang berkaitan dengan demografi responden, Bahagian B pula melibatkan taburan responden terhadap *Tahap Persepsi Pelajar Terhadap Penggunaan SIPC Sebagai Alat Bantu Mengajar* manakala Bahagian C melibatkan *Tahap Keberkesanan Penggunaan SIPC Sebagai Alat Bantu Mengajar*.

Kajian Rintis

Kajian rintis bertujuan menguji soal selidik menggunakan sampel yang lebih kecil berbanding saiz sampel yang dirancang untuk mengukur sejauh mana kebolehpercayaan instrumen soal selidik sebelum kajian sebenar dijalankan. Instrumen kajian dianggap mempunyai tahap kebolehpercayaan tinggi sekiranya nilai Cronbach Alpha melebihi 0.7 (Mohd Majid Konting, 2004). Nilai Cronbach Alpha yang diperoleh bagi setiap bahagian instrumen soal selidik diinterpretasi berdasarkan Jadual 1 di bawah. Nilai keseluruhan Cronbach Alpha bagi instrumen kajian rintis masing-masing menunjukkan nilai 0.82 dan 0.76 iaitu berada pada tahap kebolehpercayaan tinggi.

Jadual 1: Analisis Alpha'Cronbach

Perkara	Alpha'Cronbach
Tahap Persepsi Pelajar Terhadap Penggunaan SIPC Sebagai Alat Bantu Mengajar	0.82
Tahap Keberkesanan Penggunaan SIPC Sebagai Alat Bantu Mengajar	0.76

Kaedah Analisa Data

Kaedah analisis kuantitatif digunakan bagi menghuraikan skor min dengan menggunakan perisian SPSS (*Statistical Packages for Social Science*). Skala yang digunakan untuk mengukur pemarkahan bagi kajian ini ialah dengan menggunakan kaedah skala Likert Lima Mata iaitu 1 (Sangat Tidak Setuju), 2 (Tidak Setuju), 3 (Kurang Setuju), 4 (Setuju) dan 5 (Sangat Setuju). Hasil dapatan kajian dianalisis dengan menggunakan skor min dan tahap skor min. Nilai min keseluruhan yang diperolehi bagi setiap faktor diinterpretasi mengikut tahap julat skor min yang ditetapkan sebagai ukuran iaitu 1.00-2.00 (Rendah), 2.01-3.00 (Sederhana Rendah), 3.01-4.00 (Sederhana Tinggi) dan 4.01-5.00 (Tinggi).

Dapatan Kajian

Dapatan kajian yang diperoleh digunakan untuk menjawab objektif kajian pertama iaitu mengenalpasti tahap persepsi pelajar terhadap penggunaan SIPC sebagai alat bantu mengajar dalam Kursus Pengenalan Sistem Komputer. Jadual 2 menunjukkan skor min keseluruhan adalah pada tahap julat skor min tinggi iaitu 4.51. Pernyataan yang paling dominan iaitu pada skor min tertinggi 4.63 adalah item kelima iaitu kandungan SIPC berinformasi interaktif. Manakala, pernyataan yang paling kurang dominan iaitu min 4.42 adalah item keempat iaitu SIPC mudah digunakan iaitu informasi disampaikan dengan jelas.

Ini menunjukkan bahawa penggunaan SIPC sebagai alat bantu mengajar berbentuk AR dapat mengubah cara pengajaran dan pembelajaran lebih interaktif. Pelajar cenderung

eISBN 978-967-2426-22-6
13th – 14th December 2020

menggunakan SIPC sebagai alat pembelajaran alternatif dalam bagi Kursus Pengenalan Sistem Komputer. Sebahagian besar kajian-kajian lepas berkenaan teknologi AR menunjukkan bahawa pelajar teruja dan berminat untuk belajar menggunakan teknologi AR. Antaranya kajian daripada Nugraha et al. (2014) dan Haryanto et al. (2017) menyatakan bahawa aplikasi AR bermanfaat sebagai alat bantu mengajar yang menyenangkan dan mudah berbanding penggunaan buku. Pengujian kepuasan penggunaan AR dari segi kegunaan dan manfaat aplikasi AR sebagai alat bantu mengajar telah dijalankan menunjukkan bahawa aplikasi AR bermanfaat sebagai alat bantu mengajar, aplikasi AR mudah digunakan dan aplikasi AR menarik untuk digunakan sebagai alat bantu mengajar.

Selain itu, aplikasi AR menyokong persekitaran pembelajaran kolaboratif berasaskan inkuiri dan mampu menyokong pembelajaran berpusatkan pelajar berbanding pembelajaran tradisional berpusatkan guru (Wang et al., 2014). Tambahan lagi, AR menciptakan pengalaman pembelajaran yang dihubungkan dengan kelas formal, supaya pelajar dapat belajar di luar waktu kelas dan di luar waktu persekolahan (Burton et al., 2011).

Jadual 2 : Persepsi Pelajar Terhadap Penggunaan SIPC Sebagai Alat Bantu Mengajar

Bil	Item	Skor Min
1.	Paparan Aplikasi SIPC Mesra Pengguna	4.50
2.	Aplikasi SIPC Bersifat Mudahalih Membantu Pelajar Mempraktikkan SLT (*Self Learning Time*)	4.53
3.	Elemen Dalam SIPC Sesuai Digunakan Semasa Pembelajaran	4.47
4.	Mudah Digunakan Iaitu Informasi Disampaikan Dengan Jelas	4.42
5.	Kandungan SIPC Berinformasi Interaktif	4.63
	Skor Min Keseluruhan	4.51

Objektif kajian kedua iaitu mengenalpasti tahap keberkesanan penggunaan SIPC sebagai alat bantu mengajar dalam Kursus Pengenalan Sistem Komputer. Jadual 3 menunjukkan skor min keseluruhan adalah pada tahap julat skor min tinggi iaitu 4.51. Ini menunjukkan bahawa kesemua item yang dikaji menyokong bahawa SIPC sebagai alat bantu mengajar adalah sangat berkesan.

Aplikasi AR memberi peluang pembelajaran visual secara alternatif menjadikan kitaran pembelajaran pelajar meningkat dan mengekalkan pengetahuan dari masa ke masa. Merujuk hasil dapatan kajian daripada Westerfield et al. (2015) menunjukkan penilaian terhadap pelajar yang berlatarbelakang pengalaman minimum amali pemasangan perkakasan komputer mendapati terdapat peningkatan skor penilaian dan prestasi tugas pelajar yang lebih cepat berbanding kaedah tradisional. Terdapat perbezaan ketara daripada hasil pembelajaran sebelum dan selepas menggunakan aplikasi AR (Haryanto et al., 2017). Penggunaan AR dalam pembelajaran meningkatkan kemahiran berfikir aras tinggi pelajar seperti penyelesaian masalah, pemikiran kreatif atau pemikiran kritis (Saltan & Arslan, 2016 dan Wang et al., 2014).

Berdasarkan sintesis daripada kajian-kajian lepas, jelas menunjukkan penggunaan AR dalam pembelajaran mewujudkan keseronokan pembelajaran bagi pelajar, malahan pelajar bermotivasi untuk terlibat dalam proses eksperimen dan demonstrasi sambil menggunakan telefon pintar atau tablet. Ciri-ciri aplikasi AR yang mengandungi elemen objek 3D, animasi, audio dan video yang interaktif mendorong guru atau pendidik untuk menarik perhatian pelajar. Ini dapat disimpulkan bahawa aplikasi AR meningkatkan hasil pembelajaran yang jauh lebih baik.

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13th – 14th December 2020

Jadual 3: Keberkesanan Penggunaan SIPC Sebagai Alat Bantu Mengajar

Bil	Item	Skor Min
1.	Meningkatkan Kefahaman Saya Tentang Komponen Komputer Peribadi Secara Fizikal	4.56
2.	Meningkatkan Minat Saya Terhadap Pembelajaran Berkaitan Perkakasaan Komputer	4.47
3.	Meningkatkan Penglibatan Saya Dalam Aktiviti P&P Di Dalam Bilik Kuliah	4.56
4.	Memupuk Perasaan Ingin Tahu (*Explore*) Dan Berani Mencabar Diri (*Self-Challenge*)	4.50
5.	Melibatkan Penggunaan Telefon Peribadi Semasa Proses Pembelajaran	4.47
	Skor Min Keseluruhan	4.51

Kesimpulan

Penggunaan SIPC dilihat dapat memberi impak kepada proses pembelajaran iaitu mampu dilaksanakan secara kendiri oleh pelajar tanpa pemantauan khusus dari pensyarah. Pendekatan yang impresif ini mampu menarik perhatian pelajar pada aktiviti amali yang dijalankan dan menghasilkan pembelajaran yang lebih signifikan. Penggunaan SIPC amat praktikal di mana ianya boleh digunakan setiap masa berulang kali oleh semua pensyarah dan pelajar kerana pengendalian aplikasinya yang amat mudah. Pelajar hanya perlu membuka aplikasi SIPC pada telefon pintar dan mengimbas pada penanda SIPC tersebut. Secara ringkasnya ia adalah aplikasi mudah alih yang efektif dan membantu dalam memahami perkakasan komputer dengan lebih berkesan. Secara tidak langsung, ianya dapat membantu pelajar mengekalkan atitud positif, dinamik dan seronok terhadap pembelajaran.

SIPC berpotensi untuk digunasama oleh semua lapisan masyarakat serta menggalakkan perkongsian ilmu dan idea kepada mereka yang ingin mempelajari konsep asas komputer, pemasangan perkakasan dan instalasi perisian samada di sekolah mahupun di rumah. Seiring dengan itu, penggunaan SIPC menjadikan pelajar lebih terbuka dan mengubah paradigma mereka bahawa perkakasan komputer adalah mudah dan senang difahami.

Manakala di peringkat Politeknik, inovasi SIPC khususnya dapat menyumbang kepada pencapaian Transformasi Tindakan 2017-2020 Politeknik Sultan Mizan Zainal Abidin di bawah Transformasi Unggul 5: Ekosistem iaitu *Membudayakan Aplikasi Mobile dalam P&P di bawah aktiviti menghasilkan bahan inovasi aplikasi mobile dalam P&P* seiring dengan perkembangan teknologi dalam pendidikan masa kini yang memerlukan teknik pengajaran lebih kreatif, inovatif dan interaktif. Menyedari hakikat bahawa potensi AR kian meluas, maka penggunaan AR disasarkan seiring dengan ledakan teknologi pendidikan kini dan sekaligus membantu mengurangkan kos perbelanjaan sektor pendidikan secara signifikan. AR dalam pendidikan mewujudkan pengurangan perbelanjaan pendidikan institusi dan dapat meningkatkan keupayaan pembelajaran pelajar dengan hanya menggunakan alat bantu mengajar yang minimum (El Sayed et al., 2010). Bagi mencapai matlamat ini, industri memerlukan kemahiran yang mampu mengaplikasikan dan mengendalikan teknologi AR seiring dengan keperluan dan kehendak semasa industri.

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"BELUM JUGA TUAN BERTEMU DENGAN ANAK RAJA ITU?": ADAB BERKOMUNIKASI DALAM HIKAYAT BERBINGKAI

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Abstract: *Kesusasteraan Kanak-kanak dan Remaja masih belum menemui definisinya yang tepat dalam korpus Kesusasteraan Melayu Moden. Sehubungan itu, karya-karya yang wataknya terdiri daripada golongan dewasa terus dinikmati oleh kanak-kanak sehingga akhirnya merumitkan pendefinisian kesusasteraan kanak-kanak itu. Maka, banyak karya-karya folklor Barat seperti Cinderella, Rapunzel dan beberapa yang lain menjadi tumpuan bacaan kanak-kanak di Malaysia. Sesuatu perlu dilakukan agar bahan bacaan yang menepati nilai ketimuran dan keislaman dihidangkan kepada golongan muda ini. Bermula dari sinilah, Kesusasteraan Hikayat menerusi teks Hikayat Khoja Maimun yang kaya dengan adab dan pengajaran perlu diketengahkan untuk menggantikan cerita folklor Barat tersebut. Objektif kajian ini adalah untuk mengenalpasti watak-watak yang berkomunikasi dalam Hikayat Khoja Maimun dan menganalisis adab berkomunikasi antara watak-watak tersebut berdasarkan enam (6) kaedah komunikasi dalam Surah Luqman. Metodologi kajian adalah secara analisis teks dengan tiga aktiviti utama bagi menyelesaikan objektif kajian iaitu menjelaskan watak yang berkomunikasi dalam teks Hikayat Khoja Maimun, mengenalpasti kerangka untuk menganalisis adab komunikasi dalam Hikayat Khoja Maimun dan menganalisis adab berkomunikasi antara watak-watak utama berdasarkan enam (6) kaedah komunikasi dalam Al Quran menerusi Surah Luqman iaitu menerusi panggilan, perlambangan, pengulangan, penjelasan, perhatian dan pemilihan idola. Dapatan kajian adalah Hikayat Khoja Maimun menepati enam (6) adab berkomunikasi dalam Surah Luqman. Ini bermakna menerusi komunikasi yang beradab, segala urusan dapat dilalui dengan mudah dan menemui kejayaan. Inilah yang cuba dibuktikan dalam Hikayat Khoja Maimun sebagai salah sebuah karya dalam Sastera Hikayat yang berfungsi bukan sahaja memberi pengajaran tetapi menghibur khalayaknya. Justeru, sudah sampai masanya bahan bacaan kanak-kanak di Malaysia ini digantikan dengan khazanah yang diwarisi sejak turun-temurun dan bukannya bergantung kepada folklor Barat yang jauh menyimpang daripada adab ketimuran apatah lagi nilai-nilai keislaman.*

Keywords: *Adab, Komunikasi, Sastera Hikayat, Hikayat Khoja Maimun, Surah Luqman*

Pengenalan

Realitinya, sastera kanak-kanak dan remaja masih belum mempunyai definisi dan ciri yang kukuh dalam korpus kesusasteraan (Hunt 1992; Reynolds 2011; Anderson 2012). Sebagaimana pendapat McClure, Garthwait, dan Kristo (2014), 'sastera kanak-kanak' adalah segala bahan yang dipenuhi dengan illustrasi sama ada berbentuk buku bergambar, puisi, buku eletronik meliputi semua genre dalam sastera. Manakala menurut Hunt (1999), jika terminologi 'sastera' sendiri mengelirukan maka gabungannya dengan istilah 'kanak-kanak' tambah sukar untuk dijelaskan secara tepat. Ini ditambah dengan perspektif kanak-kanak terhadap definisi 'sastera' yang sentiasa mengalami perubahan bergantung kepada lokasi dan masa sesuatu karya

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13th – 14th December 2020

dihasilkan (Hunt 1999). Misalnya novel pertama kanak-kanak di Britain pada 1865 bertajuk *Alice's Adventures in Wonderland* oleh Charles Dodgson (dengan nama penanya Lewis Carroll) sekadar untuk menghiburkan golongan tersebut tanpa memberi pengajaran yang sewajarnya (Thacker dan Webb 2002:6). Penampilan watak-watak binatang yang boleh bercakap, semua benda hidup seperti manusia dan yang lebih mengasyikkan apabila manusia mampu bertukar saiz untuk masuk ke alam fiskyen itu berjaya menambat hati kanak-kanak sehingga novel tersebut terkenal di seluruh dunia. Ini bermakna secara psikologinya, kanak-kanak amat menyukai cerita-cerita yang dipenuhi unsur fantasi, aksi serta pengembaraan. Maka tidak hairanlah tajuk-tajuk seperti *Robinson Cruseo, Gulliver's Travel, Wind in the Willows* dan beberapa yang lain yang awalnya disasarkan kepada golongan dewasa tetapi mendapat tempat di hati kanak-kanak terutamanya di Barat. Ini diperkuatkan oleh McClure, Garthwait, dan Kristo (2014) bahawa sastera kanak-kanak asasnya dikarang hasil ilham beberapa genre seperti, "*Fiction, Traditional Literature, Fantasy and Science Fiction, Historical Fiction, Contemporary Realistic Fiction, Non-Fiction and Biography*".

Sehubungan itu, Kesusasteraan Melayu Tradisional yang merupakan hasil keintelektualan pengarang terdahulu wajar didedahkan serta diperkenalkan kepada generasi muda ini disebabkan oleh ketiadaan ciri khusus dalam definisi 'sastera kanak-kanak dan remaja'. Apatah lagi, kanak-kanak di Malaysia khususnya sentiasa dihidangkan dengan cerita-cerita folklor Barat seperti *Cinderella, Snow White and Seven Dwarfs, Beauty and the Beast* (Hadijah Rahmat 2006; Arba'ie Sujud dan Nik Rafidah Nik Muhamad Effendi 2011: 71).

Persoalannya, adakah cerita-cerita folklor Barat yang sarat dengan unsur percintaan dan adegan-adegan romantik berbau seksual ini sesuai dibaca oleh golongan muda yang jelas berlawanan dengan kehendak agama dan norma masyarakat Timur? Apakah tiada karya-karya lain daripada korpus Kesusasteraan Melayu terutama Kesusasteraan Melayu Tradisional yang dapat mengisi kekosongan ini? Apakah karya-karya ini mampu membina akhlak apatah lagi adab kepada kanak-kanak yang merupakan khalayak utamanya? Maka berteraskan kepada persoalan-persoalan di atas, kajian ini akan meneliti genre Kesusasteraan Hikayat yang digunakan sebagai bahan kajian. Kajian hanya akan memfokuskan kepada Hikayat Berbingkai atas justifikasi keunikannya yang mengandungi 'cerita dalam cerita', penuh dengan elemen adab terutama dalam tatacara berkomunikasi serta kurang mendapat perhatian kalangan pengkaji sastera dan Alam Melayu. Bertitik-tolak daripada sinilah, objektif kajian dibentuk iaitu untuk:

i. Mengenalpasti watak-watak yang berkomunikasi dalam *Hikayat Khoja Maimun;* dan
ii. Menganalisis adab berkomunikasi antara watak-watak tersebut berdasarkan enam (6) kaedah komunikasi dalam Surah Luqman.

Secara tidak langsung, kajian ini dapat memperkukuhkan hubungan antara sastera kanak-kanak dengan Kesusasteraan Melayu Tradisional dan menolak penerusan bahan stereotaip daripada folklor Barat yang telah lama menjadi bacaan utama kanak-kanak di Malaysia. Akhirnya dapat membuktikan bahawa hubungan kedua korpus ilmu ini saling berkesinambungan dan saling melengkapi antara satu sama lain.

Sorotan Kajian

Kolonial Belanda dan British pada zaman penjajahan mereka di Alam Melayu telah banyak mengumpul dan mengambil manuskrip-manukrip Melayu untuk di bawa pulang ke negara mereka. Ini adalah antara usaha mereka untuk mengenali *world view* dan etos masyarakat Melayu agar memudahkan proses penjajahan mereka. Sehubungan itu, antara karya–karya yang terdapat di perpustakaan Leiden University, British Library atau School of Oriental and

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13th – 14th December 2020

African Studies, University of London adalah khazanah sastera kanak-kanak yang tersimpan rapi hasil koleksi dan kajian beberapa sarjana kolonial seperti Stamford Raffles, William Farquhar, W.E. Maxwell, H.C. Klinkert, van Ophuijsen, Snouck Hurgronje, R.O.Winstedt dan beberapa yang lain (Nik Rafidah Nik Muhamad Effendi 2018). Ini membuktikan bahawa sedari awal lagi, kajian mengenai sastera kanak-kanak tanahair telah terlebih dahulu dimulakan oleh para orientalis ini walau ianya tidak benar-benar menjurus kepada genre tersebut secara tuntas.

Meneliti kajian sastera kanak-kanak pelbagai perspektif oleh beberapa pengkaji tanahair, didapati tidak banyak direkodkan pada awal dan pertengahan abad ke-20. Hanya nama-nama seperti Salmah Ayob (1981), Nijhar (1984) dan Sulaiman Masri (1984) [sekadar menyatakan beberapa nama] melakukan kajian berfokus kepada kaedah dan kesan pendidikan kepada kanak-kanak. Namun pada era ke-21, kemunculan ramai pengkaji yang terdiri daripada para sarjana dan pelajar pasca siswazah memBayangkan bahawa penyelidikan sastera kanak-kanak secara saintifik mula mendapat tempat dalam kalangan generasi muda. Nama-nama seperti Othman Puteh (2000), Izzah Abdul Aziz (2000; 2001), Misran Rokimin (2001), Mohd. Sharif Mohd.Saad dan Alimah Salam (2001), Faridah Samsudin (2003), Hadijah Rahmat (2006), Mahzan Arshad (2006), Nik Rafidah Nik Muhamad Effendi dan Lily Salwani Razali (2011), Siti Zuhaidah Zakaria dan Nik Rafidah Nik Muhamad Effendi (2014), Arba'ie Sujud *et.al* (2014), Fazilah Abu Bakar dan Nik Rafidah Nik Muhamad Effendi (2016), Farra Humairah Mohd. dan Nik Rafidah Nik Muhamad Effendi (2016), Rohaya Mohd.Ali (2018) dan Nik Rafidah Nik Muhamad Effendi *et.al.* (2018) [sekadar menyebut beberapa nama] adalah antara pengkaji yang menjurus kepada pengkajian genre ini secara komprehensif.

Berdasarkan sorotan literatur di atas, tiada kajian yang khusus menyorot kepada Kesusasteraan Melayu Tradisional sebagai bahan utama kepada pengkajian sastera kanak-kanak terutama Hikayat Berbingkai. Apatah lagi, kajian mengenai adab berkomunikasi dalam genre ini belum pernah dilakukan. Hanya Sara Beden (2018) yang menggunakan bahan kajian Hikayat Berbingkai iaitu *Hikayat Khoja Maimun* tetapi dalam konteks 'perancangan bestari' dengan aplikasi pendekatan pengurusan Mohamad Mokhtar terhadap teks tersebut. Justeru, bertitik-tolak dari sinilah, kajian ini dilakukan terutama dalam membuktikan bahawa Kesusasteraan Melayu Tradisional perlu diperluaskan penerapannya sebagai bahan kreatif kepada sastera kanak-kanak khususnya. Apatah lagi Hikayat Berbingkai merupakan genre yang bersumberkan karya internasional berpengaruh Hindu dan Arab-Parsi, diadun dengan kebijaksanaan lokaliti pengarang Melayu yang tidak patut dilupakan sementelah dibiarkan lapuk ditelan zaman.

Metodologi

Kertas kerja ini menggunakan kaedah analisis teks terhadap *Hikayat Khoja Maimun* yang diterbitkan oleh Dewan Bahasa dan Pustaka, Kuala Lumpur pada tahun 2000 diselenggarakan oleh Abdul Rahman Kaeh. Karya ini berteraskan sebuah naskhah milik Perpustakaan Universiti Leiden di Belanda dengan pedoman rujukan KL16, antara ratusan naskhah koleksi C.Klinkert. Asalnya teks ini bersumber daripada *Kitab Sukasaptati* dalam bahasa Sanskrit di mana versi panjangnya telah diterjemahkan oleh Wortham dalam Bahasa Inggeris bertajuk *The Enchanted Parrot, being a Selection from the Suksaptati or The Seventy Tales of a Parrot* serta satu versi pendek edisi R.Schmidt (Abdul Rahman Kaeh 2000: xiii). Kepopularan ceritanya menyebabkan terjemahan dilakukan dalam pelbagai bahasa seperti Parsi, Hindustan, Inggeris dan pelbagai lagi termasuklah bahasa Melayu. Keintelektualan pengarang Melayu mengarang semula karya bersifat internasional ini menyebabkan terhasillah *Hikayat Khoja Maimun, Hikayat Bayan Budiman, Hikayat Khoja Mubarak* dan *Cerita Taifah.* Digelar sebagai Hikayat Berbingkai kerana karya ini bersandarkan kepada satu karya dasar dengan beberapa cerita

eISBN 978-967-2426-22-6
13th – 14th December 2020

sisipan yang lain. Misalnya *Hikayat Khoja Maimun* ini mengandungi 26 cerita sisipan yang melingkarinya menjadikan teks ini sempurna jalan cerita pada akhirnya.

Maka, untuk menyelesaikan objektif pertama iaitu mengenalpasti watak-watak yang berkomunikasi dalam *Hikayat Khoja Maimun,* maka aktiviti –aktiviti yang dijalankan adalah:

i. Menjelaskan watak yang berkomunikasi dalam teks Hikayat Khoja Maimun; dan
ii. Mengenalpasti kerangka untuk menganalisis adab komunikasi dalam Hikayat Khoja Maimun.

Objektif kedua kajian iaitu menganalisis adab berkomunikasi antara watak-watak utama berdasarkan enam (6) kaedah komunikasi dalam Al Quran menerusi Surah Luqman (Khairul Azhar Meerangani 2017). Walau surah ini menitik-beratkan nasihat ibubapa kepada anaknya, namun kajian akan menggunakan pendekatan ini kerana *Hikayat Khoja Maimun* lebih memerihalkan nasihat sebagai elemen penting untuk membimbing yang amat tepat diselesaikan menggunakan enam (6) kaedah berkomunikasi berdasarkan Sural Al-Luqman ini.

Analisis dan Keputusan

Karya kesusasteraan adalah hasil intelektual pengarang yang serba indah dan sarat dengan fungsi mendidiknya kepada khalayak. Malahan, sastera juga dianggap sebagai medium penjaga peradaban dan penghimpun ajaran yang dapat mendidik manusia dengan adab yang harus dikekalkan agar dapat diwarisi oleh generasi akan datang (Samsudin A. Rahim 2001). Bersesuaian dengan agama Islam sebagai agama yang ‘mendefinisikan’ Melayu, sastera dikenali sebagai ‘al-adabi’ iaitu sastera yang datang daripada jiwa yang halus (beradab) dan bertujuan mendidik serta mengasuh hati nurani khalayak dengan nilai-nilai murni sehingga jiwa mereka turut menjadi halus dan lembut (Muhd Norizam Jamian dan Shaiful Bahri Md Radzi 2015: 184). Sebagaimana pendapat Syed Muhammad Naquib al-Attas (2001: 54) bahawa sekiranya sastera adalah ‘al-adabi’ maka insan yang beradab (adabi) pastinya digelar ‘insan adabi’. Ini bermakna ‘adab’ mengambil kira unsur-unsur keilmuan, kerohanian dan akhlak seperti yang telah digunakan oleh Rasulullah S.A.W dan para ilmuwan terdahulu iaitu:

> *“Pengenalan dan pengiktirafan hakikat bahawa ilmu dan segala yang wujud teratur bertingkat-tingkat mengikut martabat dan darjatnya masing-masing. (Serentak dengan itu) adab juga ialah pengenalan dan pengiktirafan tempat yang wajar bagi seseorang berhubung dengan hakikat tersebut serta dengan kebolehan dan potensi jasadi, akli dan rohani diri masing-masing”.*
>
> (Al-Attas 2001: 54)

Manakala ‘komunikasi’ menurut Gamble dan Gamble (2013: 2) adalah satu proses yang melibatkan transformasi makna secara perlahan-lahan atau tanpa disengajakan iaitu, *“One person does or says something, thereby engaging in symbolic behavior, while others observe what was done or said and attribute meaning to it. Whenever you observe or give meaning to behavior, communication is taking place”.* Ini membawa kepada ‘komunikasi interpersonal’ iaitu satu proses di mana pertukaran informasi, perasaan dan makna secara verbal atau buka-verbal antara satu dengan yang lain atau dengan kata lain ia adalah komunikasi dua hala. Komunikasi dua hala ini melibatkan nada suara, ekspresi muka, pergerakan dan bahasa badan. Gamble dan Gamble (2013: 3) menghuraikannya seperti di bawah:

> *“The fact that interpersonal communication takes two people means that it is indivisible. Without the second person, interpersonal communication is impossible.*

eISBN 978-967-2426-22-6
13th – 14th December 2020

> *Thus, the parties to interpersonal communication are a duo: a couple, a pair, or perhaps adversaries. From an interpersonal perspective, even groups of three or more individuals are viewed as composites of dyads, effectively serving as the foundations for separate pairings and potential coalitions. Without a dyad, a relationship does not exist, and without a relationship there is no interpersonal communication".*

Kajian ini tidak akan menggunakan konsep komunikasi interpersonal secara rinci tetapi sekadar ingin menerangkan bahawa berlaku adab berkomunikasi menerusi teks *Hikayat Khoja Maimun*. Secara ringkasnya, teks ini yang mengisahkan mengenai Khoja Maimun seorang pedagang yang terpaksa meninggalkan isteri jelitanya bernama Bibi Zainab seorang diri dan mengamanahkan dua ekor burung peliharaannya iaitu burung Tiung dan burung Bayan untuk menjaga isterinya itu. Walau bagaimanapun, Bibi Zainab pada suatu hari telah jatuh hati dengan seorang anak raja yang lalu di tepi rumahnya sehingga akhirnya menyebabkan beliau ingin keluar bertemu dengan kekasihnya itu. Halangan secara keras oleh burung Tiung menyebabkan Bibi Zainab membunuhnya dan bermula dari situ, burung Bayan mula mengambil ikhtibar daripadanya. Amanah yang diberi oleh Khoja Maimun perlu ditunaikan dan bermulalah burung Bayan memulakan komunikasinya secara beradab dengan Bibi Zainab. Dengan metod bercerita menggunakan 26 cerita (cerita sisipan) maka, Bibi Zainab dapat dihalang daripada melakukan maksiat dan akhirnya maruah diri serta keluarganya dapat diselamatkan daripada tercemar.

Watak Yang Berkomunikasi Dalam Teks Hikayat Khoja Maimun

Berdasarkan *Hikayat Khoja Maimun*, terdapat dua watak utama yang mendasari cerita pokok iaitu burung Tiung dan burung Bayan.

Burung Tiung

Teks ini memaparkan beberapa episod dari awal komunikasi antara beberapa watak yang dalam cerita dasar dan bagaimana watak-watak tersebut berinteraksi pada akhir setiap cerita sisipan diperdengarkan. Misalnya pada awal cerita dasar ditemui burung Tiung yang cuba menegur secara telus tanpa diplomasi kepada Bibi Zainab ketika beliau ingin keluar menemui kekasihnya. *Hikayat Khoja Maimun* (2000: 7) memperlihatkan tindakan Burung Tiung yang begitu emosional ketika menjawab pertanyaan Bibi Zainab seperti petikan berikut:

> *"Setelah Tiung itu mendengar kata Bibi Zainab, maka* ***dia pun menampar-nampar dadanya*** *seraya berkata, "Ayuhai Tuan Siti yang baik rupa!* ***Pekerjaan apakah yang tuan hamba kerjakan ini****?* ***Tidakkah takut kepada Allah dan malu akan Nabi s.a.w.*** *Maka tuan hendak mengerjakan yang maksiat lagi larangan Allah Taala, ditegahkan Rasulullah istimewa pula sangat kejahatannya itu, tiada wajib atas segala perempuan yang mulia mengerjakan pekerjaan yang demikian itu.* ***Tidakkah tuan mendengar hadis?*** *Barang siapa perempuan menduakan suaminya bahawa sesungguhnya dimasukkan malaikat ke dalam neraka jahanam seribu tahun lamanya, dan lagi* ***tidakkah tuan malu samanya makhluk di dalam dunia ini?*** *Sabarlah tuan hamba dahulu, In shaa Allah Taala tuan yang laki-laki pun bangat cepat juga akan datang. Jikalau diketahuinya kelak* ***tiadakah tuan malu dan mati dibunuhnya****? Alangkah aib nama tuan tersebut pada sekalian alam ini".*

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kelakuan burung Tiung yang menampar-nampar dada melambangkan tindakan tidak berpuas hati dan marah yang amat sangat sehingga sanggup menyakitkan diri. Apatah lagi terdapat beberapa ayat yang berbentuk soalan yang mampu merendahkan maruah seseorang seolah-olah kelihatan terlalu dangkal iman dan ilmunya. Misalnya ayat seperti:

1. Pekerjaan apakah yang tuan hamba kerjakan ini?
2. Tidakkah takut kepada Allah dan malu akan Nabi s.a.w.
3. Tidakkah tuan mendengar hadis?
4. Tidakkah tuan malu samanya makhluk di dalam dunia ini?

Berdasarkan ayat-ayat di atas, didapati tiga (3) kali perkataan 'tidak' digunakan dalam teks ini yang menggambarkan betapa negatifnya persoalan yang diajukan oleh burung Tiuang kepada Bibi Zainab. Persoalan-persoalan inilah yang membangkitkan kemarahan Bibi Zainab sehingga dibunuhnya Tiung tersebut. Bermula dari sinilah, burung Bayan mula belajar mempertahankan diri, melepaskan diri daripada dibunuh dan sekaligus menjalankan amanah yang diberi oleh Khoja Maimun dengan sebaiknya.

Burung Bayan

Beberapa adab komunikasi burung Bayan ditemui dalam teks ini (*Hikayat Khoja Maimun* 2000:7-8) bermula dengan bercakap bohong dan memburukkan individu lain untuk melepaskan dirinya iaitu:

> *"Hai Siti yang mulia yang sangat elok paras! Jikalau demikian* ***baiklah tuan segera pergi mendapatkan anak raja itu****, kerana tuan sudah berjanji dengan dia, supaya jangan kedapatan kata kepada anak-raja itu kelaknya.****Tuan pun sangat bebal bertanya kepada Tiung itu daripada sebab dia pun ingin juga, bagaimanapun adalah dengkinya juga akan tuannya*** *[…] Adapun akan bahagian hamba ini haraplah tuan jikalau kejahatan sekalipun pekerjaan tuan, In shaaAllah di atas hamba membaikkan dia.[…]* ***Baiklah tuan segera pergi****!* ***Kalau-kalau sudah tiba anak raja itu menanti tuan daripada hamba pun sangat hendak berbual*** *[…]* ***Baiklah tuan segera pergi mendapatkan anak raja itu*** *tetapi dengan ikhtiar juga".*

Burung Bayan didapati lebih berdiplomasi dalam berkomunikasi. Ini ditunjukkan oleh penggunaan 'baiklah' (sebagai galakan) dalam perbualannya memujuk dengan Bibi Zainah daripada terus melakukan perbuatan maksiat itu seperti berikut:

1. Baiklah tuan segera pergi mendapatkan anak raja itu
2. Baiklah tuan segera pergi
3. Baiklah tuan segera pergi mendapatkan anak raja itu

Rentetan daripada pernyataan di atas, membuktikan bahawa burung Bayan lebih menggunakan diplomasi dalam berbicara dengan Bibi Zainab. Ini disebabkan beliau dapat dapat menjangkakan bentuk hukuman yang bakal diterima sekiranya dia bercakap benar tanpa didahului dengan ayat-ayat pujukan kepada Bibi Zainab. Oleh kerana itulah, frasa 'baiklah' diulang-ulang penggunaannya dengan tujuan tertentu oleh burung Bayan demi menyelamatkan dirinya.

Kerangka adab berkomunikasi

Adab berkomunikasi dinyatakan dalam Al-Quran menerusi Surah al-Nahl (16: 125) bahawa,

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13th – 14th December 2020

"Serulah kepada jalan Tuhanmu dengan hikmah kebijaksanaan dan nasihat pengajaran yang baik serta berbahaslah dengan mereka menggunakan cara terbaik". Sayyid Quṭb (1988) menambah bahawa komunikasi secara berhikmah memerlukan kepada pemerhatian dan penelitian terhadap situasi dan realiti semasa golongan sasar menggunakan teknik komunikasi yang bersesuaian dan berkesan. Kaedah nasihat pula diaplikasikan melalui komunikasi secara lemah-lembut yang mampu meresap ke dalam hati manusia dan bukannya melalui ancaman dan tegahan yang boleh mengaibkan mereka atas segala tindakan yang dilakukan (Khairul Azhar Meerangani 2017). Justeru, berdasarkan al-Quran didapati adab berkomunikasi dengan jelas dinyatakan dalam Surah Luqman (ayat 13 sehingga 19). Surah ini menggariskan 6 adab komunikasi berkesan iaitu menerusi panggilan, perlambangan, pengulangan, penjelasan, perhatian dan pemilihan idola seperti penerangan di bawah ini.

Adab berkomunikasi dalam Surah Luqman dengan Hikayat Khoja Maimun

Karya sastera merupakan hasil karya dengan bahasa yang indah dan isinya yang bermanfaat kepada khalayaknya. Berdasarkan Al-Quran dalam Surah Luqman, 'panggilan' atau sapaan merupakan aspek yang penting dalam adab berkomunikasi. Ini digambarkan bagaimana Luqman memulakan perbualan dengan anaknya menggunakan panggilan manja yang memperlihatkan perasaan cinta dan keprihatinan seorang bapa kepada anaknya (Khairul Azhar Meerangani 2017). Nyata, panggilan yang lembut ini mampu meresap terus ke hati anak- anak sehingga memudahkan mereka untuk mendengar dan mentaati perintah daripada kedua ibu bapanya (Abd al-Mun'ain, 1995). Luqman telah menggunakan panggilan manja tersebut kepada anaknya sebanyak 3 kali iaitu pada ayat 13, 16 dan 17. Hal ini menunjukkan bahawa panggilan manja tersebut bukanlah suatu kebetulan sahaja sebaliknya mencerminkan ketelitian Luqman dalam memilih panggilan yang sesuai bagi menarik perhatian anaknya (Khairul Azhar Meerangani 2017). Meneliti *Hikayat Khoja Maimun* didapati, beberapa kali 'panggilan' atau sapaan manja diketengahkan dalam teks terutamanya panggilan burung Bayan kepada Bibi Zainab dalam usaha memujuknya agar tidak lalai dan melupakan pertemuan dengan anak raja itu seperti petikan di bawah:

> *"Hai Siti **yang mulia yang sangat elok paras**!" (Hikayat Khoja Maimun 2000:7)*

> *"Hai tuan yang **amat bijaksana** dan **paras yang amat gemilang**" (Hikayat Khoja Maimun 2000: 75).*

Ini menunjukkan betapa panggilan atau sapaan sebagai adab penting dalam berkomunikasi dinyatakan secara jelas dalam teks. Secara tidak langsung membuktikan bahawa 'panggilan' sangat dititikberatkan sebagai salah satu adab dalam berkomunikasi berkesan. Hasilnya, kecurangan yang bakal dilakukan oleh Bibi Zainab dapat dibendung secara berhikmah menggunakan adab komunikasi yang sesuai.

Adab berkomunikasi yang seterusnya adalah menggunakan kaedah perlambangan agar sesuatu nasihat itu lebih dekat dan mudah difahami oleh golongan sasaran. Ini dibuktikan menerusi ayat 18 apabila Luqman mengingatkan anaknya adab sesama manusia terutama menjaga laras bahasa dan nada suara ketika berbicara iaitu, "Dan janganlah kamu memalingkan mukamu daripada manusia (kerana sombong) dan janganlah berjalan di bumi dengan berlagak sombong". Luqman juga melarang anaknya daripada meninggikan suara ketika berkata-kata dengan membandingkan perbuatan tersebut seperti suara rengekan keldai. Ini dinyatakan dalam Surah Luqman (31:19) iaitu, "Dan sederhanalah kamu dalam berjalan dan lunakkanlah suaramu. Sesungguhnya seburuk-buruk suara ialah suara keldai". Inilah yang dilakukan oleh

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13th – 14th December 2020

burung Bayan sewaktu berkomunikasi dengan Bibi Zainab. Kaedah perlambangan yang diterapkan dalam Surah Luqman menepati adab berkomunikasi dalam *Hikayat Khoja Maimun.* Petikan di bawah menjelaskan bagaimana burung Bayan menggolongkan Bibi Zainab sebagai individu yang 'bebal' kerana bertanya untuk keluar kepada burung Tiung yang diketahui cabul mulutnya ketika berbicara. Seharusnya Bibi Zainab terus bertanya kepadanya kerana menurut beliau, walau sejahat manapun pekerjaan yang ingin dilakukan oleh tuannya (Bibi Zainab), burung Bayan akan setia memulihkan keadaan dan sentiasa bersamanya seperti petikan di bawah:

> *Jikalau demikian* ***baiklah tuan segera pergi mendapatkan anak raja itu****, kerana tuan sudah berjanji dengan dia, supaya jangan kedapatan kata kepada anak-raja itu kelaknya.****Tuan pun sangat bebal bertanya kepada Tiung itu daripada sebab dia pun ingin juga, bagaimanapun adalah dengkinya juga akan tuannya*** *[…] Adapun akan bahagian hamba ini haraplah tuan jikalau kejahatan sekalipun pekerjaan tuan, In shaaAllah di atas hamba membaikkan dia.[…]* ***Baiklah tuan segera pergi****!".*
>
> *(Hikayat Khoja Maimun 2000: 7-8)*

Ini bermakna, kaedah 'perlambangan' sebagai adab berkomunikasi sangat diterapkan dalam teks ini. Walau pada hakikatnya, burung Bayan sangat mengeji perbuatan Bibi Zainab namun beliau menggunakan adab berkomunikasi yang menekankan 'perlambangan' dalam percakapan sehingga menyebabkan Bibi Zainab teruja dan tidak meneruskan perbuatan curangnya itu. Apatah lagi, balasan daripada Burung Bayan perlu ditafsir dengan jelas kerana makna tersiratnya iaitu, "Baiklah segera tuan pergi bangat-bangat memimpin tangan suci ini, sekadar ingat-ingat tuan di jalan" dan "Sungguhpun hamba ini binatang **tetapi sangatlah ingin rasanya hati hamba hendak bertemukan tuan dengan anak raja itu**" (*Hikayat Khoja Maimun* 2000: 75, 65). Inilah ayat-ayat 'perlambangan' yang memerlukan tafziran lebih mendalam. Secara tidak langsung, adab berkomunikasi secara 'perlambangan' mencirikan keunikan masyarakat Melayu yang kaya dengan kesantunan berbicara walau terselit sindiran yang disampaikan dengan penuh berhemah dan bijaksana.

Kaedah 'pengulangan' berkomunikasi dalam al-Quran yang diterapkan oleh Luqman kepada anaknya bertujuan memberi penekanan yang boleh mempengaruhi tingkahlaku seseorang individu. Berdasarkan Surah Luqman, larangan syirik serta saranan bersyukur kepada Allah SWT diulang-ulang oleh Luqman ketika menyampaikan nasihat kepada anaknya (Khairul Azhar Meerangani 2017). Sebagaimana yang dinyatakan dalam surah ini pada ayat ke-12 iaitu, "Dan sesungguhnya telah Kami berikan hikmah kepada Luqman iaitu bersyukurlah kepada Allah. Dan barangsiapa yang bersyukur (kepada Allah) maka sesungguhnya dia bersyukur untuk dirinya sendiri". Luqman turut mengulanginya pada ayat ke 14 ditambah dengan rasa bersyukur kepada ibu bapa.

Rentetan itu, penerapan 'perulangan' dalam *Hikayat Khoja Maimun* ditemui menerusi 'pengulangan' ayat "Belumkah tuan hamba bertemu laki-laki itu?" yang diulang beberapa kali sebagai penekanan kepada sindiran atas kecurangan Bibi Zainab kepada suaminya seperti Jadual 1 berikut:

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 1: Pengulangan dalam *Hikayat Khoja Maimun*

Bil.	Ceritera dan halaman	Petikan
1.	(Ceritera kedua, hal. 16)	"**Belumkah tuan hamba bertemu laki-laki itu?** […] Terlalu sangat bebalnya tuan ini maka maka tidak mahu bertemu dengan anak raja itu".
2.	(Ceritera ketiga, hal. 24-25)	"**Belumkah lagi tuan hamba bertemu dengan anak raja itu**?"
3.	(Ceritera keempat, hal. 30-31)	"**Belumkan tuan bertemu pada malam tadi dengan yang diberahikan itu**? […] Tiadalah hamba mahu hikayatkan oleh kerana **tuan hamba belum bertemu dengan tuan hamba itu**".
4.	(Ceritera kelima, hal. 35-36)	**"Belumkah tuan bertemu dengan anak raja itu** pada malam tadi hai Siti yang amat bangsawan?"
5.	Ceritera keenam, hal. 39-40	**"Belum juga tuan bertemu dengan anak raja itu?** Pada sangka hamba tuan sudah tuan hamba bertemu malam tadi!"
6.	(Ceritera ketujuh, hal. 45)	**"Belumkah tuan hamba berjumpa dengan anak raja itu**? Kepada sangkaku, malam tadi sudah tuan hamba pergi dengan tuan berahikan itu?"

Sumber: (*Hikayat Khoja Maimun* 2000).

Berdasarkan Jadual 1 di atas, membuktikan bahawa 'pengulangan' ayat yang sama oleh burung Bayan kepada Bibi Zainab menunjukkan kesungguhan walau hakikatnya burung Bayan menentang perbuatan tersebut. Namun inilah adab berkomunikasi yang berkesan demi menghalang dirinya terbunuh sebagaimana yang dialami oleh burung Tiung akibat keceluparannya mengkritik secara telus.

Kaedah 'penjelasan' pula merupakan adab dalam komunikasi yang diterapkan dalam Al-Quran menerusi Surah Luqman. Dinyatakan bahawa setiap nasihat atau teguran oleh ibubapa kepada anaknya perlu diberi penjelasan agar anak-anak faham sebab-musabab kepada nasihat atau teguran tersebut seperti terjemahan berikut:

> *"Dan Kami perintahkan kepada manusia (agar berbuat baik) kepada kedua ibu bapanya. Ibunya telah mengandungkannya dalam keadaan lemah yang bertambah-tambah, dan menyusukannya dalam masa dua tahun".*

Ayat tersebut menerangkan betapa pentingnya sebagai seorang anak berbuat baik kepada kedua ibubapanya. Penjelasan kepada 'berbuat baik' ini adalah dengan mengambilkira kepayahan proses mengandung, membesarkan anak-anak dan segala pengorbanan ibubapa melaksanakan tanggungjawab yang telah diamanahkan oleh Allah SWT kepada mereka (Khairul Azhar Meerangani 2017). Maka, setiap ibu bapa perlu berusaha untuk memberikan penjelasan dalam setiap nasihat dan teguran yang diberikan kepada anak-anak dalam usaha memastikan agar setiap nasihat tersebut diterima dengan penuh kerelaan dan keterbukaan.

Meneliti Hikayat Khoja Maimun didapati, aspek 'penjelasan' penting dalam meneruskan urusan berkomunikasi secara berkesan. Misalnya dalam ceritera ke-12 (Hikayat Khoja Maimun 2000: 71-72), dinyatakan bagaimana burung Bayan menegur Bibi Zainab ketika beliau ingin meneruskan hasrat bertemu dengan kekasih anak rajanya itu. Dalam tegurannya itu, burung Bayan menjelaskan bahawa tegurannya adalah untuk kebaikan dan menyamakannya dengan kisah Nabi Sulaiman yang turut mengikut nasihat binatang seperti berikut:

eISBN 978-967-2426-22-6
13th – 14th December 2020

> *"Hai batu kepada hamba yang beriman lagi sempurna budi bicara dan bijaksana.* ***Adakah hamba melarang tuan hamba****, berkenankah hamba duduk menyusahkan tuan pergi* ***kerana sebab hamba binatang****? Inilah maka tuan tidak mahu menurut kata hamba.* ***Pada fikiran hamba jikalau binatang sekalipun, pada jalan yang baik itu, patutlah diturut katanya****. Sedangkan Nabi Allah Sulaiman itu menurut kata landak. Bagaimana maka tuan ini tidak mahu menurut kata hamba".*
>
> *(Hikayat Khoja Maimun 2000: 71-72).*

Petikan di atas secara tidak langsung menyatakan bahawa 'penjelasan' penting sebagaimana yang diutarakan oleh burung Bayan bahawa walau beliau hanya seekor 'binatang' namun pendapatnya sangat relevan untuk diambil perhatian sehingga disinonimkan dengan kisah Nabi Sulaiman.

Al-Quran menerusi ayat 13 dalam Surah Luqman dinyatakan bagaimana Luqman masih lagi memantau perkembangan anaknya dengan memberi pelbagai nasihat tanpa jemu. Ini menepati kaedah 'perhatian' sebagai salah satu adab dalam berkomunikasi menurut Surah Luqman. Berdasar Surah Luqman, ibubapa sewajarnya memberi perhatian dengan meluangkan masa yang berkualiti bersama anak-anak bagi mewujudkan hubungan mesra dan erat dengan mereka. Menerusi 'perhatian' inilah, anak-anak tidak akan berasa tersisih sehingga memerlukan mereka mencari perhatian daripada individu yang lain. Meneliti *Hikayat Khoja Maimun*, mendapati adab berkomunikasi yang menekankan kepada 'perhatian' menyebabkan Bibi Zainab teruja sehingga bertangguh-tangguh untuk berjumpa dengan kekasihnya. Inilah 'perhatian' yang diberi oleh burung Bayan kepada Bibi Zainab yang merupakan kaedah penting bagi merelevankan komunikasi berkesan. Ini bermakna menerusi 'perhatian', seorang wanita yang sangat merindui kasih-sayang suaminya sehingga hampir menghampiri penzinaan dapat diselamatkan secara berhemah seperti petikan di bawah:

> *"****Pada bicara hamba, baik juga tuan segera pergi. Janganlah tuan takut, tiada akan tuan in beroleh malu****, In shaaAllah hambalah bicarakan ia. Janganlah syak hati". (Ceritera kedua, hal. 16)*

Frasa "In shaaAllah hambalah bicarakan ia. Janganlah syak hati" inilah yang merujuk kepada 'perhatian' sebagaimana diidam-idamkan oleh Bibi Zainab. 'Perhatian' yang berbentuk tumpuan dengan penuh kasih-sayang ini merupakan satu faktor penting yang membenarkan pujukan dilaksana dengan jayanya. Oleh itu dapatlah dikatakan bahawa, ayat yang menjurus 'perhatian' kepada subjek dalam adab berkomunikasi merupakan elemen utama yang sering dilupakan, Nyata, teks *Hikayat Khoja Maimun* tanpa disedari terlebih dahulu mengetengahkannya untuk menjadi ikhtibar kepada khalayak pembaca dalam mencapai urusan komunikasi yang berkesan.

Manakala adab berkomunikasi yang terakhir dalam Surah Luqman adalah 'pemilihan Idola'. Sebagaimana yang dinyatakan dalam Al-Quran bahawa anak-anak dilahirkan dalam keadaan suci bersih seperti kain putih. Ibu bapa memainkan peranan penting dalam mencorakkan acuan yang terbaik buat anak-anak mereka terutama mendapatkan keredhaan Allah SWT. Oleh itu, pemilihan idola ini amat penting agar anak-anak lebih mudah meniru dan mempraktikkannya dalam kehidupan mereka (Khairul Azhar Meerangani 2017). Menerusi ayat 15 dalam Surah Luqman dinyatakan betapa Luqman menanamkan kepentingan untuk mengikuti jalan individu yang kembali kepada Allah sebagaimana yang dinyatakan iaitu, "Dan ikutilah jalan orang yang kembali kepadaKu". Maka, pemilihan teman dan persekitaran yang baik juga sangat memainkan peranan dalam membentuk peribadi anak-anak. Oleh itu, menjadi

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13th – 14th December 2020

tanggungjawab setiap ibu bapa untuk menyediakan model ikutan terbaik agar dapat dijadikan tauladan kepada golongan ini. Kecuaian dalam aspek ini boleh mengakibatkan anak-anak bakal terjebak dengan persekitaran dan lingkungan yang buruk sehingga mampu mempengaruhi akhlak mereka. Berdasarkan *Hikayat Khoja Maimun*, didapati adab berkomunikasi yang menekankan kepada 'pemilihan idola' dinyatakan daripada awal apabila burung Bayan sentiasa menasihati Bibi Zainab sehinggalah diakhirinya dengan terbatalnya hasrat Bibi Zainab untuk berlaku curang kepada suaminya. Inilah sahabat sejati yang seharusnya dijadikan idola walau pada awalnya terpaksa menggunakan puji-pujian untuk menghadapi gejolak nafsu sahabatnya (Bibi Zainab) secara bijaksana. Petikan di bawah ini membuktikan pernyataan ini iaitu:

> *"Hai batu kepada hamba yang beriman lagi sempurna budi bicara dan bijaksana.* ***Adakah hamba melarang tuan hamba****, berkenankah hamba duduk menyusahkan tuan pergi* ***kerana sebab hamba binatang****? Inilah maka tuan tidak mahu menurut kata hamba.* ***Pada fikiran hamba jikalau binatang sekalipun, pada jalan yang baik itu, patutlah diturut katanya****".*
>
> *(Hikayat Khoja Maimun 2000: 71-72)*

Kesimpulan

Kajian ini bertujuan untuk memperkenalkan karya dalam Kesusasteraan Melayu Tradisional yang berada dalam genre Sastera Hikayat iaitu *Hikayat Khoja Maimun*. Walau para pelakunya yang terdiri daripada individu yang telah dewasa, namun jalan ceritanya amat menarik untuk ditonjolkan dan dihidupkan semula terutamanya buat kanak-kanak. Secara tidak langsung, golongan muda ini terus terpelihara adabnya sambil mendapat pengajaran yang berhikmah daripada sastera hikayat ini. Kajian dapat mencapai semua objektif yang digariskan dengan satu rumusan bahawa adab berkomunikasi sangat penting diterapkan seawal usia kanak-kanak. Menerusi komunikasi yang beradab, segala urusan dapat dilalui dengan mudah dan menemui kejayaan. Inilah yang cuba dibuktikan dalam *Hikayat Khoja Maimun* sebagai salah sebuah karya dalam Sastera Hikayat yang berfungsi bukan sahaja memberi pengajaran tetapi menghibur khalayaknya. Justeru, sudah sampai masanya bahan bacaan kanak-kanak di Malaysia ini digantikan dengan khazanah yang diwarisi sejak turun-temurun dan bukannya bergantung kepada folklor Barat yang jauh menyimpang daripada adab ketimuran apatah lagi nilai-nilai keislaman. Rentetan daripada itulah, masyarakat perlu kembali kepada khazanahnya sendiri, berfikir dan bertindak mengikut tatacara yang diatur oleh intelektual terdahulu agar definisi 'sastera' sebagai bahasa yang indah serta karya yang bermanfaat dapat mencapai matlamat asal penulisannya.

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PANDEMIK CORONAVIRUS (COVID-19): TINJAUAN CABARAN PERLAKSANAAN PENGAJARAN DAN PEMBELAJARAN DALAM TALIAN (PDPDT) DI KALANGAN PENSYARAH POLITEKNIK KOTA BHARU

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Abstrak: *Penularan wabak pandemik coronavirus (covid-19) telah mengubah corak pengajaran dan pembelajaran di setiap peringkat tahap pendidikan di Malaysia. Bagi memastikan kelestarian pendidikan terus berlangsung, kaedah pengajaran dan pembelajaran dalam talian (PDPDT) telah di perkenalkan kepada semua warga pendidik. Pembelajaran dalam talian adalah suatu pembelajaran yang merangkumi bahan pembelajaran, aktiviti dan pentaksiran dalam talian. Kajian ini dilakukan untuk mendapatkan data bagi pelaksanaan PDPDT oleh pensyarah di Politeknik Kota Bharu (PKB) sepanjang pandemik covid-19 dari aspek jenis aktiviti yang dilaksanakan secara dalam talian, platform yang diaplikasikan, penggunakan sumber data internet, masalah perlaksanaan PDPDT dan tahap penerimaan pelajar terhadap PDPDT. Instrument yang digunakan dalam kajian adalah berbentuk soal selidik yang disebarkan secara atas talian kepada semua pensyarah di PKB. Seramai 163 orang pensyarah telah memberi maklumbalas. Hasil dapatan mendapati 94.3% responden menggunakan PDPDT untuk pelaksanaan teori, amali dan pentaksiran seperti kuiz, tugasan, ujian dan amali. Platform yang digunapakai ialah Google Meet, Big Blue Button (BBB), zoom meeting, Telegram, WhatsApp, Microsoft Teams dan lain-lain sebagai medium untuk perlaksanaan PDPDT. Hasil dapatan kajian menunjukkan majoriti responden menggunakan sumber data persendirian kerana hampir 80% responden menyatakan masalah akses kepada internet PKB. 69.3% responden menyatakan mendapat maklumbalas yang baik dari pelajar berkaitan perlaksanaan PDPDT. Secara keseluruhannya, pelaksanaan PDPDT boleh dilaksanakan terutamanya bagi proses pengajaran dan pembelajaran yang melibatkan kefahaman teori. Bagi kursus yang melibatkan kemahiran teknikal atau amali, adalah lebih sesuai dilaksanakan secara bersemuka bagi memastikan kemahiran teknikal yang tepat dapat diaplikasikan ketika menyelesaikan tugas. Pihak PKB disarankan agar menaiktaraf capaian internet dengan kapasiti yang mencukupi serta menyediakan kemudahan infra yang bersesuaian kepada pensyarah serta pelajar bagi kelancaran proses PDPDT yang dilaksanakan.*

Katakunci: *Covid-19, Pengajaran dan Pembelajaran Dalam Talian (PDPDT), Pensyarah PKB*

Pendahuluan

Pandemik coronavirus (covid-19) telah mengubah corak pengajaran dan pembelajaran di setiap peringkat tahap pendidikan samada di peringkat awalan (pra sekolah), sekolah rendah, sekolah menegah dan Institut Pengajian Tinggi Awam/Swasta bukan sahaja di Malaysia bahkan di seluruh dunia. Di peringkat pengajian tinggi tempatan, banyak garis panduan yang telah dikeluarkan oleh pihak Kementerian Pengajian Tinggi (KPT), Agensi Kelayakan Malaysia

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13th – 14th December 2020

(MQA) dan badan profesional lain untuk memberi fleksibiliti kepada institusi pengajian tinggi (IPT) agar PdP dapat dijalankan dengan lancar (Mohd Hafiz,2020).

Pengajaran dan pembelajaran dalam talian (PDPDT) boleh dilaksanakan secara segerak (synchronous) atau tidak segerak (asynchronous) dengan menggunakan kaedah yang bersesuaian (Garis Panduan Pembelajan Teradun Gantian, 2020). Pelbagai inisiatif telah di ambil oleh pihak institusi, pensyarah dan pelajar untuk menjayakan proses PDPDT demi memastikan kelestarian pendidikan terus berlangsung. Proses PDPDT juga melibatkan proses seperti merekod kehadiran pelajar sehinggalah pelaksanaan pentaksiran oleh pelajar. Ini bagi mengetahui keberkesanan proses PDPDT seterusnya memastikan objektif kandungan pembelajaran dapat dicapai dengan sempurna.

Pernyataan Masalah

PKB sememangnya telah mengamalkan kaedah pembelajaran teradun bagi penggunaan bahan pengajaran dan perlaksanaan penilaian berterusan pelajar secara atas talian bermula 2016 lagi. Tetapi, semenjak penularan wabak pandemik covid-19, perlaksanaan PDPDT di PKB telah dikuatkuasakan bagi semua aktiviti pengajaran dan pembelajaran bukan sahaja merangkumi bahan pembelajaran dan pentaksiran malah latihan amali serta penilaian amali juga hendaklah dilaksanakan secara atas talian. Permasalahan yang timbul adalah berkaitan dengan cabaran yang perlu dihadapi oleh pensyarah menjalankan proses PDPDT yang telah dikuatkuasakan. Cabaran adalah dari aspek kebolehan pensyarah dalam menggunakan platform semasa proses PDPDT, kelajuan capaian data internet dalam melaksanankan proses PDPDT dan tahap penerimaan pelajar terhadap PDPDT yang dialankan. Pelaksanaan PDPDT memerlukan banyak komitmen daripada semua pensyarah dan pelajar malah mendapat sokongan terutamanya daripada pihak institusi. Jadi, kajian ini dilakukan bagi mendapatkan data-data sebagai tinjauan awal kepada tindakan yang perlu di ambil oleh pihak pengurusan PKB dan pihak Jabatan Pengajian Politeknik dan Kolej Komuniti (JPPKK).

Objektif Kajian

Kajian ini dilaksanakan bertujuan untuk mengenalpasti:

a) Aktiviti PDPDT yang dilaksanakan oleh pensyarah.
b) Cabaran atau kekangan yang dihadapi dalam pelaksanaan PDPDT.
c) Tahap penerimaan pelajar terhadap PDPDT yang dilaksanakan

Persoalan Kajian

a) Apakah aktiviti PDPDT yang dilaksanakan oleh pensyarah.
b) Apakah aplikasi atas talian yang digunapakai oleh pensyarah untuk PDPDT.
c) Dari manakah sumber data internet yang digunapakai oleh pensyarah untuk PDPDT.
d) Apakah cabaran yang dihadapi oleh pensyarah dalam pelaksanaan PDPDT.
e) Bagaimanakah tahap penerimaan pelajar terhadap PDPDT.

Kepentingan Kajian

Kajian tinjauan ini, adalah diharapkan dapat memberi data yang benar bagi pelaksanaan PDPDT dalam kalangan pensyarah PKB semasa menghadapi pandemik covid-19. Hasil kajian adalah sebagai sumber penting untuk dibentangkan kepada pihak pengurusan PKB dan Jabatan Pengajian Politeknik dan Kolej Komuniti (JPPKK) sebagai tinjauan awal berkaitan dengan pelaksanaan PDPDT di Politeknik. Kajian ini membolehkan pihak pengurusan PKB dan JPPKK membuat perancangan yang lebih terperinci dari segi peruntukan belanjawan bagi memantapkan lagi kemudahan capaian internet, penyusunan kalendar akademik Politeknik,

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13th – 14th December 2020

merangka latihan untuk peningkatan kemahiran instruktional dan kepakaran *e-learning* kepada pensyarah politeknik.

Kajian Literatur

Pelaksanaan proses pengajaran dan pembelajaran secara maya atau dalam talian menjadi keperluan mendesak ketika seluruh dunia termasuk Malaysia bergelut dengan masalah penularan wabak COVID-19 (Muzaffar Syah, 2020). Menurut Fatin Aliah,(2020) pembelajaran atas talian ini sebenarnya mampu menghasilkan seseorang yang mempunyai kemahiran pembelajaran sepanjang hayat (*Life Long Learning*). Kemahiran pembelajaran sepanjang hayat ini adalah salah satu kemahiran utama dalam Kemahiran Abad Ke-21 yang perlu dikuasai oleh setiap individu untuk berjaya dalam abad yang mencabar ini. Kemahiran ini memerlukan seseorang yang mampu menentukan apa yang perlu dipelajari, mencari maklumat atau bahan untuk dipelajari, mempunyai kemahiran pembelajaran kendiri dan berdikari, bermotivasi, serta boleh membuat refleksi terhadap pembelajarannya dengan melakukan pentaksiran kendiri atau cara yang lain.

Pengajaran atas talian membolehkan proses pembelajaran yang dilaksanakan tanpa mengira jarak dan bilangan ahli yang melayarinya. Selain itu, pelajar juga dapat melalui proses pembelajaran yang berterusan di samping berupaya menyampaikan pengetahuan dengan lebih berkesan. Melalui platform yang diperkenalkan, pengajar juga boleh berinovasi dalam penyediaan platform, kaedah pengajaran dan penyampaian maklumat yang lebih sistematik dan efisien. (Mohamad Idham,2020).

Kaedah pengajaran dan pembelajaran dalam talian (PDPDT) perlu di laksanakan untuk menyokong pembelajaran teradun (blended learning) seperti yang dinyatakan dalam Lonjakan 9, Pelan Pembangunan Pendidikan Malaysia (Pengajian Tinggi) 2015-2025. Pelajar dan pendidik abad ke-21 perlu memanfaatkan teknologi ICT terkini dalam meningkatkan keberkesanan pembelajaran. Pelajar dan pendidik boleh merentasi sempadan fizikal untuk berinteraksi di pentas global. Pembelajaran teradun membuka kepada kepelbagaian pendekatan pembelajaran selari dengan keperluan pembelajaran TVET dan pembelajaran sepanjang hayat dengan memanfaatkan teknologi pembelajaran dalam talian. Bahan-bahan pembelajaran boleh dirakam dan dicapai secara dalam talian sebelum atau semasa aktiviti hands-on dijalankan. (Garis Panduan Pelaksanaan Pembelajaran Teradun Gantian (Pembelajaran Dalam Talian), 2020).

PdP secara atas talian adalah medium terbaik untuk memastikan kesinambungan proses pembelajaran sewaktu pandemik COVID-19 ini melanda negara. Kaedah PdP secara atas talian ini menuntut komitmen dan kerjasama daripada semua pihak terutamanya dari segi pengetahuan dan kemahiran berkaitan teknologi maklumat, penyediaan peranti digital dan akses capaian internet yang berkualiti serta penyediaan kaedah penilaian yang bersesuaian bagi mengukur pencapaian pelajar (Nor Fauziana, 2020).

Menurut Mohd Hafiz, (2020) PdP secara dalam talian melibatkan proses daripada merekod kehadiran pelajar sehingga pelaksanaan pentaksiran pelajar. Kehadiran pelajar boleh direkod sama ada secara segerak (*synchronous*) atau tidak segerak (*asynchrounous)* dengan menggunakan kaedah yang bersesuaian seperti penggunaan QR code, Google Form dan Microsoft Form. Pelaksanaan PdP pula boleh dilakukan melalui pelbagai platform sedia ada seperti *MOOC, Open Educational Resources (OER), Flipped Classroom* secara dalam talian, kelas tutor secara maya menggunakan *Big Blue Button* selain menggunakan *Learning Management System (LMS)*. Platform yang dimaklumkan ini juga mampu untuk merakam kehadiran pelajar melalui aktiviti-aktiviti yang dilakukan pelajar. Pelaksanaan PdP dalam talian secara segerak boleh dilakukan dengan mengunakan *Microsoft Teams, Webex, Facebook*

eISBN 978-967-2426-22-6
13th – 14th December 2020

Live, Google Classroom, Google Meet, Zoom dan *Skype For Business.* Pelaksanaan secara tidak segerak pula boleh dilakukan dengan mengunakan *Microsoft PowerPoint, Microsoft PowerPoint Recording, YouTube, Powtoon, Prezi, WeVideo, SoundCloud, Google Slides, Slideshare, Google Drive, Dropbox, Screencast-O-Matic, VideoScribe*, sumber daripada *Khan Academy, Edmodo, Google Classroom, Facebook, Instagram, Twitter, Pinterest dan Flickr.* Manakala, pelaksanaan aktiviti PdP bersama pelajar boleh dilakukan dengan menggunakan *Google Form, Microsoft Form, Padlet, Blendspace, Mentimeter, Flipgrid* dan *Mindmeister* yang mana setiap alat bantuan PdP dalam talian boleh disemak di laman sesawang UNESCO.

Pelaksanaan penilaian dan pentaksiran dalam talian pula boleh dilaksanakan melalui pelbagai kaedah dan seharusnya berpandukan kaedah *Outcome Based Education* (OBE) dengan merujuk kepada *Bloom's Digital Taxonomy* bagi membangunkan rubrik yang bersesuaian dengan keperluan kurikulum program. Pelbagai medium pentaksiran dalam talian yang boleh diketengahkan seperti *Socrative, GoFormative, Kahoot, Quizziz, Quizlet, Gimkit, Poll Everywhere* dan *EdPuzzle* yang mana ianya juga boleh dicapai di laman sesawang UNESCO. Pelaksanaan peperiksaan akhir secara dalam talian juga boleh dilaksanakan namun perlu mengambil kira kesediaan pensyarah dan pelajar daripada segi infrastruktur dan capaian internet.

Menurut Pusat e-Pembelajaran dan Sumber Pengajaran, Universiti Malaysia Pahang, sekiranya capaian internet rendah, platform seperti *WhatsApp, Telegram* dan *Instagram* sesuai dijadikan platform pengajaran murid. Bagi capaian sederhana, platform seperti *Youtube* dan *Kahoot* sesuai digunakan, manakala bagi capaian tinggi, platform bersemuka seperti *Zoom, Microsoft Team, Skype* dan *Google Meet* sesuai digunakan.

Metodologi Kajian

Instrument yang digunakan dalam kajian ini adalah soal selidik yang dibina menggunakan aplikasi *Google Form* dan disebarkan kepada pensyarah PKB melalui aplikasi *WhatsApp* dan Telegram PKB. Syed Arabi (2002) menyatakan penggunaan soal selidik adalah amat sesuai kerana ianya lebih praktikal, berkesan dan menjimatkan perbelanjaan. Soal selidik ini dibahagikan kepada dua bahagian iaitu bahagian A dan bahagian B. Bahagian A mengandungi soalan-soalan berkaitan dengan maklumat latar belakang responden. Manakala Bahagian B mengumpul data mengenai cabaran yang dihadapi dari aspek kebolehan pensyarah dalam menggunakan platform semasa proses PDPDT, kelajuan capaian data internet dalam melaksanankan proses PDPDT dan tahap penerimaan pelajar terhadap PDPDT yang dialankan. Responden juga diberi peluang untuk memberi cadangan atau komen berkaitan dengan pelaksanaan PDPDT di PKB. Analisa data yang diperolehi seterusnya di proses dengan menggunakan perisian *Microsoft Excel.*

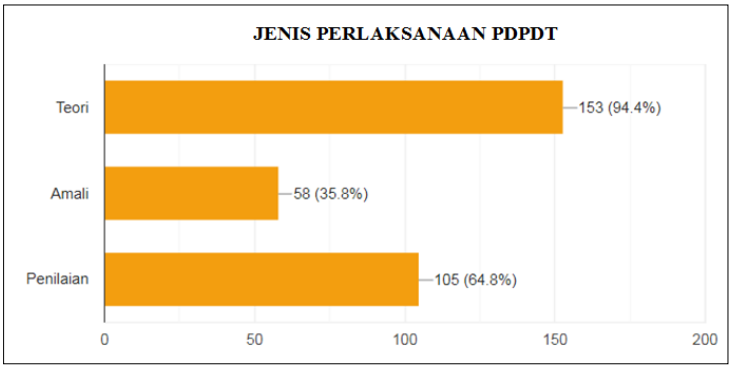
Dapatan dan Analisa Kajian

PKB terdiri daripada 6 jabatan, 4 jabatan telah memberi maklumbalas. Jumlah pensyarah bagi 4 jabatan ialah 247 orang, 163 telah memberi maklumbalas terhadap kajian tinjauan yang dijalankan. Merujuk kepada jadual penetuan saiz sampel berdasarkan saiz polulasi yang dikeluarkan oleh Kerjie dan Morgan (1970), di mana bagi saiz polulasi seramai 250 maka saiz sampel adalah 152. Kajian ini telah memperolehi saiz sampel lebih daripada yang telah dicadangkan oleh Kerjie dan Morgan, jadi ini boleh meningkatkan kesahan dan kebolehpercayaan data yang diperolehi.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jenis Aktiviti PDPDT

Persoalan pertama kajian adalah apakah jenis aktiviti PDPDT yang di dilaksanakan oleh pensyarah di PKB. Terdapat tiga jenis aktiviti yang dilaksanakan seperti yang ditunjukkan di dalam Rajah 1. Hasil kajian mendapati 94.4% responden menggunakan PDPDT untuk pelaksanaan teori, 35.8% untuk pelaksanaan amali dan 64.8% untuk penilaian atau pentaksiran seperti kuiz, tugasan dan amali.



Rajah 1: Jenis Aktiviti PDPDT Pensyarah PKB

Maklumbalas yang diterima oleh responden yang menggunakan PDPDT secara segerak (*synchronous*), pelaksanaan PDPDT yang diaplikasikan bersama pelajar lebih kepada untuk menerangkan teori. Setelah itu, responden akan membuat pentaksiran/penilaian seperti melakukan kuiz, memberi tugasan dan ujian kepada pelajar secara tidak segerak (*asynchronous*) dalam sela masa tertentu. Bagi pelaksanaan amali, PDPDT digunakan untuk menerangkan konsep pelaksanaan amali dan perbincangan berkaitan dengan amali yang perlu dan telah dilakukan. Berdasarkan maklumbalas juga, boleh dikatakan seorang responden menggunakan lebih dari 1 aplikasi untuk berinteraksi dan menjayakan PDPDT bersama pelajar.

Merujuk kepada Garis Panduan Pelaksanaan Pembelajaran Teradun Gantian (Pembelajaran Dalam Talian), 2020 bahan pembelajaran dan aktiviti pembelajaran segerak (*synchronous*) merangkumi penggunaan alat pengajaran aplikasi web 2.0 seperti *padlet, Google drive, Kahoot, edpuzzle* atau aplikasi lain yang bersesuaian dimana perlu melibatkan alatan interaksi masa-nyata (*real time*) seperti perbincangan, forum, pembentangan dan perbahasan. Selain itu, tempoh pembelajaran maya juga dihadkan kepada 1 jam melalui penggunaan Telesidang, webinar dan audio masa-nyata.

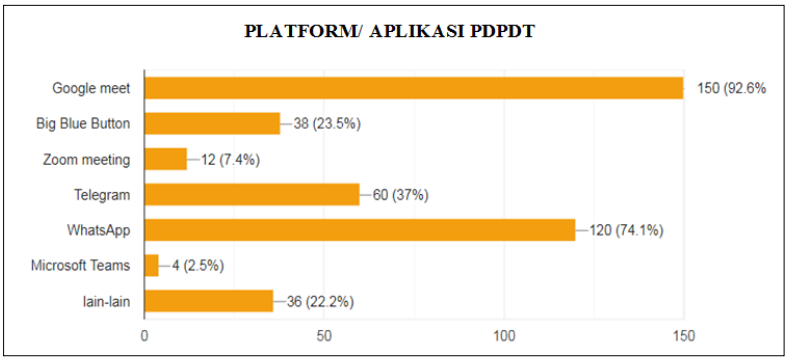
Bagi pembelajaran tidak segerak (*asynchronous*), aktiviti pembelajaran merangkumi pentaksiran berterusan dalam tempoh 1 minggu seperti kuiz, penilaian dan tugasan dalam talian, aktiviti pembelajaran secara dalam talian untuk satu minggu seperti penggunaan alatan web 2.0, forum, perbincangan, kaji selidik dan maklumbalas. Bahan pembelajaran (bagi 1 jam kuliah pembelajaran) hendaklah terdiri daripada bahan pembelajaran yang berdurasi 1 jam atau video berdurasi 10 minit melalui rakaman video, animasi dan multimedia.

Aplikasi PDPDT yang digunakan

Persoalan kedua kajian adalah apakah aplikasi atas talian yang digunapakai oleh pensyarah untuk PDPDT. Rajah 2 menunjukkan aplikasi yang digunakan untuk pelaksanaan PDPDT yang telah di laksanakan secara segerak (synchronous) dan bukan segerak (asynchronous). Bagi PDPDT secara *synchronous* atau pembelajaran atas talian secara bersemuka, aplikasi *Google Meet* menjadi pilihan utama responden iaitu sebanyak 92.6% diikuti oleh *Big Blue Button* (BBB) 23.5%, *zoom meeting* (7.4%) dan *Microsoft Teams (2.5%).*Manakala, bagi PDPDT

eISBN 978-967-2426-22-6
13th – 14th December 2020

secara *asynchronous* atau pembelajaran tanpa bersemuka, aplikasi *WhatsApp* mendapat pilihan tertinggi iaitu sebanyak 74.1% dan diikuti oleh Telegram sebanyak 37.0%. Selain dari platform yang dinyatakan, terdapat juga responden yang menggunakan lain-lain platform sebagai medium untuk menyampaikan PDPDT iaitu sebanyak 22.2%.



Rajah 2: Aplikasi Untuk Pelaksanaan PDPDT

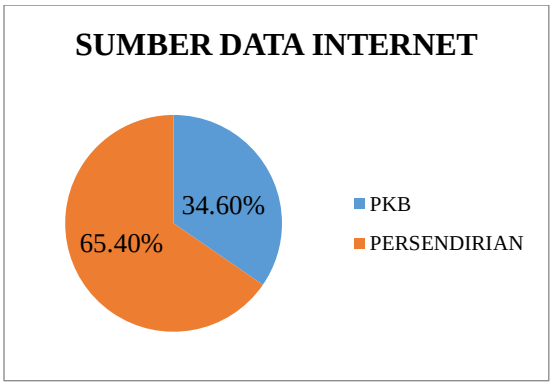
Pemilihan platform atas talian yang digunakan oleh responden adalah berdasarkan kepada latar belakang pengetahuan sedia ada responden sendiri. Kebanyakan responden memilih aplikasi *Google Meet* kerana penggunaan aplikasi ini telah diberi pendedahan awal sebelum PDPDT dilaksanakan di PKB oleh jawatankuasa e-pembelajaran PKB. Selain itu, platform ini boleh dicapai dengan mudah dan secara percuma di mana pada awalnya juga tidak mempunyai had masa. Selain aplikasi *Google Meet*, responden juga telah di beri pendedahan tentang aplikasi *Big Blue Button* yang di sertakan dalam pakej LMS CIDOS 3.5 dan juga aplikasi *Microsoft Teams.* Menurut responden, aplikasi *Big Blue Button* memerlukan kemahiran dan kefahaman yang tinggi dari segi penetapan *setting* dan kaedah untuk menyelenggara platform kerana ia berkait dengan penetapan yang telah di buat di dalam platform LMS CIDOS 3.5. Dari segi *Microsoft Teams* pula, rata-rata responden masih belum memahami penggunaannya dengan jelas kerana aplikasi ini baru sahaja di perkenalkan di PKB dan responden perlu mempunyai akaun yang sah dan berdaftar untuk menggunakannya secara pakej. Pemilihan platform *Zoom Meeting* menjadi pilihan ketiga mungkin kerana kekangan had masa penggunaan yang terhad kepada 40 minit sahaja bagi penggunaan secara percuma dan ini tidak mencukupi tetapan waktu PdP yang telah digariskan dalam jadual responden. Selain itu, aplikasi *Google Meet* dan *Zoom Meeting* juga tiada kemudahan untuk rekod PDPDT yang telah dilaksanakan sekiranya responden menggunakan akaun percuma. Bagi platform *asynchronous*, majoriti daripada responden dan pelajar memang telah mempunyai aplikasi *WhatsApp* dalam gajet masing-masing berbanding *Telegram* dan mereka menggunakan aplikasi ini secara kerap untuk pelaksanaan PDPDT.

Sumber Data Internet

Persoalan ketiga kajian ialah dari manakah sumber data internet yang digunapakai oleh pensyarah untuk PDPDT. Merujuk kepada Rajah 3, dapatan kajian menunjukkan 65.4% responden menggunakan sumber data persendirian dan 34.6% menggunakan sumber data internet PKB untuk menjayakan PDPDT. Responden mengambil inisiatif untuk menggunakan data persendirian ekoran daripada capaian internet menggunakan sumber internet PKB adalah sangat tidak memuaskan. Proses pelaksanaan PDPDT menjadi tidak lancar, suara tersekat-sekat, responden tidak dapat mendengar/menerima maklumbalas dari pelajar dengan jelas dan aktiviti bersemuka dalam PDPDT tidak dapat dilaksanakan mengikut yang telah dirancang.

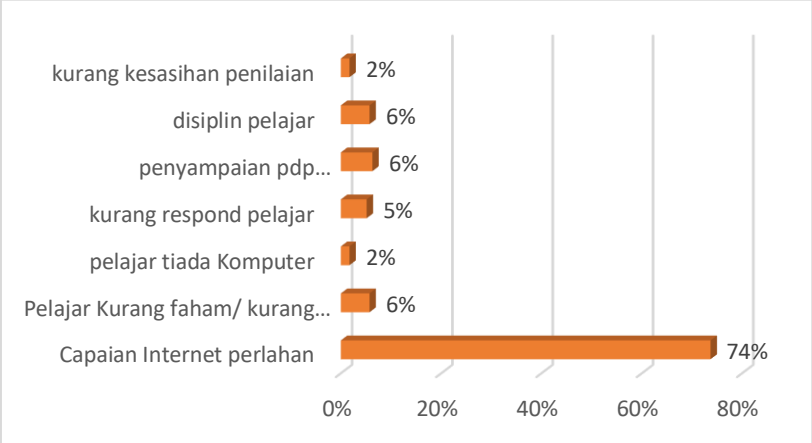
eISBN 978-967-2426-22-6
13th – 14th December 2020

Menurut Mohamad Idham, (2020) bagi memastikan kaedah pembelajaran atas talian yang berkesan, terdapat beberapa faktor yang perlu diambil kira seperti pembinaan kawalan persekitaran, kepentingan interaksi secara interaktif, latihan yang efektif dan berkesan, akses capaian teknologi yang maksimum, tahap piawaian yang standard, jaminan kualiti sumber yang tidak terhad, penentangan terhadap perubahan semasa dan teknologi, permasalahan berkaitan harta intelektual dan hak cipta serta sokongan institusi pendidikan yang menjalankan kaedah pembelajaran atas talian.



Rajah 3: Sumber Data Internet Dalam Pelaksanaan PDPDT

Cabaran Perlaksanaan PDPDT



Rajah 4: Cabaran Perlaksanaan PDPDT

Persoalan keempat kajian adalah apakah cabaran yang dihadapi oleh pensyarah dalam pelaksanaan PDPDT. Hasil dapatan menunjukkan hampir 80% responden menyatakan masalah akses kepada internet seperti yang ditunjukkan dalam Rajah 4 adalah merupakan halangan utama untuk menjayakan PDPDT. Selain itu, responden juga perlu berdepan dengan masalah sikap, komitmen dan disiplin pelajar semasa mengikuti PDPDT. Antara maklumbalas yang diterima dari responden berdasarkan soal selidik yang dijalankan adalah pelajar kurang memberi maklumbalas semasa sesi kuliah sedang berlangsung, tidak mengikuti kelas secara *on time* dan sepenuhnya, tidak menampilkan diri sebagai seorang pelajar Politeknik semasa mengikuti sesi kuliah dan kelewatan pelajar dalam menghantar pentaksiran yang diberi secara dalam talian. Selain itu, responden juga menghadapi masalah untuk menerangkan kandungan pembelajaran yang melibatkan aspek pengiraan. Pelajar sukar untuk memahami penerangan berkaitan dengan pengiraan yang dilakukan walaupun sesi PDPDT telah dibuat secara

eISBN 978-967-2426-22-6
13th – 14th December 2020

asynchronous dengan kaedah merakam video berkaitan pengiraan dan menyebarkan kepada pelajar sebelum sesi kelas secara segerak (synchrous) di lakukan. Untuk pelaksanaan PDPDT secara *synchronous*, responden turut menghadapi masalah di mana video pembelajaran yang dihasilkan tidak *support* platform *online* yang digunakan semasa PDPDT. Responden juga menyatakan bahawa mereka tidak mempunyai bahan bantu mengajar (BBM) yang lengkap untuk menjayakan PDPDT dan kekangan kemahiran untuk meneroka platform atas talian yang digunakan. Maklumbalas yang diterima juga menyatakan responden mempunyai keraguan dalam menentukan pemarkahan bagi pentaksiran yang di buat dalam talian. Ketelusan hasil kerja tidak dapat dipastikan dengan jelas dan kebanyakan pelajar terlibat dengan plagiat semasa melaksanakan pentaksiran.

Menurut Ehwan Ngadi, (2020) tiga implikasi utama dilihat menjadi cabaran besar kepada pendidik bagi menjalankan pembelajaran secara atas talian, iaitu kebolehcapaian internet dan kestabilan platform pengajaran, pengurusan emosi serta pentaksiran secara holistik. Menurutnya, kebolehcapaian internet menjadi salah satu perkara penting dalam mengendalikan kelas atas talian. Usaha mengenalpasti tahap kebolehcapaian internet bagi setiap pelajar di dalam kelas dapat membantu pendidik dalam menentukan kaedah bersesuaian bagi membolehkan kelas atas talian dapat dijalankan dengan baik. Namun begitu, beberapa kekangan wujud terutamanya bagi pelajar yang tinggal di kawasan yang kurang mendapat liputan internet. Oleh yang demikian, pelajar-pelajar ini perlu dicapai dengan menghubungi mereka melalui platform yang lebih sesuai seperti aplikasi *WhatApps, Telegram* mahupun *Messenger*. Sekiranya pelajar-pelajar ini tidak dapat dihubungi melalui aplikasi-aplikasi ini, maka kaedah konvensional adalah pilihan terakhir dengan mengepos atau menghantar bahan pengajaran kepada pelajar. Ini amat penting bagi mengelakkan pelajar ketinggalan mengikuti sesi pembelajaran, dan pada masa yang sama berupaya merangsang sistem kognitif pelajar secara berterusan. Selain itu, pemilihan platform bersesuaian amat penting dalam proses pengajaran dan pembelajaran. Ini bertujuan mengelakkan berlakunya *lag* atau *screen freeze* yang boleh mengganggu tumpuan pelajar sekiranya kelas atas talian dilakukan secara segerak. Pendidik perlu mengetahui tahap kestabilan internet, sama ada rendah, sederhana atau tinggi sebelum memilih platform pengajaran yang bersesuaian.

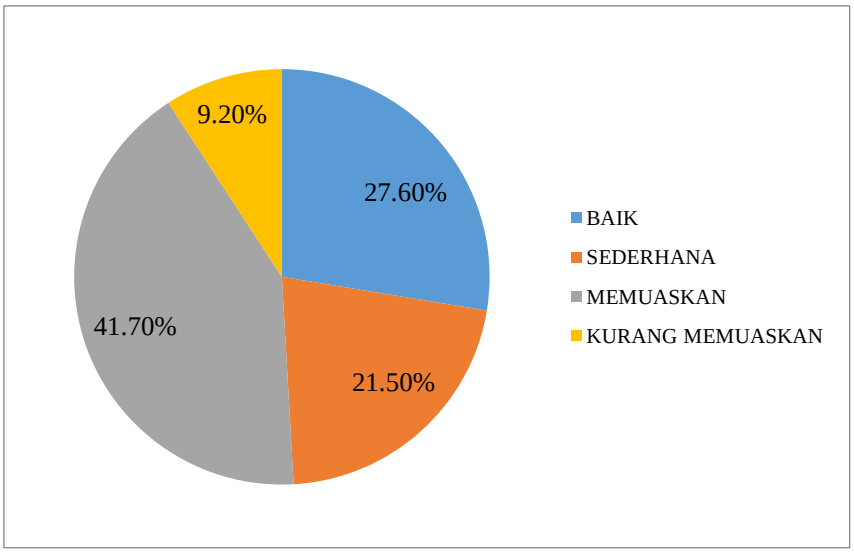
Menurut Mohd Hafiz, (2020) di sebalik pelbagai kaedah tersedia yang boleh diguna pakai, setiap IPT perlu memastikan cabaran utama berkaitan dengan PdP secara dalam talian perlu diselesaikan dengan baik. Isu yang pertama adalah berkaitan dengan kesediaan pengajar berkaitan dengan kualiti bahan PdP yang perlu dibangunkan. Bagi menjaga kualiti PdP dalam talian, setiap IPT perlu melaksanakan kursus/klinik bagi meningkatkan kemahiran pensyarah khususnya pentaksiran dalam talian. Cabaran yang kedua adalah berkaitan etika dan plagiat PdP dalam talian. Setiap IPT perlu memastikan bahan PdP yang dibangunkan dan pengunaan isi kandungan media (seperti grafik, audio, video, animasi dan lain-lain) tidak melanggar hak cipta mana-mana pihak. Ini termasuk isu plagiat untuk pelaksanaan peperiksaan akhir dan penilaian berterusan secara dalam talian dan ianya perlu dikawal dengan baik melalui penyediaan garis panduan yang jelas kepada pelajar dan pengajar. Cabaran yang seterusnya adalah berkaitan dengan penilaian dan pentaksiran pelajar. Ianya perlu dilaksanakan dengan adil dengan mengambil kira kekangan pelajar daripada segi infrastruktur dan capaian internet.

Tahap Penerimaan Pelajar

Persoalan kelima kajian adalah bagaimanakah tahap penerimaan pelajar terhadap PDPDT. Rajah 5 menunjukkan tahap penerimaan kandungan pembelajaran yang telah dilaksanakan. 27.6% responden menyatakan mereka mendapat penerimaan dan maklumbalas yang baik dari pelajar, 21.5% berada pada tahap penerimaan sederhana, 41.7% memuaskan dan 9.2% tidak

eISBN 978-967-2426-22-6
13th – 14th December 2020

memuaskan. Berdasarkan maklumbalas yang diterima, situasi ini berlaku disebabkan oleh kurangnya kebolehan pelajar untuk mendalami kandungan pembelajaran dan tidak dapat mencapai tahap maksimum seperti yang dikehendaki. Ini ekoran daripada capaian internet yang tidak stabil semasa sesi kuliah sedang berlangsung dimana talian selalu terputus-putus, suara pensyarah kurang jelas, pelajar tidak menumpukan perhatian secara serius semasa sesi kuliah, video pdp tidak berfungsi dengan baik, sukar untuk menentukan tahap kefahaman pelajar terhadap kandungan pembelajaran, penglibatan pelajar secara tidak menyeluruh dan pelajar kurang fokus dan tidak menunjukkan minat yang mendalam terhadap PDPDT.



Rajah 5: Tahap Penerimaan Pelajar Terhadap PDPDT

Menurut Fatin Aliah, (2020) pelaksanaan pembelajaran atas talian ini memerlukan pelajar membina kemahiran pembelajaran sepanjang hayat. Pelajar tidak boleh lagi menggunakan set pemikiran dahulu iaitu menunggu cikgu atau pensyarah untuk bercakap atau berkuliah baharu mula belajar. Pelajar perlu menentukan apakah yang perlu dipelajari, mencari bahan yang telah guru atau pensyarah letak di platform pembelajaran maya seperti Google Classroom dan *e-learning* institusi, kemudian menyusun masa sendiri untuk meneliti bahan tersebut kemudian menyelesaikannya. Pelajar perlu belajar menyusun masa dan keutamaan, bahan mana yang perlu dipelajari dan diselesaikan terlebih dahulu, yang mana kemudian.

Menurutnya lagi, pelajar perlu menyusun jadual pembelajaran sendiri, mencari bahan pembelajaran selain yang diberikan oleh pensyarah, menyusun waktu perbincangan bagi tugasan berkumpulan, menentukan tarikh tutup pecahan kerja-kerja tugasan kumpulan supaya boleh dilengkapkan sebelum tarikh tutup tugasan, serta membuat pelbagai keputusan yang memerlukan kemahiran penyelesaian masalah seperti masalah internet yang tidak stabil atau lemah, kawal kumpulan tugasan yang tidak ada akses internet, laptop dan speaker bermasalah, dan sebagainya. Apabila dilakukan pembelajaran secara atas talian, pelajar tidak lagi boleh bergantung kepada pensyarah semata-mata sebagai sumber ilmu. Pelajar perlu membuka minda untuk meneliti bahan pembelajaran lain di atas talian, bukan nota dan kuliah pensyarah semata-mata. Pencarian bahan pembelajaran yang sahih dan betul juga merupakan salah satu kemahiran pembelajaran sepanjang hayat yang perlu dibina. Ini boleh termasuk nota atau buku elektronik dari universiti terkemuka, video dan platform pembelajaran terbuka seperti *Massive Open Online Courses* (MOOC) yang percuma dan sebagainya.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kesimpulan dan Cadangan

Dapatan kajian menunjukkan bahawa pelaksanaan PDPDT oleh pensyarah di PKB masih lagi diperingkat permulaan dan perlu di bantu oleh pihak pengurusan untuk memastikan proses PDPDT norma baru ini dapat dilaksanakan dengan jayanya. Kemudahan capaian internet yang baik dan menyeluruh adalah merupakan aspek atau inipati utama yang perlu di ambil tindakan dan perhatian segera oleh pihak pengurusan. Selain itu, latihan kemahiran penggunaan aplikasi atau platform atas talian juga perlu di titik beratkan supaya para pensyarah dapat mengoptimumkan penggunaan platform untuk memantapkan lagi pelaksanaan PDPDT. Sebagai langkah untuk menggalakkan penggunaan PDPDT dikalangan pensyarah PKB, pihak pengurusan hendaklah mengambil inisiatif seperti memberi penghargaan kepada pensyarah yang giat melaksanakan PDPDT. Selain itu, cadangan dari responden juga merangkumi aspek-aspek berikut:

a) Menyediakan kemudahan seperti Cyber Cafe, Bilik Komputer Umum dan internet access dengan jumlah yang lebih banyak dan percuma kepada pelajar.
b) Pelajar diberi voucher internet untuk membolehkan mereka mengikuti PDPDT dengan jayanya di kediaman masing-masing.
c) Tambah baik infastruktur atau kelajuan talian supaya dapat menampung penggunaan semasa yang agak tinggi (upgrade data server Myren PKB).
d) Memberi kelonggaran kepada pensyarah yang ingin melaksanakan PDPDT ini untuk berada di kawasan capaian yang lebih baik (capaian sendiri) mengikut pilihan pensyarah.
e) Pensyarah diberikan kelonggaran dalam penilaian untuk penentuan gred.
f) Memperkasakan lagi penggunaan Web 2.0 untuk menjayakan PDPDT terutamanya untuk pentaksiaran (kuiz dan ujian).
g) Memberi kesedaran dan penekanan yang mendalam kepada pelajar berkaitan dengan pelaksanaan PDPDT

Komen yang dikemukakan oleh pensyarah PKB berkaitan dengan pelaksanaan PDPDT antaranya:

a) PDPDT boleh dilaksanakan tetapi tahap penerimaan dan kefahaman pelajar tidak dapat dipastikan sepertimana PdP secara bersemuka
b) PDPDT dilihat tidak sesuai untuk kursus yang mempunyai praktikal/amali
c) Bagi kursus yang melibatkan pengiraan, pendekatan PDPDT kurang sesuai.
d) Untuk kursus yang melibatkan praktikal/amali, sepatutnya pelajar boleh hadir bergilir-gilir ke Politeknik dan menjalankan praktikal/amali mengikut sop yang telah digariskan.

Semoga penemuan dari hasil kajian ini mendapat perhatian dan tindakan sewajarnya daripada pihak pengurusan demi memastikan proses PdP berjalan dengan lancar dan terancang sepanjang pandemik covid-19.

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13th – 14th December 2020

CABARAN E-DAGANG DALAM KALANGAN PELAJAR KEUSAHAWANAN DIGITAL JABATAN PERDAGANGAN

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Abstract: *Kursus Keusahawanan Digital (Digital Enterprenurship) adalah kursus teras umum (common core) yang perlu diambil oleh pelajar peringkat Diploma di Jabatan Perdagangan, Politeknik Malaysia. Penawaran kursus bertujuan melahirkan usahawan yang berupaya menjalankan perniagaan secara atas talian selari dengan perkembangan IR4.0. Kajian ini dijalankan untuk mengenalpasti cabaran yang dihadapi oleh pelajar Keusahawanan Digital Politeknik Merlimau dan perbezaan cabaran yang dihadapi pelajar terhadap tempoh pengalaman berniaga dan program pengajian. Kajian tinjauan menggunakan pendekatan kuantitatif dijalankan ke atas 113 pelajar di Jabatan Perdagangan yang merupakan sampel kajian untuk menjawab soalselidik. Soal selidik mempunyai 15 item soalan merangkumi tiga aspek kajian iaitu pengetahuan, keselamatan dan kewangan. Data kajian dikumpulkan dan dianalisis dengan menggunakan statistik deskriptif dan statistik inferensi. Hasil kajian mendapati cabaran e-dagang dalam kalangan pelajar Keusahawanan Digital berada pada tahap yang sederhana antara 2.93 hingga 3.29. Dapatan kajian juga mendapati tidak terdapat perbezaan yang signifikan antara cabaran e-dagang terhadap tempoh pengalaman berniaga* $p(113) = 0.466$ *dan program pengajian* $p(113) = 0.594$. *Kesan daripada penawaran kursus dapat menggilap kemahiran pelajar menjadi usahawan dan memberikan pengalaman menghadapi cabaran berniaga secara dalam talian. Ianya juga dapat dijadikan sebagai panduan kepada pensyarah dan kurikulum dalam menghasilkan kandungan pengajaran sejajar dalam objektif organisasi untuk membangunkan graduan TVET yang holistik, bercirikan keusahawanan dan seimbang melalui pendidikan yang dinamik seiring dengan revolusi perindustrian (IR4.0).*

Keywords: *e-Dagang, Keusahawanan Digital*

Pengenalan

Perkembangan teknologi maklumat dan komunikasi (ICT) di Malaysia telah memberikan banyak kelebihan dalam urusan sosial, pekerjaan, ekonomi, pendidikan, politik masyarakat dan sebagainya. Penggunaan ICT dalam perniagaan turut merancakkan sektor ekonomi dunia ke arah penjanaan pendapatan negara yang lebih baik dan positif. Kepesatan teknologi maklumat dalam kehidupan membentuk masyarakat yang berpengetahuan atas faktor mudah mencari maklumat dan menyebarkan sebarang maklumat. Dengan menggunakan pengetahuan tersebut, masyarakat kini bijak memanfaatkan peluang dan menggunakan kemahiran yang dimiliki untuk menjana pendapatan melalui urusan perniagaan secara elektronik.

Terdapat pelbagai definisi e-dagang yang dibincangkan dalam kalangan sarjana. Namun, definisi tersebut meliputi 4 perspektif asas iaitu perspektif dalam proses perniagaan, perspektif komunikasi, perspektif perkhidmatan dan perspektif secara atas talian (Ahmad Syahrul et al, 2012). Dalam kajian ini, e-dagang dilihat sebagai sistem pengantaraan antara peniaga dan pengguna dalam urusan jualbeli barang atau perkhidmatan dengan menggunakan

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13th – 14th December 2020

medium internet. Perkembangan ICT dalam perniagaan ini memberikan manfaat kepada peniaga dan usahawan dalam mengaplikasikan teknologi dalam perniagaan mereka. Kesan dalam penggunaan e-dagang, pihak berkenaan dapat mengembangkan pasaran perniagaan mereka dengan lebih luas melangkaui sempadan geografi.

Keusahawanan Digital dijadikan sebagai salah satu daripada modul pengajian yang ditawarkan kepada pelajar di Jabatan Perdagangan, Politeknik Malaysia. Penggunaan e-dagang dalam konteks pengajian kursus ini merangkumi penyampaian dari segi pengetahuan dan kemahiran dalam menguruskan transaksi perniagaan secara atas talian. Antara kemahiran yang perlu dikuasai oleh pelajar adalah kemahiran memasarkan produk atau perkhidmatan jualan, kemahiran komunikasi secara atas talian dan menguruskan transaksi elektronik, yang memenuhi ciri-ciri salah satu model e-dagang iaitu perniagaan kepada pengguna (B2C) (Kurikulum JPPKK, 2017).

Faktor kepesatan dalam perkembangan ICT di Malaysia menjadikan keusahawanan atas talian sebagai tren terkenal dalam kalangan usahawan di Malaysia (Mohd Raduan Amran, 2019). Keusahawanan atas talian bermaksud usahawan mengadaptasi ICT dalam menguruskan perniagaan mereka. Usahawan perlulah berani dalam mengambil risiko dan peluang dalam perniagaan yang dijalankan. Risiko merujuk kepada cabaran-cabaran yang dihadapi oleh usahawan dalam tempoh mereka menguruskan perniagaan secara atas talian. Para usahawan perlulah berupaya mendepani sebarang cabaran yang mendatang sama ada dalam kawalan mahupun luar kawalan mereka.

Pernyataan Masalah

Suruhanjaya Komunikasi dan Multimedia Malaysia (SKMM) melaporkan pada tahun 2010, 66.3% masyarakat Malaysia lebih gemar membeli secara bersemuka berbanding atas talian (online) atas faktor kurang keyakinan terhadap aspek keselamatan semasa berurusniaga. 59.1% daripada pengguna tersebut kurang percaya terhadap sistem *online*, manakala 58.7% berasa kurang selamat terhadap pembelian dalam bentuk ini. Masalah ini menjadi cabaran kepada peniaga dan usahawan atas talian untuk meyakinkan pengguna semasa pembelian.

Dalam kajian Ayo C.K et al (2011) membincangkan elemen percaya (Trust Model) dalam urusniaga e-dagang yang berorientasikan perniagaan kepada pengguna (B2C). Antara cabaran yang dihadapi oleh pengguna *online* yang boleh menjejaskan perniagaan e-dagang adalah pengguna percaya kebarangkalian tinggi berlaku penyelewengan data (internet fraud), ketidakpercayaan kaedah pembayaran, maklumat yang tidak mencukupi dalam laman e-dagang dan kos yang tinggi dalam mendapatkan kemudahan internet.

Oleh demikian, kajian ini dilakukan bagi mengenalpasti cabaran yang dihadapi oleh para pelajar Keusahawanan Digital semasa melaksanakan perniagaan secara atas talian.

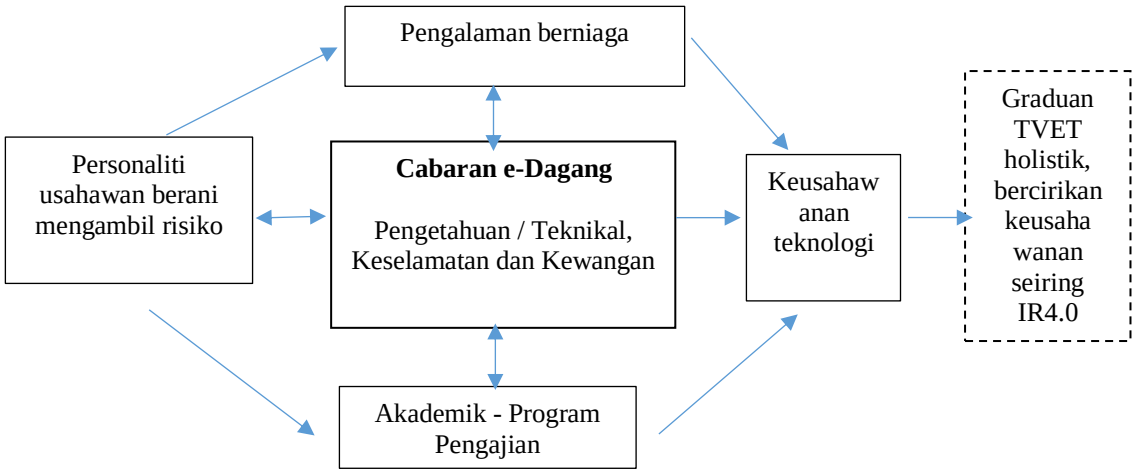
Objektif Kajian

Antara objektif kajian yang disasarkan oleh pengkaji dalam kajian ini adalah:

i. Mengenal pasti tahap cabaran yang dihadapi oleh pelajar Keusahawanan Digital dari aspek pengetahuan dan teknikal, keselamatan dan kewangan
ii. Mengenal pasti perbezaan antara tempoh pengalaman berniaga terhadap cabaran e-dagang
iii. Mengenal pasti perbezaan antara program pengajian terhadap cabaran e-dagang

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kerangka Konsep



Rajah 1: Kerangka Teori kajian diubahsuai daripada Model Pembangunan Usahawan (Edward, 1991)

Sorotan kajian dan Hipotesis Kajian

Dalam kajian Norfadhilah N. & Halimah H. (2010) mendapati personaliti usahawan yang dikenalpasti dalam kalangan pelajar universiti pengajian tinggi awam (IPTA) di Malaysia, berada pada tahap tinggi untuk kesemua personaliti sebagai usahawan kecuali berani mengambil risiko yang hanya memperolehi min sederhana. Cabaran dalam e-dagang merujuk kepada risiko yang dihadapi oleh pelajar selaku pengguna semasa menjalankan perniagaan secara talian.

Dalam kajian lepas, tiada perbezaan yang signifikan antara ciri orientasi sikap keusahawanan terhadap faktor pengalaman perniagaan, namun, terdapat perbezaan orientasi sikap keusahawanan yang signifikan terhadap faktor tahap pendidikan formal dalam kalangan usahawan belia bumiputera muslim (Buerah tunggak & Zoolhilmi Ahmed (2015). Dalam kajian tersebut merumuskan faktor pendidikan mempengaruhi sikap keusahawanan pelajar turut bertepatan dengan Norfadhilah N. & Halimah H. (2010) yang menyatakan wujud perbezaan minat keusahawanan yang signifikan antara pelajar yang berlainan jurusan.

Dapatan daripada kajian lepas, hipotesis nul telah dibentuk dalam kajian ini iaitu:

Ho_1 : Tidak terdapat perbezaan yang signifikan tempoh pengalaman berniaga terhadap skor min cabaran e-dagang

Ho_2 : Terdapat perbezaan yang signifikan program pengajian terhadap skor min cabaran e-dagang

Model Kajian

Model kajian yang dirujuk dalam kajian ini adalah Model Pembangunan Usahawan. Edward (1991) dalam kajian Puspawati Parni (2013) telah membangunkan model usahawan teknikal. Model ini menerangkan faktor utama yang mempengaruhi individu menceburi bidang keusahawanan teknologi (digital) adalah laterbelakang keluarga. Diikuti dengan faktor orientasi matlamat, personaliti dan motivasi. Seterusnya merupakan faktor perkembangan akademik dan umur disamping pengalaman perniagaan atau bekerja dengan majikan terdahulu

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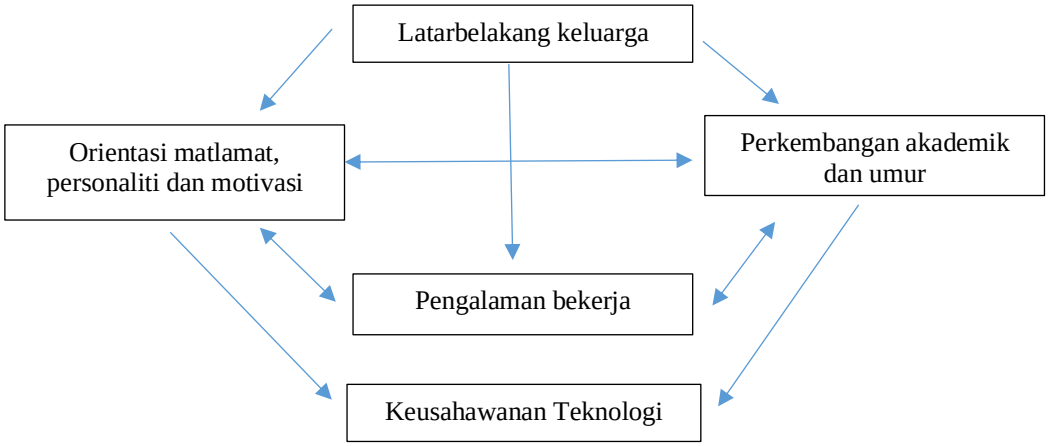
13th – 14th December 2020



Rajah 2: Model Pembangunan Usahawan – *Sumber Edward (1991) dalam Puspawati Parni (2013)*

Sorotan Literatur

Beberapa kajian lepas turut membincangkan cabaran-cabaran yang dihadapi oeh pengguna perniagaan atas talian. Faktor asas kepada kejayaan e-dagang adalah rangkaian internet. Revolusi internet dalam kehidupan masyarakat pada masa kini menjadi elemen terpenting dalam setiap aktiviti manusia, khususnya kepada perkembangan ekonomi yang lebih pesat dan supaya kekal konsisten dalam persaingan. Kemudahan dan fasiliti yang mencukupi termasuklah kemudahan Internet berkelajuan tinggi menjadi tunjang kepada pelaksanaan transaksi elektronik (Ahmad Syahrul et al, 2012). Kelancaran rangkaian ini ini memberi impak positif kepada pembeli untuk meneruskan proses pembelian selain peniaga dapat memberikan maklumat dengan segera kepada pembeli.

Rasa kurang percaya terbentuk melalui anggapan hasil yang akan diperolehi tidak selari dengan jangkaannya. Tiada rasa percaya menjadi faktor utama kepada kegagalan e-dagang dan rasa percaya ini penting untuk membolehkan transaksi elektronik berlaku. Menurut kajian Ayo C.K et al (2011), antara kegusaran pengguna *online* antaranya kesanggupan dan kemampuan penjual bertindak mengikut kehendak pelanggan, jujur dalam urusniaga, tidak menyebarkan maklumat peribadi kepada penjual lain dan berupaya menghantar barangan jualan sepertimana yang dipersetujui. Menjadi cabaran kepada pembeli untuk meneruskan pembelian secara atas talian apabila barang yang dipesan tidak memenuhi sepertimana yang diiklankan akibat pengiklanan yang menggelirukan pengguna (Ibrahim Ali, 2015). Tambahan, kaedah perniagaan atas talian yang memerlukan pembayaran dibuat terlebih dahulu menjadi halangan apabila pengguna beranggapan wujud risiko pesanan tidak diterima.

Kajian Norazila et al (2016) mendapati kebanyakan peniaga e-dagang tidak menyatakan dengan jelas bagaimana data peribadi pengguna akan dilindungi, mewujudkan masalah ketidakpastian sekuriti transaksi elektronik ini. Akses internet yang mahal memberikan cabaran kepada pengguna e-dagang khususnya semasa mencari maklumat berkaitan produk baru (Ahmad Syahrul et al, 2012). Menjadi halangan kepada pengguna untuk percaya kepada pembelian secara atas talian dapat menjimatkan kos sekiranya terpaksa membayar kos akses yang mahal untuk penggunaan internet.

Metodologi Kajian

Rekabentuk kajian menggunakan pendekatan kuantitatif dalam tatacara pemprosesan data dan menggunakan instrumen soalselidik sebagai alat pengumpulan data. Manakala, kaedah yang

eISBN 978-967-2426-22-6
13th – 14th December 2020

dipilih berdasarkan kaedah tinjauan ke atas para pelajar Jabatan Perdagangan yang mengambil kursus Keusahawanan Digital. Data kuantitatif yang diperolehi melalui kajian ini akan dikumpulkan dan dianalisis secara deskriptif dan inferensi dengan menggunakan SPSS versi 25.

Populasi dan Sampel Kajian

Populasi kajian adalah pelajar Jabatan Perdagangan yang merangkumi semua program pengajian yang menawarkan kursus Keusahawanan Digital sebagai subjek teras umum (common core). Pemilihan sampel dalam kajian ini berdasarkan teknik pensampelan rawak mudah. Menurut Azizi et al (2007) teknik pensampelan ini sesuai digunakan untuk kumpulan responden yang kecil dan dengan beranggapan kesemua responden bersifat homogenous. Pengkaji menggunakan data sebenar bagi bilangan pelajar yang mengambil kursus Keusahawanan digital ini pada sesi Disember 2019.

Jadual 1: Bilangan pelajar mengambil kursus Keusahawanan Digital

JABATAN PERDAGANGAN, PMM	Jumlah pelajar
Diploma Akauntansi	40
Diploma Pengajian Perniagaan	40
Diploma Pemasaran	33
Jumlah	113

Instrumen Kajian

Borang soalselidik digunakan sebagai instrumen pengumpulan data dalam kajian ini. Soal selidik tertumpu kepada persoalan kajian untuk mengenal pasti cabaran e-dagang yang dihadapi oleh pelajar Keusahawanan Digital. Borang soalselidik dibina dan digunakan bagi menjawab permasalahan kajian yang dikaji. Instrumen kajian dibahagikan kepada 2 bahagian iaitu bahagian I mengenai demografi responden yang dipilih iaitu tempoh pengalaman berniaga dan program pengajian dan bahagian II cabaran e-dagang dalam tiga (3) aspek kajian yang dicadangkan dalam kerangka konseptual kajian. Item soalan diadaptasi daripada dapatan kajian-kajian lepas dan disesuaikan mengikut responden kajian.

Jadual 2: Pembahagian item instrumen mengikut aspek kajian

Bahagian	Aspek/Dimensi kajian	Jumlah item
I	Maklumat Demografi	2
II (a)	Cabaran e-dagang aspek pengetahuan/teknikal	5
II (b)	Cabaran e-dagang aspek keselamatan	5
II (c)	Cabaran e-dagang aspek kewangan	5
	Jumlah	17

Skala likert lima (5) peringkat digunakan bagi menjawab 15 item soalselidik pada bahagian II kerana ia berupaya memberikan maklumbalas yang tepat berkaitan persoalan kajian. Skala likert mewakili 5 adalah untuk sangat setuju (SS), 4 mewakili setuju (S), 3 mewakili sederhana (SD), 2 mewakili tidak setuju (TS) dan 1 merujuk kepada sangat tidak setuju (STS). Instrumen kajian telah melalui kajian rintis dengan nilai kebolehpercayaan *Cronbach Alpha*, 0.903 untuk keseluruhan item.

Tatacara Pemerolehan Data

Pengkaji menggunakan pendekatan kuantitatif melalui teknik pensampelan rawak mudah ke atas semua pelajar yang mengambil kursus Keusahawanan Digital untuk menjadi responden

eISBN 978-967-2426-22-6
13th – 14th December 2020

kajian. Borang soalselidik ditadbir sendiri oleh pengkaji dengan kerjasama Pensyarah Kursus Keusahawanan Digital, Politeknik Merlimau.

Tatacara Penganalisisan Data

Data yang diperoleh daripada kajian ini dianalisis menggunakan SPSS versi 25 secara statistik deskriptif dan statistik inferensi. Analisis statistik deskriptif akan menghuraikan dapatan dalam bahagian I (demografi responden) dalam bentuk kekerapan dan peratus. Bagi mengenalpasti tahap cabaran e-dagang, pengkaji menggunakan analisis statistik deskriptif, melalui analisis kekerapan, skor min dan sisihan piawai.

Analisis inferensi digunakan bagi melihat perkaitan antara pembolehubah bersandar dan bebas. Kajian ini melihat perbezaan secara statisitik skor min cabaran e-dagang sebagai pembolehubah bersandar terhadap faktor demografi responden sebagai pembolehubah bebas.

Analisis Dapatan

Kajian ini melibatkan 113 pelajar yang mengambil kursus Keusahawanan Digital di Jabatan Perdagangan. Sebanyak 66 orang (58.4%) responden mempunyai pengalaman berniaga 0-6 bulan, 34 orang (30%) mempunyai pengalaman 6 bulan-12 bulan, 7 orang (6.1%) untuk 1 tahun-3 tahun dan 6 orang (5.5%) mempunyai pengalaman berniaga 3 tahun ke atas.

Bagi demografi program pengajian, 40 orang (35.3%) responden mewakili pelajar Diploma Akauntansi, 40 orang (35.3%) juga daripada pelajar Diploma Pengajian Perniagaan dan 33 orang (29.4%) daripada pelajar dari program Diploma Pemasaran. Interpretasi tahap cabaran e-dagang diukur menggunakan julat skor kajian.

Jadual 3: Interpretasi tahap berdasarkan julat skor

Julat Skor	Interpretasi tahap
5-11	Rendah
12-18	Sederhana
19-25	Tinggi

Tahap Cabaran E-Dagang Dari Aspek Pengetahuan Dan Teknikal

Jadual 4 menunjukkan julat skor cabaran aspek pengetahuan dan teknikal yang dihadapi oleh pelajar Keusahawanan Digital. Dapatan menunjukkan 12 (10.6%) responden mempunyai tahap rendah, 72 (63.7%) mempunyai tahap sederhana dan 29 (25.7%) responden mempunyai tahap cabaran e-dagang yang tinggi dari aspek pengetahuan dan teknikal

Jadual 4: Julat skor tahap cabaran e-dagang dari aspek pengetahuan dan teknikal

Aspek / Dimensi	Interpretasi Piawai Julat Skor	Frekuensi (N=113)	Peratus (%)
Cabaran pengetahuan dan teknikal	Rendah	12	10.6
	Sederhana	72	63.7
	Tinggi	29	25.7

Tahap Cabaran E-Dagang Dari Aspek Keselamatan

Jadual 5 menunjukkan julat skor cabaran aspek keselamatan yang dihadapi oleh pelajar Keusahawanan Digital. Dapatan menunjukkan 12 (10.6%) responden mempunyai tahap rendah, 61 (53.9%) mempunyai tahap sederhana dan 40 (35.5%) responden mempunyai tahap cabaran e-dagang yang tinggi dari aspek keselamatan

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 5: Julat skor tahap cabaran e-dagang dari aspek keselamatan

Aspek / Dimensi	Interpretasi Piawai Julat Skor	Frekuensi (N=113)	Peratus (%)
Cabaran keselamatan	Rendah	12	10.6
	Sederhana	61	53.9
	Tinggi	40	35.5

Tahap Cabaran E-Dagang Dari Aspek Kewangan

Jadual 6 menunjukkan julat skor cabaran aspek kewangan yang dihadapi oleh pelajar Keusahawanan Digital semasa menjalankan perniagaan e-dagang. Dapatan menunjukkan 31 (27.4%) responden mempunyai tahap rendah, 60 (53.0%) mempunyai tahap sederhana dan 22 (19.6%) responden mempunyai tahap cabaran e-dagang yang tinggi dari aspek kewangan.

Jadual 6: Julat skor tahap cabaran e-dagang dari aspek kewangan

Aspek / Dimensi	Interpretasi Piawai Julat Skor	Frekuensi (N=113)	Peratus (%)
Cabaran kewangan	Rendah	31	27.4
	Sederhana	60	53.0
	Tinggi	22	19.6

Perbezaan Tempoh Pengalaman Berniaga Terhadap Cabaran E-Dagang

Analisis Varian (ANOVA) digunakan bagi mengenal pasti perbezaan tempoh pengalaman berniaga terhadap skor min cabaran e-dagang. Hasil kajian mendapati nilai p(113) = 0.466, tahap signifikan ini adalah lebih besar daripada nilai *alpha* yang ditetapkan (0.05), maka hipotesis nul gagal ditolak iaitu tidak terdapat perbezaan yang signifikan tempoh pengalaman berniaga terhadap skor min cabaran e-dagang.

Perbezaan Program Pengajian Terhadap Cabaran E-Dagang

Analisis Varian (ANOVA) digunakan bagi mengenal pasti perbezaan secara statistik nilai skor min cabaran e-dagang terhadap program pengajian. Hasil kajian mendapati nilai p(113) = 0.594, tahap signifikan ini adalah lebih besar daripada nilai *alpha* yang ditetapkan (0.05), maka hipotesis nul ditolak iaitu tidak terdapat perbezaan yang signifikan program pengajian terhadap skor min cabaran e-dagang. Interpretasi tahap cabaran e-dagang diukur menggunakan skor min berikut;

Jadual 7: Interpretasi tahap berdasarkan skor min

Skor min	Interpretasi tahap
1.00 – 2.33	Rendah
2.34 – 3.66	Sederhana
3.67 – 5.00	Tinggi

Sumber: Dyer (2006) dalam Nur Hazwani (2018)

Analisis Cabaran E-Dagang Mengikut Kekerapan Dan Nilai Min Mengikut Item Soalan

Jadual 8 menunjukkan analisis kekerapan, skor min dan interpretasi tahap bagi setiap item cabaran yang dikaji. Item 1 mencatatkan nilai min (3.96) dengan tahap cabaran tertinggi iaitu 81 responden (71.7%) setuju/sangat setuju dengan item *'Kemudahan internet yang tidak berkelajuan tinggi menyebabkan proses transaksi terganggu'.* Manakala, cabaran yang dengan tahap interpretasi paling rendah adalah untuk item no 14 *'Pernah diberikan resit bayaran palsu*

eISBN 978-967-2426-22-6
13th – 14th December 2020

oleh pembeli' yang mana 70 responden (62%) tidak setuju/sangat tidak setuju dengan pernyataan ini (skor min 2.30)

Seterusnya, analisis dibuat berdasarkan aspek-aspek cabaran. Dalam aspek pengetahuan dan teknikal, item 1 memberikan cabaran dengan nilai min paling tinggi, namun bagi cabaran item 4, *'Mengalami kesulitan dalam menyampaikan maklumat jualan kepada pembeli secara atas talian'* mencatatkan nilai min (2.96) terendah, hanya 31 responden (27.4%) setuju/sangat setuju dengan cabaran tersebut.

Cabaran dari aspek keselamatan menunjukkan semua cabaran pada interpretasi sederhana. Item dengan nilai min tertinggi (3.60) adalah item no 10, *'Mengetahui prosedur atau tindakan undang-undang sekiranya berlaku penyalahgunaan maklumat peribadi dalam urusniaga secara atas talian'* yang mana 67 responden (59.3%) bersetuju/sangat setuju dengan item ini. Manakala, item yang mancatatkan cabaran pada tahap yang paling rendah dengan skor min 3.00 adalah item no 7, *Barang dipesan tidak menepati seperti yang diiklankan'* hanya 34 responden mewakili 30% bersetuju/sangat bersetuju pernah mengalami cabaran ini.

Aspek cabaran dari segi kewangan, cabaran yang memperolehi nilai min terendah (2.30) adalah item 14, *Pernah diberikan resit bayaran palsu oleh pembeli'*, manakala cabaran dengan nilai min tertinggi adalah item 11, '*Pernah mengalami kerugian atas urusniaga yang dijalankan secara atas talian (online)*' hanya 53 responden (46.9%) setuju/sangat setuju dengan item ini.

Jadual 8: Analisis kekerapan dan min berdasarkan item soalan

Aspek/Dimensi	Item	Sangat Tidak Setuju (%)	Tidak setuju (%)	Sederhana (%)	Setuju (%)	Sangat Setuju (%)	Min	Interpretasi Piawai Min
Cabaran Pengetahuan dan teknikal	1	1(0.9)	7 (6.2)	24 (21.2)	45 (39.8)	36 (31.9)	3.96	Tinggi
	2	6(5.3)	18 (15.9)	51 (45.1)	29 (25.7)	9 (8.0)	3.15	Sederhana
	3	5(4.4)	23 (20.4)	53 (46.9)	25 (22.1)	7 (6.2)	3.05	Sederhana
	4	7(6.2)	31 (27.4)	44 (38.9)	21 (18.6)	10 (8.8)	2.96	Sederhana
	5	5(4.4)	17 (15)	47 (41.6)	27(23.9)	17(15)	3.30	Sederhana
Cabaran Keselamatan	6	6 (5.3)	26 (23)	39 (34.5)	33 (29.2)	9 (8.0)	3.12	Sederhana
	7	7 (6.2)	30 (26.5)	42 (37.2)	24 (21.2)	10 (8.8)	3.00	Sederhana
	8	4 (3.5)	12 (10.6)	45 (39.8)	42 (37.2)	10 (8.8)	3.37	Sederhana
	9	3 (2.7)	15 (13.3)	44 (38.9)	36 (31.9)	15 (13.3)	3.40	Sederhana
	10	3 (2.7)	12 (10.6)	31 (27.4)	48 (42.5)	19 (16.8)	3.60	Sederhana
Cabaran Kewangan	11	9 (8.0)	20 (17.7)	31 (27.4)	42 (37.2)	11 (9.7)	3.23	Sederhana
	12	5 (4.4)	28 (24.8)	31 (27.4)	37 (32.7)	12 (10.6)	3.20	Sederhana
	13	6 (5.3)	32 (28.3)	39 (34.5)	30 (26.5)	6 (5.3)	2.98	Sederhana
	14	35 (31)	35 (31.0)	21 (18.6)	18 (15.9)	4 (3.5)	2.30	Rendah
	15	10 (8.8)	27 (23.9)	41 (36.3)	27 (23.9)	8 (7.1)	2.96	Sederhana

eISBN 978-967-2426-22-6
13th – 14th December 2020

Perbincangan

Kajian ini membuktikan cabaran yang paling besar dihadapi oleh pelajar Keusahawanan Digital adalah dari aspek keselamatan berbanding kewangan dan pengetahuan dan teknikal. Walaubagaimanapun, ketiga-tiga cabaran berada pada tahap yang sederhana. Dapatan ini merumuskan bahawa kebanyakan para pelajar bersetuju menghadapi bentuk cabaran tersebut semasa menjalankan perniagaan secara atas talian.

Cabaran yang paling besar dihadapi oleh pelajar adalah kemudahan internet yang tidak berkelajuan tinggi menyebabkan transaksi elektronik terganggu. Urusniaga akan gagal sekiranya kemudahan ini mengganggu proses penyampaian dan penerimaan maklumat antara penjual dan pembeli. Selari dengan kajian Jamilahalmutairi & Abdullah A. (2016) kelajuan internet yang tidak berkualiti dan tidak mencukupi merupakan halangan dari segi teknikal dalam penggunaan e-dagang.

E-dagang telah diterima baik di seluruh dunia. Penggunaan e-dagang yang semakin meningkat di Malaysia membuktikan masyarakat mempercayai aspek keselamatan data dan kesahihan transaksi. Tambahan pula, terdapat undang-undang e-dagang (e-commerce law) yang telah dikuatkuasakan bagi memastikan hak pengguna terjamin. Pengesahan pembayaran boleh disemak secara atas talian dengan pantas. Maka, isu menerima resit palsu dapat dielakkan.

Dalam kajian ini, tidak wujud perbezaan antara tempoh pengalaman berniaga terhadap cabaran e-dagang yang dihadapi pelajar. Kajian ini membuktikan semua usahawan menghadapi cabaran e-dagang yang sama tanpa mengambilkira pengalaman berniaga. Cabaran boleh berlaku kepada semua orang, namun cara mengatasinya mungkin berbeza bergantung kepada pengalaman yang ada. Dapatan kajian ini selari dengan kajian Buerah tunggak & Zoolhilmi Ahmed (2015) yang mana tiada perbezaan pengalaman berniaga dengan orientasi keusahawanan belia bumiputera muslim.

Selain itu, kajian ini juga membuktikan tidak wujud perbezaan antara program pengajian dengan cabaran e-dagang yang diterima pelajar. Bertepatan dengan kajian Norfadhilah N. & Halimah H. (2010), pelajar dari jurusan bukan teknikal seperti pengajian perniagaan, ekonomi dan perakaunan lebih cenderung kepada bidang yang serupa dengan bidangnya iaitu keusahawanan berbanding dengan pelajar jurusan teknikal.

Secara kesimpulannya, kerjaya sebagai usahawan berupaya merancakkan pertumbuhan ekonomi sesebuah negara. Dalam usaha melahirkan lebih ramai graduan usahawan, maka antara langkah permulaan ke arah matlamat tersebut adalah melalui penawaran kursus keusahawanan sebagai modul pengajian am di institusi pengajian tinggi (Mohd Raduan Amran, 2019). Dalam perkembangan ICT yang menjadi nadi kepada masyarakat kini, penawaran kursus penawaran digital ini berjaya memenuhi matlamat institusi dalam melahirkan graduan bidang keusahawanan selari revolusi perindustrian 4.0 (IR4.0).

Bagi menjadikan Malaysia sebagai hub pusat perkembangan ICT dalam perniagaan menjelang negara maju 2020, kerajaan melalui peranan institusi pendidikan telah mencadangkan dan memperuntukkan sumber yang besar bertujuan memperluaskan pengetahuan dalam penguasaan ICT melalui seminar, penawaran kursus, jalinan kerjasama dengan agensi MDEC dan MARA, bengkel keusahawanan digital dan sebagainya. Program keusahawanan dirancang bermula dari fasa pembudayaan keusahawanan, pewujudan usahawan, peningkatan dan pengukuhan telah dilaksanakan di semua instutusi pendidikan di Malaysia (Roslinawati, Noor Fariza & at al, 2017). Halatuju ini dirangka rentetan daripada pencapaian keusahawanan sebagai bidang yang penting telah menyumbang dengan sangat jelas kepada peningkatan kebolehpasaran siswazah, secara tidak langsung juga memenuhi hasrat kerajaan dalam melahirkan masyarakat yang progresif dan berpendapatan tinggi.

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TAHAP PENERIMAAN PELAJAR TERHADAP PENGGUNAAN KEMUDAHAN DI ATAS TALIAN UNTUK MENYOKONG AKTIVITI PEMBELAJARAN FLEKSIBEL BERDASARKAN ELEMEN REKABENTUK PENDEKATAN HEUTAGOGI

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Abstract: *Pendekatan pembelajaran Heutagogi merupakan satu kaedah pembelajaran fleksibel berpusatkan kendiri ('self-directive learning') bertujuan membentuk pelajar yang bermotivasi tinggi justeru memungkinkan mereka untuk merancang pendekatan pembelajaran mereka sendiri sesuai dengan minat masing-masing, sama ada di dalam situasi formal atau tidak formal. Tumpuan utama kajian ini adalah di dalam ruang lingkup elemen-elemen rekabentuk pendekatan heutagogi iaitu Meneroka ('exploration'), kreativiti ('creation'), kolaborasi ('collaboration'), perhubungan ('connection'), perkongsian ('sharing'), dan refleksi ('reflection'). Seramai 102 responden melibatkan kumpulan pelajar junior (Semester 1) dan pelajar senior (Semester 5) Program Diploma Teknologi Maklumat dari 3 buah politeknik iaitu Politeknik Kuching Sarawak, Politeknk Muadzam Shah dan Politeknik Kuala Terengganu telah memberikan maklumbalas terhadap kajian yang dijalankan melalui borang soal-selidik yang merangkumi 24 item berdasarkan skala likert 5 mata. Pengesahan item adalah menggunakan kaedah Cronbach Alpha di mana nilai yang diperolehi adalah melebihi 0.80 bagi setiap elemen Heutagogi (setiap elemen merangkumi 4 item). Dapatan kajian mendapati pelajar menerima baik penggunaan kemudahan di atas talian untuk menyokong aktiviti pembelajaran mereka (skor min melebihi 3.80) namun terdapat perbezaan yang ketara di antara pelajar junior dan pelajar senior di dalam beberapa elemen Heutagogi iaitu elemen kolaborasi, berhubung dan refleksi. Kesimpulannya, pendekatan Heutagogi perlu diperkukuhkan lagi bagi menyokong usaha bersama dalam melahirkan graduan yang holistik.*

Keywords: *Heutagogi, Elemen Rekabentuk, Pembelajaran Fleksibel, Graduan Holistik*

Pendahuluan

Sistem pendidikan yang fleksibel dapat mengatasi pelbagai kekangan sama ada isu geografi atau fizikal, kerana pendekatan ini membolehkan pelajar belajar secara bebas dan merentasi skop pendidikan, bidang latihan atau bidang pekerjaan yang berbeza. Melalui fleksibiliti sesiapa sahaja tanpa mengira status, dapat memilih dan menyesuaikan kaedah pembelajaran mereka agar seiring dan menepati minat dan kemampuan masing-masing. Dalam menyediakan pendekatan berpusatkan pelajar yang holistik serta mendukung sistem pendidikan yang fleksibel, pendekatan pembelajaran Heutagogi merupakan satu bentuk kaedah pembelajaran berpusatkan kendiri ('self-directive learning') yang boleh diperkenalkan untuk memperkasakan pelajar[1]. Pendekatan Heutagogi mampu membentuk pelajar yang

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13th – 14th December 2020

bermotivasi tinggi, memungkinkan mereka untuk merancang kaedah dan pendekatan pembelajaran mereka sendiri sesuai dengan minat masing-masing, sama ada di dalam situasi formal atau tidak formal.

Pendekatan Heutagogi yang diperkenalkan memerlukan pelajar bertindak bukan sahaja sebagai penghubung dan pencipta di dalam sesi pembelajaran tetapi juga memainkan peranan aktif sebagai konstruktivis (penentu kaedah dan isi pembelajaran). Dengan disokong oleh mod pembelajaran yang fleksibel, pelajar berupaya untuk memainkan peranan mereka dengan mudah dan bersesuaian dengan kehendak kerangka ini, kerana semua kriteria yang disenaraikan sebagai tonggak utama boleh dicapai sepenuhnya melalui pembelajaran fleksibel. Pendekatan ini dapat memberi ruang kepada pelajar untuk berdikari dan mandiri, seterusnya membantu memupuk sifat penting yang akan membolehkan individu menguruskan cabaran kehidupan moden di abad ke-21. Dengan perancangan yang baik, pembelajaran yang fleksibel dengan disokong oleh pendekatan Heutagogi dapat memberi kesan positif kepada penyertaan yang lebih luas untuk menyokong kemajuan individu dalam segenap aspek.

Latar Belakang Kajian

Kemajuan yang dicapai dalam bidang Teknologi Maklumat telah membuka banyak peluang baru untuk semua golongan meningkatkan pengalaman mencari ilmu. Perkembangan ini membolehkan para pelajar untuk menyesuaikan persekitaran tempat mereka bekerja atau belajar dengan personaliti individu, dan menggunakan pelbagai kemudahan tersedia bagi memenuhi minat dan keperluan yang berbeza[2]. Setiap individu mempunyai personaliti yang unik; membentuk perbezaan dari segi kekuatan, kelemahan, daya tahan dan pendekatan motivasi. Keunikan ini juga terpakai semasa proses menuntut ilmu, di mana masing-masing juga mempunyai gaya pembelajaran yang berbeza[3].

Sistem pembelajaran yang kurang fleksibiliti menyukarkan pelajar untuk membuat peralihan antara bidang. Pilihan selalunya adalah terhad, kaku dan tetap, tanpa memberikan ruang dan peluang untuk perubahan segera. Seringkali agak terlambat bagi pelajar untuk memahami bahawa bidang yang mereka ceburi bukanlah pilihan yang paling tepat untuk mereka. Pelajar menjadi kurang bermotivasi dan hilang arah, sehingga akhirnya hilang minat untuk meningkatkan pengetahuan mereka.

Tanpa pendekatan pendidikan yang fleksibel dan holistik, akan wujud banyak batasan yang menutup peluang kepada mereka yang berkeinginan untuk mencari ruang menuntut ilmu. Dalam beberapa keadaan yang melibatkan mereka yang kurang bernasib baik, atau individu yang mempunyai bakat khusus, atau pekerja yang mempunyai jadual kerja yang padat, mereka semua akan menghadapi lebih banyak halangan sekiranya mereka ingin melanjutkan pelajaran.

Penggabungan dunia automasi dan digitalisasi ke dalam teknologi terkini memerlukan pelajar untuk bergerak seiring dengan keperluan industri dalam usaha untuk menyediakan tenaga kerja yang berkualiti dan sentiasa kedepan sejajar dengan perkembangan teknologi semasa. Perkembangan ini menuntut pendekatan yang menyeluruh, meliputi semua ruang lingkup terutama dalam bidang pendidikan, kerana pelajar yang cemerlang akhirnya akan melahirkan graduan yang berpotensi dan sentiasa bermotivasi untuk melengkapkan diri mereka dengan ilmu pengetahuan terkini dalam menyokong arus pembangunan modenisasi.

Kajian Literatur

Pendidikan fleksibel dapat menawarkan peluang yang lebih besar buat semua kerana setiap individu dapat memilih untuk meningkatkan pengetahuan dan kemahiran masing-masing secara berperingkat, mengikut minat dan kemampuan individu justeru memperkasakan mereka dengan set kemahiran pelbagai disiplin dan lengkap dengan keperibadian professional[4].

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13th – 14th December 2020

Penguasaan kemahiran pembelajaran secara fleksibel berasaskan pendekatan Heutagogi dapat menggalakkan penguasaan kemahiran yang dapat menyokong perkembangan potensi diri dengan bergantung sepenuhnya kepada keinginan diri sendiri, harus diperkenalkan untuk memperkasakan pelajar.

Prinsip Heutagogi membolehkan kemahiran belajar ditentukan oleh diri sendiri (*'self-directive'*) di mana pelajar bertanggungjawab sepenuhnya terhadap kemajuan dan keberkesanan proses pembelajaran mereka, dengan cara menentukan sendiri tujuan dan hala tuju pembelajaran mereka, berdasarkan kemampuan dan keinginan mereka sendiri[5]. Pendekatan Heutagogi juga merupakan satu proses yang dinamik, di mana semua elemen-elemen yang terlibat seperti kontrak, aktiviti dan hasil pembelajaran adalah berkesinambungan dan boleh diulang-ulang, yang asasnya didokong oleh pelajar yang berkebolehan, kreatif dan mempunyai motivasi kendiri yang tinggi [6].

Pendekatan Heutagogi secara umumnya terdiri daripada 6 elemen rekabentuk iaitu Meneroka, Kreativiti, Kolaborasi, Berhubung, Perkongsian dan Refleksi (Rajah 1).

Rajah 1: Elemen Rekabentuk Heutagogi Beserta Definisi

Sumber: (Blaschke, 2018)

Pendekatan Heutagogi perlu diterokai sebagai salah satu usaha murni untuk melahirkan tenaga kerja yang fleksibel, yang dapat menyesuaikan diri dengan mudah seiring dengan keperluan teknologi yang berubah-ubah. Strategi ini boleh digunakan bersama dengan platform Web 4.0 yang dapat menyokong amalan pendidikan jarak jauh yang berpusatkan pelajar. Platform Web 4.0 menawarkan akses mudah dalam proses pencarian maklumat dan pelajar dapat menentukan sendiri hala tuju pembelajaran mereka[7] sama ada dalam situasi formal dan tidak formal. Pemilihan dan penggunaan alat kolaborasi yang tepat seperti laman rangkaian sosial, saluran Youtube dan Sistem Pengurusan Pembelajaran (LMS), bukan sahaja dapat membolehkan pelajar menyeimbangkan antara kerjaya profesional dan keperluan kemahiran tetapi juga pemilihan landskap pembelajaran yang bersesuaian[8].

Kajian menunjukkan peningkatan penggunaan Internet sebagai medium komunikasi dan interaksi, sama ada untuk mengetahui berita semasa, menambah pengetahuan baru atau sekadar untuk berhubung di media rangkaian sosial. Kecenderungan peggunaan kaedah komunikasi baru ini perlu di terima sebagai paradigma baru dalam dunia pendidikan iaitu pendidikan berasaskan Internet (*'Internet education'*). Pelbagai manfaat dapat diperoleh dari gaya pendidikan baru ini, seperti memperluaskan akses pendidikan, menyediakan peluang pembelajaran berkualiti tinggi, meningkatkan hasil dan kemahiran pelajar, menyokong pemilihan pendidikan berdasarkan minat dan menghasilkan kecekapan pengurusan[9].

eISBN 978-967-2426-22-6
13th – 14th December 2020

Teknologi maklumat telah menganjakkan hala tuju pendidikan bukan sekadar pengajaran dan pembelajaran tetapi kepada proses mencipta, memelihara, mengintegrasikan, menyebarkan dan mengaplikasikan pengetahuan untuk kemajuan masyarakat[10]. Institusi-institusi yang menawarkan kurikulum berasaskan pembelajaran berpusatkan pelajar juga boleh mengintegrasikan pendidikan Internet ini dengan cara penggunaan aplikasi berasaskan awan, supaya dapat membantu pelajar meningkatkan kualiti kaedah pembelajaran dan menilai pengetahuan mereka sendiri[11]. Pendidik juga harus bijak memanfaatkan situasi yang melibatkan pelajar generasi baru yang mempunyai kemahiran tinggi dengan dunia atas talian; dengan cara menggunakan pelbagai teknik pembelajaran bagi mendorong pelajar agar sentiasa proaktif, berinteraksi dengan baik dan fokus dengan pembelajaran mereka. Selain itu, penggunaan platform media sosial dengan kaedah yang betul juga dapat menyokong pembelajaran pelajar yang bermotivasikan diri sendiri[12].

Abad ke-21 disebut sebagai era teknologi dan pengetahuan digital kerana munculnya pendekatan baharu seperti digitalisasi, globalisasi, kecerdasan buatan dan automasi robotik. Perkembangan ini membawa bersama isu-isu baru dalam pendidikan, seperti keperluan strategi pembelajaran yang bersesuaian bagi menyampaikan kandungan kurikulum yang sentiasa berubah-ubah, dan peluang meneroka sudut inovasi dalam kemahiran mengajar untuk memenuhi keperluan generasi digital. Pendekatan pembelajaran era teknologi perlulah fleksibel agar sesuai dengan tahap motivasi pelajar dan matlamat pencapaian individu yang berbeza-beza; sekaligus berfungi sebagai platform alternatif bagi mereka yang berminat untuk meneroka lebih jauh ke dalam dunia pendidikan tanpa sempadan. Perkembangan teknologi pendidikan ini juga menyokong pendekatan interdisplin dan integrasi antara reka bentuk, teknologi dan kaedah pedagogi, sekaligus memberikan hasil dan pengalaman yang maksimum untuk pelajar[13].

Pendidikan sebenar hanya dapat dicapai melalui pengalaman sebenar yang dikutip sepanjang masa, ketika proses menyelesaikan masalah secara proaktif berlansung. Pembelajaran fleksibel berteraskan pendekatan Heutagogi adalah antara kaedah yang boleh diketengahkan untuk melihat pelajar memainkan peranan sebagai 'peserta proaktif' dan sebagai rakan kongsi yang menyumbang idea untuk mencapai hasil yang diperlukan[14]. Oleh itu, usaha memperkasakan pelajar dengan kemahiran heutagogi yang holistik, dan integrasi pembelajaran secara fleksibel yang menggunakan platform Internet dengan tujuan untuk memberikan pengalaman pembelajaran berpusatkan pelajar yang berinovasi, adalah satu kaedah yang perlu diteroka bagi mengembangkan era baru pendidikan transformatif.

Objektif Kajian

Objektif kajian yang dijalankan ini adalah seperti berikut:

1. Mengenal pasti tahap penerimaan pelajar terhadap penggunaan kemudahan di atas talian untuk menyokong aktiviti pembelajaran fleksibel berasaskan elemen rekabentuk pendekatan Heutagogi, berdasarkan semester belajar.
2. Mengenal pasti perbezaan tahap penerimaan pelajar terhadap penggunaan kemudahan di atas talian untuk menyokong aktiviti pembelajaran fleksibel berasaskan elemen rekabentuk pendekatan Heutagogi, berdasarkan semester belajar.
3. Mengenal pasti perbezaan tahap penerimaan pelajar terhadap penggunaan kemudahan di atas talian untuk menyokong aktiviti pembelajaran fleksibel di dalam setiap elemen rekabentuk pendekatan Heutagogi, berdasarkan semester belajar.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Soalan kajian yang dibentuk adalah berdasarkan objektif kajian. Soalan kajian seperti berikut:

1. Bagaimanakah tahap penerimaan pelajar terhadap penggunaan kemudahan di atas talian untuk menyokong aktiviti pembelajaran fleksibel berasaskan elemen rekabentuk pendekatan Heutagogi, berdasarkan semester mereka belajar?
2. Adakah terdapat perbezaan tahap penerimaan pelajar terhadap penggunaan kemudahan di atas talian untuk menyokong aktiviti pembelajaran fleksibel berasaskan elemen rekabentuk pendekatan Heutagogi, berdasarkan semester mereka belajar?
3. Adakah terdapat perbezaan tahap penerimaan pelajar terhadap penggunaan kemudahan di atas talian untuk menyokong aktiviti pembelajaran fleksibel di dalam setiap elemen rekabentuk pendekatan Heutagogi, berdasarkan semester mereka belajar?

Metodologi Kajian

Kajian yang dijalankan ini merupakan kajian kuantitatif. Data dipungut menggunakan soal selidik yang berasaskan skala likert 5 mata mewakili '*Sangat Tidak Setuju*, *Tidak Setuju*, *Neutral*, *Setuju* dan *Sangat Setuju*'. Sampel kajian telah dipilih secara rawak yang melibatkan seramai 102 pelajar, terdiri daripada 45 pelajar Semester 1 (junior) dan 57 pelajar Semester 5 (senior). Kesemua pelajar sedang mengikuti pengajian dalam bidang Diploma Teknologi Maklumat di 3 buah politeknik yang berlainan iaitu Politeknik Kuching Sarawak (PKS), Politeknik Muadzam Shah (PMS) dan Politeknik Kuala Terenggangu (PKT). Bagi tujuan pengesahan soalan soal-selidik, ujian alpha Cronbach telah dilaksanakan dan nilai yang diperoleh ialah .853 bagi item elemen Meneroka, .912 bagi item elemen Kreativiti, .946 bagi item elemen Kolaborasi, .910 bagi item elemen Hubungan, .937 bagi item elemen Perkongsian dan .951 bagi item elemen Refleksi. Dapatan data seterusnya dianalisis menggunakan perisian SPSS (Statistical Packages for the Social Sciences) versi 26. Analisis yang digunakan dalam kajian ini melibatkan analisis deskriptif (min) dan analisis inferensi (signifikan).

Dapatan Kajian

Kajian yang telah dijalankan ini melibatkan seramai 102 pelajar Diploma Teknologi Maklumat semester 1 dan semester 5, dari 3 buah politeknik berbeza iaitu Politeknik Kuching Sarawak (PKS), Politeknik Muadzam Shah (PMS) dan Politeknik Kuala Terengganu (PKT).

Jadual 1: Taburan Pelajar Berdasarkan Politeknik

Politeknik	Bilangan	Peratus
Politeknik Kuching Sarawak	22	21.6
Politeknik Muadzam Shah	31	30.4
Politeknik Kuala Terengganu	49	48
JUMLAH	**102**	**100**

Jadual 1 memaparkan taburan pelajar berdasarkan politeknik. Seramai 102 pelajar terlibat sebagai responden, iaitu 22 pelajar dari PKS, 31 pelajar dari PMS dan 49 pelajar dari PKT. Pemilihan responden adalah secara rawak kerana soalan kajian diedarkan mengikut status semester belajar.

Jadual 2: Jumlah Pelajar Berdasarkan Semester Belajar

Semester Belajar	Bilangan	Peratus
Semester 1 (Junior)	45	44.1
Semester 5 (Senior)	57	55.9
JUMLAH	**102**	**100**

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 2 memaparkan jumlah pelajar berdasarkan semester belajar. Terdapat 45 orang responden terdiri daripada pelajar Semester 1 (junior) dan 57 responden adalah pelajar Semester 5 (senior). Jumlah kesemua responden yang terlibat adalah 102 orang.

Penerimaan Pelajar dari Konteks Elemen Rekabentuk Heutagogi

Jadual 3: Dapatan Nilai Min Elemen Meneroka Berdasarkan Semester Belajar

	Pelajar Semester 1 (Junior) (n=45)	Pelajar Semester 5 (Senior) (n=57)	JUMLAH (n=102)
Elemen Meneroka	**Min**	**Min**	**Min**
1. Saya tahu menggunakan kemudahan di atas talian untuk mencari maklumat	4.69	4.56	4.62
2. Penggunaan kemudahan di atas talian untuk mencari maklumat menjimatkan masa saya	4.51	4.37	4.43
3. Penggunaan kemudahan di atas talian membolehkan saya untuk mencari maklumat secara lebih mendalam	4.20	4.26	4.24
4. Saya selalu menggunakan kemudahan di atas talian untuk mencari maklumat yang menarik minat saya	4.60	4.39	4.48
WEIGHTED MEAN	**4.50**	**4.39**	**4.44**

LEGEND:
4.01 – 5.00 – Sangat Setuju / Tahap Penerimaan Tinggi
3.01 – 4.00 – Setuju / Tahap Penerimaan Sederhana
2.01 – 3.00 – Neutral / Neutral
1.01 – 2.00 – Tidak Setuju / Tahap Penerimaan Rendah
0.01 – 1.00 – Sangat Tidak Setuju / Tahap Penerimaan Sangat Rendah

Jadual 3 menunjukkan min tahap penerimaan pelajar untuk elemen rekabentuk Heutagogi yang pertama iaitu Meneroka berdasarkan kepada status semester belajar pelajar tersebut. Secara umumnya tidak terdapat perbezaan ketara di antara dua kategori pelajar ini, dengan perbezaan min hanyalah 0.11. Min bagi pelajar junior dan senior masing-masing dalah 4.50 dan 4.39 yang menunjukkan tahap penerimaan yang tinggi bagi elemen Ekplorasi.

Jadual 4: Dapatan Nilai Min Elemen Mencipta / Kreativiti Berdasarkan Semester Belajar

	Pelajar Semester 1 (Junior) (n=45)	Pelajar Semester 5 (Senior) (n=57)	JUMLAH (n=102)
Elemen Mencipta / Kreativiti	**Min**	**Min**	**Min**
5. Penggunaan kemudahan di atas talian membuatkan saya menjadi lebih kreatif di dalam mencari maklumat	4.22	4.00	4.10
6. Penggunaan kemudahan di atas talian membuatkan saya berjaya menghasilkan hasil pembelajaran yang lebih kreatif	4.16	3.89	4.01
7. Penggunaan kemudahan di atas talian memberi peluang kepada saya menjadi lebih kreatif	4.13	3.95	4.03
8. Saya akan terus menggunakan kemudahan di atas talian bagi menyokong aktiviti kreativiti saya	4.38	4.09	4.22

eISBN 978-967-2426-22-6
13th – 14th December 2020

WEIGHTED MEAN	**4.22**	**3.98**	**4.088**

LEGEND:
4.01 – 5.00 – Sangat Setuju / Tahap Penerimaan Tinggi
3.01 – 4.00 – Setuju / Tahap Penerimaan Sederhana
2.01 – 3.00 – Neutral / Neutral
1.01 – 2.00 – Tidak Setuju / Tahap Penerimaan Rendah
0.01 – 1.00 – Sangat Tidak Setuju / Tahap Penerimaan Sangat Rendah

Bagi elemen rekabentuk Heutagogi yang kedua iaitu Kreativiti, didapati tahap penerimaan pelajar dari kategori junior adalah tinggi berbanding pelajar kategori senior hanya sederhana (Jadual 4). Kategori pelajar junior memperoleh nilai min = 4.22 manakala nilai min bagi pelajar senior hanya 3.98.

Jadual 5: Dapatan Nilai Min Elemen Kolaborasi Berdasarkan Semester Belajar

	Pelajar Semester 1 (Junior) (n=45)	**Pelajar Semester 5 (Senior) (n=57)**	**JUMLAH (n=102)**
Elemen Kolaborasi	**Min**	**Min**	**Min**
9. Penggunaan kemudahan di atas talian menyokong proses kolaborasi yang berkesan	4.09	3.81	3.93
10. Penggunaan kemudahan di atas talian mempercepatkan proses untuk saya berkolaborasi dengan rakan saya dalam menyelesaikan masalah	4.29	3.75	3.99
11. Saya mampu menyelesaikan masalah dengan lebih baik melalui kolaborasi di atas talian	4.11	3.61	3.83
12. Saya akan terus menggunakan kemudahan di atas talian untuk berkolaborasi dengan rakan saya	4.11	3.77	3.92
WEIGHTED MEAN	**4.15**	**3.73**	**3.919**

LEGEND:
4.01 – 5.00 – Sangat Setuju / Tahap Penerimaan Tinggi
3.01 – 4.00 – Setuju / Tahap Penerimaan Sederhana
2.01 – 3.00 – Neutral / Neutral
1.01 – 2.00 – Tidak Setuju / Tahap Penerimaan Rendah
0.01 – 1.00 – Sangat Tidak Setuju / Tahap Penerimaan Sangat Rendah

Jadual 5 merumuskan nilai min bagi elemen rekabentuk Heutagogi yang ketiga iaitu Kolaborasi. Dapatan menunjukkan tahap penerimaan bagi pelajar dari kategori senior masih sederhana dengan bacaan min 3.73 manakala pelajar dari kategori junior menunjukkan bacaan min yang baik iaitu 4.15, mengambarkan tahap penerimaan kategori ini sebagai tinggi. Min keseluruhan iaitu 3.919 meletakkan elemen Kolaborasi antara elemen yang perlu difokus dalam usaha pemantapan pendekatan Heutagogi. Berdasarkan keputusan ujian *t*, terdapat perbezaan yang signifikan di antara dua kategori ini dengan bacaan tahap signifikan (*p*) adalah 0.03, iaitu kurang dari 0.05

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 6: Dapatan Nilai Min Elemen Berhubung Berdasarkan Semester Belajar

	Pelajar Semester 1 (Junior) (n=45)	Pelajar Semester 5 (Senior) (n=57)	JUMLAH (n=102)
Elemen Berhubung	**Min**	**Min**	**Min**
13. Penggunaan kemudahan di atas talian memudahkan saya berinteraksi dengan mereka yang berpengetahuan di dalam bidang	4.40	4.07	4.22
14. Penggunaan kemudahan di atas talian memudahkan saya mendapat maklum balas mengenai hasil kerja saya	4.31	3.91	4.09
15. Saya yakin kemudahan di atas talian boleh menyokong kaedah pembelajaran mengikut minat saya	4.33	3.84	4.06
16. Saya yakin kemudahan di atas talian boleh menyokong kaedah pembelajaran saya secara fleksibel	4.22	3.81	3.99
WEIGHTED MEAN	**4.31**	**3.90**	**4.088**

LEGEND:
4.01 – 5.00 – Sangat Setuju / Tahap Penerimaan Tinggi
3.01 – 4.00 – Setuju / Tahap Penerimaan Sederhana
2.01 – 3.00 – Neutral / Neutral
1.01 – 2.00 – Tidak Setuju / Tahap Penerimaan Rendah
0.01 – 1.00 – Sangat Tidak Setuju / Tahap Penerimaan Sangat Rendah

Bagi elemen rekabentuk Heutagogi yang ke empat iaitu Berhubung, pelajar dari kategori junior mempunyai bacaan min yang sangat baik iaitu 4.31, menunjukkan tahap penerimaan yang tinggi (Jadual 6). Penerimaan bagi pelajar kategori senior masih di tahap sederhana dengan bacaan min hanya 3.90. Ujian *t* yang dijalankan juga menunjukkan perbezaan yang ketara di antara dua kategori ini dengan nilai $p = 0.005$.

Jadual 7: Dapatan Nilai Min Elemen Perkongsian Berdasarkan Semester Belajar

	Pelajar Semester 1 (Junior) (n=45)	Pelajar Semester 5 (Senior) (n=57)	JUMLAH (n=102)
Elemen Perkongsian	**Min**	**Min**	**Min**
17. Perkongsian ilmu di atas talian mampu memberi manfaat kepada semua termasuk saya	4.49	3.95	4.19
18. Saya suka menggunakan kemudahan di atas talian untuk berkongsi ilmu	4.33	4.00	4.15
19. Saya yakin perkongsian ilmu oleh saya secara atas talian dapat memberi manfaat kepada orang lain	4.33	3.95	4.12
20. Saya akan terus menggunakan kemudahan di atas talian untuk berkongsi ilmu	4.29	4.00	4.13
WEIGHTED MEAN	**4.36**	**3.97**	**4.145**

LEGEND:
4.01 – 5.00 – Sangat Setuju / Tahap Penerimaan Tinggi
3.01 – 4.00 – Setuju / Tahap Penerimaan Sederhana
2.01 – 3.00 – Neutral / Neutral
1.01 – 2.00 – Tidak Setuju / Tahap Penerimaan Rendah
0.01 – 1.00 – Sangat Tidak Setuju / Tahap Penerimaan Sangat Rendah

eISBN 978-967-2426-22-6
13th – 14th December 2020

Elemen Perkongsian yang merupakan elemen rekabentuk Heutagogi yang ke lima juga menunjukkan penerimaan pelajar kategori junior (min = 4.36) adalah lebih baik berbanding pelajar kategori senior (3.97) seperti yang ditunjukkan dalam Jadual 7.

Jadual 8: Dapatan Nilai Min Elemen Refleksi Berdasarkan Semester Belajar

	Pelajar Semester 1 (Junior) (n=45)	Pelajar Semester 5 (Senior) (n=57)	JUMLAH (n=102)
Elemen Refleksi	**Min**	**Min**	**Min**
21. Penggunaan kemudahan pembelajaran di atas talian memberi saya peluang untuk menilai tahap kefahaman saya dengan mudah	4.16	3.77	3.94
22. Penggunaan kemudahan pembelajaran atas talian memberi saya peluang untuk sentiasa menambahkan kefahaman saya dengan lebih mendalam	4.16	3.75	3.93
23. Penggunaan kemudahan pembelajaran atas talian memberi saya peluang untuk menilai tahap kefahaman saya merentasi pelbagai bidang	4.18	3.81	3.97
24. Saya yakin refleksi kendiri hasil daripada proses pembelajaran atas talian sangat berguna untuk kemajuan diri saya	4.36	3.79	4.04
WEIGHTED MEAN	**4.21**	**3.78**	**3.971**

LEGEND:
4.01 – 5.00 – Sangat Setuju / Tahap Penerimaan Tinggi
3.01 – 4.00 – Setuju / Tahap Penerimaan Sederhana
2.01 – 3.00 – Neutral / Neutral
1.01 – 2.00 – Tidak Setuju / Tahap Penerimaan Rendah
0.01 – 1.00 – Sangat Tidak Setuju / Tahap Penerimaan Sangat Rendah

Bacaan nilai min keseluruhan bagi elemen rekabentuk Heutagogi yang terakhir iaitu Refleksi adalah 3.971, menunjukkan secara umumnya penerimaan pelajar berada pada tahap sederhana. Bagaimanapun, terdapat perbezaan yang ketara di dalam bacaan min bagi pelajar junior iaitu 4.21 berbanding min bagi pelajar senior hanyalah 3.78 (Jadual 8). Ujian t juga melaporkan tahap signifikan adalah 0.009, menyokong dapatan tahap penerimaan tinggi oleh pelajar junior berbanding sederhana bagi pelajar senior.

Perbincangan

Hasil kajian menunjukkan bahawa secara umumnya tahap penerimaan pelajar terhadap penggunaan kemudahan di atas talian untuk menyokong aktiviti pembelajaran fleksibel berdasarkan elemen rekabentuk pendekatan Heutagogi adalah sangat baik. Beberapa elemen iaitu *meneroka*, *mencipta*, *berhubung* dan *perkongsian* menunjukkan tahap penerimaan pelajar yang tinggi. Ini memberikan kenyakinan kepada penyelidik bahawa pelajar telah bersedia untuk menguasai pendekatan Heutagogi. Walaupun terdapat 2 elemen yang menunjukkan tahap penerimaan sebagai sederhana iaitu elemen *kolaborasi* dan *refleksi*, namun dapatan ini masih boleh di kategorikan sebagai positif. Terdapat juga perbezaan dapatan yang ketara di antara kumpulan pelajar junior berbanding pelajar senior, di mana tahap penerimaan pelajar

junior adalah jauh lebih tinggi di dalam elemen *mencipta, kolaborasi, berhubung, perkongsian* dan *refleksi*. Perbezaan ini yang mungkin disebabkan oleh jurang digital[15] atau perbezaan generasi[16] [17] membuka laluan untuk kajian yang lebih mendalam.

Kesimpulan

Perkembangan abad ke-21 memperlihatkan kemunculan pelbagai teknologi yang memerlukan set kemahiran yang berubah-ubah, menyebabkan ramai yang ketinggalan kerana kekurangan kemahiran yang diperlukan untuk turut bersaing. Usaha untuk memperkasakan pelajar dengan asas kemahiran Heutagogi yang jitu bertujuan agar mereka dapat memanfaatkan motivasi kendiri mereka sendiri untuk sentiasa meningkatkan potensi diri seiring dengan tren dan pengetahuan terkini. Mereka akhirnya akan lahir sebagai graduan dengan kebolehan personal seperti daya intelek dan penyelesaian masalah, kemampuan analitik, kritis dan reflektif, kesediaan untuk pembelajaran sepanjang hayat, motivasi diri, fleksibiliti dan kemampuan menyesuaikan diri, pengurusan risiko, mampu memberikan komitmen penuh, beretika dan mempunyai tanggungjawab sosial seiring dengan kemahiran ilmiah[18]. Pendekatan Heutagogi yang digabungkan ke dalam strategi penyampaian pembelajaran secara fleksibel akan membantu untuk memperkasakan generasi baru dengan asas pengalaman pembelajaran yang ditentukan berdasarkan kehendak kendiri. Kemahiran holistik ini membantu mereka untuk memahami dengan lebih baik keperluan dan motivasi diri untuk menggilap pengetahuan mereka. Mereka akan mahir untuk menilai kembali situasi mereka di dalam semua aspek, seperti kurangnya kompetensi dalam kemahiran tertentu, dan segera mengenalpasti kaedah untuk mengatasi situasi tersebut.

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PERSEDIAAN TERHADAP PENGGUNAAN MS TEAM SEBAGAI PLATFORM UTAMA PDPDT DI KALANGAN PELAJAR JTMK PMS

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Abstract: *Pandemik covid-19 yang melanda seluruh dunia pada tahun 2020 telah melumpuhkan hampir keseluruhan sektor sosial dunia. Dunia pendidikan tidak terkecuali daripada terkena kesannya. Dengan jumlah kes yang semakin meningkat dari semasa ke semasa telah memaksa Kementerian Pendidikan Malaysia untuk membuat keputusan yang drastik dengan menutup keseluruhan institusi pendidikan negara buat sementara waktu. Bagi membendung angka kes dari terus melonjak naik, sesi pengajaran dan pembelajaran diteruskan secara dalam talian secara keseluruhannya. Jabatan Teknologi Maklumat dan Komunikasi (JTMK), Politeknik Muadzam Shah turut mengaplikasikan sesi pengajaran dan pembelajaran dalam talian (pdpdt). Pemilihan platform yang sesuai dari segi kemudahan penggunaan, kesesuaian rekabentuk antaramuka, kesesuaian rekabentuk interaksi dan elemen-elemen lain yang dapat menbantu pelajar mempelajari kandungan silibus yang disampaikan merupakan faktor pilihan pensyarah dalam pemilihan platform pdpdt. Platform MS Team merupakan medium pdpdt pilihan pensyarah dalam menyampaikan kandungan silibus kepada pelajar-pelajar. Satu tinjauan yang bertajuk Persediaan Terhadap Penggunaan MS Team Sebagai Platform Utama Pdpdt Di Kalangan Pelajar JTMK, PMS telah dijalankan bagi mengetahui tahap persediaan pelajar-pelajar terhadap penggunaan platform MS Team sebagai platform utama pdpdt. Seramai 250 orang pelajar JTMK PMS yang terdiri daripada pelajar-pelajar semester 1 hingga semester 5 telah dipilih sebagai responden kepada tinjauan ini. Soal selidik yang berjenis skala likert 5 telah digunakan sebagai sampel pengumpulan data yang diedarkan melalui aplikasi google forms kepada semua responden. Hasil analisis daripada tinjauan yang dijalankan ini menunjukkan pada bahagian kemudahan penggunaan Ms Team, bacaan min 3.95 telah dicatatkan dengan sisihan piawai 0.688. Bahagian kedua pula iaitu kesesuaian rekabentuk antaramuka mencatatkan bacaan min sebanyak 4.11 dengan sisihan piawai 0.693. Bahagian tiga iaitu kesesuaian rekabentuk topik mencatatkan bacaan min 3.96 dengan sisihan piawai 0.701. Bahagian empat iaitu faktor yang membantu pelajar mempelajari topik mencatat bacaan min 4.04 dengan sisihan piawai 0.704 manakala bahagian terakhir iaitu motivasi pula mencatat bacaan min 3.77 dengan sisihan piawai 0.844. Indeks min keseluruhan bagi tinjauan ini adalah 3.96. Secara keseluruhannya, tinjauan ini membuktikan bahawa MS Team dapat diterima oleh pelajar-pelajar JTMK, PMS sebagai platform utama pdpdt bagi menggantikan bilik kuliah realtiti.*

Keywords: *MS Team, pdpdt, covid-19*

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Pengenalan

Tahun 2020 membuka tirai dengan penularan wabak coronavirus yang dikenali sebagai covid-19. Virus yang berasal dari Wuhan, China itu telah merebak hampir ke seluruh dunia dan telah meragut jutaan nyawa mangsanya. Menurut Berita Harian pada 12 Mac 2020, Pertubuhan Kesihatan Sedunia (WHO) telah mengisytiharkan COVID-19 sebagai pandemik, sekali gus menegaskan penularan dan keadaan wabak itu yang teruk adalah sangat membimbangkan. Secara umum, pandemik bermaksud wabak penyakit yang tersebar dengan begitu meluas merentasi sempadan, malah hingga ke seluruh dunia. Menurut Kamus Dewan Edisi Keempat, pandemik bermaksud wabak penyakit yg tersebar dgn begitu meluas, sama ada hingga ke seluruh wilayah, benua atau dunia. Covid-19 yang melanda pada tahun ini telah melumpuhkan hampir keseluruhan sektor sosial dunia. Negara-negara yang mempunyai jumlah kes yang tinggi telah mengambil langkah mengawal penularan dengan melaksanakan *lockdown* atau perintah kawalan pergerakan. Dunia pendidikan tidak terkecuali daripada terkena kesannya.

Dengan jumlah kes yang semakin meningkat dari semasa ke semasa telah memaksa Kementerian Pendidikan untuk membuat keputusan yang drastik dengan menutup keseluruhan institusi pendidikan negara buat sementara waktu. Bagi membendung angka kes dari terus melonjak naik, sesi pengajaran dan pembelajaran diteruskan secara dalam talian secara keseluruhannya. Jabatan Teknologi Maklumat dan Komunikasi (JTMK), Politeknik Muadzam Shah (PMS) turut mengaplikasikan sesi pengajaran dan pembelajaran dalam talian (pdpdt). Pemilihan platform yang sesuai dari segi kemudahan penggunaan, kesesuaian rekabentuk antaramuka, kesesuaian rekabentuk interaksi dan elemen-elemen lain yang dapat menbantu pelajar mempelajari kandungan silibus yang disampaikan merupakan faktor pilihan guru atau pensyarah dalam pemilihan platform pdpdt.

Sesi pdpdt memerlukan satu medium bilik darjah maya bagi membolehkan pelajar dan guru atau pensyarah berinteraksi secara dua hala. Bilik darjah maya tidak begitu berbeza dengan bilik darjah tradisional. Di dalam kelas maya terdapat guru yang mengajar tetapi bukan di kelas tetapi di hadapan kamera computer di suatu tempat lain dan pelajar yang mengambil bahagian di dalam kelas tersebut berada di hadapan computer di suatu lokasi yang lain. Di dalam bilik darjah maya boleh ada sesi interaktif seperti kelas tradisional, pelajar dan guru boleh berinteraksi secara dua hala. Bilik darjah maya boleh didefinisikan sebagai "alat persidangan web kolaboratif dengan papan putih dalam talian, bilik pelarian dan keupayaan perkongsian skrin bagi guru dan tutor yang ingin menjalankan sesi pengajaran dalam talian secara interaktif." (Swapnil Alhat, 2020)

Terdapat banyak pilihan platform pdpdt yang boleh digunakan. Antara aplikasi pertemuan maya yang biasa digunakan adalah *Big Blue Button, Google Classroom, Zoom, GoToMeeting, Cisco Webex, MS Team* dan banyak lagi aplikasi lain. Platform MS Team merupakan medium pdpdt pilihan pensyarah JTMK dalam menyampaikan silibus kepada pelajar-pelajar. Pemilihan platform yang menarik dan mempunyai ciri-ciri yang interaktif akan membuatkan sesi pdpdt akan menjadi lebih menarik. Selain itu kaedah dan gaya persembahan oleh pensyarah juga turut memainkan peranan penting bagi mewujudkan suasada pdpdt yang tidak membosankan. Kerjasama di antara pensyarah dan pelajar turut menyumbang kepada keberkesanan kaedah pdpdt ini.

Melalui tinjauan di JTMK, hampir keseluruhan pensyarah memilih MS Team sebagai platform utama bilik kuliah maya. Faktor utama MS Team menjadi pilihan pensyarah ialah pihak PMS telah menyediakan akaun Microsoft kepada semua pensyarah dan pelajar yang membolehkan mereka mengakses Microsoft Teams dengan mudah. Faktor lain pemilihan MS Team adalah sesi pdpdt yang dilaksanakan boleh dirakam dan dimuat turun oleh pelajar. Bagi sesetengan pelajar yang kurang jelas dengan sesuatu topik yang diajar, mereka boleh

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13th – 14th December 2020

memainkan semula rakaman yang telah dimuat turun bagi menguasai tahap kefahaman terhadap topik berkenaan.

Namun begitu, mampukah sesi pdpdt atau ini memberi keberkesanan yang sama dengan kehadiran pensyarah di dalam sesi perkuliahan secara realiti. Antara faktor yang menjadi penghalang utama adalah capaian internet yang tidak stabil di beberapa kawasan kediaman pelajar. Isu ini menjurus kepada halangan utama yang menyebabkan pelajar tersebut agak ketinggalan di dalam mencapai tahap kefahaman yang diinginkan.

Justeru itu, pengkaji merasakan perlu untuk menjalankan satu tinjauan berkenaan persediaan pelajar-pelajar JTMK, PMS dalam sesi pdpdt sepanjang tempoh perintah kawalan pergerakan akibat pandemik covid-19 ini. Kajian ini adalah untuk mengetahui tahap persediaan diri pelajar dalam penggunaan MS Team sebagai paltform pdpdt utama.

Pernyataan Masalah

PKP telah mengakibatkan penutupan pelbagai sektor sosial kerajaan termasuk sektor pendidikan. Justeru itu pensyarah perlu memilih platform yang sesuai untuk meneruskan pengajaran dalam talian menggunakan kaedah pembelajaran segerak (*synchronous*). Bagi pihak pelajar pula, mereka perlu mempunyai persepsi positif mengenai pembelajaran segerak untuk mereliasisakan kaedah pembelajaran norma baharu tersebut.

Objektif Kajian

- Mengkaji persediaan pelajar terhadap penggunaan MS Teams sebagai platform utama pdpdt.
- Mengkaji elemen persediaan pelajar terhadap platform MS Teams iaitu kemudahan penggunaan, kesesuaian rekabentuk antaramuka, kesesuain rekabentuk interaksi, membantu mempelajari topik dan motovasi.

Kajian Literatur

Perkembangan dunia tanpa sempadan memperlihatkan perubahan ketara medium pengajaran dan pembelajaran daripada kaedah konvesional papan putih kepada penggunaan pelbagai platform elektronik di atas talian seperti ‘Google Classroom’, ‘Cisco Webex Classroom’ dan ‘Microsoft Teams’. Perubahan dasar ini memberi impak ketara kepada pendidik dan para pelajar (Mohd Amiruddin Ag Damit dan Mohd Khaizer Omar, 2019), namun penggunaan medium yang berkesan boleh di anggap sebagai satu alternatif dalam dunia pembelajaran digital (Nur Syarafina Binti Abdul Rahman, Zainal Fitri Bin Mohd Zolkifli dan Ying Leh Ling, 2018).

Bagi menjamin keberkesanan medium yang dipilih, beberapa faktor perlu dikenalpasti seperti fasiliti yang mencukupi, kesediaan pengguna dan polisi institusi yang menyokong penggunaan medium tersebut (Awang, Hapini, Zahurin Mat Aji, Wan Rozaini Sheik Osman, Erwani Kamaruddin, Abdul Razak F. Shahatha Al-Mashhadani Zulkifli, dan Shakiroh Khamis, 2020). Pengguna (pendidik) yang terlatih secara efisien mampu untuk memberikan kesan yang positif dalam menjana kreativiti pelajar dan memberikan peluang kepada pelajar untuk menguasai ilmu sepenuhnya (Norfarahi Zulkifli, Mohd Isa Hamzah, dan Khadijah Abdul Razak, 2020). Aspek kesediaan pelajar sebagai pemain utama juga perlu di ambil kira sebagai faktor penentu keberkesanan medium yang dipilih kerana terdapat hubungan positif yang ketara di antara kesediaan pelajar dan keberkesanan kaedah pembelajaran (Demir Kaymak, Zeliha, and Mehmet Baris Horzum, 2013)

eISBN 978-967-2426-22-6
13th – 14th December 2020

Metodologi

Metodologi kajian ini dibahagikan kepada rekabentuk kajian, populasi dan sampel, instrumen kajian, kajian rintis, dan analisis data. Data yang diperolehi daripada soal selidik dianalisis dengan menggunakan perisian SPSS.

Dalam kajian ini, kaedah tinjaun digunakan untuk mengumpul maklum balas dari pelajar-pelajar JTMK, PMS sebagai persediaan terhadap menggunaan MS Team sebagai platform utama pdpdt. Kajian yang dijalankan ini adalah kajian yang bersifat kuantitatif kerana data dikutip dari soal selidik yang diedarkan kepada kumpulan pelajar semester 1 hingga semester 5 Diploma Teknologi Maklumat (Teknologi Digital) di JTMK, PMS. Pelajar dari setiap semester dipilih kerana mereka merupakan pelajar-pelajar yang perlu menjalani sesi pdpdt berikutan penularan wabak pandemik covid-19.

Dalam kajian ini, pengkaji menggunakan dua sumber data iaitu data primer dan data sekunder. Maklumbalas adalah diperolehi daripada sumber data primer iaitu responden yang terlibat mengisi borang soal selidik bagi meninjau situasi sebenar. Seterusnya, pengkaji menggunakan data sekunder yang diperolehi daripada jurnal, buku-buku, majalah, keratan akhbar, sorotan kajian-kajian lepas serta internet. Data ini digunakan untuk menambah bahan bacaan yang digunakan dalam kajian ini dan dapat digunakan untuk menjawab persoalan kajian.

Dalam kajian ini, sampel kajian yang dipilih adalah seramai 449 orang pelajar semester 1 hingga semester 5 Diploma Teknologi Maklumat (Teknologi Digital) di JTMK, PMS sesi Jun 2020. Kaedah persampelan yang digunakan dalam kajian ini adalah persampelan secara rawak. Menurut Mohamad Najib (1999), pemilihan sampel secara rawak adalah menjimatkan masa dan kos di samping bebas daripada bias.

Instrumen kajian ini terdiri dari 2 bahagian iaitu bahagian pertama soal selidik melibatkan data dermografi pelajar manakala bahagian kedua merupakan soalan-soalan yang berkaitan dengan persediaan pelajar menggunakan MS TEams. Dalam bahagian A pengkaji menganalisi data yang diperolehi menggunakan statistik deskriftif iaitu dengan melihat min dan peratusan. Di samping itu data-data ditransformasikan ke dalam bentuk jadual dan graf yang sesuai. Manakala semua data dan maklumat di dalam Bahagian B, pengkaji menggunakan statistik deskriptif dengan berpandukan skor min dan sisihan piawai. Analisis min ini akan digunakan kerana ia boleh mengukur skor min yang membawa kepada gambaran data secara keseluruhan (Uma Sekaran, 2000).

Satu kajian rintis telah dilakukan ke atas 10 orang pelajar JTMK, PMS yang mengambil Diploma Teknologi Maklumat (Teknologi Digital). Tahap kebolehpercayaan kajian dapat ditentukan dengan menggunakan interprestasi nilai Alpha Cronbach yang mempunyai julat antara 0.00 hingga 1.0. Sekiranya nilai julat menghampiri 1.0, ia menunjukkan tahap kebolehpercayaan berada pada tahap baik, tinggi, dan berkesan. Manakala, julat menghampiri 0.00 pula, ia menggambarkan tahap kebolehanpercayaan yang rendah (Yusof, 2004). Jadual 2 menunjukkan panduan dalam menganalisis kajian rintis. Dapatan analisis kajian rintis ini mendapati, nilai kebolehpercayaan yang merujuk kepada nilai Alpha Cronbach ialah 0.951 seperti Jadual 1. Ini menunjukkan instrumen berada dalam keadaan sangat baik dan efektif dengan tahap konsisten yang tinggi sekaligus boleh digunakan dalam penyelidikan sebenar (Bond & Fox, 2015). Secara keseluruhannya, kebolehpercayaan soal selidik ini adalah memuaskan dengan nilai Alpha Cronbach 0.951.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 1: Nilai Alpha Cronbach Item Soal Selidik

Alpha Cronbach	Alpha Cronbach Berdasarkan Piawaian Item	N Items
0.951	0.953	20

Jadual 2 Jantina Pelajar menunjukkan pecahan jantian responden kajian ini. Sebanyak 250 orang responden iaitu 43.8% terdiri daripada pelajar lelaki manakala selebihnya pelajar perempuan iaitu 56.2%. Peratusan bagi pecahan setiap semester ditunjukkan di dalam Jadual 3 Semester dengan 12.4% adalah pelajar semester 1, 14.8% adalah pelajar semester 2, 42.8% merupakan pelajar semester 3, 12.4% adalah pelajar semester 4 dan 17.6% merupakan pelajar semster 5. Majoriti responden yang terlibat dalam kajian ini adalah responden Melayu iaitu 88% atau 220 orang. Hanya terdapat 2 orang responden Cina iaitu 10.8% dan 27 orang responden India iaitu 10.8% mengambil bahagian dalam kajian ini. Nilai peratusan ditunjukkan di dalam Jadual 4 Bangsa.

Jadual 2: Jantina Pelajar

Jantina	Kekerapan	Peratusan
Lelaki	110	44.0
Perempuan	140	56.0

Jadual 3: Semester

Semester	Kekerapan	Peratusan
1	31	12.4
2	37	14.8
3	107	42.8
4	31	12.4
5	44	17.6

Jadual 4: Bangsa

Bangsa	Kekerapan	Peratusan
Melayu	221	88.4
Cina	2	0.8
India	27	10.8

Bahagian kedua instrumen kajian yang digunakan merupakan soal selidik yang berhubung dengan persediaan pelajar dalam menggunakan platform MS Teams sebagai platform utama pdpdt dengan penggunaan skala Liker 5 mata (1-Sangat Tidak Setuju, 2-Tidak Setuju, 3-Kurang Setuju, 4-Setuju, 5-Sangat Setuju). Terdapat lima faktor kajian yang ditekankan iaitu kemudahan penggunaan Ms Teams di kalangan pelajar, kesesuaian rekabentuk antara muka Ms Teams, kesesuaian rekabentuk interaksi Ms Teams, faktor yang dapat membantu pelajar-pelajar memahami topik yang diajar dan juga faktor motivasi.

Jadual 5: Skor Min dan Sisihan Piawai Kemudahan Penggunaan Platform Ms Teams

Item	Kemudahan Penggunaan	Min	S.P
S1	Platform MS Teams mudah untuk digunakan.	4.20	0.753
S2	Saya tidak menghadapi masalah sepanjang menggunakan MS Teams	3.50	1.019
S3	Saya boleh meneroka *(explore)* Ms Teams tanpa bantuan dari pihak lain.	3.90	0.861
S4	Setiap menu yang terdapat di dalam MS Teams mudah difahami fungsinya.	4.12	0.813
	MIN DAN SISIHAN PIAWAIAN KESELURUHAN	3.95	0.688

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13th – 14th December 2020

Jadual 5 menunjukkan faktor kemudahan penggunaan platform MS Teams dengan nilai min keseluruhan adalah 3.95 dan sisihan piawai adalah 0.688.

Jadual 6: Skor Min dan Sisihan Piawai Kesesuaian Rekabentuk Antaramuka Platform Ms Teams

Item	Kesesuaian Rekabentuk Antaramuka	Min	S.P
S5	Platform MS Team mempunyai pelbagai fungsi yang menarik.	4.10	0.818
S6	Tulisan dan arahan yang terdapat di dalam Ms Teams ini jelas dan boleh dibaca.	4.16	0.817
S7	Penggunaan grafik di dalam MS Teams adalah menarik	4.00	0.860
S8	Menu dan fungsi di dalam Ms Teams mudah difahami dan digunakan.	4.17	0.747
	MIN DAN SISIHAN PIAWAIAN KESELURUHAN	4.11	0.693

Jadual 6 menunjukkan faktor kesesuaian rekabentuk antara muka platform MS Teams dengan nilai min keseluruhan adalah 4.11 dan sisihan piawai adalah 0.693.

Jadual 7: Skor Min dan Sisihan Piawai Kesesuaian Rekabentuk Interaksi Platform Ms Teams

Item	Kesesuaian Rekabentuk Interaksi	Min	S.P
S9	Penyampaian isi pelajaran dengan menggunakan Ms Teams adalah tercapai objektifnya.	3.92	0.900
S10	Penggunaan MS Teams banyak membantu saya dalam memahami silibus yang disampaikan oleh pensyarah secara PdPDT.	3.78	0.946
S11	Penyampaian maklumat dan isi kandungan pelajaran dengan menggunakan MS Team ini senang diikuti.	3.93	0.816
S12	Fungsi-fungsi yang terdapat di dalam MS Team ini membantu saya dalam sesi PdPDT.	3.96	0.778
	MIN DAN SISIHAN PIAWAIAN KESELURUHAN	3.96	0.701

Jadual 7 menunjukkan faktor kesesuaian rekabentuk interaksi MS Teams dengan nilai min keseluruhan adalah 3.96 dan sisihan piawai adalah 0.701.

Jadual 8: Skor Min dan Sisihan Piawai Membantu Mempelajari Topik Di Dalam Platform Ms Teams

Item	Membantu Mempelajari Topik	Min	S.P
S13	Ms Teams membantu saya untuk memahami mengenai topik kursus yang dipelajari dengan memainkan semula video yang telah dirakam	4.21	0.806
S14	Ms Teams membantu saya dengan memuat turun Nota di dalam fungsi yang disediakan .	3.97	0.831
S15	Ms Teams memudahkan saya untuk menghantar tugasan yang telah diberikan.	3.89	0.955
S16	Ms Teams memberi ruang kepada saya untuk berkongsi pendapat dengan pensyarah dan rakan sekelas.	4.09	0.838
	MIN DAN SISIHAN PIAWAIAN KESELURUHAN	4.04	0.704

Jadual 8 menunjukkan faktor yang membantu pelajar-pelajar dalam memahami topik yang diajar di dalam platform MS Teams dengan nilai min keseluruhan adalah 4.04 dan sisihan piawai adalah 0.704.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 9: Skor Min dan Sisihan Piawai Motivasi Di Dalam Platform Ms Teams

Item	Motivasi	Min	S.P
S13	Saya seronok menggunakan Ms Teams	3.96	0.863
S14	Ms Team telah menaikan minat saya untuk terus menggunakannya sebagai platform PdPDT..	3.82	0.956
S15	Saya berasa yakin untuk menjawab soalan peperiksaan melalui sesi pdp secara MS Team.	3.59	1.109
S16	Sekiranya diberi peluang, saya ingin terus menggunakan MS Team sebagai platform PdP.	3.73	1.040
	MIN DAN SISIHAN PIAWAIAN KESELURUHAN	3.77	0.844

Jadual 9 menunjukkan faktor motivasi di dalam platform MS Teams dengan nilai min keseluruhan adalah 3.77 dan sisihan piawai adalah 0.844.

Impak

Hasil daripada tinjauan ini menunjukkan min keseluruhan soal selidik adalah 3.77. Ia menunjukkan penggunaan MS Teams adalah diterima oleh pelajar-pelajar JTMK, PMS sebagai platform utama pdpdt. Dapat dinyatakan bahawa platform MS Teams diterima oleh majoriti pelajar bagi menggantikan pertemuan secara bersemuka di antara pensyarah dan pelajar. Ms Teams mempunyai banyak kelebihan berbanding dengan platform dalam talian yang lain, antaranya ialah MS Teams digunakan sebagai platform menghantar tugasan, melaksanakan kuiz dan ujian dan juga sebagai platform bagi pensyarah menyampaikan sebarang maklumat yang penting. Dengan menggunakan Ms Teams, sesi pdp masih boleh diteruskan seperti sediakala walaupun pelajar dan pensyarah tidak berada di tempat yang sama. Bagi pelajar yang mempunyai masalah gangguan capaian internet, mereka tidak perlu gusar jika tertinggal sesi pdpdt yang telah ditetapkan. Pelajar masih boleh memahami isi silibus yang diajar dengan memuat turun video yang telah dirakam. Pelajar juga boleh menyimpan video rakaman bagi tujuan rujukan pada waktu yang lain. Bagi pihak pensyarah pula, jika mereka bercadang untuk menyampaikan isi kandungan silibus secara *'asynchronous'*, sesi tersebut boleh dirakam terlebih awal dan menyimpan video tersebut di dalam platform MS Teams untuk tontonan pelajar. Pelajar boleh sama ada menonton atau memuat turun video tersebut.

Penggunaan Ms Teams ini menjadi mudah kerana ia menjadi tapak asas sebagai pusat sehenti untuk semua kumpulan koloberatif yang digunakan seperti MS Office serta aplikasi dan perisian yang lain. Perkongsian *whiteboard* di dalam MS Teams juga memudahkan pelajar-palajar untuk memahami topik yang diajar apabila pensyarah boleh menulis di atas *whiteboard* tersebut seperti menulis pada papan putih di dalam kelas realiti. Pelajar juga boleh menulis pada *whiteboard* yang sama, sama ada untuk bertanyakan soalan atau memberikan idea terhadap sesuatu topik. Ini membuatkan sesi pdpdt berlangsung seperti sediakala di dalam kelas konvensional. Pengunaan akaun MS Teams yang percuma dikalangan pelajar juga membolehkan pelajar mengoptimunkan penggunaan setiap aplikasi dan fungsi yang disediakan di dalma platform tersebut.

Kesimpulan

Terdapat dua kaedah pdpdt yang diaplikasikan iaitu *'synchronous'* dan *'asynchronous'*. '*Synchronous'* merujuk kepada sesi pdpdt pada masa sebenar (*real-time*). Pengajar dan pelajar boleh berkomunikasi dan bertemu secara maya pada masa yang sama, walaupun ketika berada di lokasi yang berlainan. Manakala *'asynchronous'* pula merujuk kepada pembelajaran tidak berlaku pada masa sebenar (real-time). Komunikasi di antara pengajar dan pelajar boleh berlaku pada masa yang berbeza. (Zalika Adam, 2020). Pelaksanaan norma baharu pada hari

eISBN 978-967-2426-22-6
13th – 14th December 2020

ini banyak mengubah persepsi pelajar dan pensyarah dalam kaedah menyampaikan ilmu pengetahuan. Walaupun majoriti pelajar memilih platform MS Teams sebagai satu medium yang menggantikan bilik kuliah konvensional, terdapat juga sebilangan kecil pelajar yang tidak dapat menerima kaedah pdp norma baharu ini. Mereka lebih memilih untuk belajar secara bersemuka dengan kehadiran pensyarah di dalam bilik kuliah secara konvensional. Keyakinan mereka terhadap penggunaan platform pdtpt ini masih rendah. Antara faktor yang mempengaruhi pilihan mereka adalah faktor semester. Pelajar semester 1 masih dibayangi dengan corak pdp semasa di peringkat sekolah dengan kehadiran guru di dalam kelas. Faktor lain adalah masalah capaian internet yang kurang baik menyebabkan mereka memilih untuk belajar secara konvensional. Isu ini boleh diatasi dengan bantuan dan dorongan daripada para pensyarah agar menjadi lebih menarik. Pensyarah perlu bijak menggunakan ruang dan kepelbagaian kaedah pdp agar sesi pdpdt ini menjadi lebih menarik. Antara elemen yang boleh ditambah semasa sesi pdpdt adalah dengan memasukkan aktiviti-aktiviti *Outcome Based Education* OBE dalam talian seperti *coggle, wordwall, powtoon* dan pelbagai aplikasi lagi bagi menarik minat pelajar dan menjadikan sesi pdpdt tidak membosankan.

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13th – 14th December 2020

VR360: TINJAUAN PENDEKATAN APLIKASI VIDEO INTERAKTIF BERBENTUK REALITI MAYA SEBAGAI MEDIUM UNTUK MENYAMPAIKAN KANDUNGAN PEMBELAJARAN

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Abstrak: *Selari dengan perkembangan teknologi dan kepelbagaian perisian yang wujud untuk pembelajaran, pendekatan interaktif berbentuk realiti maya (Virtual Reality) VR360° adalah merupakan salah satu teknologi terkini yang boleh diaplikasikan oleh pendidik dalam menyampaikan pembelajaran kepada pelajar. Penggunaan Video VR360 ini merupakan suatu medium pengajaran dan pembelajaran (PdP) bagi memenuhi keperluan pembelajaran teradun yang berkonsepkan flipped classroom. Kajian ini dilaksanakan untuk mendapatkan maklumbalas daripada pelajar berkaitan dengan tahap pendedahan, keberkesanan dan kesesuaian pendekatan Aplikasi Video VR360 sebagai medium untuk menyampaikan kandungan pembelajaran. Instrument yang digunakan dalam kajian adalah berbentuk soal selidik yang disebarkan secara atas talian kepada pelajar Semester 1 dan 3 Diploma Kejuruteraan Awam (DKA) sesi Jun 2020, Politeknik Kota Bharu (PKB). Seramai 206 orang pelajar telah memberi maklumbalas. Hasil dapatan mendapati 82.1% responden telah terdedah kepada aplikasi video VR360 dalam PdP. Dari segi keberkesanan, hasil kajian mendapati responden bersetuju bahawa penggunaan aplikasi ini mampu menarik minat , lebih cepat dan berkesan untuk kefahaman, memberi peluang untuk meneroka secara nyata (3D), menjimatkan masa PdP, memberi pengalaman baru dan keseronokan kepada mereka dalam mendalami kandungan pembelajaran. Selain itu, responden turut mengatakan bahawa penggunaan aplikasi ini adalah merupakan suatu medium interaktif dalam PdP dan 54.9% responden menyatakan video VR360 ini sesuai untuk dijadikan sebagai medium penyampaian kandungan pembelajaran. Secara umumnya, penggunaan aplikasi ini memberi kesan yang positif kepada perkembangan kendiri pelajar. Dicadangkan agar pendekatan Video VR360 ini dapat diaplikasikan secara meluas untuk kursus-kursus yang bersesuaian dan dijadikan sebagai satu pilihan untuk para pensyarah menyampaikan kandungan pembelajaran.*

Katakunci: *Virtual Reality 360°, Kaedah Penyampaian dalam PdP, Pembelajaran Teradun, Flipped Classroom*

Pendahuluan

Teknologi dalam pendidikan telah berkembang dengan jayanya dimana pelbagai medium penyampaian sama ada secara maya atau bersemuka telah dipraktiskan oleh para pendidik untuk menyampaikan kandungan pembelajaran. Perkembangan ini adalah selari dengan percambahan pelbagai jenis perisian yang wujud untuk di terokai oleh pendidik secara percuma atau langganan berbayar dalam memastikan hasil pembelajaran dapat di capai. Antara pendekatan yang boleh digunakan adalah video interaktif berbentuk realiti maya (Virtual Reality) VR360. Penggunaan Video VR360 ini merupakan suatu medium pengajaran dan

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13th – 14th December 2020

pembelajaran (PdP) bagi memenuhi keperluan pembelajaran teradun yang berkonsepkan *flipped classroom*. Kaedah ini berkesan dalam memastikan objektif pembelajaran dapat di capai di samping dapat meningkatkan kemahiran kendiri pelajar.

Menurut Noreliana (2018), Realiti maya merupakan suatu teknologi yang membantu penggunanya untuk merasakan suasana 3 dimensi yang seolah seperti nyata. Lingkungan yang dihasilkan oleh *virtual reality* disimulasikan dengan bantuan komputer, di mana lingkungan tersebut hanya dapat diciptakan dari imajinasi penggunanya atau lingkungan tersebut memang benar-benar ada di kenyataan. Pelajar akan lebih berminat terhadap pembelajaran yang menggunakan teknologi berbanding dengan sistem pembelajaran yang biasa.

Pernyataan Masalah

Pelaksanaan pembelajaran teradun memerlukan pembelajaran yang berkonsepkan *flipped classroom.* Konsep pembelajaran ini memerlukan pensyarah membekalkan bahan pembelajaran terlebih awal sebelum proses PdP di bilik kuliah di laksanakan. Kaedah penyampaian dan bahan PdP juga perlu dipelbagaikan untuk menarik minat dan meningkatkan tahap kefahaman pelajar. Pendekatan aplikasi video berbentuk realiti maya VR360 merupakan suatu medium untuk menyampaikan kandungan pembelajaran. Namun, aplikasi ini masih tidak digunakan secara meluas oleh para pensyarah. Kajian ini dilakukan bagi meninjau tahap pendedahan, keberkesanan dan kesesuaian pendekatan aplikasi VR360 sebagai suatu medium untuk menyampaikan kandungan pembelajaran selain menggalakkan pensyarah agar menghasilkan bahan PdP yang interaktif dan secara nyata 3 Dimensi (3D). Selain itu, melalui pendekatan VR360 ini dapat mendedahkan para pelajar dengan teknologi pembelajaran yang terkini.

Objektif Kajian

Kajian ini bertujuan untuk mengenalpasti:

a) Tahap pendedahan pelajar terhadap aplikasi Video VR360 dalam PdP.
b) Keberkesanan pendekatan aplikasi Video VR360 dalam menyampaikan kandungan pembelajaran.
c) Kesesuaian penggunaan aplikasi Video VR360 sebagai medium penyampaian kandungan pembelajaran.

Persoalan Kajian

a) Adakah pelajar telah mendapat pendedahan terhadap aplikasi Video VR360 dalam PdP?.
b) Adakah pendekatan aplikasi Video VR360 berkesan untuk menyampaikan kandungan pembelajaran?
c) Adakah aplikasi interaktif video VR360 sesuai digunakan sebagai medium untuk menyampaikan kandungan pembelajaran?

Kepentingan Kajian

Kajian tinjauan ini, adalah diharapkan dapat memberi data yang benar bagi menentukan tahap pendekatan, keberkesanan dan kesesuaian aplikasi video VR360 sebagai medium untuk menyampaikan kandungan pembelajaran. Kepentingan kajian ini adalah untuk mengalakkan pensyarah mengaplikasikan pendekatan Video VR360 dalam pelaksanaan PdP bagi menyokong pembelajaran teradun yang berkonsepkan *flipped classroom*. Hasil kajian adalah sebagai sumber penting untuk dibentangkan kepada pihak pengurusan bagi merangka latihan untuk meningkatkan kemahiran dan kepakaran pensyarah dalam menyampaikan PdP.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kajian Literatur

Perkembangan teknologi maklumat dan komunikasi dengan laju dan meluas memberi kesan kepada semua aspek kehidupan tidak terkecuali di dalam bidang pendidikan. Selari dengan perkembangan ini, ia telah mengubah cara manusia belajar (Naismith et. al, 2004). Proses pembelajaran kini berlangsung dengan melampaui ruang fizikal bilik kuliah (Kukulska-Hulme & Taxer, 2005), bersifat globalisasi dan sepanjang hayat (Sharples, 2000 & Cheng & Towsend, 2000).

Penggunaan media di dalam proses pendidikan akan menambah proses pemahaman pelajar lebih mendalam dan menjadikan aktiviti pembelajaran yang lebih pelbagai (Norah et.al. 2012). Hasil kajian Sharples (2000) mendapati bahawa penggunaan video dapat meningkatkan penglibatan dan motivasi pelajar dalam mempelajari sesuatu. Penggunaan video dalam kalangan pendidik sebagai bahan PdP di dalam bilik kuliah adalah perkara yang tidak asing lagi. Pendidik telah mengenal pasti tentang kehebatan pengajaran berasaskan video mampu untuk menarik minat, meningkatkan motivasi dan pengalaman belajar (Berk, 2009 & Jamalludin & Zaidatun, 2003).

Justeru itu, selari dengan perkembangan teknologi terkini, pengkaji ingin membuat tinjauan tentang keberkesanan dan kesesuaian pendekatan video interaktif berbentuk realiti maya (VR) sebagai alternatif untuk menyampaikan kandungan pembelajaran bagi meningkatkan lagi kefahaman pelajar dalam proses PdP. Teknologi realiti maya (VR) merupakan simulasi komputer melalui terjemahan imitasi sekitaran dengan cubaan menyerupai keadaan nyata atau fizikal suatu perkara, situasi atau produk. Teknologi realiti maya (VR) dapat dihasilkan menggunakan aplikasi multimedia mendalam yang menggunakan komputer bagi mewujudkan suatu alam simulasi menggunakan komputer. (Anitawati et.al,2015). Multimedia merupakan satu teknologi yang menggabungkan pelbagai sumber maklumat (media) seperti teks, grafik, bunyi, animasi, video dan sebagainya yang mana maklumat ini disampaikan dan dikawal oleh sistem komputer secara interaktif (Hofstetter, 1995). Menurut Harun et al., (2000), multimedia merupakan suatu kaedah yang membenarkan seseorang pengguna menerokai sesuatu maklumat melalui persembahan dengan kehendak dan kelajuan yang tersendiri. Pengguna boleh mencapai sebarang topik atau meninggalkan bahagian-bahagian yang tidak begitu menarik atau tidak diperlukan oleh mereka.

Penggunaan aplikasi realiti maya ini mampu mengubah corak pembelajaran di dalam kelas. Pembelajaran akan lebih menyeronokkan dan menarik. Kini aplikasi realiti maya dapat diakses tidak kira masa hanya dengan menggunakan VR Box, telefon mudah alih dan aplikasi realiti maya yang dimuat turun ke dalam telefon. (Norazmira et.al.2019). Video VR360 yang dihasilkan ini adalah merupakan simulasi audiovisual yang membolehkan pengguna melihat sekeliling mereka ke semua arah sama seperti yang mereka dapat dalam kehidupan nyata. Ia merupakan antara muka yang dapat menghubungkan pengguna ke video dan merupakan suatu teknologi yang membantu penggunanya untuk merasakan suasana 3D yang seolah seperti nyata.

Pembangunan aplikasi realiti maya (VR) ini juga merupakan suatu bahan PdP untuk membantu dalam menghasilkan pembelajaran teradun (blended learning). Pembelajaran teradun atau hibrid merupakan satu pendekatan pedagogi abad ke-21 yang menggabungkan antara pembelajaran konvensional (bersemuka) dan pembelajaran secara dalam talian dengan 30 hingga 80 peratus kandungan dan aktiviti kursus dikendalikan secara dalam talian sama ada menyokong atau menggantikan pembelajaran bersemuka (Kementerian Pengajian Tinggi, 2011). Konsep pembelajaran teradun yang dipraktiskan adalah menggunakan kaedah *flipped classroom* iaitu suatu model pendekatan pengajaran yang mengalihkan masa kuliah di dalam kelas kepada kuliah melalui video di luar kelas (Norhailmi, 2018).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Matlamatnya adalah untuk memaksimakan pemahaman tentang sesuatu prinsip, teori dan pengetahuan. Pembelajaran teradun adalah pendekatan yang berpusatkan pelajar yang mana pelajar boleh mengawal sendiri kadar pembelajaran mereka dan mereka boleh menggunakan pelbagai teknologi atas talian. Kaedah pembelajaran ini diperkenalkan sejajar dengan hasrat yang diunjurkan oleh Dasar e-Pembelajaran Negara dan Lonjakan ke-9 dalam Pelan Pembangunan Pendidikan Malaysia (Pendidikan Tinggi) 2015-2025. Menurut Siti Zuraida et al. (2015), model pembelajaran ini menyumbang kepada memperibadikan pembelajaran dengan membolehkan pelajar mengambil kesempatan daripada pelbagai peluang untuk memenuhi matlamat pembelajaran mereka.

Metodologi kajian

Instrument yang digunakan dalam kajian ini adalah soal selidik yang dibina menggunakan aplikasi *Google Form* dan disebarkan kepada sebahagian pelajar Semester 1 dan 3 Diploma Kejuruteraan Awam (DKA) sesi Jun 2020, Politeknik Kota Bharu (PKB) melalui aplikasi *WhatsApp* dan Telegram. Syed Arabi (2002) menyatakan penggunaan soal selidik adalah amat sesuai kerana ianya lebih praktikal, berkesan dan menjimatkan perbelanjaan. Soal selidik ini dibahagikan kepada dua bahagian iaitu bahagian A dan bahagian B. Bahagian A mengandungi soalan-soalan berkaitan dengan maklumat latar belakang responden dan tahap pendedahan responden kepada aplikasi Video VR360. Manakala Bahagian B mengumpul data mengenai keberkesanan dan kesesuaian pendekatan Video VR360 sebagai medium untuk menyampaikan kandungan pembelajaran kepada pelajar. Responden juga diberi peluang untuk memberi cadangan atau komen berkaitan dengan penggunaan Video VR360 dalam menjayakan PdP. Data yang diperolehi seterusnya di proses dengan menggunakan perisian *Microsoft Excel.*

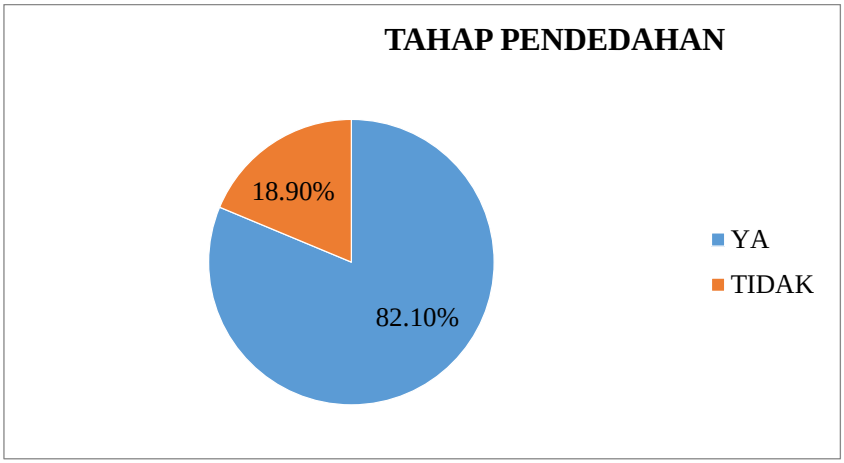
Dapatan dan Analisa Kajian

Pelajar DKA, PKB semester 1 dan 3 sesi Jun 2020 ialah seramai 268 orang, 206 telah memberi maklumbalas terhadap kajian tinjauan yang dijalankan. Merujuk kepada jadual penentuan saiz sampel berdasarkan saiz polulasi yang dikeluarkan oleh Kerjie dan Morgan (1970), di mana bagi saiz polulasi seramai 250 maka saiz sampel adalah 152. Kajian ini telah memperolehi saiz sampel lebih daripada yang telah dicadangkan oleh Kerjie dan Morgan, jadi ini boleh meningkatkan kesahan dan kebolehpercayaan data yang diperolehi.

Tahap Pendedahan Pelajar Terhadap Aplikasi Video VR360

Persoalan pertama kajian adalah adakah pelajar telah mendapat pendedahan terhadap aplikasi Video VR360 dalam PdP. Berdasarkan maklumbalas yang diterima, 82.10% pelajar menyatakan bahawa mereka telah didedahkan kepada aplikasi Video VR360 manakala 18.9% menyatakan tidak menerima pendedahan. Hasil dapatan boleh dirujuk berdasarkan Rajah 1 di bawah.

eISBN 978-967-2426-22-6
13th – 14th December 2020



Rajah 1: Tahap Pendedahan Pelajar Terhadap Aplikasi Video VR360.

Seiring dengan pembangunan dalam teknologi pendidikan dan perisian yang semakin canggih, pendedahan berkaitan dengan Video VR360 telah disebar luas secara menyeluruh kepada pelajar. Pendedahan ini secara tidak langsung telah meningkatkan kemahiran kendiri pelajar untuk meneroka teknologi pembelajaran. Namun demikian, masih terdapat sebilangan pelajar yang belum terdedah dengan aplikasi Video VR360 ini. Hal ini adalah berkemungkinan disebabkan oleh kurangnya kelengkapan yang lengkap untuk membolehkan mereka meneroka Video VR360 yang telah dilayari dan kurangnya pengetahuan untuk mengeksploitasi video pembelajaran yang dihasilkan. Menurut Norazmira et.al (2019), penggunaan VR Box untuk melayari Video VR360 dapat menghasilkan kesan visual yang semakin berkualiti, relistik dan mampu meletakkan diri pengguna seakan berada di tempat sebenar.

Keberkesanan Aplikasi Video VR360

Persoalan kedua kajian adalah adakah pendekatan aplikasi Video VR360 berkesan untuk menyampaikan kandungan pembelajaran. Untuk menjawab kepada persoalan ini, pengkaji telah mengemukakan empat item yang dikategorikan sebagai item utama yang menyumbang kepada keberkesanan aplikasi VR360 sebagai medium penyampaian kandungan pembelajaran. Aspek yang dinilai adalah berdasarkan aspek-aspek berikut:

a) Peningkatan Minat.
b) Peningkatan kefahaman.
c) Peluang mendalami kandungan pembelajaran secara nyata (3D).
d) Pengalaman baru dan keseronokkan dalam PdP.

Dapatan kajian untuk setiap aspek di wakilkan dalam rajah dan analisa dibawah.

Peningkatan Minat.

Penyampaian kandungan pembelajaran menggunakan Video VR360 ini menarik minat responden untuk mengetahui dengan lebih lanjut berkaitan dengan kandungan pembelajaran yang ingin diketengahkan. Berdasarkan kajian, 21.4% responden sangat bersetuju, 63.1 % bersetuju, 14.1% kurang setuju dan 1.5% sangat tidak setuju dengan pernyataan tersebut.

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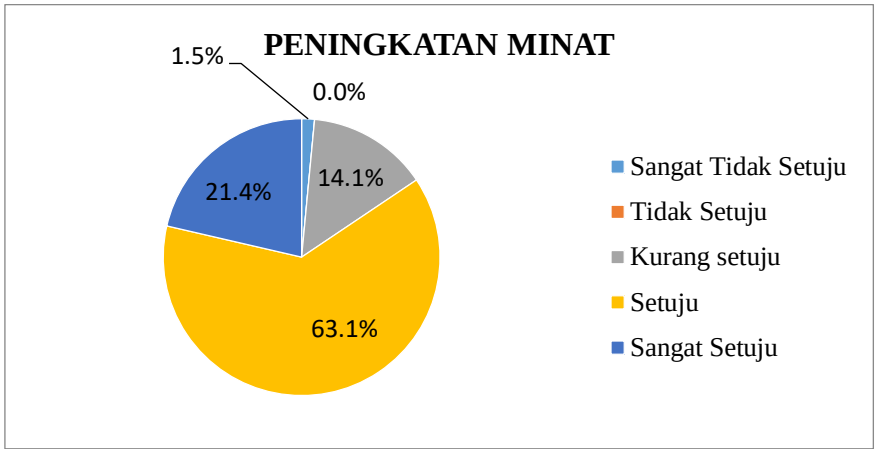
13th – 14th December 2020

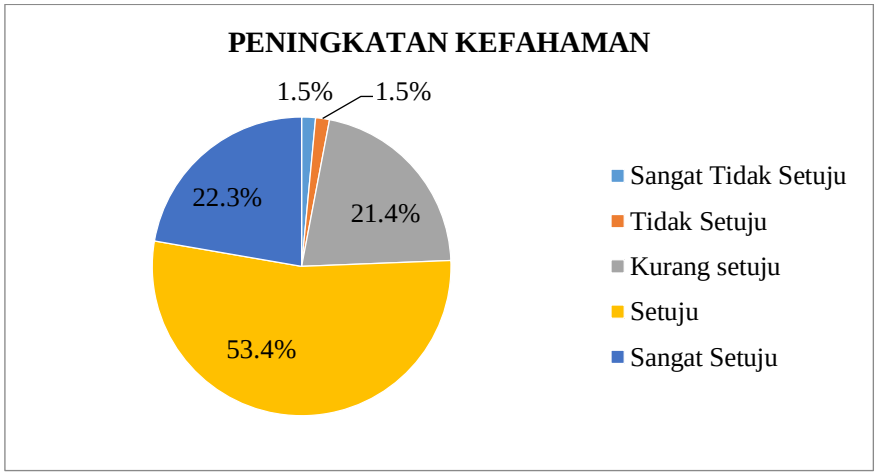


Rajah 2: Penggunaan Aplikasi Video VR360 Dapat Meningkatkan Minat Responden Untuk Meneroka Kandungan Pembelajaran.

Menurut Noreliana (2018), pelajar akan lebih berminat terhadap pembelajaran yang menggunakan teknologi berbanding dengan sistem pembelajaran yang biasa. Pernyataan ini turut di sokong oleh Syamsulaini (2016), yang mengatakan penggunaan video ini juga mampu mempelbagaikan kaedah pengajaran guru dalam usaha memberi motivasi dan sekaligus menarik minat dalam pembelajaran. Kebolehan Video VR360 mengaplikasikan simulasi 360 merupakan satu faktor utama untuk menarik minat pengguna. Selain dari kajian ini, kajian yang dilakukan oleh Norazmira et.al (2019), juga menunjukkan 83% responden bersetuju penggunaan kaedah realiti maya ini dapat meningkatkan minat dalam pembelajaran khasnya bidang Seni Bina.

Lebih Mudah Dan Berkesan Kepada Kefahaman Pelajar

Pendekatan PdP menggunakan Video VR360 ini lebih mudah dan berkesan kepada kefahaman responden. Berdasarkan kajian, 22.3% responden sangat bersetuju, 53.4% bersetuju, 21.4% kurang setuju dan 1.5% tidak setuju dan sangat tidak setuju dengan pernyataan tersebut.



Rajah 3: Penggunaan Aplikasi Video VR360 Lebih Mudah Dan Berkesan Kepada Kefahaman Responden.

Elemen-elemen dalam multimedia antaranya seperti muzik, animasi, simulasi dapat menolong menyampaikan isi pelajaran kepada pelajar dalam bentuk yang mudah difahami dan

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13th – 14th December 2020

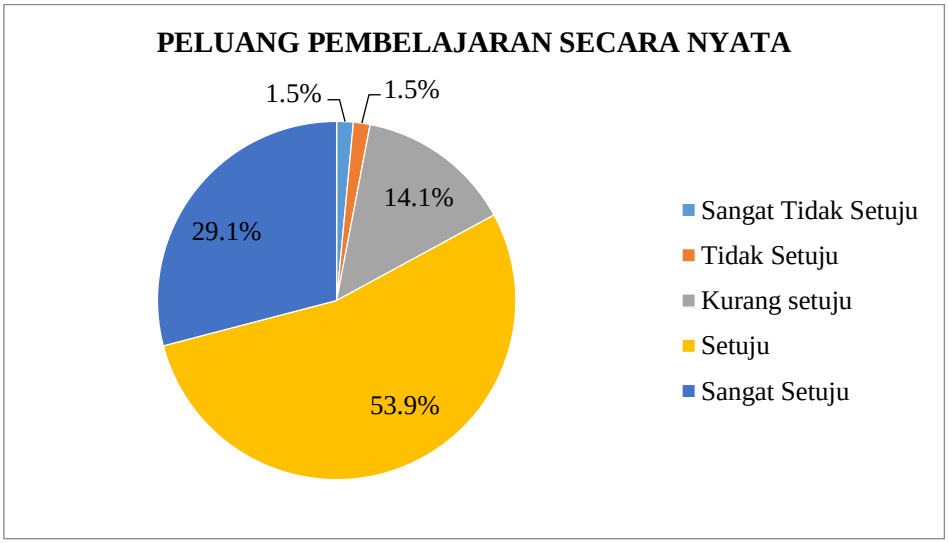
lebih menarik berbanding buku atau media lain dan ianya mampu memenuhi strategi belajar yang bervariasi (Ellis, 2004). Melalui Video VR360 ini responden boleh meneroka kandungan pembelajaran dengan bebas dan secara nyata. Fungsi ini secara tidak langsung dapat membantu meningkatkan kefahaman pelajar dan pembelajaran itu menjadi lebih mudah dan berkesan. Pernyataan ini turut di sokong oleh dapatan kajian yang dilakukan oleh Norazmira et.al (2019) dimana 90% responden bersetuju kaedah ini dapat membantu dalam memahami topik yang dipelajari terutama yang melibatkan analisis tapak dan kajian kes. Menurut Awang Pajuzi (2009), penggunaan Realiti Maya ini jika diterapkan dalam pembelajaran dapat membantu pensyarah dan pelajar untuk mendapatkan kefahaman yang lebih tinggi. Pendekatan yang baru dengan menggunakan aplikasi realiti maya akan menimbulkan suasana baru dan segar di dalam kelas. Malah akan dapat membantu pensyarah menghasilkan simulasi realiti maya bagi kursus yang sesuai dalam memberi pemahaman teknikal kepada pelajar.

Menurut Jamaludin et al., (2003), penggunaan perisian multimedia sudah semestinya mendatangkan kebaikan kepada pelajar di dalam pendidikan. Penggunaannya dapat mengatasi kelemahan serta masalah yang dihadapi di dalam proses pengajaran biasa di dalam kelas yang dilaksanakan secara tradisi. Ia boleh menjadi peransang kepada golongan pendidik serta menjadi alat yang dapat membantu para pendidik menyampaikan pengajaran dengan berkesan. Antara kelebihan pembelajaran berasaskan multimedia adalah :

(i) Menyokong Pembelajaran Kendiri
(ii) Membantu imiginasi terhadap perkara abstrak.

Peluang Mendalami Kandungan Pembelajaran Secara Nyata (3D)

Video VR360 ini memberi peluang kepada responden untuk meneroka PdP secara nyata iaitu 3D. Berdasarkan kajian, 29.1% responden sangat bersetuju, 53.9% bersetuju, 14.1% kurang setuju dan masing-masing 1.5% tidak setuju dan sangat tidak setuju dengan pernyataan tersebut.



Rajah 4: Penggunaan Aplikasi Video VR360 Memberi Peluang Kepada Responden Untuk Meneroka PdP Secara Nyata (3D).

Video VR360 yang dihasilkan ini adalah merupakan simulasi audiovisual yang membolehkan pengguna melihat sekeliling mereka ke semua arah, sama seperti yang mereka dapat dalam kehidupan nyata. Ia merupakan antara muka yang dapat menghubungkan

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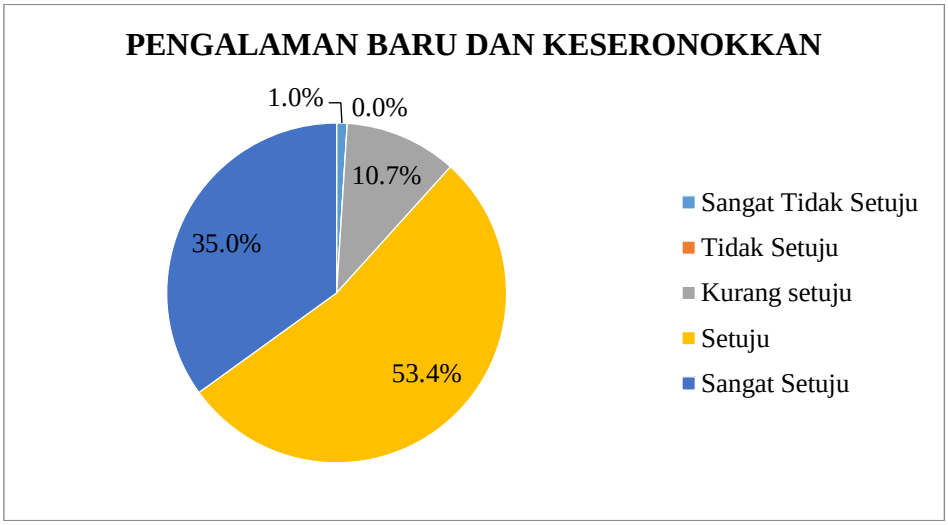
13th – 14th December 2020

pengguna ke video dan merupakan suatu teknologi yang membantu penggunanya untuk merasakan suasana 3D yang seolah seperti nyata. Menurut Norazmira et.al (2019), teknologi realiti maya 360° sebagai medium pembelajaran dan pengajaran memberikan persekitaran pembelajaran yang lebih stimulatif dan mampu mencorakkan kaedah pembelajaran masa hadapan. Pengguna akan mempunyai rasa berasa di tempat sebenar bukan hanya dengan melihat imej foto. Dengan menggunakan konsep 'walk-through' mampu meletakkan pengguna seolah-olah berjalan ditempat sebenar. Dengan penghasilan video VR360 ini, dapat dirumuskan bahawa pelajar lebih memahami dan menyukai pembelajaran video berbentuk realiti maya kerana mereka dapat meneroka pembelajaran secara nyata dalam bentuk 3 dimensi (3D). Melalui kaedah ini, pelajar dapat merasakan bahawa mereka sedang terlibat secara nyata dalam situasi yang sedang berlangsung.

Pengalaman Baru Dan Keseronokkan Dalam PdP

Video VR360 memberi pengalaman baru dan keseronokkan kepada responden dalam proses PdP. Berdasarkan kajian, 35.0% responden sangat bersetuju, 53.4% bersetuju, 10.7% kurang setuju dan 1.0% sangat tidak setuju dengan pernyataan tersebut.



Rajah 5: Penggunaan Aplikasi Video VR360 Memberi Pengalaman Baru dan Keseronokan Kepada Responden Dalam Proses PdP.

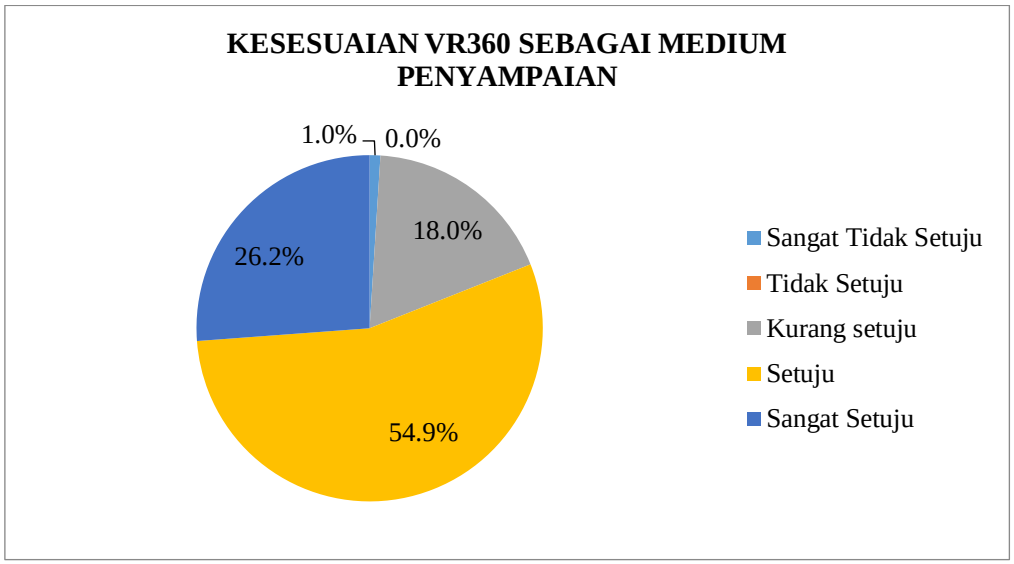
Dalam membina pengetahuan, pengalaman dan kemahiran pembelajaran, program pembelajaran secara realiti maya boleh diselitkan dengan unsur multimedia merangkumi teks, audio, grafik, animasi dan video. Kajian Kayaoglu. et al. (2011) mendapati terdapat peningkatan yang signifikan terhadap pelajar yang menggunakan animasi dalam pembelajaran mereka. Ini kerana, para pelajar didedahkan dengan situasi dan pengalaman yang baru melalui video ini yang mana mereka hanya meneliti dan memahami isi kandungan penyampaian yang terdapat di dalam video tersebut. Ini berbeza dengan kaedah PdP secara tardisional yang memerlukan para pelajar untuk hadir ke bilik kuliah dan sekaligus menyekat pembebasan cara pembelajaran yang lebih efektif. Menurut Clark (2006), Realiti Maya boleh digunakan untuk membuat pembelajaran lebih menarik dan menyeronokkan dengan tujuan untuk meningkatkan motivasi dan perhatian, mengurangkan kos apabila menggunakan objektif dan persekitaran sebenar tidak kira berapa mahal simulasi itu. Ia juga memungkinkan bahawa situasi yang mustahil untuk diterokai dalam dunia sebenar boleh dilakukan melalui video VR 360 ini. Penggunaan video banyak membantu pendidik untuk memudahkan aktiviti pengajaran di

eISBN 978-967-2426-22-6
13th – 14th December 2020

samping pelajar lebih seronok untuk belajar. Selain itu, elemen multimedia terutamanya animasi telah menjadikan proses pendidikan itu sesuatu yang menghiburkan dan menjanjikan pelbagai kemudahan yang tidak pernah terfikir oleh manusia sebelum ini serta tidak membosankan (Jamaludin et al., 2001). Pernyataan ini turut disokong oleh Reiber (1991) di mana telah menyatakan kebanyakan pelajar suka dan terhibur belajar dengan animasi. Penerapan nilai hiburan yang tidak berlebihan di dalam pendidikan akan memberi kesan yang baik terhadap proses pengajaran dan pembelajaran (Ismail, 2000). Oleh itu, dapat disimpulkan bahawa Video VR360 ini mampu untuk memberikan pengalaman baru dan keseronokan dalam PdP kerana mengandungi semua elemen multimedia.

Kesesuaian Aplikasi Video VR360 Sebagai Medium Penyampaian

Persoalan ketiga kajian adalah adakah pendekatan Video VR360 sesuai untuk digunakan sebagai medium untuk menyampaikan kandungan pembelajaran?. Berdasarkan maklumbalas yang di terima, 26.2% responden sangat bersetuju, 54.9% bersetuju, 18.0% kurang setuju dan 1.0% sangat tidak setuju dengan pernyataan tersebut. Hasil dapatan boleh dirujuk berdasarkan Rajah 8 di bawah.



Rajah 6: Kesesuaian Penggunaan Aplikasi Video VR360 Sebagai Medium Penyampaian Kandungan Pembelajaran.

Teknologi pendidikan adalah kombinasi antara proses dan alatan yang terlibat untuk menangani keperluan dan masalah pendidikan dengan memberi penekanan kepada aplikasi alat yang terkini iaitu komputer dan teknologi yang berkaitan (Roblyer, 2003).

Teknologi realiti maya masih baru diperkenalkan di negara ini, oleh yang demikian terdapat sesetengah aspek yang masih perlu diperbaiki dan ditambahbaik. Akan tetapi potensi teknologi realiti maya dalam bidang pendidikan terutama Seni Bina dilihat dapat pergi dengan lebih jauh lagi jika diberikan lebih pendedahan dan penekanan. (Norazmira et.all, 2019).

Melibatkan lebih dari satu deria pendidikan menerusi multimedia akan menggerakkan setiap deria pengguna untuk terlibat sama dalam proses pembelajaran. Keseluruhan deria iaitu deria penglihatan, pendengaran, sentuhan dan minda seseorang pelajar itu akan tertumpu dan terlibat secara aktif dalam proses tersebut (Vaughan, 1998). Penglibatan lebih daripada satu deria membawa impak positif terhadap proses pembelajaran. Pembelajaran yang menggunakan

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13th – 14th December 2020

satu deria sahaja adalah kurang berkesan berbanding dengan pembelajaran yang menggunakan pelbagai deria (Alessi et al., 2003). Oleh itu dapat disimpulkan bahawa penggunaan Video VR360 sebagai medium dalam menyampaikan kandungan pembelajaran adalah sesuai kerana video ini mempunyai elemen multimedia yang lengkap.

Kesimpulan

Hasil dapatan menunjukkan responden memberi maklumbalas positif berkaitan dengan bahan kajian. Ini menunjukkan pendekatan video VR360 ini jika diterapkan dalam pembelajaran dapat membantu pensyarah dan pelajar untuk mendapatkan kefahaman yang lebih tinggi. Pendekatan ini sesuai dengan proses pembelajaran yang terhad di dalam kelas dimana lebih memerlukan pelbagai jenis kaedah penyampaian dan bahan pengajaran untuk meningkatkan lagi kefahaman pelajar tentang kandungan PdP. Melalui pendekatan ini juga, dapat dirumuskan bahawa pelajar lebih memahami dan menyukai pembelajaran video berbentuk realiti maya kerana mereka dapat meneroka pembelajaran secara nyata dalam bentuk 3D. Pelajar dapat merasakan bahawa mereka sedang terlibat secara nyata dalam situasi yang sedang berlangsung.

Selain itu, video VR360 ini bukan sahaja dapat mengubah cara komunikasi PdP malah mungkin dapat mengubah cara kita berfikir. Sebagai cadangan untuk kajian yang akan datang, pengkaji mengesyorkan agar:

a) Video VR360 yang di hasilkan disertakan dengan elemen *gamification* untuk menambahkan keseronokan dalam PdP.
b) Memasukkan penilaian seperti kuiz dan tugasan menggunakan aplikasi Web 2.0 dalam Video VR360 yang di hasilkan untuk menilai keberkesanan video.
c) Perlaksaan video VR360 dibudayakan dalam PdP secara meluas untuk kursus yang bersesuaian seperti kursus teknikal
d) Menggunakan kamera yang mempunyai pixel yang lebih tinggi bagi memperlihatkan persekitaran gambaran video dengan lebih jelas dan penambahan elemen interaktif supaya video VR360 yang dihasilkan mudah untuk difahami.

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KECENDERUNGAN PELAJAR-PELAJAR DALAM BIDANG TEKNOLOGI MAKLUMAT DI POLITEKNIK KUCHING SARAWAK TERHADAP KEUSAHAWANAN

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Abstrak: *Kajian ini adalah untuk melihat tahap kecenderungan pelajar terhadap bidang keusahawanan di kalangan Pelajar Semester 3 di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuching Sarawak. Seramai 93 orang pelajar Semester 3 yang terlibat dalam kajian ini yang merangkumi pelajar-pelajar Diploma Teknologi Maklumat(Teknologi Digital). Kajian ini dijalankan untuk mengenalpasti minat pelajar-pelajar dalam bidang teknologi maklumat terhadap bidang keusahawanan, mengenalpasti sumber dorongan pelajar-pelajar dan mengenalpasti pemantapan budaya keusahawanan yang diterapkan kepada pelajar-pelajar di Jabatan Teknologi Maklumat dan Komunikasi. Secara amnya, daripada kajian yang telah dijalankan ini didapati bahawa ke semua pelajar menunjukkan kecenderungan yang tinggi terhadap bidang keusahawanan. Dapatan kajian tersebut menunjukkan skor min yang tertinggi adalah sebanyak 3.8 di mana pelajar berminat untuk memulakan perniagaan sekiranya diberi peluang dan sumber yang diperlukan. Pelajar juga didapati mempunyai sumber dorongan yang tinggi terhadap keusahawanan. Sumber dorongan yang menarik bagi pelajar untuk menceburi bidang keusahawanan adalah untuk menyara keluarga selain dari membuat kebajikan dan menawarkan khidmat kepada masyarakat yang menunjukkan skor min sebanyak 3.9. Hasil daripada soalselidik yang telah dijalankan, skor min keseluruhan menunjukkan bahawa kebanyakkan program-program yang dilaksanakan dapat membudayakan keusahawanan di kalangan responden.*

Kata kunci: Cenderung, Minat, Keusahawanan, Teknologi Maklumat

Pengenalan

Lonjakan 1 dalam Pelan Pembangunan Pendidikan Malaysia 2015-2020 (Pendidikan Tinggi) menggariskan bahawa belia Malaysia perlu dididik untuk menghadapi masa hadapan yang semakin mencabar, bukan sahaja melengkapkan mereka dengan kemahiran dan asas etika yang mantap, malah memperkasa daya tahan dan meningkatkan ciri keusahawanan bagi meneroka peluang-peluang baharu. Justeru, hal ini penting untuk beralih daripada suasana mencari kepada mencipta pekerjaan. Di Malaysia, bidang keusahawanan sedang rancak diperkembangkan melalui pendidikan, selaras dengan usaha untuk menjadikan bidang ini di antara bidang kerjaya yang diminati (Shahrin Bin Hashim & NorsilaBinti Abdul Rahman, 2007). Para pelajar perlu mempunyai inisiatif untuk melakukan anjakan paradigma di mana mereka perlu melihat keusahawanan itu sebagai prospek kerjaya yang penting selaras dengan tuntutan arus globalisasi. Selain itu juga, bidang keusahawanan dilihat sebagai satu kerjaya yang berpotensi untuk mengatasi masalah pengangguran di kalangan para graduan.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Menurut *Kamus Dewan Edisi ke-Empat,* Usahawan adalah seorang yang mengusahakan sesuatu perusahaan, pengusaha; keusahawanan (segala-gala) yang berkaitan dengan usahawan atau kegiatan dan kemahiran usahawan. Manakala merujuk kepada *Modul Keusahawanan Politeknik* keusahawanan pula dapat didefinisikan sebagai satu bidang ilmu yang merangkumi unsur-unsur sikap, kemahiran dan pengetahuan yang berkaitan dengan perniagaan dan perusahaan.

Perniagaan suatu dekad yang lalu adalah satu kerjaya yang bukan menjadi pilihan bagi kebanyakan orang.Ini kerana ramai berpendapat perniagaan merupakan kerjaya yang memerlukan modal yang besar dan tidak begitu menyerlah malahan sukar untuk diceburi. Lantaran itu, isu penyertaan golongan Bumiputera dalam bidang keusahawanan di peringkat nasional khususnya IKS semakin sering di tekankan. Selaras dengan agenda pembangunan ekonomi dan sosial untuk mewujudkan sebuah bangsa Malaysia yang bersatu padu dan kental pada masa hadapan, penekanan perlu diberi kepada aspek agihan pendapatan yang seimbang dan keadilan sosial di kalangan masyarakat yang berbilang kaum.

Bagaimanapun, perubahan dan kemajuan dalam pembangunan ekonomi negara, terutamanya pada dua dekad kebelakangan ini telah melahirkan banyak peluang-peluang perniagaan. Pembudayaan keusahawanan dikenalpasti sebagai wadah terbaik untuk memanfaatkan bidang tujahan (“niche area”) dan teknologi tertentu bagi menghasilkan modal insan yang berinovasi.(“Program Keusahawanan,” 2012). Menurut Abdul Said (2012) pendidikan keusahawanan yang diterapkan dalam Kemahiran Hidup Bersepadu dapat diserapkan dalam pendidikan keusahawanan di peringkat yang lebih tinggi. Dalam pada itu, Mohd Khaled (2007) menyatakan Dasar Pembangunan Keusahawanan Institusi Pengajian Tinggi akan mengembangkan nilai-nilai keusahawanan tulin supaya tenaga kerja kita tidak lagi cenderung kerja makan gaji semata-mata, sebaliknya memilih makan gaji sebagai pilihan terakhir mereka.

Dalam menuju ke arah negara maju, para pelajar seharusnya telah bersedia untuk mencorak masa depan mereka dengan pelbagai pilihan kerjaya. Antara pilihan kerjaya yang boleh diceburi ialah perniagaan tanpa mengira latar belakang kursus yang diambil semasa menyambung pengajian selepas Sijil Pelajaran Malaysia. Begitu juga dengan pelajar-pelajar Politeknik Malaysia amnya dan Politeknik Kuching Sarawak khususnya. Justeru kami mensasarkan untuk mengkaji kecenderungan pelajar-pelajar dalam bidang teknologi maklumat di Politeknik Kuching Sarawak terhadap keusahawanan.

Pernyataan Masalah

Kementerian Pengajian Tinggi pada 2013 melalui Pelan Pembangunan Pendidikan Malaysia 2015-2025 (Pendidikan Tinggi) telah menggariskan 10 lonjakan di mana lonjakan yang pertama telah menggariskan untuk melahirkan graduan yang holistik, bercirikan keusahawanan dan seimbang. Lantaran itu, semua pelajar pelbagai bidang haruslah bersedia dan mampu untuk menggunakan pengetahuan serta kemahiran yang mereka ada ke arah keusahawanan.

Kajian ini dijalankan adalah bertujuan untuk mengkaji tahap kecenderungan pelajar-pelajar semester tiga(3) di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuching Sarawak terhadap bidang keusahawanan. Aspek dorongan dan pemantapan budaya keusahawanan dikatakan sebagai perkara yang dapat mempengaruhi kecenderungan para pelajar semester tiga(3) di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuching Sarawak terhadap keusahawanan.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Objektif Kajian

1. Mengenalpasti tahap minat pelajar-pelajar semester tiga(3) di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuching Sarawak terhadap keusahawanan.
2. Mengenalpasti sumber dorongan pelajar-pelajar semester tiga(3) di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuching Sarawak.
3. Mengenalpasti pemantapan budaya keusahawanan yang diterapkan kepada pelajar-pelajar semester tiga(3) di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuching Sarawak.

Metodologi Kajian

Kajian ini merupakan kajian berbentuk kuantitatif dengan menggunakan soal selidik sebagai instrumen untuk mendapatkan data kajian. Soal selidik yang digunakan dalam kajian ini dibina dengan membuat adaptasi ke atas soal selidik yang telah digunakan oleh pengkaji yang terdahulu berdasarkan kesesuaian konstruk yang digunakan.

Soal selidik ini mengandungi 4 bahagian. Bahagian 1 merangkumi demografi pelajar Semester 3 di Jabatan Teknologi Maklumat dan Komunikasi yang mendaftar Kursus Cyberpreneurship. Bahagian 2 bertujuan mengenalpasti minat pelajar terhadap keusahawanan. Manakala Bahagian 3 adalah mengenalpasti sumber dorongan pelajar dan Bahagian 4 memerlukan respon daripada pelajar untuk mengenalpasti pemantapan budaya keusahawanan di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuching Sarawak adalah membantu pelajar lebih meminati keusahawanan dan memberi pendedahan awal kepada budaya keusawahanan . Item-item soal selidik menggunakan skala Likert 5 skala bermula dengan skor (1) Sangat Tidak Setuju, (2) Tidak Setuju, (3) Tidak Pasti, (4) Setuju dan (5) Sangat Setuju.

Dapatan Kajian

Dapatan kajian ini dibahagikan kepada tiga bahagian, iaitu : (1) Minat pelajar-pelajar terhadap keusahawanan, (2) Sumber Dorongan, dan (3) Pemantapan Budaya Keusahawanan.

Minat Pelajar-Pelajar Terhadap Keusahawanan

Kecenderungan atau minat keusahawanan digambarkan sebagai faktor motivasi yang mempengaruhi individu untuk meneruskan sesuatu usaha keusahawanan(Hisric,Peters & Shapard.,2008) dan Ariffin & Sabarudin(2002) yang menyatakan bahawa minat yang kuat boleh mendorong dan membakar semangat seseorang untuk menjadi gigih apabila berhadapan dengan sebarang cabaran dan masalah. Minat di dalam kajian ini merujuk kepada kecenderungan atau keinginan seseorang pelajar itu untuk menceburi bidang keusahawanan.

Jadual 1 menunjukkan hasil dapatan kajian berkenaan dengan minat pelajar-pelajar semester tiga(3) di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuching Sarawak terhadap keusahawanan. Dapatan kajian tersebut menunjukkan skor min yang tertinggi adalah sebanyak 3.9 di mana pelajar berminat untuk memulakan perniagaan sekiranya diberi peluang dan sumber yang diperlukan. Pelajar-pelajar juga akan berusaha bersungguh-sungguh untuk memulakan dan mengendalikan sesuatu perniagaan sekiranya diberi peluang. Hasil daripada skor min keseluruhan adalah sebanyak 3.9 menunjukkan bahawa pelajar-pelajar semester tiga(3) mempunyai minat yang tinggi terhadap keusahawanan. Namun item soal selidik yang ketujuh menunjukkan nilai skor min yang rendah di mana pelajar tidak begitu yakin untuk memulakan perniagaan sendiri iaitu sebanyak 2.3 sahaja sedangkan secara keseluruhannya pelajar mempunyai skor min minat yang tinggi terhadap keusahawanan.

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13th – 14th December 2020

Jadual 1: Skor Min Bagi Soal Selidik Minat Pelajar-Pelajar Terhadap Keusahawanan

BIL	ITEM SOALAN	SKOR MIN
1	Untuk memulakan satu perniagaan dan mengekalkannya adalah sangat mudah bagi saya	3.9
2	Kerjaya sebagai seorang usahawan sama sekali tidak menarik minat saya	2.9
3	Saya bersedia untuk melakukan apa saja untuk menjadi seorang usahawan	3.9
4	Saya ragu-ragu sama ada saya mampu untuk memulakan perniagaan baru	3.8
5	Saya berminat untuk memulakan perniagaan sekiranya diberi peluang dan sumber yang diperlukan	4.2
6	Saya akan berusaha bersungguh-sungguh untuk memulakan dan mengendali perniagaan saya	4.2
7	Saya yakin saya tidak mampu untuk memulakan sesuatu perniagaan	2.3
8	Saya mampu mengawal proses pembentukan suatu perniagaan yang baru	3.8
9	Ahli keluarga dan rakan saya akan bersetuju dengan keputusan saya untuk memulakan perniagaan	4.2
10	Di antara pilihan kerjaya yang ada, saya sanggup menceburi apa jua bidang daripada menjadi seorang usahawan	3.8
11	Saya berazam untuk menjalankan suatu perniagaan pada masa hadapan	3.8
12	Saya berminat untuk memulakan perniagaan baru	3.9
13	Adalah amat sukar bagi saya untuk membangunkan sesuatu idea perniagaan	3.8
14	Saya mempunyai peluang yang tinggi untuk berjaya sekiranya saya menjalankan sesuatu perniagaan	4.1
15	Menjadi seorang usahawan akan memberikan saya suatu kepuasan yang tinggi	4.2
16	Matlamat utama saya adalah untuk menjadi usahawan	3.9
17	Menjadi usahawan memberikan saya lebih banyak kebaikan daripada keburukan	4.2
18	Saya tahu selok belok yang diperlukan untuk memulakan perniagaan baru	3.2
	SKOR MIN KESELURUHAN	**3.8**

Sumber Dorongan

Pelajar merupakan golongan belia yang perlukan dorongan dan suntikan daripada golongan yang lebih dewasa. Mohd Nawi(2011), dalam kajiannya yang bertajuk "*Budaya Keusahawanan Di Kalangan Pelajar Politeknik Port Dickson Merentas Aliran Pengajian*" menyatakan bahawa antara sumber dorongan yang paling tinggi bagi pelajar menceburi bidang keusahawanan sebagai kerjaya ialah faktor keluarga dan juga motivasi. Dorongan dalam kajian ini merujuk sebagai sesuatu yang menjadi pemangkin yang diperolehi oleh setiap pelajar bagi menceburi bidang keusahawanan.

Jadual 2 menunjukkan hasil dapatan kajian berkenaan dengan sumber dorongan pelajar pelajar semester tiga(3) di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuching Sarawak terhadap keusahawanan. Sumber dorongan yang menarik bagi pelajar untuk menceburi bidang keusahawanan adalah untuk menyara keluarga selain dari membuat kebajikan dan menawarkan khidmat kepada masyarakat yang menunjukkan skor min sebanyak 4.2 iaitu yang tertinggi di antara kesemua item yang diuji. Secara keseluruhannya skor min bagi sumber dorongan pelajar terhadap keusahawanan adalah tinggi kecuali pada item kesepuluh yang menunjukkan skor min yang terendah iaitu responden menceburi bidang keusahawanan akibat kehilangan pekerjaan.

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13th – 14th December 2020

Jadual 2 : Skor Min Bagi Soal Selidik Sumber Dorongan Ke Atas Pelajar-Pelajar Terhadap Keusahawanan

BIL	PERKARA	SKOR MIN
1	Ingin mencapai cita-cita menjadi seorang usahawan	3.8
2	Ingin cepat kaya/ menikmati cara hidup mewah	4.0
3	Ingin menawarkan khidmat kepada masyarakat	4.1
4	Ingin melakukan kerja kebajikan yang diredhai Tuhan dengan menggunakan keuntungan yang diperoleh daripada aktiviti keusahawanan	3.8
5	Kepuasan bekerja sendiri	3.9
6	Saya ingin berdikari dan tidak suka bekerja makan gaji	3.9
7	Ingin mendapatkan kepuasan kerja daripada aktiviti keusahawanan	3.9
8	Ahli keluarga dan rakan mendorong saya untuk menceburi bidang perniagaan	3.9
9	Membantu menyara keluarga	4.2
10	Mengambil alih perniagaan keluarga	3.6
11	Memperolehi peluang untuk berniaga	3.7
12	Ransangan daripada kejayaan orang lain	3.9
	SKOR MIN KESELURUHAN	3.9

Pemantapan Budaya Keusahawanan

Pengetahuan keusahawanan bukan hanya berasaskan teori tetapi juga pengalaman usahawan menguruskan perniagaan mereka dan soal bimbingan selepas keluar universiti(Abdullah, 2010). Mohamed Idris(2009) yang menyatakan bahawa pengalaman masa lalu sama ada pengalaman baik atau buruk akan mempengaruhi seseorang itu sebelum mereka membuat keputusan mengenai kerjaya masa depan dengan kenyataan. Dalam kajian ini, pemantapan budaya didefinisikan sebagai menerapkan dan mengukuhkan penglibatan dan penerimaan pelajar terhadap keusahawanan.

Jadual 3 menunjukkan hasil dapatan kajian berkenaan dengan pemantapan budaya keusahawan yang telah diterapkan kepada pelajar-pelajar semester tiga(3) di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuching Sarawak. Hasil daripada soalselidik yang telah dijalankan, skor min keseluruhan menunjukkan bahawa kebanyakkan program-program yang dilaksanakan dapat membudayakan keusahawanan di kalangan responden yang telah dipilih di mana kesemua item soal selidik yang diuji menunjukkan nilai skor min yang melebihi daripada 3.8.

Jadual 3: Skor min bagi soal selidik pemantapan budaya keusahawanan di kalangan pelajar-pelajar semester akhir Kolej Komuniti Jasin

BIL	PERKARA	SKOR MIN
1	Memberi pendedahan awal ilmu keusahawanan dan perniagaan kepada pelajar	4.3
2	Menganjurkan program-program keusahawanan pelajar untuk dimanfaat oleh pelajar	4.2
3	Menyediakan bantuan kewangan dan kemudahan asas kepada usahawan terutamanya usahawan pelajar	4.0
4	Menyediakan kemudahan pinjaman jangka panjang dan jangka pendek kepada usahawan pelajar yang berkelayakan	3.9
5	Menggalakkan pelajar menghadiri kursus pengurusan kewangan dan perniagaan	4.0
6	Menggalakkan interaksi antara kaum terutamanya usahawan belia tentang kemahiran menguruskan perniagaan	4.0

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13th – 14th December 2020

7	Menggiatkan kempen kesedaran tentang isu-isu keusahawanan dan pembangunan keusahawanan	4.1
8	Memperbanyakkan program pembangunan keusahawanan	4.3
9	Meningkatkan penawaran kursus-kursus keusahawanan	4.2
10	Meningkatkan jaringan dan kerjasama dengan badan yang berkepentingan yang boleh menyokong minat pelajar menjadikan keusahawanan sebagai kerjaya pilihan	4.1
	SKOR MIN KESELURUHAN	4.1

Kesimpulan

Berdasarkan kajian yang telah dijalankan ke atas 93 orang pelajar semester tiga(3) di Jabatan Teknologi Maklumat dan Komunikasi, Politeknik Kuching Sarawak didapati ke semua pelajar menunjukkan kecenderungan yang tinggi terhadap keusahawanan berdasarkan kajian terhadap minat yang ditunjukkan oleh para pelajar terhadap item-item soal selidik yang diedarkan.

Faktor dorongan juga memainkan peranan meningkatkan tahap kecenderungan pelajar terhadap keusahawanan dibantu dengan program-program pembudayaan keusahawanan yang dilihat dapat membantu menimbulkan minat para pelajar terhadap keusahawanan secara keseluruhannya.

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MENGKAJI PENERIMAAN TEMPE BERPERISA JAGUNG DAN BERPERISA REMPAH DI KALANGAN WARGA JABATAN PELANCONGAN & HOSPITALITI, POLITEKNIK MERLIMAU MELAKA MELALUI UJIAN RASA.

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Abstract: *Kajian ini adalah bertujuan untuk mengkaji penerimaan tempe berperisa jagung dan berperisa rempah di kalangan warga Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka melalui ujian rasa. Seramai 1124 warga Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau telah menjadi responden. Instrumen kajian ini adalah berbentuk soal selidik yang terdiri dari dua bahagian iaitu Bahagian A tentang ciri demografi, dan Bahagian B tentang tahap penerimaan tempe berperisa jagung dan berperisa rempah dikalangan warga Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka. Keseluruhan kajian telah dianalisis menggunakan perisian Stastical Package for Social Sciences (SPSS) versi 17.5 dengan membuat pengiraan peratusan dan skor min. Instrumen soal selidik telah digunakan bagi mendapatkan data dan ia melibatkan penggunaan skala hedonic. Dapatan kajian menunjukkan penerimaan warga Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka terhadap tempe berperisa jagung dan rempah adalah pada tahap yang tinggi.*

Pengenalan

Tempe merupakan makanan tradisional yang berasal dari Indonesia. Ia dibuat melalui proses penapaian semulajadi dan terkawal di mana ia dibentuk mengikut acuan yang dikehendaki dan biasanya dalam bentuk empat segi. Seperti tauhu, tempe diperbuat daripada kacang soya. Proses penapaian tempe memberikan kandungan protein, serat pemakanan dan vitamin yang lebih tinggi. Kerana nilai kandungan nutrisi di dalamnya yang tinggi, tempe digunakan di seluruh dunia dalam masakan vegetarian di mana ia digunakan sebagai pengganti daging. Tempe bewarna putih disebabkan oleh tindakbalas proses penapaian. Teksturnye yang lembut mempunyai rasa dan aroma yang tersendiri dan rasanya sedikit masam. Yis digunakan dalam proses penapaian tempe yang mana ia akan menjadikan tempe bewarna putih gebu.

Tempe berperisa jagung dan tempe berperisa rempah merupakan tempe yang telah dibaiki dan diinovasi hasil daripada campuran dua bahan utama iaitu biji ketumbar dan jintan manis untuk tempe perperisa rempah dan campuran kacang soya dan biji jagung untuk tempe berperisa jagung. Kemudian tempe tersebut dibalut dan berbentuk empat segi serta dibalut dengan balutan kertas yang menarik perhatian pembeli. Hasil daripada campuran bahan yang lain juga turut membantu menghasilkan produk yang berkualiti dan sukar untuk dilupakan**.**

Latar Belakang Masalah

Tempe mudah didapati di Indonesia dan kini ia mudah didapati di seluruh dunia. Pengamal diet vegetarian di seluruh dunia menggunakan tempe sebagai pengganti daging dan ayam.

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13th – 14th December 2020

Hasilnya, tempe kini mudah didapati dan diproses di seluruh dunia bukan hanya di Indonesia. Terdapat pelbagai kajian mengenai tempe telah dilakukan di negara seperti Jerman, Jepun dan Amerika Syarikat. Di negara Indonesia, pengusaha tempe sedang mencuba untuk membangunkan kacang soya dengan memproses tempe dengan kadar yang cepat, berkualiti dan menghasilkan kandungan nutrisi yang tinggi di dalam tempe. Namun, terdapat isu berkaitan dengan hakcipta kerana umum mengetahui proses untuk menghasilkan tempe agak rumit dan faktor cuaca juga mempengaruhi dalam menghasilkan tempe.

Di Malaysia, perusahaan tempe dilakukan oleh pengusaha tempatan dan ia sinonim dengan masyarakat berbangsa jawa terutamanya di negeri Johor, Selangor dan Perak. Tempe yang ada di pasaran Malaysia juga hanyalah tempe biasa yang masih belum berperisa. Melihat kepada permintaan yang banyak dan berterusan serta tempe mempunyai penggemarnya yang tersendiri, pengkaji menginovasikan tempe dengan memperisakan tempe iaitu tempe berperisa jagung dan tempe berperisa rempah. Pengkaji juga mengkaji penerimaan tempe berperisa jagung dan berperisa rempah dikalangan warga Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka melalui ujian rasa.

Pernyataan Masalah

Sesetengah orang tidak menyukai tempe

Terdapat segelintir orang di Malaysia yang tidak menyukai tempe disebabkan oleh rasanya yang sedikit masam dan unik.

(Zalina, 2016)

Pasaran tempe yang terhad di luar

Tidak semua produk tempatan mempunyai peluang untuk dipromosikan di luar. Ini berikutan mereka tidak tahu kaedah untuk melakukan promosi untuk produk mereka. Faktor seterusnya ialah kerana produk ini tidak mempunyai sokongan daripada masyarakat tempatan. Kualiti produk ini tidak sehebat produk daripada luar negara.

(Ariyata Iskandar, 2014)

Tidak terdapat tempe berperisa di pasaran

Seumur hidup saya, tdak pernah saya dapat merasai tempe yang mempunyai pelbagai perisa. Ini adalah masanya untuk melakukan perubahan inovasi produk tempe berperisa.

(Ahmad Taslim, 2016)

Objektif Kajian

Objektif kajian ini dijalankan adalah untuk:

Untuk mengetahui penerimaan tempe berperisa jagung di kalangan warga Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka.

Untuk memperkenalkan dan mengetahui penerimaan produk terbaharu daripada tempe yang mempunyai perisa yang telah diinovasikan dan dibaiki kualitinya.

Untuk mengetahui tahap penerimaan tempe berempah di kalangan warga Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka.

Untuk memperkenalkan dan mengetahui penerimaan produk terbaharu daripada tempe yang mempunyai rasa berempah yang telah diinovasikan dan dibaiki kualitinya.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Sorotan Kajian

Pengenalan

Tempe, siapa yang tidak mengetahuinya? Makanan asli Indonesia secara beransur-ansur mulai mendapat populariti di seluruh dunia. Di negara-negara Eropah dan Amerika, tempe adalah sangat disukai terutamanya oleh mereka yang vegetarian. Makanan soya sangat berkhasiat dan kaya dengan protein. Sama seperti tauhu, tempe juga mengandungi pelbagai nutrien yang bermanfaat untuk tubuh. Kedua-duanya adalah makanan yang sihat, yang membezakannya adalah pembuatan tempe melalui proses penapaian. Proses penapaian ini menjadikan tempe menjadi makanan dengan sumber probiotik iaitu bakteria baik yang membantu menjaga kesihatan usus dan sistem imun. Tempe bermanfaat untuk kesihatan tubuh di mana banyak kebaikan apabila kita mengambil tempe dalam diet harian kita.

Kebaikan Tempe

Membantu Mengurangkan Tahap Kolestrol Buruk

Tempe mengandungi sumber protein yang tinggi. Tidak seperti protein dari sumber haiwan, protein dalam tempe mempunyai manfaat tambahan dalam menurunkan kolestrol jahat (LDL) dan meningkatkan kolesterol baik (HDL). Dengan kata lain, tempe berpotensi membantu mengurangkan risiko serangan jantung, penyakit jantung dan strok. Selain menurunkan kolesterol, tempe juga dapat membantu menurunkan kadar gula dalam darah dan *trigliserida* pada penderita diabetes.

Membantu Menurunkan Tekanan Darah

Tempe mengandungi magnesium, yang mana zat ini memainkan peranan penting pada sistem kardiovaskular dan bertanggungjawab untuk lebih dari 300 proses metabolik dalam tubuh. Magnesium bermanfaat untuk mencegah pembekuan darah, menurunkan tekanan darah, mengekalkan kekuatan tulang dan membantu mencegah komplikasi yang berkaitan dengan diabetes.

Membantu Mengekalkan Sistem Pencernaan yang Sihat

Tempe juga mengandungi serat makanan yang baik untuk tubuh. Serat berperanan dalam pengikatan lemak dan kolesterol, jadi tempe berpotensi membantu mengurangkan dan mengawal berat badan. Selain itu, serat yang terkandung dalam tempe sangat berguna dalam menjaga kesihatan sistem pencernaan dan usus besar.

Membantu Mencegah Kanser

Tempe diperkaya oleh isoflavon, sebatian antioksidan yang berperanan dalam memperbaiki sel dan mencegah kerosakan sel yang disebabkan oleh pencemaran dan cahaya matahari. Isoflavon juga bertindak sebagai agen anti barah untuk melawan sel barah yang boleh menyebabkan barah prostat, payudara dan barah serviks. Penyelidikan yang dilakukan oleh University of North Carolina di Amerika Syarikat menunjukkan bahawa phytoestrogen dan genestein (jenis isoflaven) dapat mencegah barah payudara dan prostat .

Membantu Mencegah Kanser

Masih dalam isoflavon, tempe dan produk soya lain dapat membantu mengawal estrogen. Terdapat kajian yang menunjukkan bahawa isoflavia dalam soya dapat mengurangkan kilat panas (*hot flushes*) di dalam badan dan ketidakselesaan pada wanita pascamenopause.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Sumber Tenaga

Tempe juga mengandung riboflavin, yang dikenal sebagai vitamin B2. Mikronutrien ini mudah dicerna dan larut dalam air. Riboflavin mempunyai peranan penting dalam metabolisme tenaga dan juga diperlukan dalam metabolisme zat karbohidrat, protein dan lemak. Selain itu, vitamin ini berperanan dalam pembentukan sel darah merah. Kekurangan riboflavin mempengaruhi pengeluaran tenaga badan. Gejala awal kekurangan ribloflavin biasanya bibir pecah-pecah dan sakit tekak.

Meningkatkan nilai pemakanan makanan lain

Tempe mempunyai kualiti nutrien yang tinggi dan memungkinkan penambahan tempe untuk meningkatkan kualiti makanan bijirin dan ubi.

Sumber Vitamin B: Terutama B12

Tempe adalah sumber vitamin B yang sangat baik. Bahkan tempe adalah satu-satunya sumber vitamin B12 dari sayur (biasanya vitamin B12 hanya terdapat dalam makanan haiwan) Oleh kerana itu, vegetarian lebih suka mengambil tempe dan bukannya daging . Vitamin lain yang terdapat dalam Tempe adalah vitamin B2 (riboflavin) B6 (pyridoxine), B1 (thiamin), niasin, asid folik dan asid panthotenic.

Mineral kaya

Kandungan mineral makro dan mikro di dalam tempe adalah mangan, tembaga, fosfor, magnesium, besi, pottasium, kalsium dan zink. Enzim dalam tempe pula adalah asid fitik, fosforus dan zink yang mana ia lebih banyak untuk penyerapan darah di dalam badan.

Baik untuk semua peringkat umur

Tempe dihasilkan melalui proses fermentasi kacang soya. Semasa proses penapaian berlaku, kacang soya akan mengubah nilai dan tekstur pemakanan. Enzim pencernaan akan dihasilkan oleh Rhizopus olisgosporus (cetakan tempe) semasa proses penapaian . Itulah yang menjadikan tempe lebih selesa di perut.

Memproses kacang soya menjadi tempe juga menurunkan kadar stakiosa dan raffinosa, dua bahan yang menyebabkan perut kembung. Bukan hanya itu, tempe juga mempunyai kandungan protein yang cukup tinggi. Dalam 100 gram tempe mengandungi kira-kira 20.8 gram protein, menjadikannya sesuai untuk digunakan sebagai menu harian untuk mereka yang memohon diet protein tinggi.

Nutrien lain dalam tempe ialah karbohidrat, protein dan lemak sihat yang terkandung di dalamnya lebih senang dicerna dan diserap oleh badan . Kedua-duanya digunakan oleh kanak-kanak untuk mengoptimumkan pertumbuhannya atau mengekalkan fungsi organ untuk orang dewasa.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Fakta Pemakanan

Berikut adalah fakta pemakanan per 100 g tempe :

Jadual 1: Kandungan nutrisi dalam tempe

Air	54.9 g
Tenaga	199 kcal
Tenaga	833 kJ
Protein	19.0 g
Lemak	7.7 g
Sabtu asid lemak	1.11 g
Mono-unsat. asid lemak	1.7 g
Poli-unsat. asid lemak	4.3 g
Karbohidrat	17.0 g
Serat	4.8 g
Abu	1.4 g
Isoflavon	53 mg
Kalsium, Ca	93.0 mg
Besi, Fe	2.3 mg
Magnesium, Mg	70.0 mg
Fosforus, P	206 mg
Kalium, K	367 mg
Natrium, Na	6.0 mg
Zink, Zn	1.81 mg
Tembaga, Cu	0.67 mg
Mangan, Mn	1.43 mg
Selenium, Se	8.8 µg
Tiamin (B1)	0.131 mg
Riboflavin (B2)	0.111 mg
Niacin (B3)	4.63 mg
Asid Panthotenic (B5)	0.355 mg
Vitamin B6	0.299 mg
Asid folik	52.0 µg
Vitamin A	69 µg

Metodologi Kajian

Rekabentuk kajian dan instrumen kajian

Kajian ini merupakan kajian yang bersifat diskriptif dan menggunakan kaedah ujian rasa dan ia melibatkan tempoh suatu masa tertentu sahaja. Instrumen soal selidik dipilih bagi mendapatkan data. Lokasi kajian hanya melibatkan Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka. Instrumen soal selidik yang digunakan pengkaji melibatkan penggunaan skala hedonic. Ujian Hedonic merupakan suatu komponen ujian efektif yang dijalankan bagi menentukan tahap kesukaan dan penerimaan pengguna terhadap sesuatu makanan (Aminah 2004). Skala hedonic adalah seperti berikut:

eISBN 978-967-2426-22-6
13th – 14th December 2020

Skala	1. Sangat tidak suka	2. Tidak suka	3. Tidak pasti	4. Suka	5. Sangat suka

(Chin drug Invest, 2005)

Jadual 2: Skala Hedonic

Secara amnya, borang soal selidik yang akan diedarkan kepada responden terdiri daripada dua bahagian iaitu Bahagian A dan Bahagian B. Bahagian A adalah maklumat demografi iaitu jantina dan bahagian B seperti jadual 3 berikut:

Jadual 3: Pembahagian borang soal selidik bahagian B

Skala	1.Sangat tidak suka	2. Tidak suka	3. Tidak pasti	4. Suka	5. Sangat suka
Item	**Kod A**				
Rasa					
Tekstur					
Bau					
Pembungkusan					
Warna					
Item	**Kod B**				
Rasa					
Tekstur					
Bau					
Pembungkusan					
Warna					

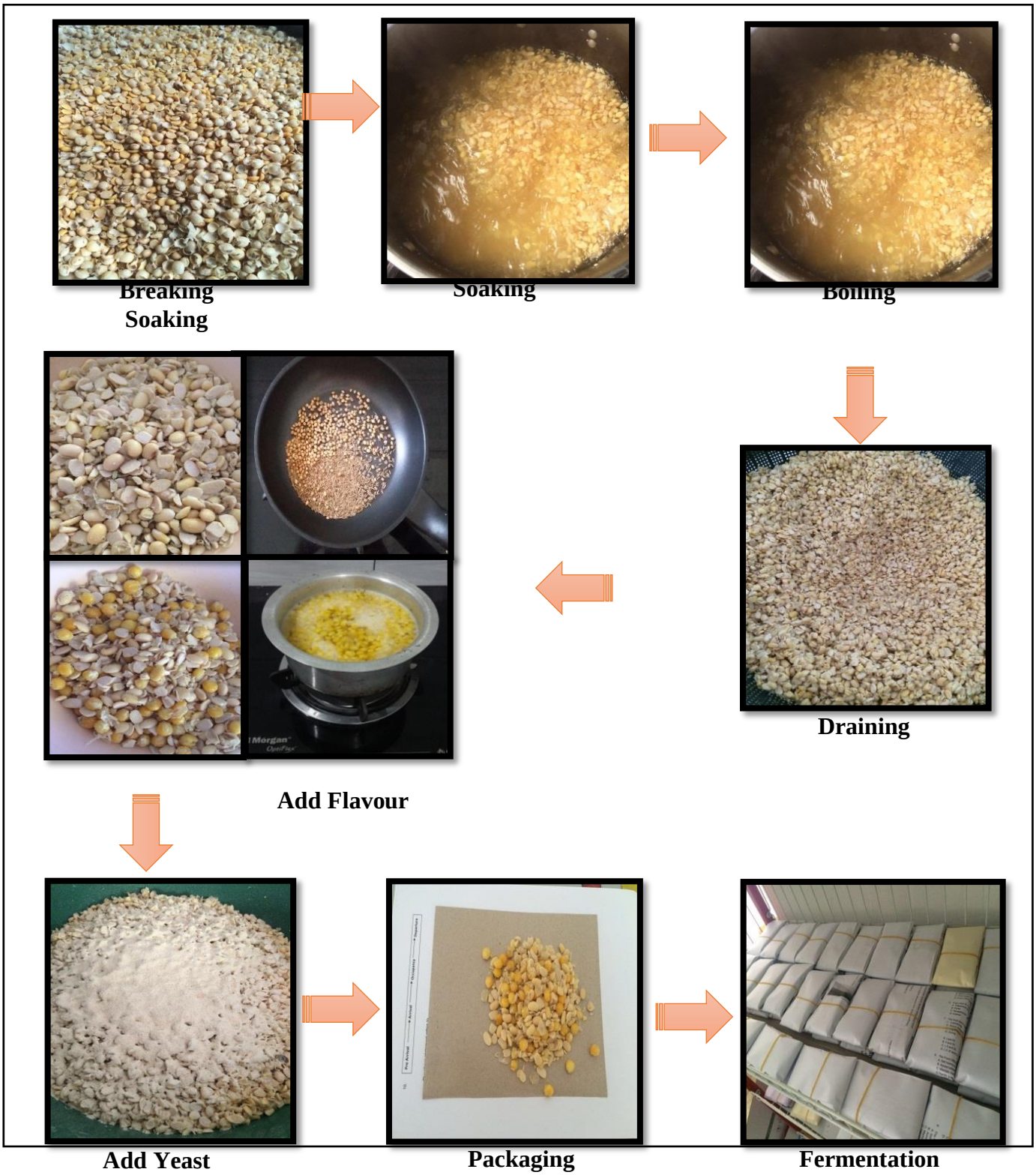
Kedua-dua bahagian soalselidik dianalisis dengan kaedah analisis statistik secara deskriktif yang mana data dianalisis dalam bentuk frekuansi dan peratusan. Data juga dipersembahkan dalam bentuk sebutan skor min.

Populasi dan Sampel kajian

Dalam kajian ini, populasi kajian pengkaji adalah pelajar-pelajar Politeknik Merlimau Melaka dan sampel kajian pengkaji adalah warga Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Prosedur kajian



Analisis data

Kedua-dua data bahagian A dan bahagian B dianalisis dengan kaedah analisis statistik secara deskriptif (*descriptive statistical analysis*) yang mana data analisis dalam bentuk frekuensi dan

eISBN 978-967-2426-22-6
13th – 14th December 2020

peratusan. Data juga dipersembahkan dalam bentuk sebutan skor min. Untuk memudahkan proses penganalisaan data, penyelidik telah menggunakan interpretasi skor min yang dikemukakan oleh Wiersma (1995) sebagai rujukan interpretasi skor min dalam jadual 4 di bawah:

Skor min	Tahap penguasaan/penerimaan
1.00 – 2.33	Rendah
2.34 – 3.67	Sederhana
3.68 – 5.00	Tinggi

(diadaptasi daripada Wiersma, 1995)

Jadual 4: Pembahagian tafsiran min

Analisis Dan Keputusan

Analisis yang dibuat adalah berdasarkan persoalan kajian bagi mencapai objektif kajian yang telah ditetapkan. Bagi maklumat demografi responden, analisis berbentuk penerangan secara terperinci iaitu dalam bentuk peratusan. Jadual 5 di bawah adalah berkaitan dengan maklumat demografi responden:

Jadual 5: Maklumat demografi responden

		Frequency	Percent
Valid	Male	360	32.0
	Female	764	68.0
	Total	1124	100.0

Jadual 6 di bawah menunjukkan dapatan kajian untuk bahagian B iaitu skor min tempe berperisa jagung. Kesemua perkara yang diuji menunjukkan tahap penerimaan tempe berperisa jagung dikalangan warga Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka berada pada tahap tinggi iaitu mencatatkan min keseluruhan 4.47. Ini bermakna responden menerima tempe berperisa jagung. Skor min untuk rasa adalah 4.37, tekstur 4.40, bau 4.33, pembungkusan, 4.63 dan warna 4.53.

Jadual 6: Skor min tempe berperisa jagung

	N	Min	Tahap Penerimaan
Rasa	1124	4.37	Tinggi
Tekstur	1124	4.40	Tinggi
Bau	1124	4.33	Tinggi
Pembungkusan	1124	4.63	Tinggi
Warna	1124	4.53	Tinggi
Min Keseluruhan		4.47	Tinggi

Jadual 7 di bawah pula, menunjukkan dapatan kajian untuk bahagian B iaitu skor min tempe berperisa rempah. Kesemua perkara yang diuji menunjukkan tahap penerimaan tempe berperisa rempah dikalangan warga Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka berada pada tahap tinggi iaitu mencatatkan min keseluruhan 4.46. Ini bermakna

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13th – 14th December 2020

responden menerima tempe berperisa rempah. Skor min untuk rasa adalah 4.33, tekstur 4.27, bau 4.43, pembungkusan, 4.57 dan warna 4.60.

Jadual 7: Skor min tempe berperisa rempah

	N	Min	Tahap Penerimaan
Rasa	1124	4.33	Tinggi
Tekstur	1124	4.27	Tinggi
Bau	1124	4.43	Tinggi
Pembungkusan	1124	4.57	Tinggi
Warna	1124	4.60	Tinggi
Min Keseluruhan		4.46	Tinggi

Kesimpulan

Merujuk tujuan kajian pengkaji iaitu melihat penerimaan tempe berperisa jagung dan berperisa rempah dikalangan warga Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka melalui ujian rasa didapati bahawa tahap penerimaannya adalah berada pada tahap tinggi iaitu mencatatkan min keseluruhan 4.47 untuk tempe berperisa jagung dan 4.46 untuk tempe berperisa rempah.

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PENGGUNAAN TEPUNG HAMPAS SOYA DALAM MENINGKATKAN KANDUNGAN NUTRISI OKARA TORTILLA WRAP

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Abstrak: *Di Malaysia, pelbagai produk berasaskan soya menjadi pilihan terutamanya kaum Melayu dan Cina seperti susu soya, tau-fu-fah, tauhu, tauhu telur, kicap, dan tempe.Penggunaan produk soya meningkat kerana kesannya yang baik terhadap manusia. Disebabkan itu, pengeluaran produk soya meningkat dari masa ke semasa dan ini memberi impak kepada penghasilan hampas soya yang tinggi.Hampas soya adalah salah satu sisa agro terkemuka yang kebanyakannya dihasilkan di Asia Timur dan Tenggara. Kebanyakan hampas soya ini digunakan sebagai makanan kepada haiwan ternakan disebabkan ia bersifat mudah rosak. Melihat kepada kandungan nutrisi hampas soya, ia mempunyai kandungan protein sayuran yang tinggi iaitu 35% dan keboleh ekstrakan protein yang sangat tinggi iaitu 85%, di mana ia mempunyai potensi sebagai bahan utama dalam penggunaan penyediaan makanan.Melihat kepada potensi dan faedahnya, penyelidikan telah dilaksanakan bagi menghasilkan Okara Tortilla Wrap dengan menggunakan tepung hampas soya, mengenalpasti kandungan nutrisi dan membuat perbandingan kandungan nutrisi di antara Okara Tortilla Wrap dan komersial wrap. Hasil daripada analisis kandungan nutrisi, ia menunjukkan bahawa Okara Tortilla Wrap mengandungi kandungan protein pada kadar 9.45g/100g, kandungan karbohidrat pada kadar 57.9g/100g, kandungan lemak pada kadar 3.2g/100g dan kandungan tenaga pada kadar 298 kcal/100g. Berdasarkan perbandingan nutrisi di antara Okara Tortilla Wrap dan komersial wrap, ia dapat disimpulkan bahawa Okara Tortilla Wrap mengandungi kandungan lemak yang rendah, tinggi kandungan karbohidrat dan protein. Kesimpulannya, Okara Tortilla Wrap yang dihasilkan daripada tepung hampas soya mengandungi nutrien yang baik dan sesuai kepada pengguna yang mempunyai alahan kepada kandungan gluten kerana produk ini tiada mengandungi gluten dan ia juga sesuai dimakan oleh pengguna yang mengamalkan diet rendah karbo.*

Kata Kunci: *Okara Tortilla Wrap, Hampas Soya, Nutrisi*

Pengenalan

Di Malaysia, pelbagai produk berasaskan soya menjadi pilihan terutamanya kaum Melayu dan Cina seperti susu soya, tau-fu-fah, tauhu, tauhu telur, kicap, dan tempe. Penggunaan produk soya meningkat, kerana kesannya yang baik terhadap manusia. Kacang soya tidak boleh dimakan mentah dan disebabkan itu, ia diproses dan dijadikan pelbagai produk makanan berasaskan soya. Proses yang biasa digunakan adalah proses penapaian bagi menghasilkan tempe dan kicap. Pelbagai negara di Asia memiliki nama yang berbeza untuk produk makanan yang ditapai, berdasarkan penyediaan dan bentuk "starin mikroba" yang digunakan, yang menyebabkan perbezaan konsistensi dan bentuk produk fermentasi. Pengeluaran produk soya

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13th – 14th December 2020

meningkat dari masa ke semasa dan ini memberi impak kepada penghasilan hampas soya yang tinggi.

Menurut Park *et al.,* (2015), bersetuju bahawa kacang soya adalah sejenis sayur yang mempunyai pelbagai kegunaan dalam pengeluaran makanan seperti susu soya, tauhu, miso dan shoyu. Kini, populariti susu soya dan minuman berasaskan kacang soya menjadikannya bidang penting dalam industri makanan dan minuman, dengan pertumbuhan industri yang pesat di seluruh dunia (Hoogenkamp and Evers, 2011). Menurut Naresh *et al.,* (2019), menyatakan bahawa kacang soya mempunyai kandungan protein yang tinggi, oleh itu produk berasaskan soya ini banyak diambil di seluruh dunia. Ia juga digunakan sebagai masakan utama di beberapa buah negara seperti di Jepun (sup miso), Korea (Doenjang), Cina (Tauhu), Indonesia (tempe) dan banyak lagi. Selain digunakan sebagai bahan utama, kacang soya juga digunakan dalam pembuatan sos yang berfungsi sebagai penambah rasa dalam masakan. Kacang soya juga digunakan dalam penghasilan minyak masak. Menurut Bo Li *et al.,* (2012), okara adalah produk yang diperolehi daripada kacang soya yang telah diekstrak airnya untuk menghasilkan susu soya. Okara juga dipanggil douzha atau tofuzha (Cina), tofukasu (Jepun), atau bejee (Korea).

Gupta *et al.,* (2018) menyatakan bahawa okara dikenali sebagai hampas kacang soya yang tidak larut dan ia terhasil dari pembuatan susu soya dan tauhu. Okara segar ini mempunyai tahap kelembapan yang tinggi dan ia cepat menjadi rosak dan busuk. Disokong oleh Kuen *et al.,* (2017), terdapat 1.2 kg okara segar yang dihasilkan dari 1 kg kacang soya melalui pembuatan tauhu dan okara juga mengandungi kandungat serat makanan yang tidak larut, kandungan protein yang tinggi, mengandungi lemak, abu, isoflavon, dan oligosakarida soya seperti “stachyose” dan “raffinose”. Okara sebagai salah satu produk sampingan yang kaya dengan serat dari pengekstrakan susu soya untuk menghasilkan terutamanya minuman soya dan pemprosesan tauhu yang terdiri daipada sifat penahan air dan pengemulsi yang baik. (Park et al., 2015). Menurut Bo Li *et al.,* (2012), okara mengandungi sekitar 25% kandungan protein dengan kualiti kandungan nutrien yang tinggi dan nisbah protein yang baik menunjukkan ia adalah sumber protein sayur yang baik dan mempunyai kos yang rendah bagi pengambilan pengguna.

Masalah pelupusan okara semakin meningkat berikutan peningkatan pengeluaran susu soya, tauhu dan produk yang berasaskan soya. Sisa pembuangan ini menjadi isu yang penting sama ada di negara maju mahupun di negara membangun. Sisa makanan ditakrifkan sebagai produk akhir pelbagai industri pemprosesan makanan yang belum dikitar semula atau digunakan untuk tujuan lain (Garcia-Gonzalez *et al.,* 2015). Hampas soya adalah sisa yang terhasil daripada pemprosesan untuk menghasilkan tauhu, susu soya, kicap, serbuk susu soya, tauhu kering dan minuman soya. Hampas soya adalah sisa utama yang terhasil daripada kacang soya dan sering dianggap sebagai bahan buangan yang kebanyakannya dibuang dan dibakar dan ia juga digunakan sebagai makanan untuk haiwan ternakan kerana nilai pemakanan yang tinggi dan sifat fungsinya yang baik (Harjanti *et al.,* 2012). Pernyataan ini dipersetujui oleh Rahman *et al.,* (2015), menyatakan bahawa makanan kacang soya adalah sumber protein yang digunakan secara meluas dalam pemakanan haiwan ternakan kerana kosnya yang murah berbanding sumber protein yang lain. Hampas soya yang segar dan basah boleh digunakan secara langsung sebagai sumber makanan haiwan ternakan kerana nilai kandungan protein yang tinggi. Menurut Aguado (2010), di Jepun, hampas kacang soya ini dikenali sebagai okara dan ia adalah produk yang berkahsiat dan tinggi kandungan protein, karbohidrat, vitamin, mineral dan lemak. Dipersetujui oleh Gupte *et al.,* (2018), okara adalah sisa yang ditinggalkan daripada kacang soya selepas diekstrak airnya yang digunakan untuk menghasilkan tauhu atau minuman soya. Hampas kacang soya adalah salah satu sisa agro yang tertinggi di Asia Timur

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13th – 14th December 2020

dan Asia Tenggara di mana ia mempunyai nilai pemakanan yang tinggi dan ia juga berpotensi untuk menghasilkan produk makanan yang baik dan berkualiti. Disokong oleh Guimarães *et al.*, (2018), dalam proses pengeluaran makanan berasaskan kacang soya sebagai susu soya, sejumlah besar okara telah dihasilkan dan ia menyumbang kepada masalah pengurusan sisa buangan.

Park et al., (2015) menyatakan bahawa walaupun sejumlah besar okara ini dihasilkan, namun ia kurang digunakan oleh industri disebabkan ia mempunyai kandungan air yang tinggi iaitu (80-85g/100g) yang menyebabkan ia cepat rosak. Disokong oleh Jankowiak et al., (2014), malangnya, penerimaan okara sebagai produk makanan adalah terhad kerana perasa kacang yang terhasil daripada tindakan enzim yang dipanggil lipoxygenase. Enzim ini terlibat dalam pengoksidaan lipid atau lemak yang mengakibatkan terhasilnya rasa kacang tersebut. Okara yang dikeringkan merupakan alternatif yang sangat baik untuk menghasilkan produk makanan yang baru, bukan sahaja untuk memperkayakan makanan tetapi juga untuk meningkatkan penggunaan dan nilainya (Porcel *et al.*, 2017).

Oleh yang demikian, pengkaji telah mengambil keputusan untuk menghasilkan *Okara Tortilla Wrap* yang dihasilkan dengan menggunakan tepung hampas soya. Perkara pertama yang hendak dilihat adalah mengenalpasti kandungan nutrisi *Okara Tortilla Wrap* dan membuat perbandingan kandungan nutrisi di antara *Okara Tortilla Wrap* dan komersial wrap.

Kajian Literatur

Kacang Soya

Kacang soya atau nama sientifiknya Glycine max (L.) Merr, adalah tumbuhan kekacang dalam keluarga Fabacea (leguminosae) yang berasal dari Cina lebih 300 tahun yang lalu. Kacang soya diperkenalkan kepada Amerika Utara semasa penjajahan, dan mereka menggunakan kacang soya sebagai sumber protein dan minyak yang berkualiti tinggi. Berikutan perang dunia ke dua, usaha pembiakan kacang soya dipergiatkan dan penyelidikan agronomi dipercepatkan untuk memajukan penanaman kacang soya bagi menghasilkan minyak yang berkualiti (Anderson *et al.*, 2019). Anwar et al., (2016) menyatakan bahawa pengeluaran kacang soya dimulakan dengan penanaman menggunakan kacang itu sendiri sebagai biji benih. Tanah yang dikeringkan dengan baik dan rata dengan keadaan sedikit berasid adalah sesuai untuk tanaman kacang soya. Kacang soya adalah tanaman subtropika, namun ia juga dapat ditanam di kawasan iklim tropika dengan suhu sehingga 50°C.

Menurut Naresh et al., (2019), terdapat banyak produk yang mana boleh dihasilkan daripada pelbagai jenis kacang soya seperti kacang soya yang mempunyai warna terang (kacang soya kuning), kacang soya berwarna gelap (kacang hitam), dan kacang soya yang belum matang (kacang yang berwarna hijau yang di dalam kulit keras). Sementara itu, Dixit et al., (2011) menyatakan bahawa, kebanyakan penanaman kacang soya adalah terdiri daripada lapisan biji berwarna kuning, namun, kacang soya berwarna gelap semakin popular di peringkat global kerana ciri-cirinya mempunyai potensi yang tinggi untuk digunakan. Kacang soya yang berwarna gelap umumnya dikaitkan dengan tahap antosianin tinggi dan sebatian fenolik lain yang menyebabkan toleransi tinggi terhadap tekanan.

Tu et al., (2012) menyatakan bahawa kacang soya banyak digunakan untuk pengeluaran makanan di negara Asia Timur dan Asia Tenggara di mana ianya terkenal dan dihargai kerana rasa dan khasiatnya. Menurut Fleddermann et al., (2013) penggantian protein haiwan (seperti daging, susu, telur) dengan pengambilan protein soya mempunyai manfaat kesihatan yang baik, seperti merendahkan risiko penyakit dan kadar kematian yang jauh lebih rendah. Walaupun terdapat banyak makanan berasaskan tenusu, pengganti susu yang berasal dari tumbuhan semakin mendapat perhatian. Oleh kerana banyak masalah kesihatan (intoleransi laktosa dan

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13th – 14th December 2020

alergi susu lembu), terdapat permintaan yang tinggi untuk makanan bukan tenusu (Sethi et al., 2016). Woodside et al., (2016) pula menyatakan bahawa ia juga bertindak sebagai pengganti bukan tenusu luar biasa yang boleh mambantu memenuhi keperluan khasiat individu yang mempunyai alahan terhadap laktosa. Diseluruh dunia kini, kacang soya dimakan dalam pelbagai jenis produk (minyak kacang soya, tauhu, tahu kering, pes soya, dan susu kacang soya).

Okara

Menurut Aguado (2010), pengeluaran okara berskala kecil pada masa kini dilihat banyak digunakan dalam masakan rumah di mana susu soya segar dihasilkan di dapur isi rumah. Peningkatan penggunaan okara dalam hidangan makanan semakin meningkat disebabkan oleh kepelbagaian resepi di dalam talian. Walau bagaimanapun, pada masa ini tidak ada produk perindustrian komersial yang diperbuat daripada okara. Nilai khasiat okara dapat ditingkatkan jika ianya dapat disatukan dengan produk bebas gluten kerana penghasilan tepung serbaguna bebas gluten masih kekurangan di pasaran. Tepung serba guna bebas gluten yang diformulasikan dengan okara sebagai bahan utama dapat memberikan nilai tambah dalam sesuatu produk makanan.

Bo Li et al., (2012) menyatakan bahawa okara adalah sisa serat pemakanan yang kekal dalam kacang soya selepas pengekstrakan air yang digunakan untuk menghasilkan susu soya dan tauhu. Oleh kerana kuantiti okara yang banyak dihasilkan di seluruh dunia dengan peningkatan penggunaan kacang soya, jumlah okara yang dihasilkan setiap tahun menimbulkan masalah pelupusan kerana kebanyakannya dibuang atau dibakar sebagai sisa. Walau bagaimanapun, telah dilaporkan bahawa okara mempunyai bioaktiviti dalam mencegah diabetes, hypocholesterolemia, hypolipidemia, dan obesiti (Hosokawa et al., 2016).

Menurut Stanojevic et al., (2012), kuantiti protein sayur-sayuran yang tinggi di dalam okara (sekitar 35%) dan ekstrak protein yang sangat tinggi (sekitar 85%) melayakkan produk sampingan ini berpotensi dalam penyediaan makanan sebagai bahan yang mempunyai fungsi yang baik. Okara merujuk kepada sisa kacang soya yang tertinggal selepas pembuatan susu soya dan tauhu. Produk pemprosesan makanan ini dihasilkan pada kira-kira 4 juta tan di seluruh dunia setiap tahun, tetapi kebanyakannya digunakan dalam makanan haiwan atau hanya dibuang (Vong dan Liu 2016). Penggunaan sedemikian adalah berpunca daripada pelbagai faktor, antaranya adalah kandungan kelembapan yang tinggi di dalam okara menjadikannya sangat mudah rosak.

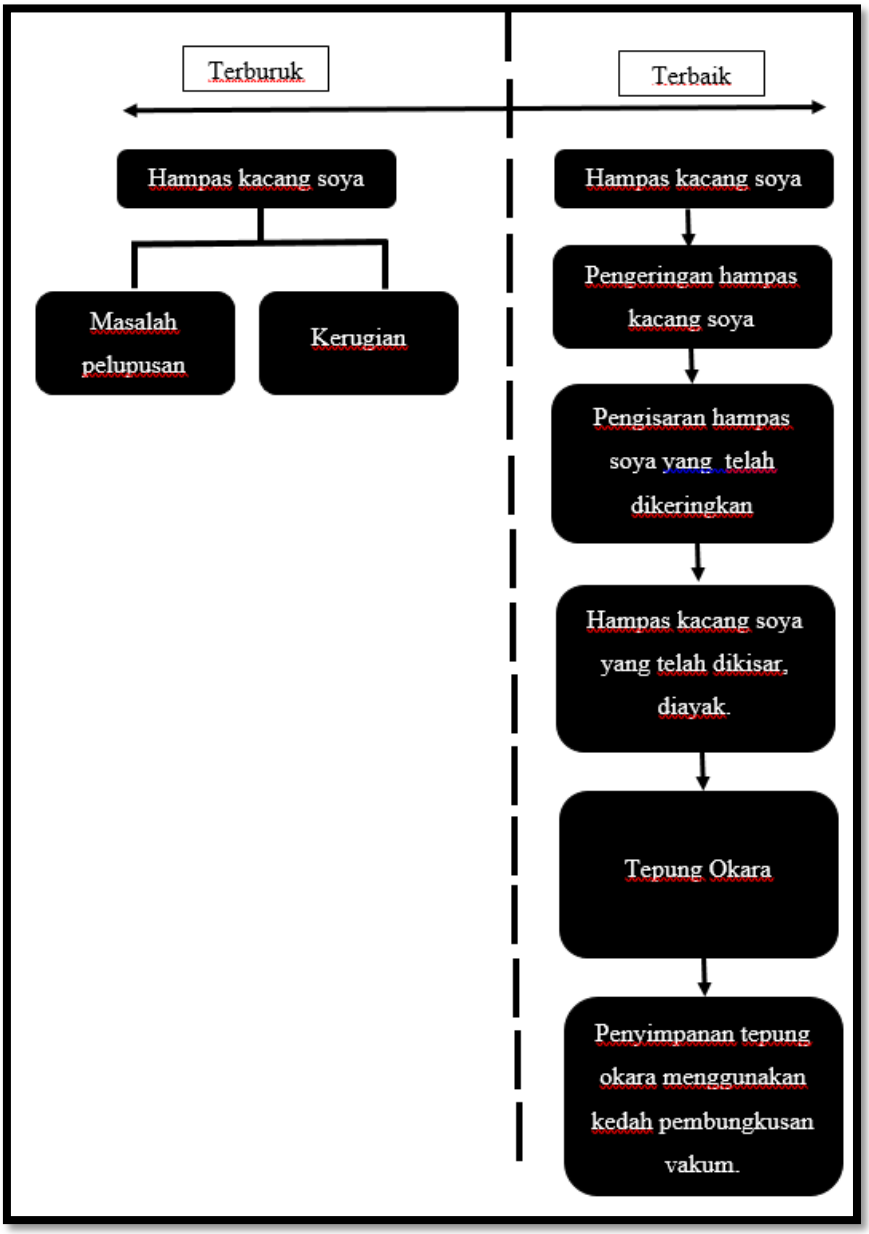
Proses pengeringan boleh mengurangkan kerosakkan mikrob tetapi proses tersebut hanya akan menambahkan kos. Okara juga mengandungi sejumlah besar serat pemakanan yang tidak larut, biasanya pada kira-kira 40-60% dalam bentuk selulosa, hemicellulosa dan pektin (Mateos et al., 2010). Tetapi Park et al., (2015) menyatakan bahawa ini hanya akan menghadkan jumlah okara yang boleh ditambah dalam produk makanan kerana terlalu banyak okara boleh membawa kepada kualiti tekstur yang lemah.

Metodologi Kajian

Terdapat dua metodologi kajian yang digunakan dalam melaksanakan kajian ini. Metodologi yang pertama adalah kaedah penghasilan tepung okara dan penghasilan *Okara Tortilla Wrap*. Metodologi kajian yang ke dua adalah dengan melaksanakan analisis nutrisi terhadap *Okara Tortilla Wrap* bagi mengenal pasti kandungan nutrisi yang terdapat di dalamnya.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Penghasilan Tepung Okara



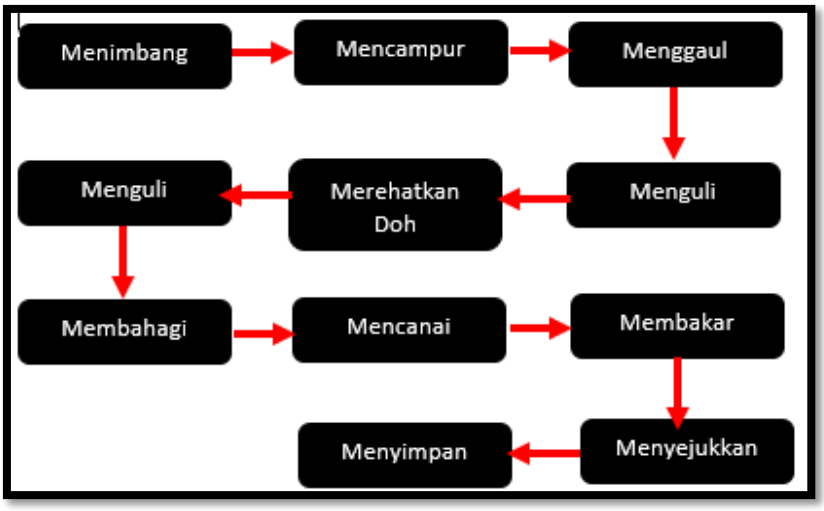
Gambarajah 1: Proses Penghasilan Tepung Okara

Hampas kacang soya diperolehi daripada peniaga air soya di sekitar Ipoh, Perak. Bagi kajian ini, para penyelidik menggunakan hampas soya yang baru sahaja diproses, ini kerana sifat hampas soya yang mudah rosak. Hampas soya ini dicuci dengan air yang ditapis dan kemudiannya ia diperah dengan menggunakan kain "cheesecloth" bagi mengeluarkan air yang terdapat di dalam hampas tersebut. Setelah air dan hampas telah diasingkan, hampas soya itu diratakan di atas dulang untuk dimasukkan di dalam oven. Hampas soya ini dikeringkan melalui proses pengeringan oven dengan suhu 40°C selama 2 jam. Suhu 40°c ini digunakan kerana tahap kepanasannya sesuai bagi tujuan proses pengeringan sesutau produk tanpa merosakkan tekstur dan rasa sesuatu produk. Hampas soya ini diterbalikkan setiap 10 minit bagi tujuan pengeringan hampas soya yang sekata. Setelah hampas soya telah kering sepenuhnya, biarkan dahulu sehingga sejuk sebelum digunakan untuk proses yang seterusnya.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Ini kerana, jika hampas soya yang panas, terus dikisar, ia akan mengeluarkan minyak, dan ini akan membuatkan tepung okara tidak tahan lama dan cepat berbau hapak. Setalah hampas soya tadi sejuk, ia dikisar dengan menggunakan pengisar kering, kemudian ia diayak dengan menggunakan pengayak yang halus. Proses ini diulangi sehingga 2 kali bagi menghasilkan kualiti tepung okara yang baik dan halus. Setelah tepung okara dihasilkan, ia disimpan di dalam pembungkusan vakum bersama gel silika bagi tujuan menyerap lebihan kelembapan di dalam tepung tersebut dan ini sekaligus akan membuatkan tepung okara ini boleh bertahan lebih lama.

Penghasilan Okara Tortilla Wrap



Gambarajah 2: Proses Penghasilan *Okara Tortilla Wrap*

Resepi adalah formula bertulis yang dibangunkan bagi menghasilkan sesuatu produk makanan mengikut kualiti dan kuantiti yang telah ditetapkan. Menurut Ayhan (2020), dengan menggunakan resepi yang telah dibangunkan, ia dapat membantu menghasilkan produk yang mempunyai kos, kualiti, konsistensi dan rasa yang sama. Ia juga boleh mengelakkan pembaziran kerana dapat mengawal jumlah hasil yang akan dikeluarkan jika merujuk sepenuhnya kepada resepi yang telah dibangunkan. Terdapat 7 bahan utama yang digunakan dalam pembuatan *Okara Tortilla Wrap*. Ia terdiri daripada tepung okara, tepung ubi, tepung kacang kuda, lemak sayuran, garam halus, air, dan minyak jagung. Kesemua bahan ini ditimbang, dan digaul rata. Setelah menjadi doh yang kasar, teruskan menguli sehingga mendapat doh yang licin. Setelah itu, doh direhatkan selama 10 minit supaya ia mempunyai regangan yang baik. Proses yang seterusnya ialah, doh tersebut diuli sekali lagi agar tiada gelembung udara yang terperangkap di dalam doh tersebut. Kemudian, doh dibahagikan kepada 60 gm setiap 1 porsi. Setelah itu, doh dicanai nipis, berbentuk bulat setebal 2mm. Kemudian, doh yang telah dicanai bulat tadi, dimasak di dalam oven yang bersuhu 140°C selama 5 minit. Setelah dibakar, *Okara Tortilla Wrap* disejukkan dan kemudian, ia dibungkus dengan menggunakan plastic “ziplock” dan disertakan dengan gel silika bagi menyerap kelembapan yang terdapat di dalam *Okara Tortilla Wrap*.

Analisa Nutrisi

Sampel *Okara Tortilla Wrap* telah dihantar ke Melaka Biotechnology Corporation, dan ia dianalisa oleh ahli kimia untuk menilai kandungan nutrisi yang terkandung di dalam *Okara Tortilla Wrap*. Analisis ini mengambil masa selama 2 minggu bagi mendapatkan keputusan.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Analisis ini menilai dari segi kandungan kelembapan, kandungan lemak, protein, karbohidrat dan kandungan tenaga.

Dapatan Kajian dan Perbincangan

Kandungan Nutrisi

Berdasarkan laporan analisis nutrisi, ia menyatakan bahawa *Okara Tortilla Wrap* mengandungi kandungan kandungan lemak pada kadar 3.2g/100g, kandungan protein pada kadar 9.45g/100g, kandungan karbohidrat pada kadar 57.9 g/100g dan kandungan tenaga pada kadar 298 kcal/100g.

Hasil kajian menunjukkan bahawa *Okara Tortilla Wrap* mengandungi kandungan lemak pada kadar 3.2 gm. Kacang soya diklasifikasikan sebagai bijirin yang mengandungi minyak dan ia digunakan untuk menghasilkan minyak kacang soya. Kandungan lemak yang terdapat di dalam biji soya berkadar 18% daripada berat kacang soya tersebut dan ia terbahagi kepada asid lemak tidak tepu dan lemak tidak tepu mono serta sedikit kandungan lemak tepu. Selain lemak yang terdapat di dalam kacang soya, lemak yang terdapat di dalam *Okara Tortilla Wrap* ini juga terhasil daripada penggunaan lemak sayuran. Lemak sayuran ini tidak mempunyai rasa dan ia berwarna putih. Lemak sayuran ini digunakan dalam pembuatan *Okara Tortilla Wrap* kerana ia membantu dalam membangunkan tekstur yang baik bagi produk. Ia juga memberikan kelembapan kepada produk serta bertindak sebagai ejen penggebuan kepada produk yang dihasilkan. Lemak sayuran ini digunakan kerana kandungan lemak yang rendah dan ia kurang berminyak.

Manakala, *Okara Tortilla Wrap* mengandungi protein pada kadar 9.45 gm. Kacang soya merupakan salah satu sumber protein berasaskan tumbuhan yang terbaik dan nilai nutrisi protein soya yang tinggi walaupun ianya tidak setinggi kandungan protein haiwan. Jenis protein utama di dalam kacang soya adalah *glycinin* dan *conglycinin.* Pengunaan protein soya juga telah dikaitkan dengan penurunan tahap kolestrol di dalam badan. Menurut Stanojevic *et al.*, (2012), kandungan protein yang tinggi terdapat di dalam okara (sekitar 35%) dan ekstrak protein yang sangat tinggi iaitu pada kadar (85%) melayakkan okara ini menjadi produk sampingan yang mempunyai nilai fungsi yang tinggi sebagai bahan utama produk berasaskan makanan.

Okara Tortilla Wrap mengandungi karbohidrat pada kadar 57.9 gm. Kadar ini masih dikelaskan sebagai makanan yang rendah karbo, namun jika kadar kandungan karbohidrat dapat dikurangkan, ia akan menjadi pilihan makanan utama bagi pengguna terutamanya yang mengamalkan hidangan diet. Ini kerana pengambilan makanan yang mengandungi kadar karbohidrat yang tinggi akan menyebabkan paras insulin yang tinggi dan pengawalan paras glukosa di dalam badan agak sukar. Menurut Hosokawa *et al.*, (2016), okara mengandungi kandungan bioaktivit dalam mencegah diabetes, hipokolesterolemia, hipolipidemia, dan kegemukan. Penggunaan nisbah tepung ubi yang tinggi, menyumbang kepada tahap karbohidrat yang tinggi di dalam *Okara Tortilla Wrap*. Oleh itu, bagi kajian yang seterusnya, ia disarankan agar, nisbah tepung ubi dikurangkan dan nisbah penggunaan tepung kacang kuda dan tepung okara dipertingkatkan.

Okara Tortilla Wrap mengandungi 298 kCal pada setiap 100 gm. Kalori dikenali sebagai unit tenaga di mana, ia menunjukkan kandungan tenaga yang pengguna ambil dalam makanan seharian. Kandungan tenaga yang terdapat di dalam *Okara Tortilla Wrap* masih di tahap baik bagi masyarakat yang kurang aktif dari segi aktiviti hariannya.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Perbandingan Nutrisi di antara Okara Tortilla Wrap dengan Komersial Wrap

Ujian Parameter	Komersial Wrap (Setiap 100 gm)	*Okara Tortilla Wrap* (Setiap 100 gm)
Tenaga	361 kCal	298 kCal
Lemak	10.72 gm	3.2 gm
Karbohidrat	56.2 gm	57.9 gm
Protein	9.2 gm	9.45 gm

Gambarajah 3: Perbandingan Nutrisi

Rajah di atas menunjukkan perbandingan kandungan nutrisi di antara *Okara Tortilla Wrap* dan komersial wrap. Merujuk kepada gambarajah di atas, bagi kandungan tenaga, ia menunjukkan bahawa kandungan tenaga yang terdapat di dalam *Okara Tortilla Wrap* adalah rendah berbanding daripada kandungan tenaga yang terdapat di dalam komersial wrap. Ini menunjukkan bahawa *Okara Tortilla Wrap* boleh dinikmati oleh pelbagai lapisan masyarakat tidak kira sama ada mereka mengamalkan gaya hidup aktif ataupun kurang aktif. Kandungan tenaga yang rendah juga menunjukkan bahawa ia boleh dijadikan sebagai hidangan diet yang baik.

Okara Tortilla Wrap mengandungi lemak pada kadar 3.2 gm berbanding komersial wrap yang mengandungi sebanyak 10.72 gm kandungan lemak. Sekali lagi, Ia menunjukkan bahawa *Okara Tortilla Wrap* adalah produk makanan yang baik kerana kandungan lemaknya tidak terlalu tinggi dan membahayakan kesihatan. Pengambilan lemak yang berlebihan dalam badan boleh menyebabkan obesiti, kencing manis dan pelbagai jenis penyakit.

Bagi kandungan karbohidrat pula, *Okara Tortilla Wrap* mengandungi 57.9 gm lebih tinggi berbanding kandungan karbohidrat yang tekandung di dalam komersial wrap yang hanya berkadar 56.2 gm sahaja. Namun begitu, kadar 57.9 gm ini masih di dalam parameter makanan yang rendah karbo dan ia sesuai dinikmati bagi semua lapisan masyarakat.

Okara Tortilla Wrap mengandungi kandungan protein yang lebih tinggi iaitu 9.45 gm berbanding komersial wrap yang mengandungi kandungan protein pada kadar 9.2 gm. Ia menunjukkan bahawa, penggunaan tepung okara membantu dalam penghasilan produk yang berprotein tinggi. Ini kerana, kandungan di dalam okara itu sendiri mempunyai kandungan protein sebanyak 35%. Penggunaan tepung kacang kuda di dalam penghasilan *Okara Tortilla Wrap* juga dapat membantu peningkatan kandungan protein kerana tepung kacang kuda mengandungi kandungan protein dan serat yang tinggi, dan ini boleh menjadi nilai tambah kepada kandungan nutrisi terhadap *Okara Tortilla Wrap*.

Kesimpulan

Objektif kajian ini adalah untuk mengenalpasti kandungan nutrisi terhadap *Okara Tortilla Wrap* dan membuat perbandingan kandungan nutrisi di antara *Okara Tortilla Wrap* dengan komersial wrap. Ia boleh dirumuskan bahawa, *Okara Tortilla Wrap* mengandungi nutrisi yang baik untuk dinikmati pelbagai lapisan masyarakat. Kandungan lemak yang rendah dan kandungan protein yang tinggi membuatkan ia adalah produk yang baik untuk diketengahkan dan ia boleh menjadi makanan alternatif kepada masyarakat yang mempunya masalah alahan kepada gluten kerana *Okara Tortilla Wrap* tidak mengandungi gluten. Ia diperbuat daripda tepung ubi, tepung kacang kuda dan bahan yang utama adalah tepung okara yang mempunyai nilai nutrisi yang baik. Kandungan tenaganya yang rendah berbanding komersial wrap memberikan alternatif yang terbaik bagi pengamal menu diet. Jika dilihat kepada kandungan

nutrisi yang terdapat di dalam *Okara Tortilla Wrap*, ia menunjukkan bahawa produk ini mempunyai peluang yang cerah untuk menembusi pasaran di Ipoh, Perak.

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MENGKAJI PENERIMAAN TEH KULIT PISANG DI KALANGAN PENDUDUK MERLIMAU DAN PELAJAR JABATAN PELANCONGAN DAN HOSPITALITI, POLITEKNIK MERLIMAU MELAKA MELALUI UJIAN RASA.

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Abstract: *Kajian ini adalah bertujuan untuk mengkaji penerimaan teh kulit pisang di kalangan penduduk Merlimau dan pelajar Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka melalui ujian rasa. Seramai 540 orang penduduk Merlimau dan 60 orang pelajar Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka telah menjadi responden kajian. Instrumen kajian ini adalah berbentuk soal selidik yang terdiri dari dua bahagian iaitu Bahagian A tentang ciri demografi, dan Bahagian B tentang tahap penerimaan teh kulit pisang di kalangan penduduk Merlimau dan pelajar Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka. Keseluruhan kajian telah dianalisis menggunakan perisian Stastical Package for Social Sciences (SPSS) versi 17.5 dengan membuat pengiraan peratusan dan skor min. Instrumen soal selidik telah digunakan bagi mendapatkan data dan ia melibatkan penggunaan skala hedonic. Dapatan kajian menunjukkan penerimaan teh kulit pisang di kalangan penduduk Merlimau dan pelajar Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka adalah pada tahap yang tinggi.*

Pengenalan

Pisang adalah buah tropika yang selalu ada di sekitar kita. Ini kerana tanaman pisang dapat tumbuh dengan baik di iklim tropika seperti di Malaysia. Pisang adalah buah yang penting dalam masyarakat, kerana pisang biasanya dimakan dibandingkan dengan buah lain tanpa memperhatikan tingkat sosial. Setelah kulitnya dikeluarkan, buahnya boleh dimakan mentah atau dimasak dan kulit pisang biasanya dibuang. Namun, tahukah anda kulit pisang juga mengandungi mineral dan baik untuk kesihatan? Ini mengandungi jumlah vitamin B6 dan B12 yang tinggi, serta magnesium dan kalium, serta beberapa serat dan protein. (Ella Allred, 2015)

Kulit pisang dapat mengatasi insomnia atau pola tidur yang tidak teratur. Kulit pisang terdiri daripada triptofan, asid amino penting dan ia boleh membantu mengatasi masalah tidur (Mary West, 2016)

Terdapat banyak manfaat kulit pisang seperti, kalium dan magnesium yang bermanfaat untuk sistem saraf dan bagus untuk meregangkan otot. Sebenarnya, magnesium adalah mineral yang paling penting untuk kelonggaran otot dan dapat mengurangkan kekejangan otot dan kesakitan yang lain (David Wolfe, 2016).

Inilah sebabnya mengapa teh kulit pisang dipilih untuk dijadikan bahan utama dan menunjukkan faedah luar biasa daripadanya. Selain itu, ia dapat mendorong orang untuk melihat sudut pandangan yang berbeza mengenai rawatan organic.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Latar Belakang Masalah

Pengurusan sisa buangan telah menjadi satu isu yang hangat diperkatakan dikalangan negara-negara membangun. Peningkatan hasil daripada sisa buangan telah memberikan impak yang negatif kepada kesihatan sejagat dan kelastrian alam semulajadi. Selain daripada itu peningkatan populasi manusia serta peningkatan ekonomi di negara-negara maju turut menyumbang kepada permasalahan ini.

Di Malaysia pembuangan sisa organik merupakan jumlah terbesar daripada jumlah pembungan sisa yang dihasilkan oleh industri iaitu sebanyak 50%. Sisa buangan organic termasuklah sisa buangan daripada penggunaan dapur, lebihan makanan, buah-buahan yang telah busuk dan rosak lebihan hasil pertanian dan sebagainya. Sebanyak 60% daripada pembuangan sisa organik disebabkan oleh isi rumah dan hanya dilupuskan di tapak pelupusan sampah. Hasil tindak balas daripada sisa tersebut dan ketidakhadiran oksigen menghasilkan toksik yang dikenali sebagai larutan resapan yang memburukkan lagi pencemaran air di tapak pelupusan sampah.

Manakala kulit pisang mewakili 40% daripada sebiji kulit pisang. Kulit pisang ini akhirnya menyebabkan hasil buangan yang tinggi dan tidak mempunyai nilai. Oleh yang demikian, sisa buangan daripada operasi memproses makanan menjadi masalah ekologi yang amat serius dan menyumbang kepada pencemaran alam sekitar. Kesimpulannya, pihak penyelidik telah meninovasikan teh berperisa baharu daripada kulit pisang. Teh ini dihasilkan daripada pembuangan kulit pisang yang tidak mempunyai perwarna dan perasa hanya terhasil daripada bahan yang natural.

Pernyataan Masalah

Pengelupasan sisa pisang

Di Malaysia, terdapat banyak industri sederhana kecil (IKS) yang terlibat dalam pangkalan pertanian pisang contohnya industri 'Kerepek pisang', "perusahaan goreng pisang" dan lain-lain. Hasil pertanian berdasarkan pangkalan produk ini menyumbang kepada pengelupasan sisa pisang.

Forum Sains Bahan, Ogos 2015

Pembuangan sisa pisang

Sisa kulit pisang biasanya dibuang di tempat pembuangan sampah perbandaran, yang menyumbang kepada masalah persekitaran yang ada.

Nik Alnur Auli Nik Yusuf, Ernie Surianiy Rosly, 2015
Kluster Kejuruteraan Lanjutan, Fakulti Sains Bumi, Universiti Malaysia Kelantan

Objektif Kajian

Objektif kajian ini dijalankan adalah untuk:

1) Untuk mengurangkan sisa sisa kulit pisang sebagai ganti minuman.
2) Untuk memperkenalkan cara baru menggunakan kulit pisang yang terbuang.
3) Untuk mengkaji tahap penerimaan teh kulit pisang di kalangan penduduk Merlimau dan pelajar Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka melalui ujian rasa

Sorotan Kajian

Pengenalan

Pisang adalah salah satu buah yang paling banyak dimakan di kawasan tropika dan subtropika (Alkarkhi et al. 2010). Secara amnya pisang dikelompokkan secara luas menjadi dua kategori,

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13th – 14th December 2020

iaitu pisang pencuci mulut dan pisang. Di Malaysia, spesies pisang pencuci mulut yang paling penting adalah Mas (AA) dan Berangan (AA) sementara untuk pisang, terdapat Awak (AAB), Nangka (ABB) dan juga Raja (ABB) (Hassan, 2004). Bunga pisang dari enam kultivar Malaysia yang berbeza iaitu, pisang Abu (Musa balbisiana cv P. Abu), pisang Berangan (Musa acuminata cv P. Berangan), pisang Nipah (Musa balbisiana cv P. Nipah), pisang Susu (Musa acuminata cv P Susu), pisang Mas (Musa acuminate cv P. Mas) dan pisang Rastali (Musa paradisiaca cv P. Rastali) adalah antioksidan dan anti-hiperglikemik.

Pisang liar Malaysia dikenal sebagai "pisang mas" dalam bahasa Melayu, yang mempunyai terjemahan "pisang emas" yang tidak menarik (pisang = pisang, mas = emas). Jari pendek, dengan sisi menonjol, lebar di tengah, bulat melintang, dengan puncak membulat hingga sedikit tumpul. Mereka agak kecil, kira-kira separuh ukuran Cavendish, dengan kulit yang lebih nipis. Kulit nipis menjadikannya agak sukar dikupas. Pisang Emas lebih manis daripada kebanyakan pisang lain dan teksturnya sangat lembut.

Pisang emas (kadang-kadang disebut sebagai pisang muli) adalah sejenis pisang yang mempunyai ukuran kecil dengan diameter 3-4 cm. Kulit pisang emas tipis dan mempunyai warna kuning terang (lebih kuning daripada pisang Lampung). Pisang Mas, mempunyai bentuk kecil dengan aroma harum dan rasanya lebih manis. Tidak hanya bergantung pada rasa manis, pisang juga mempunyai banyak manfaat untuk kesihatan kandungan mineral dan vitamin yang tinggi. (JURNAL SAINS PERTANIAN UTAR, 1 JAN 2015)

Menurut Tee dan Hassan (2011), pemberian oral kedua ekstrak kulit pisang hijau dan kuning pada tahap dos yang berbeza (200 dan 400 mg / kg) dapat digunakan untuk merawat kemurungan. Fadhilah et al. (2014) melaporkan bahawa kultivar pisang asli iaitu pisang Berangan, pisang Mas dan pisang Nipah mempunyai aktiviti antibakteria yang kuat terhadap bakteria gram negatif.

Pati tahan pisang Cavendish dan Bluggoe mempunyai struktur kristal jenis C, sedangkan Pisang Awak dan Pisang mas memiliki jenis B. Kapasiti penahan air Pisang mas adalah yang maksimum. Kelarutan Pisang Awak dan Pisang mas lebih tinggi jika dibandingkan dengan Cavendish dan Bluggoe. Lebih banyak amilosa diperhatikan pada pati tahan pisang Bluggoe dan Pisang Awak, sedangkan amilopektin lebih banyak diperhatikan pada pati tahan pisang Cavendish dan Pisang Mas.

Pisang yang digunakan

Oleh itu, kami memilih "Pisang Mas" sebagai produk kulit pisang utama kami. Terdapat kelebihan yang mana kulitnya tipis, memiliki warna kuning terang, mempunyai aktivitas antibakteri yang kuat terhadap bakteria gram negatif, mengandung daya tahan air maksimum, kelarutan tinggi dan lebih banyak amilopektin.

Nutrien pisang emas

Seperti kebanyakan buah yang lain, pisang emas adalah sejenis buah yang banyak kandungan nutrisi dan juga kaya dengan khasiat. Ini kerana buah pisang masak yang keemasan mengandungi banyak nutrien yang bermanfaat bagi tubuh, termasuk:

i. Karbohidrat. Pisang emas mengandungi dari 21.0 hingga 33.6 gram setiap 100 gram karbohidrat. Di mana karbohidrat dalam pisang emas termasuk glukosa, sukrosa, dan fruktosa.
ii. Vitamin, pisang emas mengandungi beberapa jenis vitamin, aitu vitamin A, vitamin B1, vitamin B2, niasin, dan asam folat. [Artikel berkaitan: Manfaat Vitamin A - Manfaat Vitamin A untuk kesihatan - manfaat vitamin C - faedah vitamin B untuk tubuh]

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13th – 14th December 2020

iii. Mineral. Kandungan mineral yang terdapat dalam pisang emas antara lain kalium (kalium) dan zat besi.

Manfaat pisang emas ke atas tubuh manusia.

Pisang emas adalah buah yang sangat bermanfaat untuk tubuh manusia. Pelbagai faedah yang dapat diperoleh dari pisang emas, antara lain:

Saluran pencernaan yang sihat

Pisang emas adalah sejenis buah yang mengandungi banyak serat. Serat ini sangat baik untuk kesihatan pencernaan sehingga makan emas pisang dapat membantu menyuburkan saluran pencernaan dan terlindung dari pelbagai jenis gangguan pencernaan.

Meningkatkan fungsi buah pinggang

Kalium emas dalam pisang dapat mengawal pengeluaran kalsium dalam air kencing dan keadaan ini akan membantu fungsi ginjal tetap sihat dan berfungsi dengan baik, dan akan mengurangkan risiko batu karang.

Mengurangkan tekanan darah tinggi

Kandungan kalium dan natrium rendah dalam pisang emas adalah campuran yang sangat baik untuk mencegah tekanan darah tinggi, dan dapat mengurangkan risiko strok.

Menambah tenaga

Pisang emas adalah buah yang mengandungi banyak karbohidrat sehingga pengambilan buah ini secara berkala akan menambahkan tenaga dalam badan.

Mencegah berulang penyakit ulser

Bagi seseorang yang mempunyai sejarah penyakit ulser, dengan memakan emas pisang dapat membantu mengurangkan ulser. Ini kerana pisang emas ini mempunyai kesan antasid semula jadi yang sangat berguna untuk mengatasi gejala pedih ulu hati.

Mengekalkan keseimbangan kalium dalam badan

Keadaan tekanan boleh mengurangkan jumlah kalium di dalam badan. Dengan pisang makan emas secara berkala, tidak perlu risau tentang risiko kehabisan kalium dalam badan. Ini kerana pisang mengandungi banyak kalium emas sehingga badan akan selalu mendapat pengambilan kalium. Kandungan kalium juga dapat memberikan kesan menenangkan pada minda kadang-kadang menjadi tepu atau terlambat.

Menguatkan tulang

Pisang emas adalah buah yang mengandung prebiotik yang disebut *Fructooligosaccharides* yang berfungsi untuk menjadikan tubuh kita lebih mudah menyerap nutrien. Ini secara tidak langsung akan membiarkan tubuh menyerap kalsium dengan mudah. Dengan demikian kita akan menjadi tulang yang lebih kuat.

Mengatasi anemia

Pisang emas ini adalah buah yang mengandungi banyak zat besi, vitamin, dan mineral dengan kadar yang tinggi. Pelbagai kandungan akan berfungsi untuk mencegah dan bahkan merawat penyakit kekurangan sel darah merah atau anemia.

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13th – 14th December 2020

Sebagai pencuci muka dan juga menyuburkan kulit

Selain pisang emas daging mempunyai banyak manfaat, buah kulit pisang emas, juga memiliki khasiat. Kulit pisang emas berguna untuk membersihkan dan mengelupas kulit yang telah rosak dan mati. Caranya adalah dengan menggosok bahagian dalam kulit pisang di wajah dan biarkan selama 45-60 minit. Lakukan rawatan ini setiap hari untuk mendapatkan hasil yang maksimum.

Bantu menjaga mood

Pisang emas selain mempunyai manfaat nyata untuk kesihatan tubuh manusia (fizikal), ia juga berguna untuk mewujudkan suasana yang lebih baik. Pisang emas adalah salah satu buah yang mengandungi triptofan, asid amino yang membantu tubuh menghasilkan serotonin. Keberadaan serotonin ini akan menolong seseorang memperoleh rasa selesa, tenang, dan juga dapat menyesuaikan suasana hati atau suasana hati secara semula jadi.

Mengatasi dan merawat sembelit

Sebelumnya telah dijelaskan bahawa pisang emas mengandungi serat tinggi sehingga dapat menyuburkan saluran pencernaan. Apabila pencernaan sihat, ia akan dijauhkan dari penyakit sehingga proses sembelit buang air besar dapat berjalan dengan lancar.

Muka pelembap

Buah pisang emas yang mengandungi faedah kesihatan. Sekiranya sebelumnya dikatakan bahawa kulit pisang emas boleh digunakan sebagai perawatan kulit, maka kali ini daging pisang emas dapat digunakan sebagai pelembap pada wajah anda. Inilah faedah yang diperoleh untuk kecantikan kulit. Caranya menjadikan daging pisang emas ini sebagai topeng.

Metodologi Kajian

Rekabentuk kajian dan instrumen kajian

Kajian ini merupakan kajian yang bersifat diskriptif dan menggunakan kaedah ujian rasa dan ia melibatkan tempoh suatu masa tertentu sahaja. Instrumen soal selidik dipilih bagi mendapatkan data. Lokasi kajian hanya melibatkan penduduk Merlimau dan pelajar Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka. Instrumen soal selidik yang digunakan pengkaji melibatkan penggunaan skala hedonic. Ujian Hedonic merupakan suatu komponen ujian efektif yang dijalankan bagi menentukan tahap kesukaan dan penerimaan pengguna terhadap sesuatu makanan (Aminah 2004). Skala hedonic adalah seperti berikut:

Jadual 2: Skala Hedonic

Skala					
	1. Sangat tidak suka	2. Tidak suka	4. Tidak pasti	4. Suka	5. Sangat suka

(Chin Drug Invest, 2005)

Secara amnya, borang soal selidik yang akan diedarkan kepada responden terdiri daripada dua bahagian iaitu Bahagian A dan Bahagian B. Bahagian A adalah maklumat demografi iaitu jantina, unur dan bangsa manakala bahagian B adalah seperti jadual 3 berikut:

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 3: Pembahagian borang soal selidik bahagian B

Skala	1.Sangat tidak suka	2. Tidak suka	3. Tidak pasti	4. Suka	5. Sangat suka
Item	**Kod A**				
Rasa					
Tekstur					
Penampilan					
Aroma					
Warna					

Kedua-dua bahagian soal selidik dianalisis dengan kaedah analisis statistik secara deskriptif yang mana data dianalisis dalam bentuk frekuansi dan peratusan. Data juga dipersembahkan dalam bentuk sebutan skor min.

Populasi dan Sampel kajian

Dalam kajian ini, populasi kajian pengkaji adalah penduduk negeri Melaka dan sampel kajian pengkaji adalah penduduk Merlimau dan pelajar Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka.

Prosedur kajian

Analisis data

Kedua-dua data bahagian A dan bahagian B dianalisis dengan kaedah analisis statistik secara deskriptif (*descriptive statistical analysis*) yang mana data analisis dalam bentuk frekuensi dan peratusan. Data juga dipersembahkan dalam bentuk sebutan skor min. Untuk memudahkan

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13th – 14th December 2020

proses penganalisaan data, penyelidik telah menggunakan interpretasi skor min yang dikemukakan oleh Wiersma (1995) sebagai rujukan interpretasi skor min dalam jadual 4 di bawah:

Jadual 4: Pembahagian tafsiran min

Skor min	Tahap penguasaan/penerimaan
1.00 – 2.33	Rendah
2.34 – 3.67	Sederhana
3.68 – 5.00	Tinggi

(diadaptasi daripada Wiersma, 1995)

Analisis Dan Keputusan

Analisis yang dibuat adalah berdasarkan persoalan kajian bagi mencapai objektif kajian yang telah ditetapkan. Bagi maklumat demografi responden, analisis berbentuk penerangan secara terperinci iaitu dalam bentuk peratusan. Jadual 5 di bawah adalah berkaitan dengan maklumat demografi responden:

Jadual 5: Maklumat demografi responden

Kategori	Bilangan responden	Peratus
Jantina		
Lelaki	360	60
Perempuan	240	40
Jumlah	600	100
Bangsa		
Melayu	450	75
India	75	12.5
Cina	75	12.5
Jumlah	600	100
Umur		
19 - 23	85	14
24 - 28	150	25
29 - 33	80	13
34 - 38	75	12
39 - 43	100	17
44 - 48	100	17
49 - 53	10	2
Jumlah	600	100.0

Jadual 6 di bawah menunjukkan dapatan kajian untuk bahagian B iaitu skor min teh kulit pisang. Kesemua item yang diuji menunjukkan tahap penerimaan teh kulit pisang di kalangan penduduk Merlimau dan pelajar di Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka berada pada tahap tinggi iaitu mencatatkan min keseluruhan 3.70. Ini bermakna responden menerima teh kulit pisang sebagai minuman mereka.

Jadual 6: Skor min teh kulit pisang

Item	Min	Tahap penerimaan
Rasa	3.74	Tinggi
Tekstur	3.75	Tinggi
Penampilan	3.73	Tinggi
Aroma	3.63	Tinggi
Warna	4.03	Tinggi
Jumlah Min Keseluruhan	3.78	**Tinggi**

Kesimpulan

Merujuk tujuan kajian pengkaji iaitu mengkaji penerimaan teh kulit pisang di kalangan penduduk Merlimau dan pelajar Jabatan Pelancongan dan Hospitaliti, Politeknik Merlimau Melaka melalui ujian rasa, tahap penerimaannya adalah berada pada tahap tinggi iaitu mencatatkan min keseluruhan 3.78. Penyelidik dapat melihat bahawa produk tersebut dapat diterima oleh semua generasi. Penyelidik memberikan faedah khusus yang ditawarkan oleh produk. Kemudian sasarannya adalah untuk mencapai produk yang objektif, iaitu menghasilkan teh yang sihat dengan inovasi baru dengan menggunakan kulit pisang sebagai bahan utama dalam teh produk. Selain itu, orang ramai dapat mengetahui bahawa produk ini mempunyai faedah tersembunyi yang tidak pernah mereka ketahui dan sesuai untuk semua orang yang berdiet kerana mereka boleh menambah pemanis mengikut pilihan mereka.

Rujukan

Apa Faedah Makan Kulit Pisang?

http://www.livestrong.com/article/457082-apa-peranan-kepada-kebaikan-dengan-ban-banana-peels/ Livestrong.com, 28 Mei 2011

Sisa Kulit Pisang dan Potensinya dalam Aplikasi Pertanian

https://www.researchgate.net/publication/283894172_Waste_Banana_Peel_and_Its_Potentialization_in_Agricultural_Applications_Morphology_Oview

Nik Alnur Auli Nik Yusuf, Ernie Surianiy Rosly, 16 November 2015

Khasiat Teh Pisang Pisang

http://metro.co.uk/2015/09/30/this-is-why-you-should-be-eating-your-banana-peel-5414205/

Francesca Kentish, Metro.co.uk, 30 September 2015

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TINJAUAN KEPERLUAN PERALATAN PELAJAR UNTUK PERSEDIAAN PEMBELAJARAN ATAS TALIAN DI KOLEJ KOMUNITI GERIK

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Abstrak: *Kolej Komuniti Gerik (KKGP) adalah institusi tempatan dibawah Kementarian Pengajian Tinggi yang bertempat di Gerik, Perak. KKGP menawarkan pendidikan dan latihan kepada pelajar lepasan sekolah menengah dan masyarakat tempatan. Semenjak penutupan dan penyekatan berkuat kuasa, KKGP menggunakan inisiatif pembelajaran atas talian mengantikan pembelajaran fizikal untuk membantu pengajar dan pelajar menjalani pembelajaran yang lebih efektif dan efisien. Pembelajaran atas talian adalah sebarang bentuk pengajaran dan pembelajaran yang menggunakan teknologi digital. Untuk pembelajaran atas talian, pelajar memerlukan peralatan teknologi, telefon pintar, komputer riba, tablet dan seangkat dengannya. Jadi, tinjauan ini telah dijalankan untuk mengenal pasti peralatan dan sumber yang digunakan oleh pelajar untuk pembelajaran atas talian di Kolej Komuniti Gerik. Sebanyak 140 pelajar terpilih terdiri daripada 230 populasi melalui prosedur persampelan rawak berdasarkan Jadual Penentuan Saiz Sampel Krejcie dan Morgan. Penemuan keseluruhan tinjauan menunjukkan pelajar menggunakan jenis telefon pintar dengan kapasiti penyimpanan data yang cukup. Tetapi, hasil tinjauan juga menunjukkan sumber jalur lebar tidak bergantung kepada jenis peralatan yang digunakan semasa pembelajaran atas talian. Kesimpulan yang diperolehi dari tinjauan ini, tidak semua peralatan dan sumber yang digunakan oleh pelajar KKGP dapat menampung pembelajaran atas talian. Oleh kerana itu, pengajar KKGP menawarkan pembelajaran atas talian dari berlainan aplikasi untuk memudahkan pelajar mengakses pembelajaran atas talian.*

Abstract: *Kolej Komuniti Gerik (KKGRI) is a local institution under Ministry of Education located at the Gerik, Perak. KKGRI provided education and training for high school graduate student and local citizens. Since lockdown in force, KKGRI recommended the online learning as a physical learning substitute for educator and student to have an efficient and effective education. Online learning is any kind of way in teaching and learning using digital technology. For online learning, student need a digital instrument such as smartphone, laptop, tablet, and others. Therefore, a survey was carried out to identify instrument and sources that been used by the student for online learning in KKGRI. There was 140 students out of 230 student selected using random sampling based on Krejcie and Morgan sampling table. The overall finding of the study shows student used smartphone that have enough memory capacity. But, the survey also shows that internet sources for the instrument by the student are not capable to support the online learning. For the conclusion, not all the instrument and sources used by the KKGRI student can afford the online learning. As the result, KKGRI educator need to provide another online learning method to ease student to access the course information.*

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kata kunci: *Pembelajaran Atas Talian, Kolej Komuniti, Peralatan Teknologi, Kelas Atas Talian.*

Pengenalan

Kolej Komuniti Gerik (KKGRI) adalah institusi tempatan di bawah Kementerian Pengajian Tinggi dan beroperasi sejak tahun 2003 di Gerik, Perak. KKGRI menawarkan pendidikan dan latihan kepada pelajar lepasan sekolah menengah. Terdapat tiga (3) program umum ditawarkan iaitu sijil teknologi maklumat, sijil fesyen dan pakaian; dan sijil automotif. KKGRI juga menyediakan latihan untuk meningkatkan kemahiran dan melatih semula untuk keperluan tenaga kerja setempat. Kualiti pendidikan penting untuk menghasilkan pelajar yang mempunyai daya kebolehpasaran dalam dunia pekerjaan. Jadi, pembelajaran atas talian menjadi norma baharu untuk institusi membantu pengajar dan pelajar dalam urusan pembelajaran.

Pembelajaran atas talian (e-pembelajaran) merupakan sebarang bentuk pengajaran dan pembelajaran yang disampaikan melalui penggunaan teknologi digital. Bahan pengajaran dan pembelajaran yang disampaikan menggunakan media ini mempunyai grafik visual, perkataan, animasi, video ataupun audio. Disamping itu, Menurut Wan Aziaris Aziz , e-pembelajaran juga menyediakan kemudahan seperti kemudahan dalam bentuk pembelajaran secara berkumpulan dan dibantu oleh pengajar dalam bidang tertentu secara atas talian (Aziz, 2015).

E-pembelajaran diwujudkan untuk memudahkan proses pembelajaran serta membolehkan pelajar untuk mengamalkan pembelajaran yang berterusan. Di samping itu, pengajar berupaya menyampaikan pengetahuan dan komunikasi dengan lebih berkesan. Latihan dan maklumat juga dapat disampaikan lebih berstruktur dan bersepadu.

Namun setiap perubahan baru memerlukan masa dan intelek penguna untuk mengadaptasi dengan teknologi baru. Tambahan lagi, pelajar dan pengajar perlu menitik berat tentang persediaan seperti peralatan yang sesuai dan sambungan jalur lebar yang baik untuk mereka mula berjinak dalam dunia e-pembelajaran. Jadi, kajian ini dijalankan untuk mengenal pasti peralatan dan sumber yang digunakan oleh pelajar untuk e-pembelajaran di Kolej Komuniti Gerik.

Terdapat 4 objektif utama yang dicapai dalam kajian ini:

a) Mengenal pasti spesifikasi peralatan dan sumber yang digunakan oleh pelajar untuk pembelajaran atas talian.
b) Mengenal pasti jenis telefon pintar dan versi system operasi yang digunakan oleh pelajar untuk pembelajran atas talian.
c) Mengenalpasti hubungan antara jenis telefon pintar dan kapasiti storage yang sedia ada didalam telefon pintar.
d) Mengenalpasti hubungan antara sumber jalur lebar yang digunakan dan kemudahan peralatan yang dimiliki oleh pelajar untuk pembelajaran atas talian

Terdapat beberapa cadangan disyorkan untuk penyelidikan masa hadapan. Kajian ini boleh dipertingkatkan lagi dengan menggunakan penyelidikan yang sama dan pendekatan yang berlainan seperti:

a) Menggunakan lebih ramai bilangan responden.
b) Mendapatkan respon dari kumpulan yang berlainan seperti pengajar dan staf.
c) Meninjau spesifikasi peralatan yang berlainan.
d) Menggunakan satu atau berlainan pembelajaran atas talian.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kajian Literatur

Pelaksanaan pembelajaran atas talian (e-pembelajaran) telah lama dipraktikkan di negara-negara maju kerana ia dipercayai mampu memberikan pelbagai manfaat dan kebaikan. Kebanyakan universiti tempatan baik awam mahupun swasta termasuk sekolah-sekolah di Malaysia turut mempraktikkan penggunaan kaedah pengajaran dan pembelajaran secara maya ini. Begitu juga, kolej komuniti Gerik, mengkaji tahap pelaksanaan e-pembelajaran.

Pengkaji, mengkaji pelbagai jenis platform/media pembelajaran digital yang berpotensi dan mempunyai banyak ruang untuk dieksplorasi. Melalui pelbagai jenis platform yang tersedia, tahap prestasi dan pencapaian pelajar-pelajar di nilai untuk memastikan mereka turut serta di dalam pembelajaran atas talian serta tidak mempunyai sebarang masalah. oleh itu, peralatan yang digunakan di atas talian amat penting untuk memastikan kelangsungan e-pembelajaran antara pelajar dan pengajar.

Pembelajaran Atas Talian

Pembelajaran atas talian (e-pembelajaran) telah terkenal dalam kalangan para pendidik dan pelajar sejak beberapa tahun yang lalu. Ia sebenarnya merupakan istilah yang merujuk kepada penggunaan pelbagai jenis alatan elektonik yang canggih seperti komputer, telefon bimbit, *notepad*, beberapa alat komunikasi dan juga jalur lebar untuk menyediakan latihan dalam mata pelajaran tertentu. Pelajar boleh menghadiri e-pembelajaran pada bila-bila masa siang atau malam dan mereka boleh mengambil bahagian dalam kelas yang dianjurkan oleh pengajar di mana terdapat soalan interaktif dengan pelajar-pelajar lain. Mereka juga boleh menggunakannya mengikut masa mereka sendiri.

Secara umumnya, e-pembelajaran ini lebih bersifat latihan kendiri dan ia sangat fleksibel bagi mereka yang bekerja sepenuh masa tetapi mahu melanjutkan pelajaran. Pelaksanaan e-pembelajaran telah lama dipraktikkan di negara-negara maju kerana ia dipercayai mampu memberikan pelbagai manfaat dan kebaikan. Kebanyakan universiti tempatan baik awam mahupun swasta termasuk sekolah-sekolah di Malaysia turut mempraktikkan penggunaan kaedah pengajaran dan pembelajaran secara maya ini.

Platform/Media Yang Digunakan Untuk Pembelajaran Atas Talian

Terdapat pelbagai jenis platform/media pembelajaran digital yang berpotensi dan mempunyai banyak ruang untuk dieksplorasi. Melalui pelbagai jenis platform yang tersedia, tahap prestasi dan pencapaian pelajar-pelajar di nilai untuk memastikan mereka turut serta di dalam pembelajaran atas talian serta tidak mempunyai sebarang masalah. Antara contoh media/platform yang dapat digunakan untuk e-pembelajaran adalah *Google Meet*, *Google Classroom*, *Zoom*, *e-learning portal* dan tidak ketinggalan juga media sosial seperti *Facebook group*, *Whatapps*, dan *Wechat*. Menurut Ziani A. K. media sosial digunakan sebagai alat untuk membantu; seperti komunikasi dengan orang ramai, rakan, mahupun membantu dalam berkomunikasi dengah ahli-ahli dalam kumpulan. Beliau juga menambah bahawa media sosial jugak digunakan sebagai medium pemindahan maklumat yang juga sebagai usaha untuk menyumbang idea-idea (Ziani, 2015).

Peralatan Yang Digunakan Untuk Pembelajaran Atas Talian

Untuk kajian ini, tinjauan dilakukan atas peralatan yang digunakan di atas talian amat penting untuk memastikan kelangsungan pembelajaran atas talian antara pelajar dan pengajar. Jenis-jenis peralatan elektronik seperti telefon pintar dan komputer yang digunakan untuk e-pembelajaran oleh pelajar-pelajar di kaji untuk mengenal pasti keselesaan, keperluan dan kemampuan pelajar-pelajar untuk menyertai proses e-pembelajaran. Pelbagai jenis jenama

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13th – 14th December 2020

telefon pintar yang digunakan oleh para pelajar untuk e-pembelajaran juga ditinjau di dalam kajian ini. Antara contoh-contoh jenama telefon pintar adalah seperti, *Samsung, iPhone, Asus, Huawei*, *Nokia*, *Lenovo*, *Oppo* dan *Sony*. Menurut Barashdi et al, kajian dari pengkaji lain membuktikan telefon pintar merupakan alat yang canggih, dinamik serta bersifat mudah alih yang memberi kemudahan kepada para pengguna untuk mengakses maklumat tidak kira dimana ataupun bila (Sulaiman Al-Barashdi, Bouazza, H. Jabur, & Al-Zubaidi, 2016). Hasil kajian daripada Fariza Khalid dan Md yusoff Daud mendapati bahawa kebanyakkan pelajar menggunakan telefon pintar berjenama Samsung diikuti oleh *iPhone*, *Nokia*, *Oppo* dan akhir sekali *Sony* (Khalid & Daud, 2016). Selain itu, hubungan jenis telefon pintar dan simpanan untuk pembelajaran atas talian juga dikaji di dalam kajian ini untuk mngenalpasti permasalahan yang bakal dihadapi oleh para pelajar untuk e-pembelajaran.

Liputan Rangkaian Jalur Lebar Yang Sesuai

Bagi memastikan kaedah pembelajaran atas talian yang berkesan, terdapat beberapa faktor yang perlu diambil kira seperti liputan rangkaian jalur lebar yang sesuai. Kebolehcapaian jalur lebar menjadi salah satu perkara penting dalam mengendalikan e-pembelajaran. Usaha mengenal pasti tahap kebolehcapaian jalur lebar bagi setiap pelajar dapat membantu tenaga pengajar dalam menentukan kaedah pembelajaran bersesuaian bagi membolehkan e-pembelajaran dijalankan dengan baik. Lokasi keberadaan pelajar mempengaruhi kadar penyertaan di dalam e-pembelajaran. Kawasan luar bandar dijangka mempunyai masalah untuk mengakses kepada jalur lebar berbanding kawasan bandar kerana liputan jalur lebar yang tidak stabil. Pemilihan platform yang sesuai amat penting dalam proses e-pembelajaran. Menurut Ehwan ngadi, hal ini bertujuan untuk mengelakkan berlakunya *lag* atau *screen freeze* yang boleh menggangu tumpuan pelajar sekiranya e-pembelajaran di lakukan secara bersemuka (Ngadi, 2020). Penggunaan rangkaian sama ada secara percuma mahupun secara berbayar juga mempengaruhi e-pembelajaran kerana tahap kestabilan jalur lebar samada rendah, sederhana atau tinggi bergantung kepada jumlah jalur lebar yang dilanggan.

Persediaan Pelajar Dengan Pembelajaran Atas Talian

Selain itu, antara faktor-faktor lain yang perlu di ketengahkan adalah seperti persediaan pelajar dengan pembelajaran atas talian. Tidak semua pelajar mampu menyesuaikan diri dengan cepat terhadap proses e-pembelajaran ini. Oleh itu menurut Rahima Dahlan, proses penilaian tahap kesediaan pelajar perlu diutamakan (Dahlan, 2020).

Sumber Jalur Lebar Paling Sesuai Untuk Pembelajaran Di Atas Talian

Sumber jalur lebar seperti WiFi atau data mudah alih dikaji di dalam kajian ini untuk menentukan sumber jalur lebar yang terbaik untuk kelangsungan proses pembelajaran atas talian. WiFi adalah protocol untuk penghantaran jarak jauh melalui frekuensi radio, kebanyakkan dalam lingkungan 2.4 dan 5 GHz manakala data mudah alih adalah jalur lebar yang dilanggan khas untuk telefon pintar masing-masing. Dalam kajian ini, kedua-dua sumber jalur lebar ini dikaji untuk menentukan sumber yang manakah yang terbaik untuk para pelajar menjalankan e-pembelajaran tanpa sebarang masalah. Dalam satu kajian di Amerika Syarikat, mendapati bahawa pelajar yang terlibat dalam kursus dalam talian bertambah dari setahun ke setahun. Mengikut Kajian Sloan Consortium 2009 (Allen & Seaman, 2010) bertajuk Learning on Demand, Online education in the United States, anggaran enrolmen terkini pelajar yang mengikuti kursus online pada Fall Semester 2008 telah meningkat kepada 17% iaitu sejumlah 4.6 juta pelajar berbanding tahun 2007.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Metodologi Kajian

Kajian yang dijalankan adalah campuran kuantitatif dan disokong oleh perincian secara kualitatif. Data kuantitatif diperoleh dengan menganalisis soal selidik kepada pelajar Kolej Komuniti Gerik. Manakala, data kualitatif diperoleh dari analisis yang dijalankan berbentuk frekuensi dan Korelasi Speraman Rho.

Peserta dan Instrumen

Sebanyak 139 pelajar Kolej Komuniti Gerik yang terlibat. Kebanyakan pelajar adalah daripada semester 3 dan merupakan dari tiga (3) kumpulan kursus iaitu kursus teknologi maklumat, kursus fesyen dan pakaian dan kursus automotif.

Google Form digunakan sebagai instrumen untuk soal selidik dalam kajian ini. Hal ini adalah untuk memudahkan pelajar memberi respon dalam talian dan ia juga memudahkan penkaji mendapatkan kiraan asas statistik dalam masa yang sama. Terdapat dua (2) bahagian untuk soal selidik; (A) Maklumat Demografi Pelajar; (B) Maklumat Peralatan, Sumber dan Spesifikasi digunakan untuk semasa sesi pembelajaran atas talian. Objektif soal selidik adalah mendapatkan maklumat jenis peralatan, sumber dan spesifikasi digunakan oleh pelajar secara umum. Dalam masa yang sama, soal selidik ini bertujuan untuk mendapatkan status semasa kemampuan pelajar dalam pembelajaran dalam talian.

Analisa dan Keputusan Kajian

Analisis data dari soal selidik diuji secara deskriptif dan berdata nominal. Analisis yang dijalankan berbentuk frekuensi dan Korelasi Speraman Rho. Objektif (1) adalah untuk tinjauan jenis telefon pintar dan sumber yang digunakan untuk pembelajaran atas talian. Objektif (1) juga bertujuan untuk tinjauan pentadbir akan kebolehan medium pembelajaran atas talian dalam menyokong perisian telefon pintar pelajar.

Figure 1 menunjukkan 83.5% menggunakan *android* berbanding 16.5% menggunakan *iOS*. Menurut Archangel, laporan analisa ke atas empat (4) jenis system pengoperasian telefon pintar yang mendapat penilaian tertinggi di pasaran iaitu *iOS, android, Microsoft dan Blackberry OS* (Archangel, 2019). Namun sistem pengoperasian yang banyak digunakan adalah *android* dan *iOS*. Menurut Archangel lagi, *Apple iOS* adalah sistem pengoperasian yang mengendalikan *iPhone, iPod touch*, dan *iPad*. Manakala, *android* adalah sistem pengoperasian berasaskan *Linux* yang digunakan pada mana-mana peranti. Hal ini juga menjadi pendorong utama kepada responden dan pengguna telefon pintar lebih banyak menggunakan *android* berbanding *iPhone.*

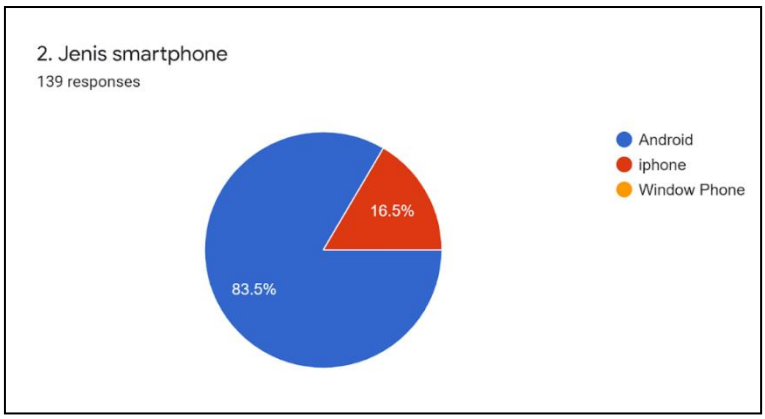

Figure 1 Jenis Telefon Pintar yang Digunakan oleh Pelajar

Sumber: Google Form

eISBN 978-967-2426-22-6
13th – 14th December 2020

Hasil kajian ini juga disokong oleh Xanviernaxa, bahawa 48% atau 1700 responden memilih faktor harga penyebab utama mengapa mereka lebih memilih *android* berbanding *iPhone*. Hal ini boleh membuktikan dengan harga yang ditawarkan oleh syarikat *Apple* pada model terkini sangat premium hingga melebihi had kemampuan pembeli (xaviernaxa, 2018). Menurut Shahrul Yusof, *iPhone* yang paling murah adalah pada harga sekitar RM1949. Telefon pintar *Android* pula mempunyai pilihan yang banyak dan boleh diperolehi dari harga serendah RM199 (Yusof, 2017). Ini mengukuhkan lagi mengapa kebanyakkan pelajar memilih telefon pintar *android* berbanding *iPhone*.

Figure 2 menunjukkan maklumat terperinci bagi penggunaan *android*, terdapat 48.5% pelajar mempunyai telefon pintar menggunakan *android* dibawah versi 5.0, dimana versi ini tidak dapat menyokong pembelajaran atas talian. Berbanding 51.5% pelajar mempunyai telefon pintar menggunakan *android* lebih daripada versi 5.0.

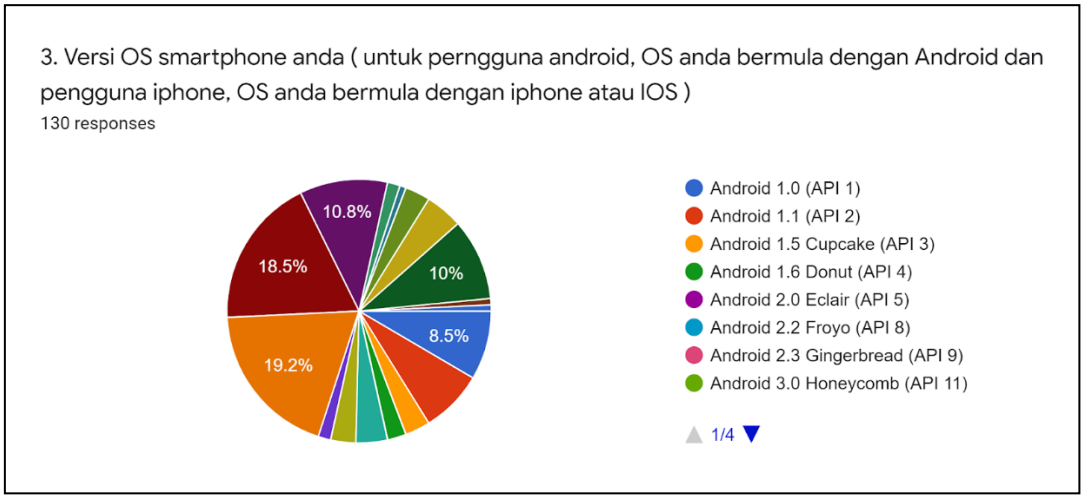

Figure 2 Jenis Android yang Digunakan untuk Telefon Pintar

Sumber: Google Form

Android dan *iPhone* versi 5 keatas menyediakan lebih banyak kemudahan dan kelebihan. Sumber melalui Wikipedia, menegaskan bahawa versi baharu ini menampilkan antaramuka yang lebih menarik, moden dan mempunyai kelengkapan baharu seperti *cloud storage* untuk menambah bilangan pengguna baharu dan menyimpan media dengan lebih efisien (Wikipedia, 2020).

Menurut hasil statistik di, hasil diperolehi angka kolerasi sebagai 0.301. Hasil analisa menunjukkan bahawa probabilitas (Sig) Rank Spearman 0.00 < 0.01. Maka, Ho diterima yang ertinya terdapat perhubungan di antara jenis telefon pintar dengan kapasiti storage yang sedia ada di dalam telefon pintar. Ini juga bermaksud, tingkat kekuatan hubungan antara *variable* jenis telefon pintar dengan kapasiti *storage* yang sedia adalah hubungan yang cukup.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Table 1 Hasil Kolerasi antara Jenis Telefon Pintar dan Kapasiti Storage yang Sedia Ada di dalam Telefon Pintar.

Correlations				
			2. Jenis telefon pintar	5. Kapasiti storage yang sedia ada dalam HP anda (Tanpa *External Storage*)
Spearman's rho	Jenis Telefon Pintar	Correlation Coefficient	1.000	.301**
		Sig. (2-tailed)	.	.000
		N	140	140
	Kapasiti Storage Yang Sedia Ada Dalam HP Anda (Tanpa *External Storage*)	Correlation Coefficient	.301**	1.000
		Sig. (2-tailed)	.000	.
		N	140	140

**. *Correlation is significant at the 0.01 level (2-tailed).*
Sumber: Google Form dan SPSS.

Menurut hasil statistik di Table 2 menunjukkan probabilitas (sig) Rank Spearman -0.67 melebihi 0.05 maka Ho ditolak dan tidak terdapat perhubungan di antara sumber jalur lebar dengan peralatan yang digunakan semasa pembelajaran atas talian. Hal ini juga menunjukkan sumber jalur lebar tidak bergantung kepada jenis peralatan.

Table 2 Hasil Kolerasi Antara Sumber Jalur Lebar yang Digunakan dan Kemudahan Peralatan yang Dimiliki oleh Pelajar untuk Pembelajaran Atas Talian

Correlations				
			6. Sumber internet anda gunakan dari	7. Adakah anda mempunyai perkakasan untuk melengkapkan aktiviti kelas online di kediaman anda(soalan ini adalah pilihan pelbagai yang boleh klik melebihi satu pilihan)
Spearman's rho	6. Sumber internet anda gunakan dari	Correlation Coefficient	1.000	-.067
		Sig. (2-tailed)	.	.429
		N	140	140
	7. Adakah anda mempunyai perkakasan untuk melengkapkan aktiviti kelas online di kediaman anda(soalan ini adalah pilihan pelbagai yang boleh klik melebihi satu pilihan)	Correlation Coefficient	-.067	1.000
		Sig. (2-tailed)	.429	.
		N	140	140

Sumber: Goole Form dan SPSS

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kesimpulan

Kesimpulannya, pelajar mempunyai kemudahan telefon pintar yang bersesuaian dengan keperluan peralatan untuk pembelajaran atas talian. Hanya segelintir kecil pelajar yang tidak mempunyai kemudahan telefon pintar yang boleh menyokong aplikasi pembelajaran atas talian.

Walaubagaimanapun, permasalahan yang sebenar adalah berkaitan dengan capaian jalur lebar di kawasan kediaman pelajar. Berdasarkan tinjauan ini juga menunjukkan, capaian jalur lebar adalah penting untuk setiap pelajar bersedia dalam menjalani pembelajaran atas talian.

Oleh itu, penkaji menyarankan agar pensyarah perlu meminimumkan penggunaan perisian atau aplikasi atas talian agar tidak memberikan bebanan kepada pelajar untuk membuat capaian. Di samping itu, penkaji juga mencadangkan agar pihak institusi boleh membantu pelajar yang mempunyai masalah capaian jalur lebar dengan mengumpul pelajar hadir ke kolej untuk menyiapkan tugasan yang diberikan secara atas talian.

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PEMBELAJARAN ATAS TALIAN (E-LEARNING) DI KALANGAN PELAJAR JABATAN KEJURUTERAAN MEKANIKAL POLISAS, SATU TINJAUAN

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Abstract: *Pembelajaran atas talian (e-learning) adalah suatu medium yang penting pada abad ke-21. Institusi politeknik khususnya telah melaksanakan pembelajaran atas talian (e-learning) pada sesi Jun 2020 sejak pandemik Covid-19 menular. Hampir 90% proses pembelajaran secara online dijalankan pada sesi Jun 2020 secara sepenuhnya terutama kursus yang berasaskan teori. Ini menjadi punca kuasa kepada pelaksanaan kajian ini. Kajian ini dilaksanakan untuk mengetahui tahap pengetahuan, tahap kesediaan dan tahap motivasi di kalangan 290 orang pelajar semester 1 hingga semester 5 di Jabatan Kejuruteraan Mekanikal, Polisas terhadap pembelajaran atas talian (e-learning). Statistik diskriptif digunakan dengan melihat frekuensi, peratusan dan min hasil kajian. Didapati, tahap min adalah sederhana untuk semua pembolehubah dikaji iaitu pengetahuan (3.80), kesediaan (3.73) dan tahap motivasi (3.59). Oleh itu, pihak pengurusan POLISAS umumnya dan Jabatan Kejuruteraan Mekanikal khususnya perlu lebih peka kepada isu yang diketengahkan dalam kajian ini, supaya tindakan penambahbaikan dapat diambil bagi memastikan objektif pengajaran dan pembelajaran dapat dicapai dengan jayanya melalui pembelajaran atas talian (e-learning).*

Keywords: *(Pembelajaran Atas Talian, Pengetahuan, Kesediaan, Motivasi)*

Pengenalan

Pembelajaran atas talian merupakan norma baharu setelah pandemik Covid-19 melanda dunia. Di Malaysia umumnya dan khususnya di institusi politeknik proses pembelajaran dan pengajaran telah dilaksanakan di atas talian (e-learning). Kementerian Pengajian Tinggi (KPT) telah mengeluarkan panduan pelaksanaan pembelajaran dan pengajaran (PdP) yang menetapkan proses pembelajaran dilaksanakan secara atas talian (e-learning) bagi mengelakkan penularan Covid-19. Pelajar dan pensyarah di politeknik perlu menyesuaikan diri dengan norma baharu dan mengambil tindakan proaktif bagi memastikan proses pembelajaran dapat dilaksanakan sebaik mungkin. Pandemik Covid-19 telah menyebabkan pelajar dan pensyarah terpaksa akur dengan pembelajaran atas talian (e-learning) walaupun belum bersedia sepenuhnya samada dari segi pengetahuan, kesediaan dan motivasi. Oleh itu, suatu kajian telah dijalankan bagi mengetahui tahap pengetahuan, kesediaan dan motivasi pelajar di Jabatan Kejuruteraan Mekanikal Polisas dalam pembelajaran atas talian (e-learning) ini. Kajian ini mempunyai beberapa signifikan kajian. Pertamanya, hampir 90% proses pembelajaran secara online dijalankan pada sesi Jun 2020 di politeknik. Sesi Jun 2020 merupakan permulaan pembelajaran online secara sepenuhnya terutamanya kursus berasaskan teori. Ini menjadi

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13th – 14th December 2020

punca kuasa kepada penghasilan kajian ini. Keduanya, oleh kerana belum ada kajian seumpama ini di Jabatan Kejuruteraan Mekanikal Polisas, maka hasil kajian dapat memberikan maklumat tentang tahap pengetahuan, tahap kesediaan dan tahap motivasi pelajar terhadap pembelajaran atas talian. Ketiga, data kajian ini dapat dijadikan asas untuk penambahbaikan dalam proses pembelajaran atas talian (e-learning).

Sorotan Penulisan

Pembelajaran atas talian (e-learning) dikenali sebagai pembelajaran jarak jauh memerlukan faktor kesediaan pelajar untuk memastikan kejayaan pelaksanaannya (Zhang & Liu, 2019). Selain itu, teknologi dan sikap pelajar juga menyumbang kepada kesediaan pembelajaran atas talian (e-learning) (Dray et al., 2011). Penjimatan masa dan pengurangan kos juga membolehkan pelajar belajar di mana sahaja pada bila-bila masa di luar kelas (Mladenova et al., 2020). Pada masa kini, institusi pengajian tinggi telah melaksanakan pembelajaran atas talian (e-learning) sebagai strategi pembelajaran yang penting.

Faktor motivasi pelajar memainkan peranan penting untuk memastikan kejayaan pembelajaran atas talian (e-learning) (Samir Abou El-Seoud et al., 2014; Jung et al., 2010). Apabila seseorang pelajar berminat terhadap sesuatu aktiviti, motivasi mereka akan meningkat dan hasil yang positif akan diperoleh (Vallerand et al., 1997;Ryan & Deci, 2000). Penggunaan unsur interaktif dapat meningkatkan motivasi pelajar dalam pembelajaran atas talian (e-learning) (Samir Abou El-Seoud et al., 2014) dan dapat meningkatkan penglibatan pelajar (Nicholas, 2009). Secara keseluruhannya, sikap pelajar adalah positif dan mereka menganggap pembelajaran atas talian (e-learning) membantu proses pembelajaran mereka (Asiry, 2017).

Metodologi

Seramai 290 pelajar di Jabatan Kejuruteraan Mekanikal, Polisas telah menjadi responden dalam kajian ini. Jumlah responden berdasarkan jantina, pelajar lelaki lebih ramai iaitu 239 orang (82.4%) berbanding pelajar perempuan seramai 51 orang (17.6%). Peratus responden mengikut program 64.8% pelajar DKM dan 35.2% pelajar DAD. Kajian ini menggunakan pendekatan kuantitatif dan data diperolehi menggunakan soal selidik di Google form. Instrumen kajian telah diubahsuai daripada Noraffandy Yahaya dan Ling Ning Ning (Yahaya & Ling, 2011). Seramai 290 orang pelajar di Jabatan Kejuruteraan Mekanikal Polisas telah menjadi responden untuk kajian ini. Populasi kajian ini terdiri daripada pelajar semester 1 hingga semester 5 yang mengambil kursus DKM dan DAD. Jumlah populasi ialah 864 orang pelajar (HEP Polisas sesi Jun 2020) dan berdasarkan jadual persampelan Krejcie dan Morgan (1970), jumlah sampel yang sesuai adalah 269. Tahap pengetahuan pelajar dalam penggunaan e-learning diukur menggunakan 8 item, tahap kesediaan pelajar dalam penggunaan e-learning diukur menggunakan 10 item dan tahap motivasi pelajar dalam penggunaan e-learning diukur menggunakan 8 item. Prosedur statistik deskriptif menggunakan IBM-SPSS versi 25.0 telah dijalankan.

Keputusan

Tinjauan ini mengandungi 26 item dalam soal selidik. Keputusan dalam Jadual 1 hingga Jadual 5 menunjukkan statistik descriptif untuk setiap item. Nilai min berada dalam julat 3.60 hingga 4.02. Seramai 290 orang responden telah menjawab soal selidik ini. 239 responden lelaki mewakili 82.4% manakala 51 orang responden perempuan mewakili 17.6%. Jadual 1 menunjukkan kekerapan dan peratusan responden dalam kajian ini.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 1: Kekerapan Dan Peratusan Responden Mengikut Jantina

Jantina	Kekerapan	Peratusan
Lelaki	239	82.4
Perempuan	51	17.6
Jumlah	290	100

Terdapat 2 program pengajian di Jabatan Kejuruteraan Mekanikal Polisas iaitu Diploma Kejuruteraan Mekanikal (DKM) dan Diploma Kejuruteraan Mekanikal (Automotif), (DAD). Seramai 188 orang responden terdiri daripada pelajar DKM dan 102 orang pelajar DAD seperti yang ditunjukkan di Jadual 2.

Jadual 2: Kekerapan Dan Peratusan Responden Mengikut Program

Program	Kekerapan	Peratusan
DKM	188	64.8
DAD	102	35.2
Jumlah	290	100

Hasil analisis untuk tahap pengetahuan pelajar dalam penggunaan e-learning adalah sederhana dengan min keseluruhan sebanyak 3.80. Keputusan di Jadual 3 menunjukkan kebanyakan pelajar mempunyai kemahiran menggunakan e-learning (19.7% sangat setuju dan 35.5% setuju), sedar e-learning diaplikasikan di Polisas (32.4% sangat setuju dan 36.2% setuju) dan sedar e-learning mempunyai banyak kelebihan (23.4% sangat setuju dan 31.7% setuju). Majoriti 101 (34.8%) orang pelajar sangat setuju mereka akan ketinggalan sekiranya tidak menggunakan e-learning dan 109 (37.6%) orang pelajar sangat setuju pelbagai bahan pembelajaran boleh didapati melalui e-learning. Bagi pernyataan ke enam, majoriti pelajar tahu e-learning dapat membantu pencapaian akademik (26.2% sangat setuju dan 34.1% setuju). Seterusnya untuk pernyataan penggunaan e-learning semasa pelajar berada di Polisas (26.2% sangat setuju dan 31.7% setuju) dan bagi pengetahuan ICT (26.9% sangat setuju dan 30.3% setuju).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 3: Taburan Min Dan Sisihan Piawai Mengikut Tahap Pengetahuan Pelajar Dalam Penggunaan E-learning

Pernyataan	SS f %	S f %	TP f %	TS f %	STS f %	Min
1. Saya mempunyai kemahiran menggunakan e-learning.	57 19.7	103 35.5	**111** **38.3**	15 5.2	4 1.4	3.67
2. Saya sedar bahawa e-learning diaplikasikan di POLISAS.	94 32.4	**105** **36.2**	79 27.2	11 3.8	1 0.3	3.97
3. Saya sedar bahawa e-learning mempunyai banyak kelebihan.	68 23.4	92 31.7	**98** **33.8**	25 8.6	7 2.4	3.65
4. Saya tahu bahawa saya akan ketinggalan sekiranya tidak menggunakan e-learning.	**101** **34.8**	88 30.3	77 26.6	19 6.6	5 1.7	3.90
5. Saya tahu bahawa pelbagai bahan pembelajaran boleh didapati melalui e-learning.	**109** **37.6**	92 31.7	77 26.6	10 3.4	2 0.7	4.02
6. Saya tahu bahawa e-learning boleh membantu pencapaian akademik saya.	76 26.2	**99** **34.1**	85 29.3	24 8.3	6 2.1	3.74
7. Saya sedar bahawa saya perlu menggunakan e-learning semasa saya berada di POLISAS.	76 26.2	92 31.7	**94** **32.4**	19 6.6	9 3.1	3.71
8. Saya mempunyai pengetahuan ICT.	78 26.9	88 30.3	**89** **30.7**	31 10.7	4 1.4	3.71
Min keseluruhan:						**3.80**

Catatan: Angka bercetak tebal (**bold**) mewakili pencapaian kekerapan paling tinggi.

Hasil analisis tahap kesediaan penggunaan e-learning di kalangan pelajar menunjukkan min keseluruhan sebanyak 3.73. Jadual 4 menunjukkan enam daripada sepuluh pernyataan bagi tahap kesediaan pelajar dalam penggunaan e-learning berada di tengah-tengah skala likert. Majoriti pelajar bersedia untuk mempelajari cara penggunaan e-learning dan menggunakan e-learning untuk mendapatkan bahan pembelajaran.

Jadual 4: Taburan Min Dan Sisihan Mengikut Tahap Kesediaan Pelajar Dalam Penggunaan E-learning

Pernyataan	SS f %	S f %	TP f %	TS f %	STS f %	Min
1. Saya bersedia untuk menggunakan e-learning pada bila-bila masa.	69 23.8	96 33.1	**105** **36.2**	15 5.2	5 1.7	3.72
2. Saya bersedia mempelajari cara menggunakan e-learning.	85 29.3	**101** **34.8**	84 29.0	16 5.5	4 1.4	3.85
3. Saya bersedia mempelajari cara menggunakan aplikasi e-learning.	87 30.0	**99** **34.1**	88 30.3	15 5.2	1 0.3	3.88
4. Saya bersedia untuk menghadapi cabaran dalam penggunaan e-learning.	77 26.6	**97** **33.4**	89 30.7	22 7.6	5 1.7	3.76
5. Saya bersedia memberi galakan kepada rakan-rakan supaya menggunakan e-learning.	69 23.8	93 32.1	**100** **34.5**	22 7.6	6 2.1	3.68
6. Saya bersedia menjadikan kaedah e- learning adalah cara pembelajaran pilihan saya.	64 22.1	90 31.0	**102** **35.2**	23 7.9	11 3.8	3.60
7. Saya bersedia menggunakan e-learning bagi semua mata pelajaran.	60 20.7	83 28.6	**97** **33.4**	34 11.7	16 5.5	3.47
8. Saya bersedia menggunakan e-learning untuk berkomunikasi dengan rakan-rakan sekuliah.	81 27.9	86 29.7	**99** **34.1**	17 5.9	7 2.4	3.75
9. Saya bersedia menggunakan e-learning untuk berkomunikasi dengan pensyarah.	74 25.5	89 30.7	**103** **35.5**	16 5.5	8 2.8	3.71

eISBN 978-967-2426-22-6
13th – 14th December 2020

10. Saya bersedia menggunakan e- learning untuk mendapatkan nota dan bahan-bahan pembelajaran lain.	**102** **35.2**	87 30.0	82 28.3	15 5.2	4 1.4	3.92
Min keseluruhan:						**3.73**

Catatan: Angka bercetak tebal (**bold**) mewakili pencapaian kekerapan paling tinggi.

Jadual 5 menunjukkan min keseluruhan 3.59 bagi tahap motivasi pelajar dalam penggunaan e-learning. Majoriti pelajar bersetuju mereka suka (18.6% sangat setuju dan 34.8% setuju) dan seronok (18.3% sangat setuju dan 34.5% setuju) menggunakan e-learning. Pensyarah (22.8% sangat setuju dan 37.6% setuju) dan pihak pentadbiran Polisas (20.7% sangat setuju dan 36.2% setuju) memberikan galakan kepada pelajar untuk menggunakan e-learning. Majoriti pelajar bersetuju e-learning menjimatkan kos.

Jadual 5: Taburan Min Dan Sisihan Piawai Mengikut Tahap Motivasi Pelajar Dalam Penggunaan E-learning

Pernyataan	**SS** **f** **%**	**S** **f** **%**	**TP** **f** **%**	**TS** **f** **%**	**STS** **f** **%**	**Min**
1. Saya suka menggunakan e learning.	54 18.6	**101** **34.8**	93 32.1	28 9.7	14 4.8	3.53
2. Saya berasa seronok menggunakan e-learning.	53 18.3	**100** **34.5**	92 31.7	31 10.7	14 4.8	3.51
3. Saya mendapat galakan daripada pensyarah untuk menggunakan e- learning.	66 22.8	**109** **37.6**	87 30.0	24 8.3	4 1.4	3.72
4. Saya mendapat galakan daripada rakan sebaya untuk menggunakan e-learning.	63 21.7	92 31.7	**105** **36.2**	20 6.9	10 3.4	3.61
5. Saya mendapat galakan daripada pihak pentadbiran POLISAS untuk menggunakan e-learning.	60 20.7	**105** **36.2**	95 32.8	25 8.6	5 1.7	3.66
6. Saya merasakan e-learning menjimatkan kos.	83 28.6	**85** **29.3**	82 28.3	21 7.2	19 6.6	3.66
7. Saya berminat menggunakan e-learning.	61 21.0	93 32.1	**94** **32.4**	24 8.3	18 6.2	3.53
8. Saya selesa dengan penggunaan e-learning.	63 21.7	87 30.0	**95** **32.8**	29 10.0	16 5.5	3.52
Min keseluruhan:						**3.59**

Catatan: Angka bercetak tebal (**bold**) mewakili pencapaian kekerapan paling tinggi.

Perbincangan

Hasil kajian menunjukkan tahap pengetahuan pelajar dalam penggunaan e-learning mempunyai min keseluruhan tertinggi, 3.80 berbanding tahap kesediaan pelajar dan tahap motivasi pelajar. Majoriti pelajar sangat bersetuju mereka akan ketinggalan sekiranya tidak menggunakan e-learning. Min tertinggi 4.02 pada pernyataan pelajar tahu bahawa pelbagai bahan pembelajaran boleh didapati melalui e-learning. Ini menunjukkan pelajar bersetuju e-learning adalah perlu sebagai medium untuk mendapatkan bahan pembelajaran pada masa kini (Hamzah, 2007).

Tahap kesediaan pelajar dalam penggunaan e-learning menunjukkan min 3.73. Majoriti pelajar sangat bersetuju bersedia menggunakan e- learning untuk mendapatkan nota dan bahan-bahan pembelajaran lain. Pelajar juga bersedia untuk mempelajari cara menggunakan e-learning dan menghadapi cabaran dalam penggunaan e-learning. Prestasi pelajar boleh meningkat sekiranya mereka selesa dengan situasi pembelajaran (Jagušt et al., 2018). Walaubagaimanapun, majoriti pelajar tidak pasti mereka bersedia menggunakan e-learning pada bila-bila masa samada untuk berkomunikasi dengan pensyarah dan rakan-rakan kuliah

seterusnya menjadikan e-learning sebagai cara pembelajaran pilihan untuk semua mata pelajaran. Hasil kajian dalam Jadual 5 menunjukkan majoriti pelajar bersetuju mereka suka menggunakan e-learning dan mendapat galakan daripada pensyarah dan pihak Polisas. 34.5% pelajar bersetuju mereka seronok menggunakan e-learning. Kaedah pembelajaran baru yang menerapkan gamifikasi objek dalam proses pengajaran dan pembelajaran dapat menarik minat pelajar bagi kursus berasaskan teori (Leaning, 2015;Khalid & Zainuddin, 2020). Kepuasan pelajar terhadap pembelajaran atas talian (e-learning) dapat memberi kesan yang positif terhadap pembelajaran mereka (Al-Rahmi et al., 2015). Pelajar juga bersetuju e-learning menjimatkan kos. Pada sesi Jun 2020 disebabkan pandemik Covid19 yang masih menular, majoriti pelajar Polisas tidak perlu hadir ke kampus dan belajar secara atas talian (e-learning) di rumah. Ini dapat menjimatkan banyak kos. Kebanyakan pelajar dapat menyesuaikan diri dengan pembelajaran atas talian (e-learning) disebabkan pandemik Covid-19 (Edelhauser & Lupu-Dima, 2020).

Kesimpulan

Pembelajaran atas talian (e-learning) akan diteruskan pada abad ke 21 ini. Pandemik Covid-19 telah menyebabkan pembelajaran atas talian (e-learning) dilaksanakan di semua institusi pendidikan secara meluas. Ini adalah revolusi pembelajaran atas talian (e-learning) yang akan diteruskan pada masa hadapan. Walaubagaimanapun, sokongan semua pihak diperlukan untuk memastikan tiada pelajar yang tercicir dan keperluan fasiliti internet yang baik dapat diadakan bagi memulakan transformasi digital berskala besar. Kajian ini mendapati majoriti pelajar bersedia untuk menggunakan e-learning. Pihak pentadbiran Polisas juga menggalakkan penggunaan e-learning untuk proses pengajaran dan pembelajaran. Antara usaha pihak pentadbiran Polisas untuk menggalakkan pelajar menggunakan e-learning dengan mengadakan program learn from home. Program ini adalah kolaborasi antara pihak Polisas dengan YTL Foundation Sdn. Bhd. Secara keseluruhannya, dapatan kajian menunjukkan tindakbalas yang positif terhadap pengetahuan, kesediaan dan motivasi pelajar di Jabatan Kejuruteraan Mekanikal terhadap pembelajaran atas talian (e-learning). Kajian akan datang dicadangkan untuk melihat tahap keberkesanan pembelajaran atas talian (e-learning) terhadap pencapaian akademik pelajar.

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13th – 14th December 2020

PENGGUNAAN GOOGLE MEET DALAM PROSES PENGAJARAN DAN PEMBELAJARAN DI JABATAN TEKNOLOGI MAKLUMAT & KOMUNIKASI, POLITEKNIK SULTAN MIZAN ZAINAL ABIDIN

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Abstrak: *Penularan wabak pandemik Covid19 di Malaysia memberi kesan yang mendalam terhadap semua sektor termasuk sektor pendidikan. Ekoran langkah kerajaan mengumumkan PKP di seluruh Malaysia memaksa proses PdP dilaksanakan secara atas talian samada di sekolah atau IPT. Sehubungan dengan itu sebahagian besar proses PdP di JTMK, PSMZA turut dijalankan secara atas talian. Pelbagai platform digunakan dan salah satunya ialah Google Meet. Kajian ini dijalankan bertujuan untuk mengenalpasti tiga aspek iaitu dari segi aspek kemudahan capaian, rekabentuk antara muka pengguna dan tahap mesra pengguna Google Meet dari perspektif pelajar. Responden kajian ini terdiri daripada 80 orang pelajar semester 3 dan 4 yang diajar oleh penyelidik. Hasil kajian menunjukkan bahawa responden bersetuju bahawa Google Meet mudah dicapai di samping mempunyai rekabentuk antara muka pengguna yang mudah dan menarik. Responden juga bersetuju Google Meet mempunyai tahap mesra pengguna yang bagus dan menyenangkan. Oleh itu Google Meet merupakan satu platform proses PdP yang bagus untuk digunakan.*

Kata Kunci: *Penggunaan, Google Meet, Proses, Pengajaran dan Pembelajaran*

Pengenalan

Pada Januari 2020, Pertubuhan Kesihatan Sedunia (WHO) telah mengisytiharkan situasi pandemik akibat penularan sejenis virus baharu jenis Korona yang dinamakan Corona Virus Disease 19 (Covid19). Virus ini telah menyerang seluruh dunia termasuk Malaysia. Ekoran peningkatan kes yang semakin tinggi, kerajaan Malaysia telah mengisytiharkan Perintah Kawalan Pergerakan (PKP) di seluruh negara bermula 18 Mac 2020.

Ekoran daripada arahan PKP membawa kepada penutupan sektor pendidikan di mana semua sekolah dan pusat pengajian tinggi ditutup bagi memutuskan rantaian penularan wabak yang berbahaya ini. Akibatnya, proses Pengajaran dan Pembelajaran (PdP) secara bersemuka yang telah diamalkan sejak dahulu terpaksa dihentikan dalam tempoh PKP.

Hampir semua institut pengajian tinggi (IPT) awam dan swasta telah melaksanakan PdP secara dalam talian sejak PKP. Ini termasuklah politeknik Malaysia umumnya dan Politeknik Sultan Mizan Zainal Abidin (PSMZA) khususnya. Namun, perubahan ke arah PdP secara maya ini merupakan satu cabaran yang besar bukan sahaja kepada para pelajar, malah turut memberi impak kepada kaedah pengajaran oleh para pensyarah.

Terdapat beberapa platform PdP dalam talian yang menjadi pilihan warga pendidik seperti Google Classroom, Google Meet, Youtube, Zoom Cloud Meeting, dan Microsoft Team.

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13th – 14th December 2020

Kajian ini meninjau penggunaan Google Meet dalam proses PdP di Jabatan Teknologi Maklumat dan Komunikasi (JTMK), Politeknik Sultan Mizan Zainal Abidin (PSMZA).

Penyataan Masalah

Ekoran daripada penularan wabak pandemic Covid19, pelbagai sektor telah mengalami kesan sampingan. Sektor pendidikan juga tidak terkecuali, bermula dari peringkat rendah sehinggalah IPT mengalami kesan langsung akibat penularan wabak tersebut. Di Malaysia, bermula Mac 2020, para pendidik samada di peringkat prasekolah sehingga ke IPT mula beralih kepada PdP dalam talian berbanding secara bersemuka di dalam bilik darjah atau dewan kuliah. Di PSMZA, PdP secara online telah dilaksanakan bermula pada sesi Jun 2020. Norma baharu dalam pengajaran dan pembelajaran dalam talian terus disesuaikan menerusi pelbagai platform seperti Google Classroom, Google Meet, Zoom, Microsoft Team, Telegram, Whatsapp dan sebagainya supaya pelajar tidak ketinggalan dalam proses pembelajaran. Antara isu-isu yang timbul ialah pelajar sukar mencapai platform yang digunakan kerana tidak tahu cara untuk mendaftar akaun serta rekabentuk antaramuka pengguna yang tidak mesra pengguna. Oleh itu kajian ini dijalankan bagi mengenalpasti aspek-aspek yang ada pada aplikasi Google Meet.

Objektif

i. Untuk mengenalpasti kemudahan capaian pelajar terhadap platform Google Meet
ii. Untuk mengenalpasti rekabentuk antara muka pengguna Google Meet
iii. Untuk mengenalpasti tahap mesra pengguna Google Meet

Kajian Literatur

Definisi Penggunaan

Menurut Kamus Pelajar Bahasa Malaysia Edisi Kedua (2015), penggunaan bermaksud perbuatan (usaha, kegiatan dan sebagainya) menggunakan sesuatu. Dalam kajian ini, penggunaan merujuk kepada perbuatan menggunakan Google Meet sebagai platform dalam usaha melaksanakan proses PdP secara atas talian.

Google Meet

Google Meet merupakan perkhidmatan video persidangan atau perjumpaan dalam talian yang dilancarkan oleh Google. Perkhidmatan Google Meet adalah gabungan dari Google Chat dan Google Hangouts dengan pengembangan yang lebih dikhususkan pada pertemuan dalam talian. Pada bulan Oktober 2019, Google Hangouts telah menamatkan penggunaan versi klasiknya dan pengguna dapat menggunakan Hangouts untuk versi yang lebih moden.

Google Meet diperkenalkan pada bulan Februari 2017 hanya untuk pengguna iOS (iPhone). Pada bulan berikutnya, Google Meet diperkenalkan secara umum dan dapat diakses melalui web browser, iOS, dan Android. Dalam versi percuma, pengguna dapat melakukan pertemuan dengan jumlah maksimum 100 peserta. Manakala bagi versi premium, pengguna dapat melakukan pertemuan daripada 100 sehingga 250 peserta.

Pengguna yang mempunyai akaun Google dapat membuat pertemuan atau menyertai pertemuan dalam talian. Untuk alasan keselamatan, hos mempunyai akses penuh dalam sesuatu pertemuan. Hos boleh menerima masuk dan menghapus pengguna sepanjang pertemuan berlangsung. Pada bulan April 2020, Google juga telah menambahkan ciri-ciri audio pembatalan bunyi khusus untuk pakej premium.

Manfaat utama yang dimiliki oleh Google Meet adalah untuk membantu dan memudahkan pengguna, terutama bagi pekerja yang berada di dunia perniagaan untuk mengadakan perjumpaan dalam talian atau perjumpaan jarak jauh. Selain itu Google Meet juga

eISBN 978-967-2426-22-6
13th – 14th December 2020

sesuai digunakan di dalam proses Pengajaran dan Pembelajaran (PdP) secara atas talian. Ekoran penularan wabak pandemik Covid19 yang melanda dunia pada masa kini, sekolah-sekolah dan institut pengajian tinggi diarahkan untuk ditutup bagi mengatasi penularan wabak ini. Bagi memastikan pelajar dapat terus mengikuti pengajian, proses PdP secara atas talian merupakan satu alternatif yang terbaik. Google Meet merupakan salah satu platform yang menyediakan ciri-ciri yang bersesuaian untuk digunakan dalam proses PdP. Antara ciri-ciri yang terdapat pada Google Meet adalah seperti berikut:

1. Mempunyai kemampuan untuk melakukan pertemuan dalam talian dengan menggunakan nombor telefon.
2. Bersepadu dengan Kalendar Google supaya anda dapat membuat panggilan pertemuan dengan hanya satu klik.
3. Teks tertutup yang dihasilkan oleh AI.
4. Boleh berkongsi skrin untuk melihat dokumen, persembahan, atau spreadsheet.
5. Panggilan antara semua pengguna dienkripsi.
6. Semasa menggunakan pakej G Suite Enterprise, kata laluan pengguna dilindungi dengan selamat.

Definisi Proses

Menurut Kamus Pelajar Bahasa Malaysia Edisi Kedua (2015), proses bermaksud cara atau kaedah tertentu yang diikut untuk membuat sesuatu. Selain itu, proses juga bermaksud beberapa perbuatan berperingkat-peringkat yang dilakukan untuk mendapatkan sesuatu.
Dalam kajian ini, proses merujuk kepada cara atau kaedah menggunakan Google Meet untuk melaksanakan PdP secara atas talian.

Definisi Pengajaran Dan Pembelajaran

Pengajaran menurut Kamus Pelajar Bahasa Malaysia Edisi Kedua (2015) bermaksud segala yang berkaitan dengan mengajar atau mengajarkan (seperti caranya, sistemnya). Menurut Sharifah Alwiah (1986) pengajaran sebagai aktiviti atau proses kerana apabila mengajar, aktiviti seperti menyoal, menerangkan, mendengar, menggalakkan sesuatu, dan berbagai-bagai aktiviti lain akan berlaku. Dalam kajian ini pengajaran bermaksud aktiviti pensyarah mengajar untuk menyampaikan maklumat yang berkaitan kursus yang diajar melibatkan perancangan, pengelolaan, penyampaian, bimbingan dan penilaian.

Manakala pembelajaran menurut Kamus Pelajar Bahasa Malaysia Edisi Kedua (2015) ialah perihal atau proses belajar. Pembelajaran adalah proses atau kegiatan belajar (Teuku Iskandar, 1986) yang berlaku dalam pelbagai bentuk (Schunk, 1991). Menurut Schunk, pembelajaran melibatkan pemerolehan dan pengubahsuaian pengetahuan, kemahiran, strategi, kepercayaan dan tingkah laku. Dalam kajian ini pembelajaran merujuk kepada perihal pelajar belajar untuk mendapatkan ilmu pengetahuan dengan penyampaian maklumat dan panduan daripada pensyarah.

Metodologi Kajian

Instrumen Kajian

Dalam kajian ini, instrumen yang digunakan ialah soalan soal selidik yang terdiri daripada dua bahagian iaitu Bahagian I mengandungi maklumat demografi responden dan Bahagian II ialah soal selidik di mana terdapat 3 bahagian yang diukur dengan menggunakan skala Likert.

Bahagian I : Mengandungi 1 item yang berkaitan dengan maklumat jantina pelajar.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Bahagian II :

A. Mengandungi 5 item yang berkaitan dengan kemudahan capaian pelajar terhadap platform Google Meet
B. Mengandungi 5 item yang berkaitan dengan rekabentuk antara muka pengguna Google Meet
C. Mengandungi 5 item yang berkaitan dengan tahap mesra pengguna Google Meet

Bagi soalan Bahagian II, kesemua item tersebut diukur dengan menggunakan skala Likert. Skala ini dibahagikan dengan lima (5) pemerkatan iaitu:

Skala 1: Sangat Tidak Bersetuju
Skala 2: Tidak Bersetuju
Skala 3: Tidak Pasti
Skala 4: Bersetuju
Skala 5: Sangat Bersetuju

Kajian Rintis

Kajian rintis dijalankan bertujuan bagi menentukan ciri-ciri soalan yang perlu diubah suai atau dikekalkan (Mohamad Najib, 1999). Melalui kajian rintis juga, kesahan dan kebolehpercayaan pernyataan-pernyataan dalam soal selidik yang digunakan boleh ditentukan. Menurut Fraenkel Jack. R dan Norman. E. Wallen (1996), kesahan pula didefinisikan sebagai ketepatan (*appropriateness*), kebenaran (*truthfulness*), bermakna (*meaningfulness*) dan kebolehgunaan (usefulness) instrumen yang membolehkan data-data diinferenkan.

Kajian rintis ini telah dijalankan dengan mengedarkan borang soal selidik kepada 10 orang pelajar yang dipilih secara rawak. Nilai pekali kebolehpercayaan yang didapati bagi setiap item yang terdapat di dalam borang soal selidik adalah seperti yang ditunjukkan dalam Jadual 1 di bawah:

Jadual 1: Nilai Pekali Kebolehpercayaan Item

Aspek Kajian	Cronbach's Alpha
Kemudahan Capaian Pelajar Terhadap Platform Google Meet	0.869
Rekabentuk Antara Muka Pengguna Google Meet	0.921
Tahap Mesra Pengguna Google Meet	0.929

Kebolehpercayaan instrumen yang bernilai 0.6 dan ke atas sering digunakan untuk menentukan tahap kebolehpercayaan sesuatu kajian (Mohd Majid Konting, 2005). Oleh yang demikian, setiap item yang digunakan dalam soal selidik yang telah dikemukakan mempunyai tahap kebolehpercayaan yang tinggi.

Dapatan Dan Perbincangan

Analisis Data Demografi

Demografi dalam kajian ini hanya merangkumi aspek jantina. Ini kerana skop kajian ialah kepada pelajar semester 3 dan 4 di Jabatan Teknologi Maklumat & Komunikasi (JTMK) yang diajar oleh penyelidik sahaja. Kekerapan dan peratusan aspek demografi adalah seperti dalam Jadual 2. Sampel terdiri daripada 80 orang pelajar semester 3 dan 4 iaitu 40 orang palajar lelaki (50%) dan 40 orang pelajar perempuan (50%).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 2: Demografi Responden

Demografi	Bilangan Responden	Peratusan (%)
Jantina		
Lelaki	40	50.0
Perempuan	40	50.0

Analisis Aspek-aspek Yang Mempengaruhi Penggunaan Google Meet

Perbincangan pada bahagian ini adalah berdasarkan analisis kajian Bahagian II, Seksyen A hingga C soal selidik iaitu aspek-aspek yang mempengaruhi penggunaan Google dalam proses PdP di JTMK, PSMZA. Hasil dapatan dipersembahkan dalam bentuk skor min. Nilai ini kemudian dibandingkan dengan Jadual Penentuan Aras / Tahap Mengikut Skor Min seperti pada Jadual 3 yang berasaskan sumber daripada Landel (1997) bagi memudahkan penilaian dapatan.

Jadual 3: Jadual Penentuan Aras / Tahap Mengikut Skor Min

Skor Min	Tahap
1.00 – 2.33	Rendah
2.34 – 3.66	Sederhana
3.67 – 5.00	Tinggi

Sumber : Landell (1997)

Analisis Kemudahan Capaian Pelajar Terhadap Platform Google Meet

Jadual 4 di bawah menunjukkan hasil analisis purata skor min bagi Kemudahan Capaian Pelajar Terhadap Platform Google Meet. Daripada analisis yang telah dijalankan didapati semua item berada pada tahap tinggi kecuali item kedua iaitu Google Meet boleh dicapai secara percuma berada pada tahap sederhana. Purata skor min keseluruhan bagi aspek Kemudahan Capaian Pelajar Terhadap Platform Google Meet ialah 3.27 iaitu pada tahap tinggi. Hasil dapatan ini menunjukkan bahawa responden bersetuju bahawa capaian tehadap platform Google Meet adalah mudah dan menjadi pilihan.

Jadual 4: Purata Skor Min Kemudahan Capaian Pelajar Terhadap Platform Google Meet

Aspek	Skor Min		Jumlah Skor Min	Tahap
	Lelaki	Perempuan		
Google Meet boleh dicapai dengan mudah	3.75	3.78	3.77	Tinggi
Google Meet boleh dicapai dengan percuma	3.35	3.63	3.49	Sederhana
Google Meet boleh di daftar masuk dengan menggunakan akaun gmail yang sedia ada	4.20	4.25	4.24	Tinggi
Google Meet boleh dicapai samada menggunakan gajet mudah alih atau komputer peribadi	4.20	4.28	4.24	Tinggi
Google Meet menjadi pilihan saya yang utama untuk aktiviti pembelajaran secara atas talian	3.95	4.00	3.98	Tinggi
Purata Skor Min			**3.94**	**Tinggi**

eISBN 978-967-2426-22-6
13th – 14th December 2020

Analisis Rekabentuk Antara Muka Pengguna Google Meet

Jadual 5 di bawah menunjukkan hasil analisis purata skor min bagi Rekabentuk Antara Muka Pengguna Google Meet. Dapatan daripada hasil analisis mendapati semua item berada pada tahap tinggi. Purata skor min keseluruhan bagi aspek ini ialah 3.90 iaitu berada pada tahap yang tinggi. Situasi ini menunjukkan bahawa responden bersetuju bahawa rekabentuk antara muka pengguna Google Meet sesuai dan mudah digunakan.

Jadual 5: Purata Skor Min Rekabentuk Antara Muka Pengguna Google Meet

Aspek	**Skor Min**		**Jumlah Skor Min**	**Tahap**
	Lelaki	**Perempuan**		
Setiap antaramuka pengguna Google Meet dihubungkan secara sistematik.	3.75	3.83	3.79	Tinggi
Warna paparan yang digunakan pada Google Meet adalah bersesuaian.	4.00	3.85	3.93	Tinggi
Paparan antaramuka pengguna Google Meet yang dibangunkan bersesuaian.	3.95	3.93	3.94	Tinggi
Antaramuka pengguna Google Meet mudah digunakan dan difahami.	3.93	3.88	3.91	Tinggi
Antaramuka pengguna Google Meet adalah konsisten	3.95	3.88	3.92	Tinggi
Purata Skor Min			**3.90**	**Tinggi**

Analisis Tahap Mesra Pengguna Google Meet

Jadual 6 di bawah menunjukkan hasil analisis purata skor min bagi Tahap Mesra Pengguna Google Meet. Analisis yang dijalankan mendapati semua item berada pada tahap tinggi. Purata skor min keseluruhan bagi aspek ini ialah 3.92 iaitu berada pada tahap yang tinggi. Ini menunjukkan bahawa responden bersetuju Google Meet mempunyai ciri-ciri mesra pengguna yang tinggi.

Jadual 6: Purata Skor Min Tahap Mesra Pengguna Google Meet

Aspek	**Skor Min**		**Jumlah Skor Min**	**Tahap**
	Lelaki	**Perempuan**		
Google Meet menyediakan arahan pada skrin yang mudah difahami	4.00	3.85	3.93	Tinggi
Google Meet mudah digunakan tanpa bantuan orang lain	4.05	4.08	4.07	Tinggi
Google Meet menggunakan teks yang bebas daripada kesalahan. (Ejaan, tatabahasa, tanda baca atau lain-lain)	3.95	4.05	4.00	Tinggi
Google Meet menyediakan tindak balas yang cepat.	3.83	3.75	3.79	Tinggi
Google Meet menyediakan proses mendapatkan maklumat dengan jelas dan mudah difahami	3.83	3.80	3.82	Tinggi
Purata Skor Min			**3.92**	**Tinggi**

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13th – 14th December 2020

Kesimpulan

Pelaksanaan PKP akibat penularan COVID19 memberi anjakan transformasi yang besar kepada kaedah PdP samada di sekolah atau pun di IPT di negara ini. Pelbagai kaedah dan alternatif digunakan oleh para pendidik bagi melaksanakan PdP dengan lebih berkesan. Sejajar dengan itu para pensyarah di JTMK, PSMZA juga turut melaksanakan PdP secara atas talian dengan menggunakan pelbagai platform yang ada bagi memastikan pelajar dapat mengikuti proses PdP dengan mudah dan berkesan. Antara yang menjadi pilihan ialah Google Meet.

Kajian ini dilakukan untuk mengenalpasti tiga aspek Google Meet iaitu dari segi aspek kemudahan capaian, rekabentuk antara muka pengguna dan tahap mesra pengguna Google Meet dari perspektif pelajar. Hasil kajian menunjukkan bahawa responden bersetuju bahawa Google Meet mudah dicapai di samping mempunyai rekabentuk antara muka pengguna yang mudah dan menarik. Responden juga bersetuju Google Meet mempunyai tahap mesra pengguna yang bagus dan menyenangkan.

Oleh itu, penyelidik menyimpulkan bahawa platform Google Meet menjadi satu pilihan yang baik untuk proses PdP dalam talian. Ia boleh terus digunakan dalam proses PdP pada masa akan datang.

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Abstrak: *Kajian ini melihat kesediaan pelajar terhadap pengajaran dan pembelajaran (P&P) norma baru di Jabatan Teknologi Maklumat dan Komunikasi (JTMK), Politeknik Sultan Mizan Zainal Abidin (PSMZA). Tujuan kajian ini dijalankan adalah untuk mengenal pasti tahap kesediaan penerimaan pelajar terhadap P&P norma baru ini dan kemudahan sedia ada yang mempengaruhi pelaksanaan P&P norma baru ini. Kajian ini menggunakan kaedah kuantitatif yang melibatkan sampel kajian yang terdiri daripada 81 orang pelajar dari semester 3 dan 4 JTMK, PSMZA dan menggunakan borang soal selidik sebagai instrumen kajian. Semua data yang telah dikutip dianalisis dengan perisian Statistical Package Social Science 20 (SPSS 20). Data yang diperolehi dianalisis dan dipersembahkan dalam bentuk peratusan dan skor min yang kemudiannya akan diinterpretasikan dalam bentuk jadual. Secara keseluruhannya, hasil dapatan kajian menunjukkan bahawa tahap kesediaan penerimaan pelajar terhadap P&P norma baru berada pada tahap sederhana. Namun begitu, kesediaan kemudahan sedia ada yang mempengaruhi pelaksanaan pembelajaran secara norma baru menunjukkan tahap yang tinggi.*

Kata Kunci: *Kesediaan, Pengajaran dan Pembelajaran, Norma Baru*

Pengenalan

Kehadiran virus Covid-19 telah memberi impak yang besar bukan sahaja terhadap pembangunan sosial dan kesihatan manusia sejagat, malah struktur proses pengajaran dan pembelajaran (P&P) seluruh dunia juga terkesan dengan penularan wabak ini. Krisis global akibat penularan Covid-19 ini bukan sahaja memberikan kesan yang buruk terhadap keadaan ekonomi negara malah turut menyebabkan aktiviti P&P di semua institusi pendidikan seperti sekolah, kolej dan universiti terganggu dan tertangguh.

Disebabkan pandemik ini, masyarakat mula mengadaptasi norma baharu kehidupan dalam usaha membendung peningkatan penularan wabak ini. Pandemik COVID-19 ini sangat memberi kesan bukan sahaja di Malaysia bahkan di seluruh dunia. Bagi memastikan P&P dapat dijalankan dengan lancar di peringkat pengajian tinggi tempatan, banyak garis panduan yang telah dikeluarkan oleh pihak Kementerian Pengajian Tinggi (KPT), Agensi Kelayakan Malaysia (MQA) dan badan-badan profesional yang berkaitan bagi memastikan institusi pengajian tinggi (IPT) dapat meneruskan aktiviti P&P dengan lebih efektif.

Menerusi kenyataan media bertarikh 27 Mei 2020, KPT mencadangkan semua aktiviti P&P dilaksanakan secara atas talian sehingga 31 Disember 2020. Cadangan berkenaan pengendalian aktiviti akademik di IPT semasa dan pasca PKP tersebut telah diluluskan dalam

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13th – 14th December 2020

Mesyuarat Khas Menteri-Menteri pada 16 Mei 2020 mengenai Pelaksanaan Perintah Kawalan Pergerakan (PKP) Majlis Keselamatan Negara (MKN) 2020. Semua aktiviti P&P secara bersemuka adalah tidak dibenarkan dan pembelajaran secara atas talian terus berlangsung bagi menggantikan pertemuan bersemuka kecuali pelajar yang berkeperluan untuk pulang ke kampus secara berperingkat dengan mematuhi sepenuhnya Prosedur Operasi Standard (SOP) yang ditetapkan.

Norma baru dalam P&P dilaksanakan menerusi pelbagai platform seperti Microsoft Team, Google Classroom, Google Meet, Zoom, Telegram, Whatsapp dan sebagainya agar pelajar tidak ketinggalan dalam proses P&P. Suasana P&P secara norma baru terus mendapat perhatian masyarakat terhadap pelaksanaannya dalam konteks pendidikan di Malaysia menerusi pengumuman terbaharu yang diumumkan oleh Kementerian Pendidikan Malaysia (KPM) pada 8 November 2020 tentang penutupan sekolah sehingga hujung tahun ini,

Objektif

i) Untuk mengenalpasti kesediaan penerimaan pelajar dalam pelaksanaan pembelajaran secara norma baru
ii) Untuk mengenalpasti kesediaan kemudahan sedia ada yang mempengaruhi pelaksanaan pembelajaran secara norma baru

Pernyataan Masalah

Dalam tempoh sekatan pergerakan akibat Covid-19, P&P secara atas talian bukan lagi satu pilihan tetapi keperluan. P&P norma baru ini merupakan satu keperluan penting dalam pendidikan Revolusi Industri 4.0 untuk generasi sekarang. Susulan daripada penularan wabak COVID-19 yang melanda, pertemuan secara bersemuka antara pensyarah dan pelajar terpaksa dilaksanakan secara atas talian melalui aplikasi persidangan video seperti Google Meet, MS Team, Zoom, Skype, Google Hangout, Whatsapp dan lain-lain aplikasi yang sesuai dalam proses P&P untuk menyokong pembelajaran norma baru ini.

Memandangkan aplikasi-aplikasi ini dianggap baru oleh sesetengah pensyarah dan pelajar, mereka terpaksa diberi latihan yang intensif untuk memastikan proses P&P dapat dilaksanakan secara berkesan. Pelajar terpaksa bersedia dari pelbagai aspek seperti kemudahan yang diperlukan untuk proses P&P secara atas talian, capaian internet dan sebagainya. Kemahiran teknologi maklumat (IT) pelajar turut memainkan peranan bagi memastikan P&P secara norma baru ini dapat dilaksanakan secara efektif melalui pelbagai aplikasi lain seperti Zoom, Meet atau lain-lain kaedah untuk menyediakan pembentangan tugasan yang diberi. Pembentangan melalui kaedah berkongsi skrin (*screen sharing*) juga boleh dilakukan secara digital.

Namun begitu, terdapat juga kegusaran sama ada pelajar bersedia untuk melaksanakan sesi pengajaran dan pembelajaran seperti biasa menerusi pelbagai sistem atas talian seperti Google Classroom, Google Slides dan Google Meet. Malah kumpulan WhatsApp, Telegram dan Facebook juga boleh terus menjadi platform yang sangat signifikan dalam mewujudkan sesi interaksi dan pembelajaran antara pelajar dan pensyarah. Walaubagaimanapun, masih lagi terdapat cabaran di mana pelajar perlu mahir menggunakan segala platform digital dan teknologi yang ada. Bagi memastikan P&P berjalan dengan lancar, para pelajar yang kurang mahir dengan teknologi maklumat perlu segera membiasakan diri supaya aktiviti P&P boleh diteruskan seperti biasa. Di samping itu, pensyarah juga perlu bersedia untuk berhadapan dengan situasi pelajar yang tiada akses internet serta memiliki peranti yang bersesuaian untuk belajar secara maya.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kajian Literatur

Pengajaran dan Pembelajaran

Pengajaran boleh didefinisikan sebagai penglibatan dengan pelajar untuk membolehkan pemahaman dan penerapan pengetahuan, konsep dan proses. Ia merangkumi reka bentuk, pemilihan kandungan, penyampaian, penilaian dan refleksi. Pembelajaran pula boleh didefinisikan sebagai aktiviti atau proses mendapatkan pengetahuan atau kemahiran dengan belajar, berlatih, diajar, atau mengalami sesuatu. Pembelajaran adalah mengenai apa yang pelajar lakukan, bukan mengenai apa yang kita lakukan sebagai pensyarah.

Pengajaran ialah sesuatu tugasan atau aktiviti yang diusahakan bersama oleh guru dan muridnya. Proses pengajaran tidak akan berlaku tanpa salah satu daripadanya. Pengajaran mengikut Reigeluth (2009) adalah suatu proses yang sengaja dirancang dan dilakukan untuk memudahkan pembelajaran. Ia melibatkan teori-teori pengajaran dan pembelajaran untuk menghasilkan pembelajaran.

Teori pengajaran dan pembelajaran melibatkan pelbagai kaedah dalam konstruktivisme yang memberi tumpuan kepada pelajar dan pengajaran tradisional yang lebih fokus kepada guru. Konstruktivisme adalah sebahagian dari pengajaran kerana pembelajaran melibatkan penyampaian (pengajaran) serta pembinaan (konstruktivisme) maklumat atau pengetahuan Pengajaran dirancang oleh guru secara sistematik dengan menggunakan kaedah dan teknik yang sesuai bagi mencipta lingkungan yang memungkinkan terjadinya proses belajar. Pengajaran adalah aktiviti-aktiviti bermatlamat yang dilakukan oleh guru secara sengaja dan disedari bagi membantu pengajaran. (Shahabuddin et. al. 2003).

Menurut Ishak Baba (2009), pembelajaran merupakan proses di mana individu dapat mengubah sikap dan tingkah laku mereka untuk berkembang secara berterusan dan kekal serta mampu menggunakan ilmu dan kemahiran yang diperolehi untuk kemajuan diri sendiri khasnya dan masyarakat atau negara amnya. Ia merupakan aktiviti mental, fizikal, atau rohani pada diri pelajar itu sendiri. Dalam menentukan proses pembelajaran, faktor penting yang perlu dititikberatkan ialah keinginan individu untuk terus belajar di samping berrninat untuk menerap dari mempraktikkannya di dalam situasi yang sesuai. Sifat-sifat keterbukaan, reflektif, dan objektiviti sangat perlu untuk menghasilkan pembelajaran yang berterusan. Pembelajaran boleh didefinisikan sebagai proses pemerolehan maklumat dan pengetahuan, penguasaan kemahiran dan tabiat serta pembentukan sikap dan kepercayaan.

Pembelajaran atas talian

Kaedah pengajaran dan pembelajaran (P&P) yang digunakan oleh pensyarah boleh memberi impak kepada prestasi akademik pelajar. Pembelajaran atas talian merupakan sesuatu proses yang melibatkan penyambungan kepada komputer dan internet. Penggunaan Internet digunakan untuk mengakses bahan pembelajaran, untuk berinteraksi dengan pensyarah dan rakan-rakan serta untuk mendapatkan sokongan semasa proses P&P.

Pelajar dan pensyarah menggunakan Internet dalam proses P&P khususnya untuk menyampaikan ilmu dan mencari pelbagai maklumat berkaitan pendidikan. Internet kini telah menjadi kaedah yang paling mudah dan digemari dalam konteks mencari nota-nota rujukan tambahan, soalan-soalan lepas, berkongsi pandangan dan bertanya pendapat tentang sesuatu tugasan ataupun latihan menerusi ruangan sosial di Internet (Arthur & Brafi 2013).

Selain daripada itu, menurut Mohd Nazri (2017) terdapat beberapa penemuan dan pembangunan teknologi secara atas talian yang melibatkan multimedia dan komunikasi secara langsung yang mempengaruhi aktiviti harian masyarakat hari ini. Antaranya teknologi *live streaming, virtual and augmented reality, artificial intelligence, the internet-of thing (IOT),*

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13th – 14th December 2020

Big Data dan *App Streaming.* Kesemua teknologi ini juga mempengaruhi corak dan gaya pembelajaran pelajar pada hari ini.

Menurut Muniroh, Siti Balqis, Ch'ng Pei Eng (2020), pembelajaran atas talian ini sebenarnya mampu menghasilkan seseorang yang mempunyai kemahiran pembelajaran sepanjang hayat (*Life Long Learning*). Kemahiran ini memerlukan seseorang yang mampu menentukan apa yang perlu dipelajari, mencari maklumat atau bahan untuk dipelajari, mempunyai kemahiran pembelajaran kendiri dan berdikari, bermotivasi, serta boleh membuat refleksi terhadap pembelajarannya dengan melakukan pentaksiran kendiri atau cara yang lain.

Pembelajaran secara atas talian menekankan persekitaran pembelajaran interaktif yang dirancang untuk merangsang komunikasi antara pengajar dengan pelajar dan di kalangan pelajar itu sendiri. Proses P&P ini memerlukan pengajar dan pelajar untuk mengambil peranan aktif. Pengajar selalunya akan bertindak sebagai fasilitator dan mengatur aktiviti yang melibatkan pelajar secara langsung daripada terlalu bergantung pada kuliah .

Pensyarah yang mengajar secara atas talian harus terbuka, prihatin, fleksibel dan ikhlas. Pesnyarah perlu mengimbangi kekurangan kehadiran fizikal dalam kuliah secara maya dengan memastikan persekitaran yang kondusif di mana semua pelajar merasa selesa untuk mengambil bahagian dalam proses P&P dan pelajar boleh mengakses pensyarah mereka di mana sahaja. Kegagalan untuk melaksanakan proses ini akan menyebabkan persekitaran pembelajaran yang sangat lemah. Dalam pembelajaran secara atas talian ini, pensyarah harus bersedia memberikan perhatian individu kepada pelajar yang mungkin memerlukan pertolongan tambahan. Pensyarah juga perlu bersikap peka, terbuka dan fleksibel untuk berjaya dalam proses P&P secara atas talian.

Norma Baru

Menurut Kamus Dewan Edisi Keempat, norma ialah ukuran untuk menentukan sesuatu. Norma juga bermaksud peraturan atau ketentuan yang telah menjadi kebiasaan yang dijangka akan dipatuhi oleh setiap anggota masyarakat dan sebagainya. Norma baharu pula merupakan peraturan yang diterima atau diguna pakai oleh masyarakat disebabkan berlakunya sesuatu perkara seperti pandemik penyakit berjangkit.

Norma baru adalah keadaan di mana ekonomi, masyarakat, dan lain-lain diselesaikan setelah berlaku krisis, di mana keadaan pada masa ini berbeza dari situasi yang berlaku sebelum berlakunya krisis. Istilah ini telah digunakan sehubungan dengan krisis kewangan 2007-2008, selepas kemelesetan global 2008–2012, dan pandemik COVID-19.

Metodologi

Kajian mengenai kesediaan pelajar terhadap proses P&P secara norma baru ini dilaksanakan secara kuantitatif. Ia melibatkan instrumen pengumpulan data melalui soal selidik yang diedarkan kepada 81 orang pelajar semester 3 dan 4 Jabatan Teknologi Maklumat & Komunikasi, Politeknik Sultan Mizan Zainal Abidin. Rasional memilih pelajar ini adalah kerana penyelidik mengajar pelajar-pelajar tersebut.

Kajian Rintis

Kajian rintis telah dijalankan bertujuan bagi menentukan ciri-ciri soalan yang perlu diubah suai atau dikekalkan (Mohamad Najib, 1999). Melalui kajian rintis juga, kesahan dan kebolehpercayaan pernyataan-pernyataan dalam soal selidik yang digunakan boleh ditentukan. Kajian rintis ini telah dijalankan dengan mengedarkan borang soal selidik kepada 30 orang pelajar yang dipilih secara rawak. Nilai pekali kebolehpercayaan yang didapati bagi setiap

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13th – 14th December 2020

item yang terdapat di dalam borang soal selidik adalah seperti yang ditunjukkan dalam Jadual 1 di bawah:

Jadual 1: Nilai Pekali Kebolehpercayaan Item

Aspek	Cronbach's Alpha
Kesediaan penerimaan pelajar	0.919
Kesediaan kemudahan sedia ada	0.931

Kebolehpercayaan instrumen yang bernilai 0.6 dan ke atas sering digunakan untuk menentukan tahap kebolehpercayaan sesuatu kajian (Mohd Majid Konting, 2005). Oleh yang demikian, dapatan nilai kebolehpercayaan ini telah membuktikan bahawa setiap item yang digunakan dalam soal selidik ini mempunyai tahap kebolehpercayaan yang tinggi dan sesuai digunakan dalam kajian yang ingin dijalankan.

Instrumen Kajian

Dalam kajian ini, instrumen yang digunakan ialah soal selidik yang terdiri daripada dua bahagian, iaitu Bahagian I mengandungi maklumat pelajar dan Bahagian II ialah soal selidik yang mengandungi dua bahagian iaitu Bahagian A yang mengandungi 10 item yang berkaitan kesediaan penerimaan pelajar dalam perlaksanaan pembelajaran secara norma baru dan Bahagian C yang mengandungi 6 item yang berkaitan dengan kesediaan kemudahan sedia ada mempengaruhi perlaksanaan pembelajaran secara norma baru. Bagi soalan Bahagian II, kesemua item tersebut diukur dengan menggunakan skala Likert. Skala ini dibahagikan dengan lima (5) pemerkatan iaitu:

Skala 1: Sangat Tidak Setuju
Skala 2: Tidak Setuju
Skala 3: Tidak Pasti
Skala 4: Setuju
Skala 5: Sangat Setuju

Dapatan Kajian

Demografi Responden

Demografi responden dalam kajian ini merangkumi jantina dan negeri menetap. Kekerapan dan peratusan setiap aspek demografi adalah seperti dalam Jadual 2. Sampel terdiri daripada 32 orang pelajar lelaki (39.5%) dan 69 orang pelajar perempuan (60.5%). Berdasarkan negeri pelajar menetap majoriti yang menjawab soal selidik ini adalah dari negeri Terengganu iaitu sebanyak 42% atau terdiri daripada 34 orang pelajar. Ini diikuti oleh pelajar dari negeri Selangor sebanyak 15 orang (18.5%), Kelantan sebanyak 12 orang (14.8%), Pahang sebanyak 9 orang (11.1%), Perak sebanyak 4 orang (4.9%), Johor dan Kuala Lumpur sebanyak 2 orang (2.5%) dan Kedah, Negeri Sembilan dan Labuan masing-masing seramai 1 orang (1.2%)

Jadual 2: Demografi Responden

Demografi	Bilangan Responden	Peratusan (%)
Jantina		
Lelaki	32	39.5
Perempuan	69	60.9
Negeri menetap		
Johor	2	2.5
Kedah	1	1.2
Kelantan	12	14.8
Kuala Lumpur	2	2.5
Melaka	0	0

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13th – 14th December 2020

Negeri Sembilan	1	1.2
Pahang	9	11.1
Perak	4	4.9
Perlis	0	0
Pulau Pinang	0	0
Sabah	0	0
Sarawak	0	0
Selangor	15	18.5
Terengganu	34	42
Labuan	1	1.2

Analisis Kesediaan Penerimaan Pelajar Terhadap Pembelajaran Secara Norma Baru

Berdasarkan kepada Jadual 3, didapati sebahagian item dalam kesediaan penerimaan pelajar pembelajaran secara norma baru mempunyai nilai min di tahap yang tinggi dan sebahagian lagi mempunyai nilai min di tahap sederhana. Bacaan min direkodkan dalam kadar 3.370 sehingga 3.914. Nilai min yang tertinggi iaitu 3.914 ditunjukkan dalam item yang kelima iaitu pelajar tidak mahu ketinggalan menggunakan kaedah baru dalam pembelajaran. Min yang terendah pula boleh dilihat pada item kesembilan iaitu pelajar mempunyai pengetahuan yang mendalam mengenai ICT dan perkomputeran. Berpandukan kepada dapatan hasil kajian pada jadual di bawah, boleh diperkatakan secara keseluruhannya bahawa kesediaan penerimaan pembelajaran secara norma baru mempunyai nilai min di tahap yang sederhana.

Jadual 3. Kesediaan Penerimaan Pelajar Terhadap Pembelajaran Secara Norma Baru

BIL	ITEM	MIN	TAHAP
1.	Saya selalu ingin mempelajari sesuatu perkara baru	3.889	Tinggi
2.	Saya akan memperuntukkan masa untuk mempelajari sesuatu yang baru walaupun dalam keadaan sibuk	3.593	Sederhana
3.	Saya tidak mempunyai masalah untuk menggunakan apa jua kaedah pembelajaran	3.407	Sederhana
4.	Saya suka mencuba perkara baru walaupun saya tidak pasti hasilnya	3.802	Tinggi
5.	Saya tidak mahu ketinggalan menggunakan kaedah baru dalam pembelajaran	3.914	Tinggi
6.	Saya suka mencuba sesuatu yang baru terutama berkaitan dengan pembelajaran secara dalam talian	3.531	Sederhana
7.	Saya mempunyai minat yang tinggi dalam bidang ICT	3.815	Tinggi
8.	Saya sentiasa positif terhadap penggunaan teknologi terkini dalam pembelajaran	3.778	Tinggi
9.	Saya mempunyai pengetahuan yang mendalam mengenai ICT dan perkomputeran	3.370	Sederhana
10.	Saya mempunyai kemahiran dalam bidang ICT dan perkomputeran	3.444	Sederhana
KESELURUHAN		**3.654**	**Sederhana**

Pengukuran tahap ini adalah berdasarkan Jadual 4 di bawah, menggunakan formula yang dikemukakan oleh bagi menentukan julat min pada tahap rendah, sederhana dan tinggi:

Jadual 4: Interpretasi Tahap Bagi Julat Min

Julat	Tahap
1.00 – 2.33	Rendah
2.34 – 3.67	Sederhana
3.68 – 5.00	Tinggi

Sumber: Kamazita Tahir (2007)

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13th – 14th December 2020

Analisis Kesediaan Kemudahan Sedia Ada Yang Mempengaruhi Perlaksanaan Pembelajaran Secara Norma Baru

Berdasarkan kepada Jadual 5, secara keseluruhannya didapati kesemua item dalam kesediaan kemudahan sedia ada yang mempengaruhi pelaksanaan pembelajaran secara norma baru mempunyai nilai min di tahap yang tinggi iaitu sebanyak 4.249. Bacaan min direkodkan dalam kadar 3.000 sehingga 4.235. Min tertinggi direkodkan untuk item kedua di mana pelajar mempunyai telefon pintar iaitu sebanyak 4.235. Min yang terendah pula direkod pada item keempat dari segi capaian internet yang laju iaitu sebanyak 3.000. Ini menunjukkan bahawa pelajar mempunyai kemudahan yang cukup untuk melaksanakan pembelajaran secara norma baru.

Jadual 5. Kesediaan Kemudahan Sedia Ada Yang Mempengaruhi Perlaksanaan Pembelajaran Secara Norma Baru

BIL	ITEM	MIN	TAHAP
1	Saya mempunyai kemudahan komputer peribadi	4.148	Tinggi
2	Saya mempunyai telefon pintar	4.235	Tinggi
3	Saya mempunyai akses data yang mencukupi	3.383	Sederhana
4	Saya mempunyai capaian internet yang laju	3.000	Sederhana
5	Saya mempunyai kemahiran dalam aplikasi Google Classroom, Google Meet, Zoom	3.864	Tinggi
6	Saya mudah untuk mendapatkan perisian yang diperlukan dalam proses P&P	3.432	Sederhana
KESELURUHAN		**4.249**	**Tinggi**

Perbincangan

Dapatan kajian ini menunjukkan kesediaan pelajar dalam pembelajaran secara norma baru berada pada tahap sederhana. Ini berdasarkan kepada dapatan kajian yang menunjukkan skor min bagi aspek kesediaan dalam pembelajaran secara norma baru adalah 3.654. Kesediaan pelajar dalam P&P secara norma baru perlu dititik beratkan dan diberi perhatian kerana mereka adalah pelanggan utama di setiap institusi pendidikan. Hasil pembelajaran yang ingin dicapai tidak akan dapat diperoleh jika pelajar tidak bersedia dan sama-sama terlibat dalam proses P&P secara norma baru ini walaupun pensyarah bersemangat menyediakan pelbagai bahan P&P untuk menarik minat pelajar dalam proses P&P secara baru ini. Menurut Mohammad & Mohamad Yasin (2011), penekanan kepada amalan kreativiti pengajaran bukan sahaja dapat mempelbagaikan kaedah dan strategi pengajaran baharu tetapi membantu guru memudahkan proses pengajaran dengan berkesan.

Daripada aspek dalam kemudahan sedia ada yang mempengaruhi pelaksanaan pembelajaran secara norma baru ini, dapatan kajian menunjukkan secara keseluruhannya berada dalam tahap yang tinggi. Ini dapat dilihat dari segi kemudahan telefon pintar. Boleh dikatakan hampir semua pelajar di IPT sekarang mempunyai kemudahan telefon pintar. Namun begitu, terdapat juga kekangan dalam pelbagai kemudahan dan infrastruktur dalam meneroka pembelajaran dalam platform digital ini terutama dalam masalah capaian internet. P&P secara dalam talian boleh menjadi pilihan utama bagi pelajar yang tidak mempunyai masalah peranti dan capaian internet. Bagi pelajar yang mempunyai kekangan daripada segi peranti dan capaian internet, Menteri Pengajian Tinggi Datuk Dr Noraini Ahmad mengumumkan dalam Majlis pelancaran Pakej Pelan Data dan Peranti Kepada Pelajar Institusi Pendidikan Tinggi (IPT) di KPT bahawa KPT telah memperuntukkan RM24 juta bagi Bantuan Pelan Data kepada 320,396 pelajar dari kategori B40 bagi memastikan mereka mendapat persekitaran pembelajaran yang kondusif dengan P&P secara dalam talian ekoran pandemik COVID-19.

Bantuan daripada pihak berwajib amat diperlukan dalam menyediakan kemudahan infrastruktur yang diperlukan bagi memastikan pelaksanaan proses P&P secara maya ini dapat diteruskan. Untuk mengatasi masalah capaian internet misalnya, perlu ada langkah drastik dari pihak kerajaan untuk menambahbaik kemudahan dan infrastruktur yang diperlukan supaya pada akhirnya hasrat untuk mendigitalkan sektor pendidikan negara atau lebih dikenali sebagai e-pendidikan dapat direalisasikan.

Kesimpulan

Dengan terhasilnya pelbagai norma baharu dalam bidang P&P di IPT, pelbagai hikmah dapat diperoleh akibat penularan wabak COVID-19 ini. Pelaksanaan P&P di IPT akan menjadi lebih kreatif dan fleksibel dalam memastikan pelajar dapat meneruskan proses P&P dengan lancar. Bantuan dan inisiatif yang diberikan oleh kerajaan juga banyak membantu meringankan beban yang dihadapi oleh pelajar dalam situasi semasa berkaitan pandemik COVID-19 dan diharapkan dapat dimanfaatkan sebaiknya. Semua pihak yang terlibat perlu bekerjasama dalam menghadapi norma baharu ini. Garis panduan pelaksanaan P&P dan segala amalan yang baik perlu dipatuhi bagi memastikan institusi pendidikan dapat melaksanakan proses P&P dengan sempurna. KPT, MQA dan badan profesional lain perlu lebih fleksibel demi memastikan P&P boleh terus dilaksanakan tanpa mengabaikan kualiti yang diperlukan. Cabaran norma baru ini yang dihadapi akibat PKP dan Covid-19 tidak akan melemahkan semangat para pensyarah dan pelajar untuk meneruskan sesi P&P melalui amalan norma baharu dalam sektor pendidikan negara. Kesimpulannya, krisis Covid-19 telah banyak membantu sektor pendidikan dengan memaksa kita untuk mempercepatkan kewujudan persekitaran pendidikan yang berinovasi dan berteknologi tinggi.

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13th – 14th December 2020

IMPAK PENGGUNAAN MATEMATIK SENTUH TERHADAP PENCAPAIAN MATEMATIK MURID AUTISME

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Abstrak: *Kajian ini bertujuan untuk mengenal pasti impak Matematik Sentuh terhadap pencapaian Matematik murid dengan Kecelaruan Spektrum Autisme. Kajian kes ini telah dijalankan dengan menggunakan Matematik Sentuh sebagai bahan bantu pengajaran operasi tambah dalam lingkungan 1-20 secara individu. Sebanyak lima sesi pengajaran telah dijalankan dan penilaian telah dilaksanakan sebaik sahaja sesi pengajaran tamat. Praujian telah dijalankan sebelum pengajaran dan pascaujian telah dijalankan untuk mengenal pasti perubahan pencapaian Matematik selepas menggunakan Matematik Sentuh. Dapatan kajian mendapati skor Matematik telah meningkat yang menunjukkan murid dapat menguasai kemahiran operasi tambah setelah Matematik Sentuh digunakan dalam proses pengajaran dan pembelajaran. Dapatan kajian juga mendapati bahawa emosi murid mempengaruhi keberkesanan penggunaan Matematik Sentuh yang merupakan cabaran utama penggunaan Matematik Sentuh sebab emosi murid dengan Autisme mudah terganggu. Oleh itu, guru perlu membantu murid menguruskan emosi agar dapat belajar dengan lebih berkesan. Matematik Sentuh merupakan alat pengajaran yang berkesan untuk membantu murid dengan Autisme memahami konsep Matematik yang dipelajari.*

Kata kunci: *Matematik Sentuh, Kecelaruan Spektrum Autisme, Pencapaian Matematik*

Pengenalan

Matematik merupakan satu subjek yang bukan sahaja memerlukan pemahaman konsep numerasi, malah melibatkan penyelesaian masalah dalam kehidupan seharian (Brown & Snell, 2000). Jadi, penguasaan kemahiran asas Matematik perlu dimulakan sejak awal kanak-kanak. Namun, kebanyakan murid menghadapi masalah menguasai kemahiran Matematik, terutamanya murid dengan Autisme (Scherer, Beswick, DeBlois, Healy & Opitz, 2017; Yikmis, 2016). Ketidakupayaan bersosial, masalah pengurusan tingkah laku dan emosi menyebabkan mereka tidak dapat belajar Matematik dengan berkesan (Larkey & Adkins, 2013). Fenomena ini bukan sahaja memberi tekanan kepada murid Autisme malah guru pendidikan khas kerana perlu membantu murid mendapatkan pencapaian akademik yang baik (Lee & Low, 2014).

Matematik Sentuh merupakan satu alat bantu pengajaran yang direka cipta untuk membantu murid belajar Matematik dengan lebih berkesan (Bullock, 2005; Bullock, Pierce & McClelland, 1989). Pendekatan multisensori Matematik Sentuh sesuai digunakan untuk mengajar murid dengan Autisme (Baglama, Yikmis & Demirok, 2017; Yikmis, 2016). Terdapat banyak kajian tentang penggunaan Matematik Sentuh terhadap murid berkeperluan khas (Barnett & Cleary, 2015; Gevarter, et al., 2016; Yusaini, Maat & Rosli, 2019). Namun, dapatan kajian adalah tidak konsisten. Ini mungkin disebabkan oleh keperluan pembelajaran murid yang berbeza dalam kelas pendidikan khas (Suhaimin & Mohamed, 2017; Yusaini, et al., 2019). Guru pendidikan khas memainkan peranan yang penting dalam proses pengajaran

eISBN 978-967-2426-22-6
13th – 14th December 2020

dan pembelajaran (Toran, Westover, Sazlina, Suziyani & Mohd Hanafi, 2016). Jadi, kemahiran guru dalam penggunaan Matematik Sentuh adalah penting untuk meningkatkan pencapaian Matematik murid Autisme. Namun, pengalaman guru semasa menggunakan Matematik Sentuh dalam kelas secara mendalam tidak dilaporkan (Aydemir, 2015; Yusaini, et al., 2019). Gangguan emosi murid Autisme yang boleh berlaku secara tiba-tiba di luar jangkaan boleh menjadikan satu cabaran kepada guru di dalam bilik darjah (King, Lemons & Davidson, 2016).

Kajian Literatur

Matematik Sentuh

Bullock mengubahsuai satu alat bantu pengajaran yang direka oleh Kramer dan Krug (1973). Kemudian, alat ini dikembangkan dan dikenali sebagai Matematik Sentuh (Bullock, 2005; Bullock, et al., 1989). Alat ini mempunyai titik rujukan pada nombor dan berfungsi untuk membantu murid mengira sambil belajar Matematik dengan cara yang menarik. Titik rujukan ini merupakan titik sentuh yang sama nilai dengan nilai nombor. Nombor satu hingga nombor lima mempunyai satu titik sentuh manakala nombor enam hingga nombor sembilan mempunyai titik sentuh beregu. Murid dikehendaki menyentuh titik sentuh sambil mengira jumlah titik pada nombor mengikut urutan. Dengan itu, sensori murid diaktifkan melalui kombinasi penglihatan, sentuhan dan pendengaran. Pendekatan multisensori Matematik Sentuh dapat membantu murid Autisme meningkatkan keberkesanan pembelajaran secara konkrik, separa konkrik dan abstrak (Simon & Hanrahan, 2004; Yikmis, 2016; Waters & Boon, 2011).

Murid menyentuh titik sambil mengira membolehkan pembelajaran secara aktif berlaku. Aktiviti ini juga membantu murid memahami konsep yang telah dipelajari (Green, 2009). Tambahan pula, Matematik Sentuh menggunakan pendekatan pengajaran terus, pemodelan guru, latihan berterusan dan maklum balas segera dapat membantu murid menguasai kemahiran Matematik. Setelah murid mahir dengan cara penyentuhan dan pengiraan titik, titik sentuh pada nombor dikeluarkan supaya murid dapat memahami maksud abstrak nombor dan menggunakannya untuk menyelesaikan masalah Matematik (Yikmis, 2016).

Emosi Murid Autisme dan Pembelajaran Matematik

Murid dengan Autisme bukan sahaja menghadapi masalah untuk bersosial dan berkomunikasi dengan rakan malah dengan guru mereka (Foti, De Crescenzo, Vivanti, Menghini & Vicari, 2015). Tambahan pula, mereka menghadapi masalah untuk mengawal emosi mereka (American Psychiatric Association, 2013; Lee, Ong, Lee & AR, 2017). Emosi mereka mudah terganggu apabila terdapat perubahan persekitaran yang berlaku di luar jangka mereka dan tidak diberitahu terlebih dahulu (American Psychiatric Association, 2013). Ini menyebabkan mereka menunjukkan tindakan yang agresif dan tidak dapat menumpukan perhatian pada pembelajaran (Conner, et al., 2019). Kanak-kanak dengan Autisme mempunyai tindak balas yang negatif yang boleh mengakibatkan keadaan yang mengecewakan (Adams, MacDonald & Keen, 2019; Jahromi, Meek & Ober-Reynolds, 2012). Tambahan pula, apabila mereka mengalami gangguan emosi, guru dan ibu bapa memerlukan lebih masa untuk menenangkan mereka (Konstantareas & Stewart, 2006). Emosi negatif murid yang berterusan boleh menjejaskan pembelajaran mereka (Adams, et al., 2019; Gross & Jazaieri, 2014).

Murid dengan Autisme tidak berupaya untuk belajar sendiri dan melakukan pembelajaran regulasi kendiri (Chou, Wehmeyer, Palmer & Lee, 2017). Tambahan pula, kajian lepas juga mendapati bahawa kadar pemprosesan kognitif mereka lebih rendah berbanding

eISBN 978-967-2426-22-6
13th – 14th December 2020

dengan murid tipikal mungkin disebabkan oleh kekurangan fungsi eksekutif (Doobay, Foley-Nicpon, Ali & Assouline, 2014). Jadi, mereka juga menghadapi masalah penguasaan kemahiran kognitif seperti merancang, regulasi kendiri, memberi respons dan inisiatif untuk membuat tugasan (Blijd-Hoogewys, Bezemer & Van Geert, 2014). Ketidakupayaan dan cabaran ini menjadikan Matematik sebagai satu subjek yang sukar dikuasai oleh murid dengan Autisme (Kim & Cameron, 2016). Mereka memerlukan pengajaran secara individu dengan alat bantu mengajar yang menggunakan pendekatan multisensori untuk membantu mereka belajar Matematik dengan lebih berkesan (Aydemir, 2015; Wei, Lenz & Blackorby, 2013).

Matematik Sentuh dengan Murid Autisme

Cihak dan Foust (2008) dan Fletcher, Boon dan Cihak (2010) mengkaji penggunaan Matematik Sentuh berbanding dengan penggunaan garisan nombor Matematik. Kedua-dua kajian menunjukkan murid dengan Autisme mempunyai peningkatan pencapaian dalam operasi tambah dan mereka lebih suka menggunakan Matematik Sentuh. Kajian lain seperti Berry (2009) dan Yikmis (2016) menunjukkan bahawa selepas menjalankan latih tubi, penggunaan Matematik Sentuh boleh membantu murid dengan Autisme menyelesaikan persamaan Matematik tanpa merujuk kepada titik sentuh. Penguasaan kemahiran asas Matematik yang kukuh sangat penting supaya murid berupaya untuk menguasai kemahiran Matematik yang lebih kompleks pada peringkat seterusnya (Yikmis, 2016).

Bukan semua murid dengan Autisme mendapat manfaat daripada penggunaan Matematik Sentuh. Kajian Berry (2009) mendapati bahawa lapan daripada sepuluh orang subjek kajian dapat menyelesaikan masalah operasi tambah dan tolak dengan cekap tetapi dua orang subjek kajian tidak menunjukkan pencapaian. Emosi murid Autisme yang mudah dipengaruhi oleh faktor persekitaran mungkin boleh menyebabkan penggunaan Metamatik Sentuh kurang berkesan (American Psychiatric Association, 2013). Tambahan pula, guru perlu ada perancangan untuk menguruskan masalah emosi murid semasa menggunakan Matematik Sentuh dalam proses pengajaran dan pembelajaran. Jika masalah ini tidak diatasi, ia akan menjejaskan keberkesanan penggunaan Matematik Sentuh dan pencapaian Matematik murid. Jadi, kajian secara mendalam tentang pengurusan emosi murid dengan Autisme sangat diperlukan. Oleh itu, objektif kajian ini adalah untuk mengenal pasti impak penggunaan Matematik Sentuh terhadap pencapaian Matematik murid dengan Autisme. Tambahan pula, kajian ini juga mengenal pasti gangguan emosi murid Autisme yang boleh menjejaskan keberkesanan penggunaan Matematik Sentuh.

Metodologi

Rekabentuk Kajian

Metodologi kajian kes adalah popular dalam kajian murid berkeperluan khas (Aydemir, 2015). Ini adalah kerana murid dengan Autisme mempunyai tahap fungsi kecerdasan yang berbeza. Jadi, kajian kes lebih sesuai dengan subjek kajian kategori ini kerana dapat mempamerkan maklumat yang banyak dan pelbagai. Dengan itu, pembaca dapat memahami kajian kes secara mendalam (Yin, 2017). Kajian ini bukan sahaja menggunakan metodologi kajian kes untuk mendapatkan data kuantitatif mengenai impak penggunaan Matematik Sentuh, malah mendapatkan data kualitatif daripada guru Matematik mengenai pengurusan emosi murid Autisme semasa mengajar Matematik menggunakan Matematik Sentuh.

Subjek Kajian dan Kaedah Sampel

Dalam kajian ini, tiga orang murid dan seorang guru Matematik dipilih secara persampelan bertujuan dari sebuah kelas Program Pendidikan Khas Integrasi (PPKI) di Kuching. Nama

eISBN 978-967-2426-22-6
13th – 14th December 2020

murid telah digantikan dengan nama samaran. Mereka adalah Simon, Alan dan Eddie yang didiagnosis mengalami Autisme. Ketiga-tiga murid ini berumur 8 tahun dan belajar dalam kelas Tahun 2. Tambahan pula, subjek kajian mempunyai kemahiran numerasi asas dan boleh menumpukan perhatian terhadap arahan dalam bilik darjah sekurang-kurangnya 10 minit (Yikmis, 2016). Guru Matematik dalam kajian ini juga merupakan guru Matematik subjek kajian.

Alat Bantu Pengajaran – Lembaran Matematik Sentuh

Lembaran Matematik Sentuh telah diberikan kepada subjek kajian untuk digunakan semasa sesi pengajaran dan pembelajaran. Lembaran ini diubahsuai daripada Simon dan Hanrahan (2004) dan telah disemak oleh guru Matematik yang lain untuk memastikan kesesuaian penggunaannya kepada murid dengan Autisme.

Instrumen – Penilaian Matematik

Penilaian Matematik diubahsuai dari buku teks Kurikulum Standard Sekolah Rendah Pendidikan Khas untuk menguji pencapaian Matematik subjek kajian. Penilaian ini telah digunakan untuk praujian, penilaian selepas lima sesi pengajaran dan pembelajaran serta pascaujian.

Soalan Temu Bual

Soalan temu bual adalah soalan terbuka yang berbentuk separa berstruktur. Temu bual dijalankan dengan menggunakan soalan yang telah digubal. Namun, soalan yang ditanya berubah-ubah bergantung kepada reaksi guru Matematik. Tujuan soalan temu bual adalah untuk mengenal pasti cabaran yang dihadapi oleh guru Matematik semasa sesi pengajaran dan pembelajaran menggunakan Matematik Sentuh.

Kesahan dan Kebolehpercayaan Instrumen

Penilaian Matematik telah disemak oleh guru Matematik untuk memastikan kesesuaiannya kepada murid dengan Autisme yang berumur 8 tahun. Penyemakan semula dan pengubahsuaian telah dijalankan oleh penyelidik berdasarkan maklum balas yang telah diberikan.

Untuk memastikan kebolehpercayaan skor yang direkod, *inter-rater reliability* telah dijalankan (Avant & Heller, 2011). Pemerhati bebas yang kedua telah merekodkan skor pencapaian ketiga-tiga subjek kajian selepas setiap sesi pengajaran dan pembelajaran (Avant & Heller, 2011). Skor yang direkod telah dibandingkan dengan skor yang direkod oleh guru Matematik untuk memastikan kebolehpercayaan skor. Kebolehpercayaan yang melebihi 80% dikira mencapai tahap kebolehpercayaan.

Soalan temu bual telah disemak oleh dua orang guru bahasa untuk memastikan kejelasan dan ketepatan bahasa. Maklum balas telah diberikan kepada penyelidik dan pindaan telah dibuat. Data temu bual telah ditranskripkan dan dihantar balik kepada guru Matematik untuk pengesahan ketepatan transkrip.

Prosedur Penggunaan Matematik Sentuh

Terdapat empat peringkat dalam kajian ini. Peringkat pertama adalah peringkat pengenalan dan taklimat ringkas kepada guru Matematik tentang penggunaan Matematik Sentuh. Dalam taklimat ringkas tersebut, guru Matematik didedahkan konsep Matematik Sentuh dan cara penggunaannya untuk mengajar operasi tambah dalam lingkungan 1-20. Tambahan pula,

eISBN 978-967-2426-22-6
13th – 14th December 2020

demonstrasi tentang penggunaan Matematik Sentuh telah dijalankan oleh penyelidik terhadap seorang murid dengan Autisme dalam bilik darjah PPKI.

Peringkat kedua merupakan peringkat praujian. Guru memberikan ujian Matematik kepada ketiga-tiga orang murid. Pengajaran tentang operasi tambah tidak dijalankan sebelum ujian. Tujuan peringkat ini dijalankan adalah untuk menguji tahap penguasaan murid terhadap kemahiran operasi tambah sebelum mereka diajar dengan menggunakan Matematik Sentuh.

Peringkat ketiga adalah peringkat pengajaran dan pembelajaran. Terdapat lima sesi pengajaran dan pembelajaran operasi tambah dalam lingkungan 1-20 dengan menggunakan Matematik Sentuh. Setelah tamat setiap sesi, guru Matematik memberikan penilaian untuk menguji tahap penguasaan murid. Terdapat sepuluh soalan penilaian yang sama dengan soalan latihan tetapi terdapat pengubahan urutan nombor dan urutan soalan untuk mengelakkan peniruan.

Peringkat keempat merupakan peringkat pascaujian. Pada peringkat ini, murid menjalankan penilaian tanpa proses pengajaran dan pembelajaran. Guru Matematik juga tidak memberi galakan dan bimbingan semasa penilaian. Soalan penilaian pascaujian adalah sama dengan soalan penilaian praujian. Markah bagi ketiga-tiga subjek kajian direkodkan dalam buku catatan.

Temu bual guru Matematik dijalankan setelah tamat setiap sesi pengajaran dan pascaujian. Rakaman audio dijalankan untuk merekod data lisan guru Matematik. Kandungan data lisan kemudian ditranskrip ke dalam fail *Microsoft Word* untuk dihantar kepada guru Matematik melalui Telegram. Guru Matematik memberi maklum balas terhadap transkrip tersebut.

Analisis Data

Skor praujian, penilaian selepas sesi pengajaran dan pembelajaran serta pascaujian untuk ketiga-tiga murid telah diplotkan pada graf garisan. Analisis visual grafik telah dijalankan menggunakan graf garisan untuk mengidentifikasikan perkembangan dan perbandingan skor pencapaian ketiga-tiga orang murid.

Data temu bual guru Matematik telah dianalisis dengan menggunakan analisis tematik. Kod-kod telah diidentifikasi dari data temu bual berdasarkan kata-kata kunci dari kajian literatur Matematik Sentuh. Kod-kod ini kemudian dikategorikan kepada tema-tema yang berkaitan. Kod-kod dan tema-tema yang telah diidentifikasikan, ditinjau semula oleh seorang penyelidik yang mahir dengan analisis data kualititif untuk menentukan kesesuaian kod dan tema. Memo telah ditulis dengan tema-tema yang telah diidentifikasikan (Saldana, 2013).

Dapatan Kajian

Skor Matematik

Bagi tujuh sesi penilaian peringkat praujian, penilaian selepas sesi pengajaran dan pembelajaran serta pascaujian, skor bagi setiap murid telah ditanda dengan titik-titik pada graf garisan untuk melihat perkembangan setiap murid. Jadual dan graf di bawah menunjukkan keputusan bagi ketiga-tiga orang murid.

Jadual 1: Skor Matematik Murid Berdasarkan Tujuh Penilaian

	Skor Matematik						
Murid	Praujian	Penilaian_1	Penilaian_2	Penilaian_3	Penilaian_4	Penilaian_5	Pascaujian
Simon	0	80	90	90	100	100	100
Alan	0	50	60	80	90	100	100
Eddie	0	20	30	10	70	70	70

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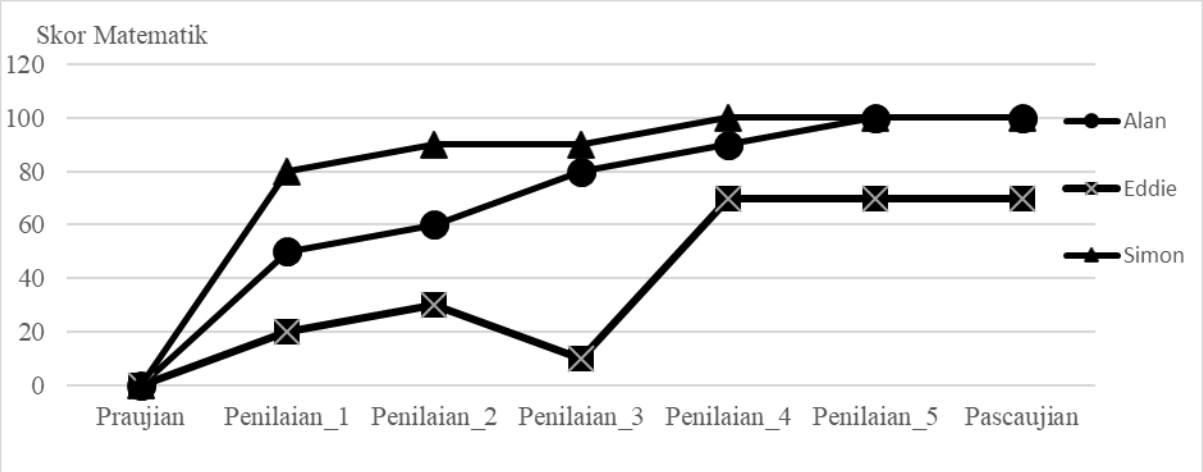
13th – 14th December 2020



Rajah 1: Graf Garisan Menunjukkan Peningkatan Skor Matematik Dalam Tujuh Penilaian Oleh Tiga Orang Murid

Graf garis dalam Rajah 1 menunjukkan tiga garisan wakil yang menggambarkan pencapaian Matematik subjek kajian bagi praujian, penilaian selepas sesi pengajaran dan pembelajaran serta pascaujian. Berdasarkan rajah, terdapat peningkatan pencapaian Matematik yang signifikan di antara skor pencapaian praujian dan pascaujian selepas lima sesi pengajaran dan pembelajaran. Jadi, Matematik Sentuh berkesan untuk meningkatkan pencapaian Matematik ketiga-tiga orang murid tersebut.

Temu Bual Guru Matematik

Data temu bual guru Matematik telah dikumpul dan dianalisis berdasarkan kajian literatur Matematik Sentuh. Tiga tema telah timbul daripada analisis tersebut.

Pendekatan Pengajaran dan Pembelajaran

Murid dengan Autisme didapati tidak berupaya untuk belajar sendiri dan melakukan pembelajaran regulasi kendiri (Chou, et al., 2017). Semasa sesi pengajaran dan pembelajaran, Simon dan Alan asyik menunggu jawapan daripada guru kerana kurang berkeyakinan untuk menambah jumlah nombor yang lebih besar seperti nombor 8 dan 9. Guru Matematik telah menggunakan pendekatan pengajaran berpusatkan murid supaya mereka kurang kebergantungan kepada guru untuk menyelesaikan masalah Matematik. Bagi Eddie yang tidak berminat untuk belajar dan enggan memberi kerjasama, guru Matematik telah menggunakan pendekatan berpusatkan guru kerana Eddie memerlukan lebih banyak masa dan bimbingan guru yang berterusan sepanjang sesi pengajaran dan pembelajaran.

Murid dengan Autisme didapati sukar menerima suatu kemahiran yang baharu (American Psychiatric Association, 2013). Akan tetapi, apabila sudah menjadi satu kebiasaan, mereka dapat menguasainya dengan cepat. Kajian mendapati cara pengajaran yang lembut lebih sesuai dengan murid Autisme. Cara bimbingan yang lembut dan mesra dapat mengurangkan gangguan emosi dan seterusnya dapat membantu mereka menguasai sesuatu kemahiran dengan cepat. Dapatan kajian menunjukkan bahawa pencapaian Matematik Simon dan Alan semakin meningkat. Tambahan pula, Simon dapat menguasai operasi tambah selepas sesi pengajaran dan pembelajaran pertama manakala Alan sudah memahami konsep operasi tambah selepas sesi ketiga.

Eddie tidak berminat terhadap Matematik sentuh. Jadi, dia tidak dapat menumpukan perhatian dan tidak berinisiatif untuk membuat tugasan. Peningkatan pencapaian Eddie tidak

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13th – 14th December 2020

ketara selepas sesi pengajaran dan pembelajaran pertama dan kedua. Malah pencapaian penilaian pada sesi ketiga telah menurun. Ini disebabkan oleh pertukaran bilik untuk sesi pengajaran dan pembelajaran yang menyebabkan emosinya terganggu. Berlainan dengan Simon dan Alan, guru Matematik menggunakan cara pengajaran yang lebih tegas. Cara bimbingan yang lebih lembut dan mesra tidak berkesan bagi Eddie. Cara yang tegas dapat menarik perhatiannya untuk menyiapkan tugasan. Keberkesanan cara pengajaran yang lebih tegas kelihatan pada penilaian keempat, Eddie dapat meningkatkan pencapaian Matematiknya secara signifikan dari 10% ke 70%.

Regulasi Emosi

Emosi murid dengan Autisme sukar dikawal. Gangguan emosi murid boleh berlaku secara tiba-tiba tanpa sebab dan berterusan dalam jangka masa yang panjang (Konstantareas & Stewart, 2006). Simon memukul meja dan enggan menyiapkan tugasan semasa sesi pengajaran dan pembelajaran kelima. Guru memujuknya dan akhirnya dia dapat menumpukan perhatian untuk menyiapkan tugasan. Pujukan dan cara bimbingan yang lembut juga berkesan terhadap Alan yang mengalami gangguan emosi. Kedua-dua murid, Simon dan Alan dapat mencapai skor penuh dalam penilaian Matematik setelah guru berjaya menenangkan emosi mereka.

Murid dengan Autisme lebih sensitif dengan perubahan keadaan dan menyebabkan gangguan emosi (American Psychiatric Association, 2013). Semasa sesi pengajaran dan pembelajaran ketiga, emosi Eddie terganggu apabila dia dibawa ke bilik kelas lain. Bilik yang selalu digunakan telah dimasuki air hujan akibat banjir kilat. Dia menunjukkan tindak balas yang negatif dengan meniarap pada meja dan enggan memberi kerjasama kepada guru Matematik. Guru telah memujuk dan memberi pelekat kepada Eddie tetapi tidak berjaya untuk menenangkan emosinya. Gangguan emosi Eddie yang berterusan telah menjejaskan pembelajaran Matematik pada sesi tersebut. Jadi keputusan Eddie pada penilaian ketiga telah merosot. Dia hanya memperoleh skor sebanyak 10% sahaja.

Regulasi Motivasi

Motivasi yang diberi oleh guru boleh mempengaruhi emosi murid dengan Autisme. Guru Matematik dalam kajian ini memotivasikan murid dengan kata-kata pujian dan ganjaran seperti pelekat dan tontonan video kesukaan. Kata-kata pujian diberikan apabila murid berjaya menjawab satu soalan. Pelekat dan tontonan video kesukaan pula diberikan sebagai ganjaran apabila murid menyiapkan tugasan yang diberikan. Motivasi yang diberikan oleh guru dalam kajian ini berkesan terhadap emosi murid dengan Autisme. Pada sesi pengajaran dan pembelajaran keempat, guru telah berjaya menenangkan emosi Simon dengan memberinya menonton video nyanyian kesukaannya. Seterusnya, guru memberikan ganjaran berupa pelekat untuk memotivasikan Simon menyiapkan tugasan. Akhirnya Simon berjaya mencapai skor penuh 100%. Pencapaiannya juga dikekalkan pada penilaian kelima dan pascaujian.

Begitu juga dengan Alan. Alan kurang berkeyakinan untuk membuat pengiraan bagi nombor yang lebih besar nilainya. Kata-kata pujian di samping bimbingan berterusan guru Matematik telah memotivasikan Alan untuk menyiapkan tugasan dan penilaian. Ganjaran berupa pelekat juga diberikan apabila Alan apabila berjaya menyiapkan tugasan. Motivasi oleh guru Matematik telah memberi kesan terhadap pencapaian Alan. Alan berjaya mencapai skor penuh 100% pada penilaian kelima dan pascaujian. Namun, motivasi guru tidak berkesan terhadap Eddie. Ganjaran tidak dapat menarik minatnya untuk belajar. Jadi, pencapaiannya belum dapat dipertingkatkan dan kekal pada 70% pada penilaian kelima dan pascaujian.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kajian ini mendapati bahawa Matematik Sentuh berkesan untuk meningkatkan pencapaian Matematik murid dengan Autisme jika emosi murid dapat diuruskan dengan baik. Kaedah motivasi yang sesuai boleh menenangkan emosi murid. Mereka boleh belajar dengan tumpuan yang lebih baik apabila dipujuk, dipuji dan dimotivasikan dengan ganjaran. Akan tetapi, bukan semua kaedah ini boleh memberi kesan yang signifikan terhadap murid dengan Autisme. Gangguan emosi murid merupakan cabaran utama murid dalam meningkatkan pencapaian Matematik dengan menggunakan Matematik Sentuh. Guru perlu sabar dan menggunakan pelbagai cara termasuk cara yang lembut dan tegas untuk membantu murid menguruskan emosi mereka. Selain itu, guru juga perlu memberikan lebih banyak masa kepada murid dengan Autisme menyesuaikan diri dengan kaedah pengajaran yang baharu.

Perbincangan

Kajian ini mengenal pasti impak penggunaan Matematik Sentuh terhadap pencapaian Matematik murid dengan Autisme. Kajian mendapati bahawa terdapat peningkatan skor selepas sesi pengajaran dan pembelajaran berbanding dengan skor praujian. Tambahan pula, skor pascaujian kekal sama dengan skor penilaian selepas sesi pengajaran dan pembelajaran terakhir. Dapatan kajian ini telah menunjukkan Matematik Sentuh berkesan untuk membantu murid Autisme meningkatkan pencapaian Matematik mereka. Keberkesanan Matematik Sentuh juga kekal tanpa sesi pengajaran dan pembelajaran. Dapatan kajian ini konsisten dengan dapatan kajian lepas (Barnett & Cleary, 2015; Gevarter, et al., 2016: Yikmis, 2016; Yusaini, et al., 2019). Dapatan kajian ini dapat membuktikan bahawa pendekatan multisensori Matematik Sentuh adalah satu pendekatan yang berkesan terhadap murid dengan Autisme.

Ketidakupayaan untuk berinteraksi sosial dengan orang lain dan gangguan emosi boleh mengakibatkan murid dengan Autisme sukar untuk menumpukan perhatian (American Psychiatric Association, 2013; Foti, De Crescenzo, Vivanti, Menghini & Vicari, 2015; Lee, Ong, Lee & AR, 2017). Masalah ini boleh mempengaruhi pembelajaran Matematik dalam kelas. Sememangnya, mereka memerlukan alat yang melibatkan multisensori untuk membantu mereka mengatasi batasan berinteraksi dan menarik perhatian mereka. Dalam kajian ini, didapati Matematik Sentuh adalah alat bantu mengajar yang berkesan tetapi terdapat syarat untuk mendapat keberkesanannya. Murid dengan Autisme sering menghadapi masalah untuk menguruskan emosi mereka. Emosi mereka mudah dipengaruhi oleh faktor persekitaran. Dalam kajian ini, guru Matematik telah menggunakan pelbagai teknik pengajaran seperti teknik pengajaran yang lembut untuk menarik perhatian mereka. Dapatan kajian ini juga menunjukkan skor pencapaian pada pascaujian kekal sama dengan skor penilaian terakhir. Ini membuktikan bahawa jika guru dapat membantu murid menguruskan emosi dengan berkesan, murid juga mendapat manfaat daripada penggunaan Matematik Sentuh.

Dalam kajian ini, didapati bahawa guru Matematik menggunakan pelekat dan ganjaran menonton video *YouTube* serta memberikan arahan yang tegas. Tujuannya adalah untuk menarik perhatian mereka untuk menumpukan perhatian pada pembelajaran. Tindakan ini juga dapat membantu murid menguruskan emosi mereka dengan baik dan fokus kepada pengajaran guru. Guru pendidikan khas perlu mengetahui pelbagai teknik untuk membantu murid menguruskan emosi mereka (Toran, et al., 2016). Mereka juga perlu kenal pasti bila dan bagaimana untuk menggunakan teknik ini dengan cara yang lebih berkesan.

Kajian ini juga mendapati bahawa guru perlu kerap memberi ganjaran kepada murid Autisme untuk membantu mereka mengekalkan emosi yang stabil dan seterusnya memotivasikan mereka untuk belajar. Ganjaran ini termasuk pelekat dan masa lapang untuk menonton video *YouTube* kegemaran. Sememangnya, ganjaran adalah alat yang paling asas untuk menggalakkan murid menumpukan perhatian pada pembelajaran secara berterusan.

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13th – 14th December 2020

Namun, terdapat pelbagai ganjaran. Guru pendidikan khas perlu mengetahui jenis ganjaran yang paling sesuai digunakan terhadap anak murid mereka (Adams, et al., 2019).

Kajian lepas tidak melaporkan dapatan yang konsisten tentang keberkesanan penggunaan Matematik Sentuh terhadap murid dengan Autisme (Barnett & Cleary, 2015; Gevarter, et al., 2016; Yusaini, et al., 2019). Dalam kajian ini, didapati bahawa guru Matematik perlu menggunakan pelbagai teknik pengajaran untuk membantu murid menguruskan emosi mereka di samping membantu mereka menumpukan perhatian untuk belajar Matematik. Kajian lepas tidak menumpukan perhatian kepada keperluan guru menguruskan emosi murid dalam proses pengajaran dan pembelajaran. Kecekapan guru menguruskan emosi murid sangat penting terhadap keberkesanan penggunaan Matematik Sentuh.

Kajian ini memberi sumbangan kepada kajian empirikal tentang penggunaan Matematik Sentuh dalam pendidikan khas. Kajian ini menunjukkan bahawa Matematik Sentuh berkesan untuk membantu murid dengan Autisme meningkatkan pencapaian Matematik mereka. Namun, guru perlu cekap menguruskan emosi murid untuk membantu mereka belajar Matematik dengan lebih berkesan. Dapatan kajian ini boleh membantu guru pendidikan khas yang lain menguruskan murid Autisme dengan lebih baik jika mereka ingin menggunakan Matematik Sentuh sebagai alat bantu mengajar subjek Matematik.

Kajian ini juga memberi sumbangan kepada aspek praktikal dalam pendidikan khas. Guru mempunyai pemahaman yang lebih mendalam tentang cabaran penggunaan Matematik Sentuh terhadap murid dengan Autisme. Ini membolehkan guru lebih bersedia apabila menggunakan Matematik Sentuh dalam kelas Matematik. Dengan itu, pencapaian akademik subjek Matematik juga dapat ditingkatkan. Jurang antara pencapaian Matematik pendidikan khas dan pencapaian Matematik aliran perdana juga dapat dirapatkan.

Kesimpulan

Kajian ini telah menunjukkan bahawa penggunaan Matematik Sentuh dapat membantu murid dengan Autisme meningkatkan pencapaian Matematik. Pendekatan multisensori Matematik Sentuh merupakan satu alat bantu mengajar yang berkesan untuk membantu murid belajar Matematik dengan lebih berkesan. Namun demikian, untuk mendapatkan keberkesanannya, guru perlu menguruskan emosi murid dengan baik. Ini adalah kerana murid kategori keperluaan khas ini sering menghadapi masalah untuk menguruskan emosi mereka. Masalah ini boleh mengurangkan keberkesanan penggunaan Matematik Sentuh. Jadi, guru pendidikan khas perlu mempelajari pelbagai teknik pengajaran dan menggunakannya dengan cara yang betul untuk membantu murid belajar Matematik dengan lebih berkesan.

Kajian ini hanya fokus kepada tiga orang murid dengan Autisme sahaja. Kajian masa depan boleh menggunakan sampel yang lebih besar agar dapat mengeneralisasikan dapatan kajian. Tambahan pula, Matematik Sentuh boleh digunakan terhadap kategori murid berkeperluan khas yang lain. Ini dapat memberikan pemahaman yang lebih mendalam tentang manfaat alat bantu mengajar ini kepada murid berkeperluan khas yang lain.

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KEPIMPINAN SERVAN DAN HUBUNGANNYA DENGAN KEPUASAN KERJA GURU

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Abstrak: *Kertas konsep ini bertujuan untuk membincangkan hubungan kepuasan kerja guru terhadap kepimpinan servan. Kertas konsep ini adalah berdasarkan teori LMX (Leader – Member Exchange, 1975) dan Model Kotter. Dapatan kajian lepas menunjukkan terdapat hubungan yang positif antara kepuasan kerja guru dengan kepimpinan servan. Kajian literatur mendapati bahawa guru menunjukkan tahap kepuasan kerja dan kepimpinan servan yang sederhana terhadap pengetua sekolah. Terdapat beberapa faktor yang mempengaruhi kepuasan kerja guru berdasarkan jantina dan persekitaran pekerjaan di sekolah seperti emotional healing, promotion dan the nature of work. Selain itu, kertas konsep ini diharapkan dapat memberi kesan terhadap dasar kerajaan iaitu perubahan yang berlaku dalam organisasi sekolah dapat memastikan kepimpinan servan berprestasi tinggi di tempatkan di sekolah dan menambahbaik amalan gaya kepimpinan servan. Jabatan Pendidikan Negeri perlu memainkan peranan dengan menyediakan latihan kepada Pengetua sekolah dalam memimpin sesebuah sekolah itu ke arah kecemerlangan guru dan sekolah. Manakala pihak IAB melalui NPQEL boleh meningkatkan kursus berkaitan pengurusan sumber manusia dan amalan komunikasi cemerlang agar Pengetua sekolah dapat memberi kepuasan kerja yang maksimum kepada warga sekolah. Kesimpulannya, kepimpinan servan penting bagi meningkatkan tahap kepuasan guru sekolah supaya berlaku perubahan dari segi kenaikan pangkat, persekitaran dan penyeliaan guru.*

Kata Kunci*: Kepimpinan Servan, Kepuasan Kerja Guru, Guru*

Pengenalan

Peranan seorang pengetua sekolah adalah untuk membantu sekolah dan masyarakat setempat. Konsep kepimpinan dalam pendidikan adalah bertujuan membentuk satu perspektif yang unik dan menarik perhatian kepada prinsip etika dan tanggungjawab. Konsep kepimpinan ini juga adalah satu anjakan dalam cara menguruskan anggota organisasi supaya mereka tidak dilihat sebagai individualistik, mengambil kesempatan dan layan diri tetapi dilihat sebaliknya sebagai seorang yang mengambil berat tentang organisasi mereka pada masa yang sama cuba untuk mencapai matlamat peribadi mereka dalam satu persekitaran saling mempercayai antara satu sama lain (Van Dierendock, 2011). Dalam kontek ini, sekolah yang cemerlang adalah disebabkan tingkah laku kepimpinan pengetua mereka sangat baik menyebabkan tahap kepuasan kerja guru meningkat lebih tinggi. (Cerit 2009, Zigarelli, 1996).

Menurut Fullan (2007) setiap aspek perubahan yang dilaksanakan di sekolah seperti merancang, melaksana dan memantau adalah peranan kepimpinan servan. Kejayaan sekolah adalah ditentukan oleh corak kepimpinan servan (Fullan 2007 ; Hallinger 2009). Penentu kepada kemajuan sekolah sama ada cemerlang atau tidak bergantung kepada kepimpinan (Shahril 2000). Faktor utama kejayaan sesebuah organisasi adalah terletak pada corak

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13th – 14th December 2020

kepimpinan pemimpin itu tersendiri (Parris & Peachey, 2013; Mei Kin, Abdull Kareem, Nordin, & Wai Bing, 2017). Menurut Fullan (2011) kepimpinan pengetua memberi pengaruh kepada tingkah laku kakitangan di sekolah. Pada abad ke- 21 ini, terdapat beberapa jenis kepimpinan yang dapat menyelesaikan isu-isu berkaitan di sekolah iaitu kepimpinan transformasional, transaksional, berwawasan, distributive, autentik dan kepimpinan servan.

Kepimpinan servan melibatkan etika, kebajikan dan moral yang berfokuskan ahli anggota organisasi (James Lemoine, 2015; Sendjaya, 2015). Kepimpinan servan mempunyai prinsip yang berbeza dengan kepimpinan lain kerana kepimpinan ini memberi fokus kepada orang bawahan berbanding dengan pencapaian objektif organisasi (Hoy & Miskel, 2013; von Fischer, 2017). Kepimpinan servan dapat mewujudkan sesebuah organisasi yang harmoni (Wahyuni, Christiananta, & Eliyana, 2014; Relly Tasap, 2016). Jika kita lihat kepimpinan pengetua pada hari ini, mereka lupa akan soal kebajikan dan keperluan subordinat untuk dihargai, dibangun dan dipimpin sehingga mencapai matlamat sesebuah organisasi. Terdapat banyak konflik yang timbul antara pengetua dan guru-guru (Goksoy, 2012; Ozdemir, Karakose, Uygun, & Yirci, 2016). Selain itu, komitmen guru makin menurun akibat masalah pengurangan keterlibatan pengetua (Toprak & Summak, 2014). Tambahan lagi, pengetua gagal menunjukkan amalan kepimpinan terbaik dalam menjalankan tugas. Kepimpinan servan mempunyai hubungan yang positif dengan pengurusan organisasi melalui kajian Wahyuni et al. (2014) dan James Lemoine (2015).

Oleh yang demikian, kepimpinan servan perlu dikaji dalam konteks pendidikan abad ke-21 kerana kajian berkaitan kepimpinan ini masih terhad khususnya di Selangor. Sungguhpun banyak kajian mendapati kepimpinan servan sesuai diamalkan dalam organisasi pendidikan khususnya di peringkat sekolah, namun literatur turut mendedahkan kepimpinan ini kurang sesuai dipraktikkan di peringkat lebih tinggi. Kajian Stoten (2013) membuktikan kepimpinan transaksional merupakan gaya kepimpinan terbaik di kolej, diikuti kepimpinan distributif, dan transformasional. Kajian perbandingan prestasi organisasi oleh Choudhary, Akhtar, dan Zaheer (2013) Malaysian Journal of Social Sciences and Humanities (MJSSH), Volume 4, Issue 3, (page 173 - 184), 2019 175 www.msocialsciences.com turut memperoleh keputusan yang tidak memihak kepada kepimpinan servan. Riddell dan Roisland (2017) juga mendapati kepimpinan transformasional lebih sesuai mempengaruhi kesediaan perubahan dalam kalangan guru. Memandangkan hasil dapatan yang tidak konsisten, maka kajian ini perlu dilakukan bagi mengenal pasti sejauh manakah kepimpinan servan memiliki keupayaan untuk meningkatkan tahap kepuasan kerja guru pada pendidikan abad ke-21.

Teori & Model

Vertical Dyad Linkage Theory ialah teori berkaitan perhubungan interaksi individu antara pemimpin dan orang bawahan. Selain itu teori ini terkenal sebagai *Leadership- Member Exchange* (LMX). Teori ini dibangunkan oleh Fred Dansereau, George Graen dan William J. Haga pada tahun 1975.Teori LMX memberi fokus kepada peranan pemimpin perlu lakukan seperti transformasi, autentik, kakitangan dan memberi kuasa. Menurut Liden dan Maslyn (1998) teori LMX berkait rapat dengan kualiti hubungan pemimpin dan orang bawahan dari segi amanah, kesukaan, professional, menghormati dan kesetiaan. Sebagai seorang pemimpin yang hebat, mereka perlu memastikan semua pekerja dan pengurusan melakukan kerja secara jujur dan ikhlas supaya dapat mewujudkan suasana persekitaran yang positif (Greenleaf, 1997).

Model Kotter dipelopori oleh John Kotter (1996). Perubahan merupakan satu corak penukaran kelakuan atau keadaan yang stabil kepada satu corak kelakuan dan keadaan yang stabil yang lain. Menurut Carzo dan Yanouzas, perubahan tidak dapat dielakkan apabila tiba masanya. Terdapat faktor dalaman dan luaran yang menekan kepada perubahan. Perlaksanaan

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13th – 14th December 2020

dan amalan perlu ditambahbaik bagi meningkatkan pencapaian (Carlopio,1998).Perubahan lebih mengambarkan ciri-ciri pendidikan berbanding dengan kestabilan (Oliver, 1996). Model Kotter mempunyai 8 elemen penting iaitu cipta keperluan, membentuk pakatan yang kuat, cipta visi perubahan, menyampaikan visi melalui komunikasi, hapuskan halangan, bentuk sasaran masa pendek, terus bina perubahan dan kukuhkan perubahan dalam budaya.

Kajian Literatur

Kecemerlangan organisasi terletak pada pemimpin yang dapat mencipta idea-idea baharu yang kreatif dan inovatif (Hargreaves et al. 2010; Kotter 2012; Lunenberg 2010). Proses perubahan organisasi yang berkesan tidak akan berlaku sekiranya tidak mempunyai pemimpin yang mantap (Sidra et al. 2012). Kepimpinanan servan adalah corak kepimpinan berasaskan individu (person-centered leadership approach). Seseorang pemimpin itu perlu memberi sokongan kepada orang bawahan bagi mencapai tahap potensi diri yang maksimum serta perhubungan antara pemimpin dan subordinat itu berkait rapat dalam memahami dan menyokong motivasi individu seseorang (Ehrhart 2004; Liden et al. 2008).

Kejayaan dan kecemerlangan sesebuah sekolah terletak pada bahu pengetua atau guru besar (Abas Awang dan Balasundran A. Ramaiah,2002). Mereka juga bukan sahaja melakukan tugas harian seperti pentadbiran dan pengurusan sekolah tetapi guru besar perlu menguruskan segala bentuk sumber dan modal insan di bawah pengendalianya terutamanya menguruskan guru dengan baik supaya dapat menyumbangkan khidmat yang lebih berkesan dan berkualiti (McNulty, 2005)

Guru besar yang bijak melaksanakan tugas dan tanggungjawab dapat memimpin sekolah ke arah kecemerlangan yang efektif. Guru besar perlu menunjukkan sifat kepimpinan yang mampu mempengaruhi orang lain dan berjaya mendapatkan komitmen stafnya. Menurut Shahril (2000) dan Peter Neil (2001), guru besar yang baik akan memberi kesan positif kepada kemajuan sekolah.Pembelajaran pelajar bergantung kepada pengurusan yang baik di sekolah tempat berlakunya proses pengajaran dan pembelajaran. Oleh itu, seseorang guru besar mempunyai peranan dan tanggungjawab yang besar dalam menghadapi era globalisasi.

Dalam menghadapi cabaran semasa, pentabbir sekolah perlu diberi motivasi oleh kepimpinan tertinggi sekolah iaitu guru besar dalam mengawal tingkah laku dan meningkatkan kelebihan individu guru (Hoy dan Miskel, 1991). Perubahan sekolah terletak pada perubahan individu dan organisasi serta melibatkan proses meningkatkan semangat, afektif dan faktor-faktor intelektual guru dalam memperbaiki amalan pedagogi mereka. Tujuan perubahan ini berlaku bertujuan untuk meningkatkan tahap kepuasan kerja guru dan kejayaan sesebuah perubahan yang berlaku di sekolah mempunyai hubungan rapat dengan daya kepimpinan sekolah (Ghitulescu 2013).

Motivasi kerja merupakan satu perangsang yang akan membangiktkan dan mengekalkan minat seseorang guru itu kearah mencapai sesuatu matlamat terntu seperti mengubah minat, sikap dan tingkah lakunya. Mengikut Woodfolk (1990), motivasi merujuk kepada satu kuasa dalaman yang akan membangkit, mengarah dan mengawal minat dan tingkah laku seseorang individu tersebut. Sikap terhadap tindakan datangnya daripada pembentukan perasaan dan pemahaman. Seseorang guru yang mempunyai pandangan yang positif terhadap sesuatu perkara akan memberinya dorongan dan semangat ke arah menjalankan tugas yang aktif dan bermakna. Oleh itu, secara tidak langsung kepuasan kerja guru akan meningkat sekiranya mereka mempunyai tahap motivasi yang tinggi dalam kesediaan proses pembelajaran.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Dapatan Kajian

Dapatan kajian menunjukkan kepimpinan servan mempunyai lima dimensi yang signifikan terhadap pengurusan perubahan di sekolah. Antara pengurusan perubahan tersebut adalah mengutamakan subordinat, beretika, pemulihan emosi, membangunkan komuniti dan memberi kuasa kepada subordinat. Gabungan pembolehubah-pembolehubah peramal memberi sumbangan sebanyak 97.6% kepada varians pengurusan perubahan di sekolah. Hasil kajian ini mempunyai persamaan dengan hasil kajian yang dilakukan oleh Jasvinder (2010), Laurie (2011), dan Savage (2011). Dapatan kajian ini juga selari dengan kajian oleh Marjolein dan Van Dierendonck (2012) menunjukkan kepimpinan servan memberi kesan yang efektif terhadap komitmen kepada perubahan. Dimensi membangunkan komuniti adalah paling signifikan mempengaruhi pengurusan perubahan di sekolah. Dimensi ini menerangkan bahawa pemimpin berkeupayaan membangunkan pasukan yang bersatu padu dengan memupuk komitmen bersama, komunikasi yang berkesan dan bertindak balas terhadap halangan (Barbuto & Wheeler 2006). Hal ini bermaksud peranan kepimpinan sangat penting dalam menentukan kejayaan pelaksanaan perubahan organisasi dan ciri-ciri kepimpinan servant perlu diketengahkan untuk menghasilkan perubahan yang berkesan. Namun begitu, dapatan kajian ini bertentangan dengan kajian yang dijalankan oleh Gile (2012) yang mendapati tidak terdapat hubungan yang signifikan antara pengurusan perubahan di organisasi dengan aspek-aspek kepimpinan servan. Williams (2010) yang menjalankan kajian tentang hubungan perubahan organisasi dengan kepimpinan mendapati bahawa kepimpinan servant di organisasi kecil yang tidak berorientasikan keuntungan tidak mempunyai hubungan dengan keberkesanan pengurusan perubahan organisasi.

JADUAL 5. Ringkasan keputusan analisis regresi berganda dimensi-dimensi kepimpinan *servant* terhadap pengurusan perubahan di sekolah

Peramal	B	Beta	t	P
Kemahiran konseptual	0.018	0.022	1.939	0.053
Mengutamakan subordinat	0.146	0.184	11.876	0.000
Beretika	0.188	0.219	16.355	0.000
Pemulihan emosi	0.223	0.277	19.075	0.000
Membangunakan komuniti	0.187	0.215	20.724	0.000
Memberi kuasa kepada subordinat	0.215	0.249	15.310	0.000
Membantu kecemerlangan dan pembangunan diri subordinat	0.019	0.025	2.005	0.073

R = 0.988 R Square = 0.976 Adjusted R Square = 0.976
F = 2314.017 P = .000

Rajah 1: Kepimpinan Servant dan Pengaruhnya terhadap Pengurusan Perubahan di Sekolah (Servant Leadership and Influence on Changes Management in Schools). Jurnal Pendidikan Malaysia. 2014.

Merujuk kepada objektif kajian untuk menentukan tahap kepemimpinan guru. Didapati bahawa guru-guru sekolah menengah di zon timur mengamalkan kepemimpinan guru berdasarkan kepada 7 dimensi yang disarankan oleh Katzenmeyer dan Moller (2001) iaitu fokus perkembangan, pengiktirafan, autonomi, kejelekitan, penyertaan, komunikasi terbuka, dan persekitaran positif. Dalam kajian ini, guru sebagai responden kajian telah membuat penilaian kendiri bagi mengenal pasti tahap amalan kepemimpinan guru di sekolah. Merujuk kepada dapatan yang diperolehi menunjukkan bahawa dimensi-dimensi kepemimpinan guru di sekolah menengah adalah pada tahap tinggi berdasarkan persepsi responden. Berdasarkan persepsi responden tentang dimensi persekitaran positif pada tahap paling tinggi di sekolah menengah. Berdasarkan persepsi tersebut, ini menunjukkan kepemimpinan guru diamalkan

eISBN 978-967-2426-22-6
13th – 14th December 2020

pada tahap tinggi oleh guru-guru sekolah menengah di zon timur Semenanjung Malaysia. Secara keseluruhannya, skor min tinggi berdasarkan persepsi responden menunjukkan tahap semua tujuh dimensi kepemimpinan guru adalah pada tahap yang tinggi. Disamping itu, guru-guru sekolah menengah di zon timur Semenanjung Malaysia menyatakan dimensi persekitaran positif merupakan dimensi utama dalam menentukan tahap kepemimpinan guru. Seterusnya merujuk kepada kategori sekolah, dapatan menunjukkan tidak terdapat perbezaan min yang signifikan berdasarkan persepsi responden. Ini menunjukkan kategori sekolah samada Sekolah Berprestasi Tinggi (SBT) atau sekolah bukan SBT tidak mempengaruhi tahap amalan kepemimpinan guru. Dapatan tersebut menunjukkan guru-guru di semua kategori sekolah mampu memainkan peranan kepemimpinan melalui kepemimpinan guru. Krisko (2001) berdasarkan kajian yang dilakukan terhadap guru telah menyenaraikan ciri-ciri kepemimpinan guru seperti mana berikut; kreatif, fleksibel, menuntuti ilmu sepanjang hayat, cekap, berani menghadapi risiko dan memiliki kemahiran intra dan interpersonal. Ciri-ciri tersebut juga terdapat di dalam dimensi kepemimpinan guru membolehkan guru-guru memainkan peranan kepemimpinan dalam kalangan guru di sekolah masing-masing. Dapatan menunjukkan dimensi persekitaran positif, autonomi, komunikasi terbuka, kejelekitan, fokus perkembangan, pengiktirafan dan penglibatan adalah pada tahap yang tinggi mengikut urutan kepentingan. Berdasarkan definisi oleh Katzenmeyer dan Moller (2001) menyatakan kepemimpinan guru merujuk kepada guru yang memimpin di dalam atau luar bilik darjah, mengenalpasti dan terlibat dalam komuniti pembelajaran guru dan pemimpin, dan mempengaruhi rakan sejawat ke arah amalan pendidikan yang lebih baik. Sehubungan dengan itu, dapatan merumuskan bahawa semua dimensi tersebut terkandung dalam definisi yang diberikan oleh Katzenmeyer dan Moller (2001). Ini menunjukkan kepemimpinan guru diamalkan pada tahap yang tinggi di sekolah menengah zon timur Semenanjung Malaysia.

Jadual 11: *Tahap amalan kepemimpinan guru*

Statistik Diskriptif	Min	SP	Frekuansi			Tahap
			Rendah	Sederhana	Tinggi	
Persekitaran Positif	4.25	.58	1(0.2%)	52(13.0%)	347(86.8%)	Tinggi
Autonomi	4.16	.54	-	59(14.8%)	341(85.2%)	Tinggi
Komunikasi Terbuka	4.15	.56	2(0.5%)	59(14.8%)	339(85.7%)	Tinggi
Kejelekitan	4.13	.53	2(0.5%)	54(13.5)	344(86.0%)	Tinggi
Fokus Perkembangan	4.10	.58	3(0.7%)	67(16.8%)	330(82.5%)	Tinggi
Pengiktirafan	4.08	.59	3(0.7%)	74(18.5%)	323(80.8%)	Tinggi
Penglibatan	4.08	.59	3(0.7%)	89(22.3%)	308(77.0%)	Tinggi
Keseluruhan	4.13	.51				Tinggi

Nota: Rendah (1 – 2.33), Sederhana (2.34 – 3.67), Tinggi (3.68 – 5),

Rajah 2: Amalan Kepimpinan Guru Di Sekolah Menengah Zon Timur Semenanjung Malaysia. Jurnal Kepimpinan Pendidikan. 2016.

Isu-Isu Di Malaysia

Tugas seorang pendidik selalu dijadikan pendebatan hangat dalam kalangan guru dan masyarakat. Antara isu yang berkaitan guru ini adalah tekanan kerja yang dilalui oleh mereka kerana tugas seorang guru semakin mencabar disebabkan mereka memegang tanggungjawab

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13th – 14th December 2020

yang berat di era dunia yang sentiasa berubah. Tekanan pekerjaan perlu diambil penekanan yang serius kerana boleh menyebabkan kesan terhadap psikologi seperti kelesuan, gangguan psikometrik dan kemurungan (Nelsom & Quick, 2013). Di samping itu juga, aspek fisiologi seseorang pekerja turut terjejas (Jain et al., 2012) seperti tekanan otot, darah tinggi, prestasi kerja yang lemah, kemalangan, gangguan tidur dan penyalahgunaan dada. Selain itu, kesan lain juga berlaku terhadap tingkahlaku yang lebih kompleks seperti merokok, menghisap dadah, minum arak, mencederakan orang lain dan sebagainya. Oleh itu, peranan kepimpinan servan begitu penting dalam menentukan keperluan orang bawahan dari segi emosi, tingkah laku dan pengawasan yang baik dalam menentukkan tahap kepuasan pekerja berada dalam keadaan yang stabil.

Pengetua sekolah memainkan peranan penting dalam menguruskan kecemerlangan dan kejayaan sesebuah sekolah (Abas Awang dan Balasundran A, Ramaiah, 2002). Tugas mereka bukan sahaja membuat tugas rutin pentadbiran dan pengurusan tetapi mereka perlu mereka perlu mengatur segala jenis sumber dan modal insan dibawah penyeliaanya terutama guru supaya mereka dapat menyumbang khidmat yang terbaik kepada sekolah (McNulty, 2005). Di Malaysia banyak usaha yang telah dilakukan untuk meningkatkan kualiti pendidikan tetapi hasilnya masih kurang memberangsangkan. Guru-guru di sekolah kurang mendapat motivasi yang cukup dalam melaksanakan tugas hakiki mereka. Tambahan lagi, persekitaran pekerjaan juga memainkan perana penting dalam meningkatkan motivasi guru. Menurut Hoy dan Miskel (1991) berkaitan motivasi dalam pekerjaan, pentadbir mempunyai pengetahuan tingkah laku manusia dalam memperolehi kelebihan dalam menghadapi masalah dan cabaran. Oleh itu, pengetua perlu memainkan peranan penting dalam memastikan motivasi guru berada pada tahap yang tinggi dalam melaksanakan tugas di sekolah supaya mereka akan bekerja dengan lebih rajin dan dapat mengelakkan perasaan dan sentiment tidak puas hati.

Implikasi

Cabaran pembelajaran abad ke-21 ini, kerajaan telah merangka Pelan Pembangunan Pendidikan Malaysia (2013-2025) bertujuan mentransformasikan sistem pendidikan negara dengan segala kemahiran baru untuk setiap murid. Oleh itu, sistem pendidikan kita mampu mencorak generasi muda ke arah berfikiran secara kritis dan kreatif, berpengetahuan serta berupaya berkomunikasi dengan baik di peringkat global (Kementerian Pendidikan Malaysia, 2013). Pengetua sekolah atau pemimpin sekolah memainkan peranan penting dalam membentuk murid dan guru yang berkualiti. Kajian Halllinger (2011) mengatakan kajian berkaitan kepimpinan selalu menjadi topik hangat dalam urusan organisasi sekolah. Kejayaan sesebuah sekolah terletak pada kepimpinan yang berkesan oleh pemimpin sekolah (Horng & Loeb, 2010; Hoy & Miskel, 2013; Yusri & Aziz, 2014; Zaidatol Akmaliah & Soaib, 2011). Pelan Pembangunan Pendidikan Malaysia (PPPM 2013-2025) melalui anjakan kelima iaitu memastikan kepimpinan berprestasi tinggi ditempatkan di setiap sekolah. Oleh itu, pengetua atau guru besar yang baru dilantik perlu mempunyai sijil National Profesional Qualification for Educational Leader (NPQEL).

Kecemerlangan organisasi memerlukan penciptaan idea-idea baharu yang kreatif dan inovatif dari seorang pemimpin dalam proses menguruskan perubahan dalam organisasi (Hargreaves et al. 2010; Kotter 2012; Lunenberg 2010). Organisasi tidak akan berubah secara berkesan sekiranya kepimpinannya tidak mantap (Sidra et al. 2012). Pemimpin perlu memberi sokongan kepada subordinat supaya mereka mencapai potensi diri sepenuhnya dan menyokong motivasi personal mereka (Ehrhart 2004; Liden et al. 2008). Rancangan Malaysia Kesembilan (RMK-9) memberi penekanan kepada modal insan seperti mendapatkan Pendidikan akademik yang sempurna, tinggi nilai akhlaknya serta cergas fizikalnya. Manakala di peringkat

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kementerian Pelajaran Malaysia segala program yang melibatkan sumber manusia dalam pendidikan dan latihan bertujuan melahirkan tenaga kerja mahir, berkualiti tinggi, nilai moral tinggi, beretika kerja dan berketerampilan tinggi. Kepimpinan servan mempunyai hubungan yang signifikan dengan kepuasan kerja dan mampu memotivasikan pekerja seterusnya meningkatkan pengurusan organisasi (Guenzi et al, 2007).

Kepimpinan servan memberi kejayaan yang lebih besar dalam melaksanakan perubahan organisasi berbanding dengan kualiti komunikasi (Brummelhuis, 2012). Menurut Barbuto dan Wheeler (2006) elemen-elemen dalam kepimpinan servan iaitu altruisme (tidak mementingkan diri sendiri), pemulihan emosi, kebijaksanaan, kemahiran pujukan dan kepimpinan organisasi dapat meningkatkan keberkesanan organisasi. PPPM 2013- 2023 melaksanakan PAK21 bagi mentransformasikan Pendidikan. Kepimpinan guru besar dalam melaksanakan PAK21 diperlukan untuk menentukan hala tuju PAK21 . Pengetua atau guru besar perlu memahami konsep, prinsip dan prosedur perlaksanaan PAK21. Mereka perlu mempunyai pelbagai kebolehan bukan sahaja boleh mengajar, malah boleh menjadi teladan dan rujukan kepada guru atau subordinat. Pengetua juga perlu berkebolehan dalam menginterpretasikan perubahan dalam sekolah dengan menggunakan komunikasi yang sesuai dan tepat pada situasi supaya guru, staf dan pelajar lebih berminat serta komited dengan segala urusan dan aktiviti di sekolah (Husein, 2016).

Kesimpulan

Kajian berkaitan kepimpinan servan dan hubunganya dengan kepuasan kerja guru banyak dijalankan di Malaysia. Walau bagaimanapun, penambahbaikan dan pengstrukturan semula perlu dibuat bagi memantapkan lagi usaha kerajaan dalam meningkatkan tahap kepuasan kerja guru berada pada tahap maksimum. Di samping itu, meningkatkan kualiti pengetua yang ditugaskan di setiap sekolah di seluruh Malaysia. Kepuasan kerja guru menjadi satu ukuran yang penting untuk menjamin kesejahteraan guru dan pelajar-pelajar yang diajar. Peningkatan kepuasan bekerja mendorong kepada pengekalan jawatan, peningkatan prestasi murid dan dapat menghasilkan guru yang berkualiti. Perhatian yang serius terhadap bebanan kerja perlu di beri keutamaan oleh pihak KPM. Disamping insentif dan latihan, aspek-aspek peningkatan kemahiran yang baharu perlu diberi penekanan agar guru-guru dapat meningkatkan keupayaan mereka agar selaras dengan perkembangan zaman.

Rujukan

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KAEDAH PEMBELAJARAN PENGAJIAN MALAYSIA 1 MELALUI PERMAINAN 'APA KERAJAAN BOLEH BANTU SAYA'

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Abstract: *Subjek Pengajian Malaysia 1 diperkenalkan di dalam Mata Pelajaran Umum dengan tujuan mengaplikasikan identiti nasional. Oleh yang demikian, pengakaedah pengajaran yang tepat perlu untuk mencapai matlmat tersebut. Kajian ini bertujuan menentukan tahap sikap pelajar terhadap mata pelajaran Pengajian Malaysia 1, menentukan tahap minat pelajar terhadap permainan 'Apa Kerajaan Boleh Bantu Saya'(AKBBS), mengenalpasti perbezaan sikap pelajar terhadap mata pelajaran Pengajain Malaysia 1 berdasarkan jantina dan mengenal pasti hubungan antara sikap dengan minat pelajar terhadap permainan AKBBS. Kajian ini menggunakan instrumen soal selidik yang merangkumi tiga komponen iaitu demografi responden, tahap sikap pelajar terhadap mata pelajaran Sejarah dan minat pelajar terhadap permainan AKBBS. Seramai 95 orang pelajar semester 1 daripada kursus Sijil Fesyen & Pakaian, Teknologi Maklumat dan Kenderaan Ringan dijadikan sampel kajian. Analisis yang dijalankan berbentuk skor min, -test dan korelasit. Soal selidik telah diedarkan secara dalam talian menggunakan Google Form. Dapatan mendapati tahap sikap pelajar terhadap Pengajian Malaysia 1 dan minat pelajar terhadap permainan AKBBS adalah tinggi. Tidak terdapat perbezaan sikap di antara jantina. Terdapat hubungan yang signifikan antara tahap sikap pelajar dengan minat pelajar ke atas permainan AKBBS. Justeru, kajian terperinci dan komprehensif perlu dilakukan terhadap permainan dan kaedah pengajaran yang mesra teknologi bagi memastikan semua pelajar mempunyai motivasi yang tinggi dan meminati mata pelajaran Pengajian Malaysia 1.*

Keywords: *(Minat, Sikap, Pengajian Malaysia 1, Permainan Berasaskan Pembelajaran)*

Pengenalan

Patriotisme boleh diertikan kecintaan dan kesetiaan kepada negara dengan menitikberatkan perpaduan dalam seluruh aspek pembangunan (Sarjit, Mohd Rahimi dan Ahmad Tarmizi, 2015). Menurut Habermas (1996) bukan hanya tanggungjawab kerajaan dalam meningkatkan patriotism malahan belia perlu ke depan menjaga kedaulatan bangsa dan negara. Walaupun ada segelintir belia yang bergiat aktif dalam persatuan tetapi nilai patriotism masih belum menyerlah (Tuan Pah, Shamsul dan Zaheruddin,2016). Namun begitu, identiti nasional di negara Malaysia masih tidak jelas dan perlu melalui proses pembentukan yang berterusan melalui pendidikan (Nur Nadia,2020). Oleh yang demikian, Pelan Pembangunan Pendidikan Malaysia 2015-2025 (Pendidikan Tinggi) telah menggariskan salah satu aspirasi yang bakal dicapai pada 2025 ialah perpaduan yang mana akan menyediakan pelajar dengan nilai dan pengalaman serta penerimaan kepelbagaian. Dalam mengimbangi akhlak dan ilmu kementerian telah menggariskan atribut integrasi nasional supaya pelajar mempunyai jati diri

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13th – 14th December 2020

kebangsaan dan memahami aspirasi negara. Oleh yang demikian, dalam memastikan lonjakan 4 iaitu melahirkan graduan TVET berkualiti Kementerian Pendidikan Tinggi (2016) telah memperkenalkan komponen kursus mata pelajaran Pengajian Umum yang perlu dilaksanakan di semua Institut Pengajian Tinggi di Malaysia termasuk kolej komuniti. Salah satu subjek yang terkandung di dalam Mata Pelajaran Pengajian Umum peringkat sijil adalah Pengajian Malaysia 1. Maklamat utama kursus Pengajian Malaysia ialah untuk melahirkan warganegara yang setia dan cinta kepada negara, berwawasan, bangga sebagai rakyat Malaysia, mampu menghadapi cabaran kearah mencapai kesejahteraan hidup serta dapat menghayati peranan Malaysia di arena antarabangsa.

Oleh yang demikian, dalam memastikan aspirasi ini tercapai kaedah pengajaran yang melibatkan penglibatan pelajar dengan mengenengahkan aktiviti yang menarik. Ini diakui oleh Lezah dan Rosy (2018) bahawa pelajar berminat dengan aktiviti secara aktif seperti G*allery Walk* dan sesi soal jawab. Kajian Wenda Novayani (2019) menunjukkan permainan berasaskan permainan dapat menyampaikan fakta sejarah dengan betul tanpa rasa bosan dan tertekan semasa proses penghafalan. Dalam memastikan minat pelajar terhadap subjek Pengajian Malaysia 1 meningkat satu permainan berbentuk strategi telah dicipta oleh pengkaji iaitu 'Apa Kerajaan Boleh Bantu Saya'. Permainan ini bertujuan untuk membantu pelajar yang menghadapi masalah untuk memahami tajuk Sistem Pemerintahan Negara dan Dasar-Dasar Negara di bawah modul Pengajian Malaysia 1 (MPU1152). Permainan ini merupakan satu konsep pedagogi yang menggantikan kuliah dalam kelas yang kurang pencahayaan, kurang ceria dan padat dengan memberi peluang dan ruang kepada pelajar untuk meneroka dan bermain di luar bilik darjah melalui QR kod, aplikasi *Argumented Reality* (AR) dan *Digital Whiteboard* yang diinovasikan dari permainan dart. Permainan adalah berbentuk santai dan nota yang berbentuk interaktif dalam bentuk QR kod dan petunjuk AR mampu merangsang ingatan pelajar dalam menghafal dasar-dasar kerajaan (Zirawaga, Olusanya dan Maduku,2017). Selain itu, kemahiran teknologi maklumat yang penting untuk abad 21 juga dapat pelajar terokai dengan pengenalan aplikasi pembelajaran digital. Turut diserapakan. Rohani, Hazri dan Mohammad (2017) menyenaraikan kemahiran yang dikehendaki majikan adalah kemahiran komunikasi, interposonal, penguasaan kemahiran asas termasuk teknologi maklumat dan bahasa, kebolehan berfikir secara kreatif dan kritis, disiplin diri dan berpengetahuan am. Peranan utama mengaplikasikan teknologi adalah melibatkan pelajar dan mendorong pelajar untuk turut serta (Zirawaga, Olusanya dan Maduku,2017). Permainaan ini berbentuk kooperatif dan menerapkan persaingan secara sihat di antara kumpulan. Permainan ini menggabungkan sesi ulangkaji dengan permainan supaya peneguhan dilakukan.

Penyataan Masalah

Kebanyakan pelajar yang datang ke Kolej Komuniti kebanyakannya mendapat keputusan lulus dalam subjek Sejarah semasa Sijil Pelajaran Malaysia (SPM) yang mana menyukarkan pensyarah menerapkan atribut integrasi nasional. Tambahan pula sikap pelajar yang cepat bosan terutamanya dalam menghafal fakta dasar-dasar negara membuatkan kelas hambar. Kajian Nor Azan dan Wong (2008) dalam kajian mereka menyenaraikan tujuh masalah dari persepsi pelajar dengan peratusan tertinggi iaitu susah menghafal fakta sejarah dan pelajaran sejarah yang membosankan kerana buku teks yang hambar. Manakala guru pula menyatakan pelajar kurang berminatdengan subjek sejarah dan susah menghafal. Melalui pemerhatian pensyarah terhadap pelajar terdahulu, walaupun pensyarah telah mengambil pendekatan pop kuiz tetapi kurang berkesan kerana pelajar sering memberi jawapan lupa. Pensyarah telah mengambil inisiatif pembelajaran kendiri dengan meminta pelajar membentangkan hasil dapatan info mereka namun fakta yang diterima selalu kurang tepat dan padat. Nota dalam

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13th – 14th December 2020

bentuk slaid power point yang dikongsi di dalam kumpulan Telegram untuk tujuan bacaan sebelum kelas juga tidak dibaca. Keadaan kelas yang tidak mempunyai kelengkapan LCD juga menyukarkan pensyarah berkongsi slaid dan nota. Kaedah pengajaran secara *story telling* pula akan memakan masa dan silibus tidak dapat dihabiskan dalam masa yang sepatutnya.

Dengan itu, pembelajaran melalui permainan AKBBS akan mampu menarik minat pelajar untuk terlibat secara aktif semasa sesi pembelajaran. Permainan berasaskan pembelajaran sesuai untuk mengaplikasikan kemahiran berfikir secara kreatif dan penyelesaian masalah (Nurfazliah, Jamalludin, Shaharuddin dan Megat.

Tujuan Kajian

Oleh yang demikian, bagi mengukur motivasi pelajar dalam subjek Pengajian Malaysia 1 melalui permainan Apa Kerajaan Boleh Bantu Saya. Kajian ini telah dijalankan dengan mengambil kira sikap pelajar terhadap subjek Pengajian Malaysia 1 dan penerimaan pelajar terhadap permainan Apa Kerajaaan Boleh Bantu Saya. Bagi tujuan ini, beberapa objektif telah dikenal pasti:

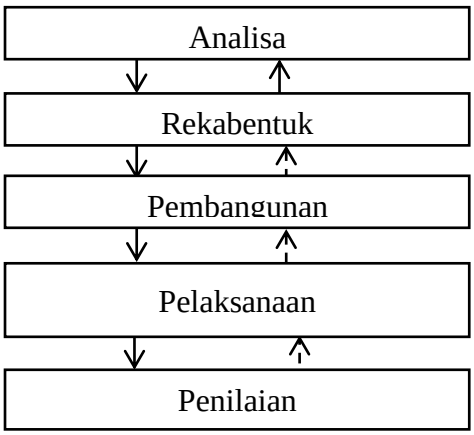
i. Menentukan tahap sikap pelajar terhadap mata pelajaran Pengajian Malaysia 1
ii. Menentukan tahap minat pelajar terhadap permainan AKBBS
iii. Mengenalpasti perbezaan sikap pelajar terhadap mata pelajaran Pengajian Malaysia 1 berdasarkan jantina
iv. Mengenal pasti hubungan antara sikap dengan minat pelajar terhadap permainan AKBBS

Persoalan Kajian

I Apakah persepsi pelajar terhadap mata pelajaran Pengajian Malaysia 1?
II Apakah tahap minat pelajar terhadap permainan AKBBS?
III Adakah terdapat perbezaan sikap pelajar terhadap mata pelajaran Pengajain Malaysia 1 berdasarkan jantina?
IV Adakah terdapat hubungan antara sikap dengan minat pelajar terhadap permainan AKBBS

Kerangka Konsep

Permainan AKBBS dirangka berdasrkan kerangka konsep yangberpandukan Teori ADDIE seperti rajah 1:



Rajah 1: Kerangka Konsep kajian

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kerangka konsep pada Rajah 1 menerangkan bahawa pengkaji menganalisa masalah kebosanan pelajar, susah menghafal dan info kurang tepat semasa pembentangan pelajar walaupun telah disediakan nota Power Point. Oleh yang demikian, pengakaji merekabentuk permainan AKBBS dengan menerapkan pembelajaran berbentuk kooperatif, pendedahan teknologi maklumat dan kemahiran berkomunikasi. Pada fasa pembangunan pengkaji telah meamsukkan teknologi ke dalam permainan iaitu QR kod, aplikasi *Argumented Reality* (AR) dan *Digital Whiteboard* supaya permainan berbentuk interaktif dan menarik. Sesuai dengan generasi Z. Sekiranya berlaku kesilapan, pembaikan akan dilakukan sebelum ia diserahkan sepenuhnya kepada pengguna sasaran untuk digunakan. Pada fasa penilaian pelajar telah diberikan penilaian berbentuk sumatif bagi melihat sama ada permainan AKBBS sesuai digunakan. Proses ini diulang semula untuk penambaikan produk. Teori ini dipilih kerana ia dapat menyelesaikan masalah semasa merangka permainan. Ini diakui oleh (Ummu, Muhammad dan Nazipah, 2015).

Kajian Literatur

Kaedah pengajaran dan pembelajaran oleh pensyarah untuk subjek Pengajian Malaysia amat penting dalam menyampaikan ilmu kepada pelajar. Antara kaedah yang biasa digunakan ialah dengan mengadakan lawatan ke muzium. Melalui kajian yang dilakukan oleh Nur Syazwani Abdul Talib, *et.al* (2019) menyatakan bahawa kaedah pembelajaran dengan mengadakan lawatan ke muzium menarik minat dan meningkatkan kemahiran pelajar. Koleksi yang ada di muzium boleh menarik minat pelajar untuk terlibat secara aktif semasa sesi pembelajaran dan menyeronokkan. Selain daripada lawatan ke muzium, kaedah penggunaan peta konsep juga diterapkan sebagai salah satu teknik pengajaran. Teknik ini sangat berkesan dalam meningkatkan pencapaian pelajar. Selain menunjukkan perubahan sikap pelajar terhadap mata pelajaran sejarah, pencapaian pelajar juga telah meningkat dengan ketara selepas diajar menggunakan peta konsep (Mohd Mahzan Awang, *et.al*, 2014). Terdapat juga kaedah pembelajaran berpusatkan pelajar dalam pembelajaran Sejarah contohnya pembentangan, perbahasan, *Gallery Walk* dan sesi soal jawab. Pernyataan ini disokong oleh kajian Lezah Kiaminen, *et.al* (2018) yang mengatakan terdapat pelajar yang berminat dengan kaedah berpusatkan pelajar kerana mereka boleh mencari, mendapatkan maklumat dan menyampaikan maklumat tersebut.

Menurut Nurul Hafizah Maarof (2020), Sejarah merupakan salah satu subjek yang kurang diminati dalam kalangan pelajar kerana terlalu padat dengan fakta-fakta sejarah, jadi kaedah pengajaran dan pembelajaran yang melibatkan pelajar secara aktif perlu dilaksanakan. Oleh yang demikian, pembelajaran berasaskan permainan perlu diketengahkan memandangkan kaedah tersebut masih kurang diterapkan dalam pengajaran bagi subjek Sejarah. Melalui kajian Wong dan Kamisah (2018) permainan dalam pengajaran memberi kesan yang positif kepada pelajar. Hasil kajian Hassan dan Poopak, (2012) turut menyatakan kaedah permainan mempercepatkan proses pengajaran dan mewujudkan suasana yang positif. Pembelajaran aktif adalah melalui penglibatan pelajar dalam melakukan pelbagai aktiviti pembelajaran termasuklah permainan. Permainan dalam pengajaran dan pembelajaran samada dalam bentuk digital ataupun fizikal terbukti memberikan kesan yang positif kepada pelajar (Junaidah *et.al*, 2016).

Terdapat kajian-kajian yang menjelaskan bahawa kaedah permainan dalam pengajaran dan pembelajaran memberi kesan positif kepada pelajar dan guru. Kaedah yang dinyatakan dapat memberi cadangan dan idea kepada penyarah kolej komuniti untuk diterapkan kepada pelajar masing-masing. Penggunaan kad dan papan permainan boleh digunakan dalam subjek Pengajian Malaysia. Seperti kajian yang dijalankan oleh Junaidah Jamaluddin, *et.al* (2016),

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13th – 14th December 2020

kaedah permainan kad (AOTB) dalam P&P dapat memberi kesan positif dengan peningkatan pencapaian pelajar. Seperti kajian yang dilakukan oleh Abdul Rasid Jamian, et.al (2017), kaedah peta pemikiran *i-Think* memudahkan pelajar mencatat nota dan meningkatkan daya ingatan pelajar. Kaedah lakonan juga boleh diaplikasikan dalam pengajaran seperti kajian Abdul Rasid Jamian, *et.al* (2016), pengaplikasian teknik didik hibur mengandungi elemen lakonan dan pembelajaran menyeronokkan.

Memandangkan subjek sejarah menggunakan fakta dan perlu dihafal, satu permainan untuk meningkatkan daya ingatan perlu dicipta untuk pelajar. Nurul Syadiyah dan Ramlah (2020), telah memperkenalkan Teknik Mnemonik dalam pembelajaran sejarah. Teknik ini adalah satu permainan untuk membantu pelajar mengingat pembelajaran yang banyak. Selain itu, permainan digital dalam penyampaian tidak ketinggalan contohnya menggunakan aplikasi tersedia dalam laman web contohnya platform *kahoot*. Penggunaan platform 'Kahoot' merupakan permainan *multiplayer* dan interaktif secara atas talian (Faridah dan Afham Zulhusmi, 2019).

Pembelajaran berasaskan permainan atau gamifikasi dalam pembelajaran merupakan pendekatan terkini dalam usaha menerapkan elemen inovasi dan teknologi digital dalam pengajaran dan pembelajaran. Penggunaan permainan dalam Pendidikan bersama-sama dengan penerangan kendiri membantu meningkatkan pencapaian pelajar dan mengubah sikap pelajar yang lemah menjadi lebih positif (Wong dan Kamisah, 2018). Penggunaan kaedah permainan menjadikan pelajar lebih aktif dan meningkatkan keyakinaan mereka. Contohnya penggunaan kaedah Permainan Video terhadap pembelajaran dapat meningkatkan pemikiran visual dalam kalangan pelajar semasa mempelajari sesuatu konsep yang sukar difahami pelajar.

Kaedah permainan dalam pengajaran dan pembelajaran dapat meningkatkan motivasi pelajar dalam pembelajaran (Nor Hafizah Maarof, et.al 2020) & (Junaidah Jamaluddin, et.al.,2016). Dengan kemahiran dalam permainan yang diterapkan oleh pensyarah, pelajar dapat menguasai kemahiran menyelesaikan masalah, kemahiran komunikasi, kemahiran berfikir secara kreatif dan kritis seiring Revolusi Industri 4.0. Pernyataan tersebut disokong oleh kajian Md Noor (2019), Sa'adiah Mohamad (2020) dan Ad Norazli (2014).

Metodologi Kajian

Kajian yang dijalankan adalah kajian kuantitatif berbentuk deskriptif dengan menggunakan reka bentuk kajian secara tinjauan dengan menggunakan borang soal selidik. Soal selidik telah diedarkan secara dalam talian menggunakan *Google Form*. Populasi dalam kajian ini adalah terdiri daripada pelajar-pelajar semester 1 program Sijil Teknologi Maklumat, Sijil Fesyen & Pakaian dan Sijil Kenderaan ringan di Kolej Komuniti Gerik yang mengambil subjek Pengajian malaysia 1. Bilangan sampel adalah seramai 95 orang. Soal selidik yang digunakan dalam kajian ini telah diadaptasi dan diubahsuai daripada instrument (Nur, Kamaruzzaman dan Nur, 2019). Soal selidik ini mengandungi 3 bahagian iaitu Bahagian A mengandungi maklumat demografi responden dan bahagian B mengandungi item-item sikap pelajar dan Bahagian C mengandungi item minat pelajar. Bagi menganalisis dapatan kajian, interpretasi skor min mengikut pandangan Pallant (2007) telah digunakan.

Jadual 1: Tafsiran Min Tahap

Min	Tahap
0.00-1.66	Rendah / Tidak Memuaskan / Tidak Perlu
1.67 – 3.33	Sederhana / Agak memuaskan / Agak Perlu
3.34 – 5.00	Tinggi / Sangat memuaskan/Sangat Perlu

eISBN 978-967-2426-22-6
13th – 14th December 2020

Dapatan Kajian Dan Perbincangan

Demografi Kajian

Sampel kajian ini terdiri daripada 95 orang pelajar dari Semester 1 dari 3 kursus iaiatu Sijil Teknologi Maklumat, Sijil Servis kenderaan Ringan dan Sijil Fesyen & Pakaian. Seramai 43 orang pelajar adalah perempuan dan 52 adalah pelajar lelaki. 29 orang pelajar adalah dari setiap kursus Teknologi Maklumat dan Fesyen & Pakaian manakala 37 pelajar dari Servis Kenderaan Ringan.

Analisis yang dijalankan berbentuk frekuensi, skor min,*T-test* dan Korelasi. Objektif 1 ialah untuk menentukan tahap sikap pelajar terhadap mata pelajaran Pengajian Malaysia 1. Berdasarkan skor min dalam Jadual 2 menunjukkan skor min untuk semua item adalah tinggi untuk sikap pelajar terhadap mata pelajaran Pengajian Malaysia 1. Pada pendapat pengkaji, pelajar berminat dengan subjek Pengajian Malaysia 1 kerana pedagogi yang dijalankan oleh pensyarah adalah berbentuk interaktif seperti melakukan penilaian sumatif melalui laman web *Wordwall, Google Form* dan *Quizz*. Kenyataan ini disokong oleh (Aniza dan Zamri,2015) dan (Mohd dan Asmah,2019) yang sependapat guru perlu kreatif dalam menyediakan alat bantu mengajar dan penilaian suapaya dapat menguji kemahiran pelajar. Selain dari tu akibat Pandemik Covid 19 kelas secara dalam talian yang menggunakan aplikasi Google *Classroom, Thinglink* dan *Group Telegram* turut menyumbang kepada minat pelajar terhadap subjek ini. Menurut Wicaksono dan Rachmadyanti (2017) *Google Classroom* mampu membuat pelajar berasa selesa dan aktif dalam kelas tetapi perlu dibantu oleh ketua kelas dan dipantau oleh pedidik supaya maklumat sampai dengan baik.Ini dipengaruhi oleh cara pembelajaran Generasi Z yang lebih dekat dengan teknologi. Ini ditegaskan oleh Rahayu (2019) yang menyatakan tanggungjawab pendidik adalah memastikan kaedah pengajaran mengikut peredaran zaman. Anuar dan Jinggan (2015) menegaskan guru sejarah perlu cekap dalam kemahiran ICT supaya pembelajaran menjadi lebih seronok dan berkesan.

Jadual 2: Skor min sikap pelajar

Report

	1.Saya suka belajar mata pelajaran Pengajian Malaysia 1	2.Mata pelajaran Pengajian Malaysia 1 senang dipelajari	3. Sekiranya terdapat masalah berkaitan mata pelajaran Pengajian Malaysia 1, saya sentiasa bertanya guru	4. Saya selalu membaca bahan bacaan tambahan berkaitan mata pelajaran Pengajian Malaysia 1	5.Penggunaan Bahan Bantu Mengajar (kuiz dan nota online) oleh pensyarah membantu saya memahami mata pelajaran Pengajian Malaysia 1	6. Saya lebih mudah mengingati fakta-fakta Pengajian Malaysia 1 berbanding mata pelajaran lain	7. Pengetahuan Pengajian Malaysia 1 berguna dalam kehidupan seharian
Mean	4.15	3.98	4.14	3.84	4.26	3.87	4.28
N	94	95	95	95	95	95	95
Std. Deviation	.961	1.062	1.097	1.003	.925	1.094	.942

Hasil kajian ini juga mendapati semua item untuk minat pelajar terhadap permainan AKBBS berada pada tahap tinggi. Pengkaji melihat fenomena ini terjadi kerana permainan adalah berbentuk interaktif dan menggunakan teknologi yang dekat dengan generasi Z. Dapatan ini juga disokong oleh kajian Kaviza (2019). Muhammad Sharafiq (2017) permainan video mampu meningkatkan kemampuan kognitif mereka dan juga ianya mendapat respon yang positif daripada responden merujuk kepada keberkesanan mempelajari Sejarah melalui

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13th – 14th December 2020

permainan video. Nor Azan dan Wong (2008) dalam kajian juga penggunaan perisian pembelajaran sejarah berasaskan permainan untuk menarik minat pelajar. Namun begitu, permainan perlu mempunyai kretiria seperti keseronokan, cabaran, persainagn, ganjaran, menggunakan teknologi multimedia, memberi maklumbalas dan latar belakang permainan yang menarik. Pengkaji mengenalpasti AKBBS mempunyai ciri keseronokan, persaingan, ganjaran dan gabungan teknologi yang menarik minat pelajar terhadap permainan ini.

Jadual 3: Skor min Minat pelajara terhadap permainan AKBBS

	1.Kefahaman pelajar mengenai dasar negara akan dapat ditingkatkan melalui permainan AKBBS	2. Pembelajaran mengenai dasar negara lebih menyeronokkan melalui permainan AKBBS	3. Permainan AKBBS akan dapat memperkukuhkan daya ingatan saya	4. Permainan AKBBS akan memberikan kemudahan dalam menyiapkan tugasan	5. Permainan AKBBS akan dapat mengukuhkan dan menghubungkaitkan pengetahuan mata pelajaran Pengajian Malaysia 1	6. Permainan AKBBS akan mengembangkan imaginasi dan daya cipta saya	7. Permainan AKBBS akan melibatkan pelajar secara aktif dalam pembelajaran Pengajian Malaysia 1
Mean	3.99	4.15	4.05	4.17	4.11	4.04	4.13
N	95	95	95	95	95	94	95
Std. Deviation	.962	.887	.982	.953	.973	.961	.981

Objektif kajian 3 adalah mengenalpasti perbezaan sikap pelajar terhadap mata pelajaran Pengajain Malaysia 1 berdasarkan jantina. Jadual 4 didapati nilai t bagi perbandingan sikap pelajar lelaki dan perempuan terhdap subjek Pengajian Malaysia ialah t= 0759 dan tahap signifikan ialah p= 0.45. Tahap signifikan ini adalah lebih besar daripada 0.05 (p>0.05). Oleh itu, hipotesis Ho diterima. Ini jelas menunjukkan tidak terdapat perbezaan minat di anatara jantina ke atas subjek Pengajian Malaysia 1. Dapatan ini juga disokong oleh Kaviza (2019). Ini disebabkan cara pengajaran yang sama didedahkan kepada pelajar tidak mengira jantina. Tugasan yang memerlukan pelajar mencari maklumat perlu disegmentasikan masa pencarian,matlamat, sumber dan cara pengumpulannya supaya pelajar tidak tersasar dari segi masa dan hilang fokus (Mohr, Kathleen A. J. and Mohr, Eric S. ,2017)

Jadual 4: Perbezaan sikap pelajar terhadap subjek Pengajian Malaysia 1 mengikut jantina

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
mean_sikap	Equal variances assumed	5.972	.016	-.759	93	.450	-.13743	.18107	-.49700	.22214
	Equal variances not assumed			-.787	89.337	.433	-.13743	.17456	-.48426	.20941

eISBN 978-967-2426-22-6
13th – 14th December 2020

Dari jadual output di bawah diketahui nilai Sig (2-tailed) antara Sikap dan Minat adalah 0.00 < 0.0, yang bererti terdapat korelasi yang signifikan antara variable sikap dan minat. Ini bermakna sikap pelajar terhadap subjek Pengajian Malaysia 1 mempengaruhi minat mereka terhadap permainan AKBBS.Kajian ini disokong dapatan kajian (NurSyazwani, Kamurazaman dan Nur Azuki, 2019) yang mendapati kaedah lawatan ke muzium ada hubungan dengan sikap pelajar terhadap subjek Sejarah. Oleh yang demikian dalam memastikan sikap pelajar terhadap subjek ini bertambah permainan AKBBS perlu diperbaiki mengikut keperluan pelajar. Permainan boleh ditambahbaik dengan menambah lebih banyak pendekatan teknologi seperti grafik dan 3D. Nor Azan dan Wong (2008) dalam kajiannya melihat peratusan tertinggi keperluan yang perlua ada permainan berasaskan pelajaran. Weng Siong dan Kamisah (2018) pula mencadangkan untuk menambah kemahiran berfikir aras tinggi pelajar, pelajar digalakkan mencipta permainan sendiri yang berkaitan pelajaran.

Jadual 5: Perhubungan Korelasi Antara Sikap Dan Minat Pelajar Terhadap Subjek Pengajian Malaysia 1

Correlations

		mean_sikap	mean_minat
mean_sikap	Pearson Correlation	1	.883**
	Sig. (2-tailed)		.000
	N	95	95
mean_minat	Pearson Correlation	.883**	1
	Sig. (2-tailed)	.000	
	N	95	95

**. Correlation is significant at the 0.01 level (2-tailed).

Kesimpulan

Secara keseluruhannya, hasil kajian dapat mengenalpasti tentang kaedah pembelajaran mata pelajaran Pengajian Malaysia 1 melalui permainan 'Apa Kerajaan Boleh Bantu Saya' ini menunjukkan keputusan yang tinggi dan memuaskan oleh para pelajar terhadap mata pelajaran Pengajian Malaysia 1 ini. Hal ini dapat dilihat dengan jelas apabila hasil kajian menunjukkan min skor untuk semua item adalah tinggi untuk sikap pelajar terhadap mata pelajaran Pengajian Malaysia 1. Dapat disimpulkan bagi objektif yang pertama adalah kepelbagaiaan idea yang diusahakan oleh tenaga pengajar menyebabkan tahap sikap pelajar terhadap mata pelajaran Pengajian Malaysia 1 dalam keadaan yang memuaskan. Seterusnya, untuk objektif kedua dalam kajian ini, hasil kajian mendapati semua item untuk minat pelajar terhadap permainan AKBBS berada pada tahap yang tinggi. Dapat disimpulkan bahawa para pelajar generasi Z ini menunjukkan minat yang maksimum terhadap permainan yang berbentuk interaktif dan moden ini. Para pelajar lebih mahir dengan permainan yang berbentuk moden ini dan ini menyebabkan minat mereka terhadap mata pelajaran pengajian Malaysia 1 melalui permainan AKBBS lebih menggalakkan. Kajian mengenai perbezaaan jantina terhadap mata pelajaran Pengajian Malaysia 1 tidak menunjukkan sebarang perbezaan di antara pelajar lelaki dan perempuan. Ini adalah kerana jenis ataupun cara pengajaran yang sama yang didedahkan kepada pelajar lelaki dan perempuan. Akhir sekali, kajian ini mendapati bahawa sikap pelajar terhadap mata pelajaran Pengajian Malaysia 1 mempengaruhi minat mereka.

Untuk meningkatkan lagi minat para pelajar Kolej Komuniti Gerik terhadap mata pelajaran Pengajian Malaysia 1 ini adalah dengan mempelbagaikan idea-idea platform mata pelajaran Pengajian Malaysia 1. Pengkaji berpendapat, pensyarah perlu untuk menyediakan suasana pembelajaran yang menarik dan harmonis. Ini bermakna pensyarah perlu mewujudkan

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13th – 14th December 2020

suasana pembelajaran yang dapat merangsangkan minat pelajar disamping sentiasa memikirkan kebajikan dan keperluan pelajar. Seterusnya, penambahbaikan dari pihak Kolej Komuniti Gerik juga perlu dilaksanakan untuk meningkatkan minat para pelajar terhadap mata pelajaran Pengajian Malaysia 1 ini. Pihak Kolej Komuniti Gerik perlulah menyediakan kelengkapan-kelengkapan untuk mata pelajaran Pengajian malaysia 1 ini kepada pelajar dan pensyarah secukupnya bukan sekadar kepakaran tenaga pengajar diperlukan malah kelengkapan alatan seperti komputer dan lain-lain alatan yang mencukupi juga memainkan peranan yang penting dalam penambahbaikan ini. Pihak Jabatan Pengajian Kolej Komuniti (JPKK) juga perlu memainkan peranan penting dalam membantu tenaga pengajar atau pensyarah dengan mengadakan bengkel berkaitan PdP dalam bentuk permainan perlu dijalankan secara berkala agar pensyarah dapat meningkatkan lagi kreativiti dalam pembelajaran disamping dapat menarik minat pelajar dengan lebih mendalam untuk mengikuti pembelajaran dalam bentuk permainan. Selain itu, Pihak Kementerian Pengajian Tinggi (KPT) juga perlu memainkan peranan penting dalam membuat penambah baikan kurikulum dari segi penilain, kajian lapangan, kemahiran pelajar dalam mewujudkan permainan terhadap subjek tersebut. Pengkaji juga mengesyorkan untuk kajian hadapan agar dapat meluaskan bilangan sampel terhadap matapelajaran lain agar dapat mempelbagaikan kaedah permainan dalam pembelajaran.

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KAJIAN KEBERKESANAN CENTRE OF TECHNOLOGY DALAM PENGURUSAN KECEMERLANGAN ELEMEN PDP DAN ELEMEN PENDAPATAN DI JABATAN PELANCONGAN & HOSPITALITI POLITEKNIK MERLIMAU MELAKA

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Abstrak: *Bidang Pelancongan & Hospitaliti (Tourism & Hospitality) telah dikenalpasti sebagai bidang tujahan (niche area) dan akan dibangunkan menjadi Pusat Kecemerlangan Teknologi juga dikenali sebagai Centre of Technology (COT) di Politeknik Merlimau Melaka (PMM). COT dirancang sebagai pusat pelbagai aktiviti dalam mencambah dan menghasilkan pengetahuan serta kemahiran baharu bagi bidang tujahan PMM. Bagi menjayakan kewujudkan COT yang bertaraf tinggi dan boleh menjadi contoh kecemerlangan bukan sahaja di kalangan warga politeknik dan juga oleh institusi pendidikan lain, pelbagai usaha pembangunan holistik dan terancang dijalankan bagi mencapai pengiktirafan tersebut. Kajian ini dijalankan adalah untuk mengenalpasti perubahan pencapaian bagi elemen Pengajaran dan Pembelajaran (PdP) dan mengenalpasti perubahan pencapaian bagi elemen pendapatan bagi tahun 2019. Metodologi bagi kajian ini ialah dengan menggunakan analisa perbandingan berdasarkan laporan audit COT bagi tahun 2018 dan tahun 2019. Hasil dapatan kajian menunjukkan bahawa terdapat peningkatan terhadap pencapaian bagi kedua-dua elemen yang dinilai. Terdapat 5 peratus peningkatan bagi elemen PdP dan 3 peratus peningkatan bagi elemen pendapatan. Secara rumusannya, penambahbaikan pencapaian bagi elemen Pengajaran & Pembelajaran (PdP) dan elemen pendapatan ini mempamerkan impak yang positif hasil daripada kesungguhan pihak pengurusan dalam memperkasakan langkah bagi menjadikan PMM sebagai Pusat Kecemerlangan Teknologi pendidikan bagi bidang Pelancongan & Hospitaliti.*

Kata kunci: *Centre of Technology, kajian pencapaian, elemen*

Pengenalan

Pada tahun 2010, YAB Timbalan Perdana Menteri telah melancarkan Hala Tuju Transformasi Politeknik yang bermatlamat untuk membina upaya baharu politeknik bagi membangunkan Konsep Transformasi Politeknik bagi membangunkan sumber manusia untuk memenuhi keperluan Model Baharu Ekonomi yang berasaskan inovasi dan kreativiti. Hala tuju Transformasi ini Politeknik ini bertujuan untuk memperluas akses pendidikan yang berkualiti dan merangkumi kesemua Bidang Keberhasilan Utama (NKRA) yang ditetapkan oleh sektor Pengajian Tinggi Negara.

Antara inisiatif utama yang dilaksanakan bagi memenuhi agenda transformasi ini ialah dengan menubuhkan Pusat Kecemerlangan Teknologi atau dikenali sebagi *Centre Of Technology* (COT) dalam bidang tujahan (*niche area*) bagi setiap politeknik. COT yang ditubuhkan ini adalah untuk meneroka dan meneraju penyelidikan dan inovasi serta

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13th – 14th December 2020

penggunaan, pemindaan dan peningkatan technologi bagi setiap bidang tujahan dengan kerjasama pihak luar dalam bidang berkaitan. COT juga berfungsi sebagai pusat rujukan dalam bidang tujahan yang memberi manfaat dan kesejahteraan kepada komunit, masyarakat dan industri berkaitan.

Bidang tujahan COT bagi sesebuah politeknik yang dipilih hendaklah dari bidang, program atau kursus yang ditawarkan di politeknik berkenaan. Bidang tujahan yang dipilih juga hendaklah bidang yang belum dijadikan bidang tujahan di mana-mana politeknik. Bidang Pelancongan & Hospitaliti (Tourism & Hospitality) telah dikenalpasti sebagai *niche area* PMM. Bidang ini akan dibangunkan menjadi *Centre of Technology* (COT) di PMM. Fokus bidang tujahanadalah dalam bidang hospitaliti yang berorientasikan penginapan dan penyediaan makanan & minuman, pengurusanmajlis dan juga pengurusan pelancongan. Pelbagai usahan telah dijalankan dengan terancang untuk mencapai pengiktirafan COT.

Penilaian terhadap COT Politeknik adalah berdasarkan tujuh (7) elemen iaitu elemen kolaborasi, elemen penyelidikan, elemen khidmat kepakaran, elemen penerbitan, elemen pengiktirafan, elemen pengajaran dan pembelajaran dan element penjanaan pendapatan. Melaui elemen PdP, ianya dinilai dengan menekankan 2 aspek utama iaitu pembangunan modul atau bahan PdP dan pembangunan inovasi dalam PdP,Elemen penjanaan pendapatan pula merujuk kepada keupayaan penjanaan pendapatan yang dijana hasil daripada aktivi COT melaui elemen-elemen COT yang terlibat.

Elemen PdP dan elemen penjanaan pendapatan merupakan elemen utama politeknik bertepatan dengan Pelan Pembangunan Pendidikan Malaysia (Pendidikan Tinggi), TVET 4.0. Berdasarkan elemen-elemen COT yang dinilai, kajian ini dijalankan adalah untuk mengenalpasti perubahan pencapaian bagi elemen Pengajaran dan Pembelajaran (PdP) dan mengenalpasti perubahan pencapaian bagi elemen pendapatan bagi tahun 2019.

Sorotan Kajian

Secara umumnya COT politeknik adalah sebuah pusat yang mengembeleng pengetahuan, kepakaran dan kemahiran yang dimiliki oleh warga politeknik dalam bidang tujahan tertentu serta memperkembangkan pengetahuan, perkongsian kepakaran dan amalan terbaik melaui kerjasama strategik dengan sektor industri, awam dan akademia demi menghasilkan impak maksima kepada kecemerlangan organisasi dan graduan politeknik. (Supaat,2019)

Menurut Tutor Utusan Malaysia, Dr. Ismail Zain di dalam Utusan Online yang diterbitkan pada 17 Oktober 2016 pensyarah perlu menterjemahkan konsep dan elemen yang terdapat dalam kerangka pembelajaran abad ke-21 bagi membentuk strategi pengajaran dan pembelajaran (PdP) yang berkesan di dalam bilik kuliah. Pensyarah perlu menekankan aspek membina pedagogi pembelajaran abad ke-21 dalam proses mereka bentuk pengajaran dan bukan hanya menumpukan aspek prasarana fizikal sahaja. Tanpa komitmen pensyarah, perubahan yang diiginkan sukar di capai, sekali gus merencatkan pelbagai program pembangunan pendidikan yang di atur. Model Rekabentuk Pengajaran ASIE *(Analyze, Strategize, Implement and Evaluate)* merupakan satu pendekatan bersepadu dalam merancang serta melaksanakan PdP abad ke 21 bukan sahaja boleh dimanafaatkan oleh semua pengamal pendidikan termasuk pensyarah di Institusi Pendidikan Tinggi. (Ismail Md.Zain, Balakrishnan ,2014)

Jadual 1 menunjukkan pembahagian markah penilaian terhadap COT politeknik

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 1: Penilaian Terhadap COT Politeknik

Elemen Penilaian	Peratus Markah
Elemen penyelidikan	20
Elemen Khidmat Kepakaran	20
Elemen Pengiktirafan	20
Elemen Pengajaran & Pembelajaran	20
Elemen Pendapatan	10
Elemen Penerbitan	10

Anugerah Pengiktirafan COT bagi sesebuah politeknik ialah 90 peratus markah dan keatas. Berdasakan agihan penilaian bagi COT menunujukkan elemen PdP dan elemen pendapatan mewakili 30 peratus daripada keseluruhan penilaian bagi tujuan pengiktirafan. Sebagai sebuah pusat pengajian, PdP merupakan elemen tunjang yang memegang peranan penting dalam memcapai misi dan visi politeknik. Manakala elemen penjanaan pendapatan secara tidak langsungnya berkait rapat dengan elemen PdP dimana ianya melibatkan penjanaan yang dihasilkan hasil daripada proses PdP. Sebagai contoh, PdP yang dijalankan dengan industri luar akan menjana pendapatan bagi sesebuah institusi.

Methodologi

Kajian yang dijalankan ini adalah dengan menggunakan analisa perbandingan berdasarkan laporan audit bagi tahun 2018 dan tahun 2019. Laporan audit adalah hasil dapatan audit yang dijalankan secara tahunan oleh panel audit COT yang dilantik dari pihak pengurusan politeknik. Berdasarkan laporan tersebut, pihak pengurusan COT sesebuah politeknik akan mengambil langkah pembaikan untuk menambah baik keputusan bagi tahun seterusnya sebagai langkah untuk mencapai Pengiktirafan COT.

Berdasarkan Jadual 2 dibawah, ianya menunjukkan pecahan pemarkahan bagi tujuan audit COT. Berdasarkan pecahan audit tersebut perbandingan akan dibuat berdasarkan tahun 2018 dan tahun 2019.

Jadual 2: Pecahan Markah Penilaian Terhadap Elemen PdP dan Elemen Pendapatan

Penilaian Aktiviti	Peratus markah
Pembangunan Bahan PdP/Modul	9
Pembangunan Inovasi PdP	8
Program Latihan Luar	3
Penjanaan Pendapatan Melaui Aktiviti PdP	10

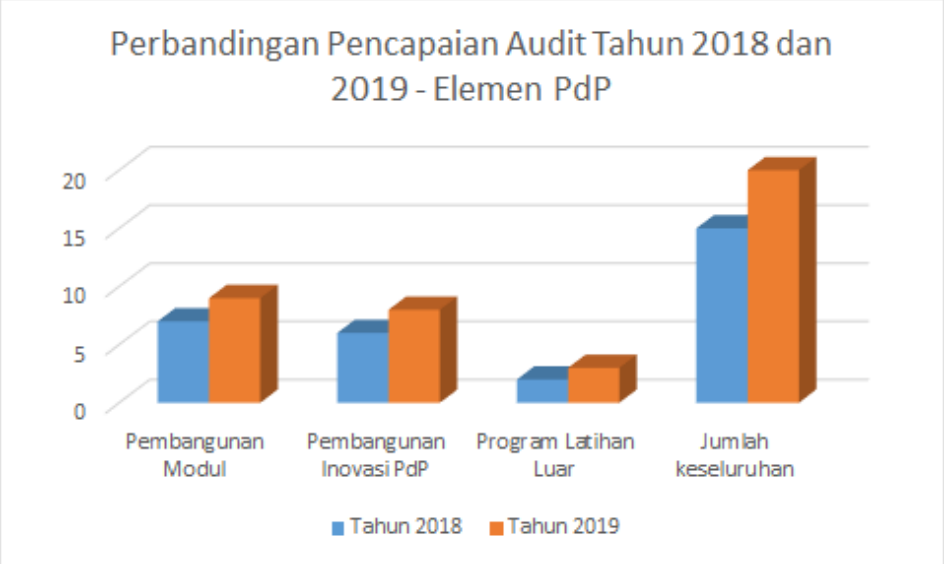
Pelbagai usaha telah dijalankan oleh pihak pengurusan dan unit COT PMM dalam memastikan terdapat perlonjakan markah dalam audit berdasarkan teguran dan pemarkahan tahun tahun sebelum. Usaha berterusan dijalankan bagi memastikan COT PMM mendapat pengiktirafan sebagai Centre Of Technology dalam bidang Pelancongan & Hospitaliti.

Dapatan Kajian

Berdasarkan perbandingan yang dibuat bagi tahun 2018 dan tahun 2019 menunjukkan bahawa terdapat perubahan dalam pencapaian bagi elemen PdP tahun 2019.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 3: Perbandingan Pencapaian Audit Tahun 2018 dan 2019 Elemen PdP



Jadual di atas menunjukkan terdapat peningkatan pencapaian bagi aspek pembangunan modul, pembangunan inovasi PdP dan program latihan luar. Peningkatan tersebut menunjukkan kesan positif atas usaha dan langkah pihak pengurusan COT PMM dalam membantu peningkatan markah tersebut. Berdasarkan pembahagian markah dapatan audit, tahun 2019 menunjukkan terdapat lonjakan markah pada elemen PdP. Bagi pembangunan modul PdP, peningkatan sebanyak 2 peratus telah dicapai, manakala bagi pembangunan inovasi PdP juga berjaya mencatat peningkatan sebanyak 2 peratus. Bagi markah program latihan luar, ianya berjaya mendapat 1 peratus kenaikan. Peningkatan 5 peratus markah ini sekaligus meraih markah penuh bagi elemen PdP yang dinilai iaitu dengan mencapai markah 20 peratus berbanding tahun 2018 hanya mencapai 15 peratus.

Antara usaha yang telah dibuat bagi pencapaian ini ialah menambah bilangan jaringan kolaborasi dengan pihak industri untuk melebar luaskan hubungan dengan pertukarakan dan perkongsian pengetahuan dan kemahiran. Selain daripada itu, pihak PMM juga mengambil langkah merebut peluang untuk menjadikan PMM sebagai Penyedia Latihan Halal yang diiktiraf oleh Jabatan Kemajuan Islam Malaysia. Pihak PMM juga telah terpilih menjadi Sekolah Latihan Pengendalian Makanan yang telah dilantik oleh Kementerian Kesihatan Malaysia. Secara tidak langsung usaha gigih warga COT yang terlibat ini mendorong kepada markah yang cemerlang ini.

Berdasarkan jadual 4 di bawah juga terdapat peningkatan markah bagi elemen pendapatan bagi tahun 2019.

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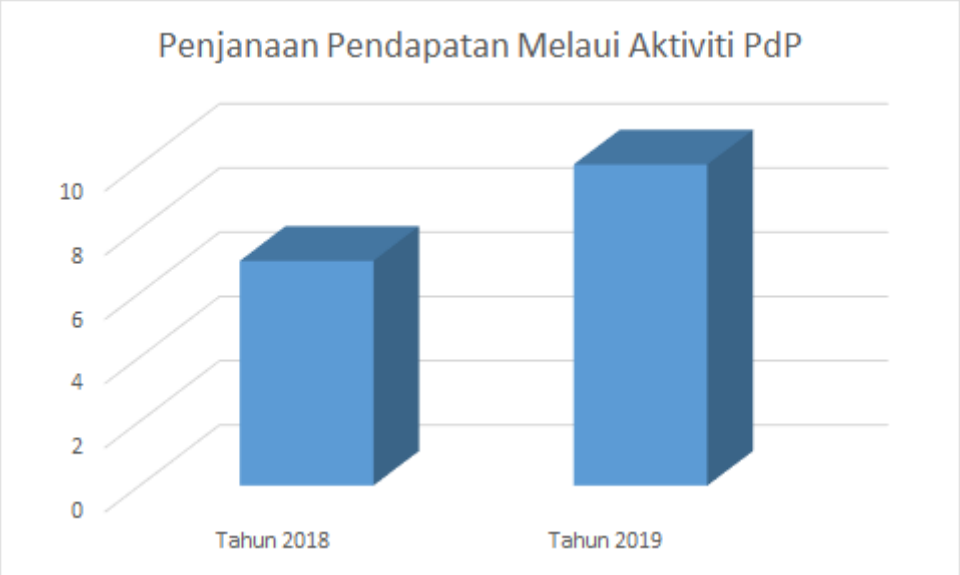
13th – 14th December 2020

Jadual 4: Perbandingan Pencapaian Audit Tahun 2018 dan 2019 elemen PdP Elemen Pendapatan



Secara perbandingan yang telah dibuat, keputusan pemarkahan audit bagi elemen pendapatan bagi tahun 2019 juga membuktikan kenaikan yang baik. Faktor ini secara tidak langsungnya berlaku kerana terdapat peningkatan dalam elemen PdP. Kaitan rapat antara kedua-dua elemen ini berjaya menghasilkan markah penuh untuk elemen pendapatan. Program latihan luar yang banyak dijalankan kepada industri luar secara tidak langsungnya menjana pendapatan yang baik seterusnya membantu melonjakkan markah untuk elemen pendapatan.

Pada tahun 2018, sararan tahunan yang ditetapkan dalam kriteria audit COT bagi elemen pendapatan tidak berjaya di raih kerana terdapat beberapa halangan yang dihadapi oleh unit COT, antaranya ialah kekurangan tenaga pengajar yang di iktiraf. Faktor ini telah diperhalusi oleh pihak pengurusan dengan mengambil beberapa langkah proaktif dalam menangani masalah tersebut. Ini terbukti dengan pencapaian yang cemerlang dalam audit 2019 iaitu peningkatan sebanyak 3 peratus secara langsungnya menjadikannya 10 peratus iaitu markah penuh bagi elemen ni.

Kesimpulan

Secara kesimpulannya, melalui kajian perbandingan yang telah dibuat, ini membuktikan bahawa terdapat peningkatan yang baik bagi elemen PdP dan elemen pendapatan bagi pemarkahan COT tahun 2019. Berdasarkan dapatan dan teguran audit pada tahun 2018, pelbagai langkah telah diperbaiki secara menyeluruh dan ini terbukti dengan pencapaian menyeluruh bagi audit COT tahun 2019. Dengan peningkatan markah dari dua elemen ini juga secara tidak langsungnya menjayakan PMM diisytihar sebagai sebuah Pusat Kecemerlangan Teknologi dalam bidang Pelancongan dan Hospitaliti. Bagi memastikan kecemerlangan COT ini terus berjaya, usaha berterusan juga perlulah dilakukan. Para pendidik perlu diberi lebih peluang untuk memajukan diri dengan kerjaya bagi menambah nilai kemahiran seiring kemajuan negara. Sijil- sijil professional yang dapat membangunkan ilmiah dan kemahiran perlu direbut bagi peningkatan kemahiran para pendidik. Jaringan kolaborasi berterusan dengan pihak industri luar juga perlu di tingkatkan agar perkongsian ilmu dan kemahiran lebih jitu dan mampan.

eISBN 978-967-2426-22-6
13th – 14th December 2020

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KECENDERUNGAN PELAJAR BIDANG BISNES UNTUK MENCEBURI BIDANG KEUSAHAWAN DI KOLEJ KOMUNITI JASIN DAN POLITEKNIK MERLIMAU

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Abstrak *: Setiap tahun, Kementerian Pengajian Tinggi telah menetapkan sasaran graduan yang menjalankan perniagaan di sesebuah institusi adalah lima peratus daripada keseluruhan graduan yang berkonvokesyen. Justeru, kajian ini dibuat untuk mengenal pasti sejauh manakah pelajar yang mengikuti bidang bisnes cenderung untuk menceburi bidang keusahawanan selepas mereka bergraduasi kelak. Objektif kajian ini adalah mengenal pasti minat pelajar, kebolehan dan keyakinan pelajar dan semangat mereka untuk menceburkan diri dalam bidang keusahawanan. Responden kajian terdiri daripada pelajar-pelajar Sijil Pengoperasian Perniagaan di Kolej Komuniti Jasin dan pelajar-pelajar Jabatan Perdagangan di Politeknik Merlimau. Hasil kajian dianalisis dengan menggunakan SPPS versi 23 dan dibentangkan dalam bentuk frekuensi dan min. Hasil dapatan menunjukkan bahawa min minat pelajar dalam bidang keusahawanan adalah 3.79. Min bagi kebolehan dan keyakinan pelajar untuk menceburi bidang keusahawanan adalah 3.63 manakala min bagi semangat pelajar untuk menceburi bidang keusahawanan adalah 3.92. Secara keseluruhannya, min kecenderungan pelajar bisnes untuk menceburi bidang keusahawanan berada di tahap sederhana tinggi.*

Keywords: *bisnes, keusahawanan, kecenderungan*

Pengenalan

Keusahawanan merujuk kepada kaedah merekabentuk, melancarkan serta mengendalikan sesuatu perniagaan. Bidang keusahawanan semakin hari, semakin berkembang melalui sistem pendidikan di institusi selaras dengan Wawasan Kemakmuran Bersama 2030 (WBK) yang menekankan pembangunan untuk semua bagi penstrukturan ekonomi yang lebih progresif berpaksikan ilmu dan bernilai tinggi di kalangan semua masyarakat. Justeru itu, pelajar perlu mempunyai inisiatif dan kreatif dalam membudayakan konsep keusahawanan sebagai salah satu peluang kerjaya mereka bagi merealisasikan teras strategik Wawasan Kemakmuran Bersama 2030 (WBK).

Usahawan adalah sesiapa yang terlibat dalam perniagaan sama ada mereka menghasilkan produk, menjual ataupun berdagang barang kepunyaan sendiri atau barang kepunyaan orang lain, menurut Wikipedia. Mengikut Kamus Dewan pula, usahawan ialah individu atau kumpulan individu yang menerajui perniagaan sendiri serta mengembangkannya dari masa ke semasa demi kemakmuran masyarakat dan negara. Keusahawanan adalah proses pewujudan dan pengembangan perniagaan secara berterusan yang menyumbang kepada pembangunan ekonomi sesebuah negara.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Perubahan dan kepesatan ekonomi negara, terutamanya pada sedekad kebelakangan ini telah melahirkan banyak peluang perniagaan terutama secara *online*. Dewasa ini, perniagaan secara *online* mendapat tempat di hati kalangan penduduk Malaysia. Siaran televisyen jugak bagai cendawan tumbuh menawarkan penjualan produk secara *online.* Pelbagai medium mereka gunakan dalam melaksanakan penjualan secara *online*. Para pembeli *online* akan terasa teruja dengan konsep pemujukan dan promosi yang dijalankan. Di situ kita dapat lihat betapa kreatifnya penjanaan pendapatan dan kesebaran ilmu berbisnes. Pusat-pusat pengajian tinggi juga mula menawarkan kursus-kursus yang berkaitan dengan pengurusan perniagaan dan keusahawanan. Contoh yang paling hampir, silibus setiap program bagi Sijil Kolej Komuniti telah diwajibkan subjek Keusahawanan.

Perkembangan sebegini menyebabkan tahap pengetahuan terhadap bidang keusahawanan semakin hari semakin meluas. Justeru itu, kita dapat melihat lebih ramai lagi rakyat Malaysia yang akan memilih bidang keusahawanan sebagai prospek utama kerjaya mereka. Dengan ilmu yang ada, mereka mampu mengendalikan perniagaan mereka dan menjadikan mereka usahawan yang berjaya. Dengan menggunakan teknik yang betul, mereka akan menjana pendapatan yang berlipat kali ganda berbanding dengan berkerja dengan orang. Namun begitu, ada juga yang kecewa terhadap perniagaan yang dijalankan. Adakah mereka salah membuat pilihan perniagaan? Atau bekalan ilmu yang sedikit? Dalam membuat kesimpulan kita perlu melihat secara terperinci faktor – faktor yang mempengaruhi bidang keusahawanan seperti minat pelajar, kebolehan dan keyakinan pelajar serta semangat pelajar untuk menceburkan diri.

Dalam menuju ke arah Wawasan Kemakmuran Bersama 2030 (WKB), para pelajar seharusnya telah bersedia untuk mengharungi masa depan mereka dengan pelbagai pilihan kerjaya. Antara pilihan kerjaya yang boleh dipelopori oleh pelajar Kolej Komuniti Jasin dan Politeknik Merlimau adalah melibatkan diri dalam bidang keusahawanan. Oleh yang demikian, kami melaksanakan kajian kecenderungan pelajar bidang bisnes untuk menceburi bidang keusahawanan di Kolej Komuniti Jasin dan Politeknik Merlimau.

Objektif Kajian

Objektif kajian ini adalah seperti berikut :

a) Mengenal pasti minat pelajar dalam bidang keusahawanan
b) Mengenal pasti kebolehan dan keyakinan pelajar untuk menceburkan diri dalam bidang keusahawanan
c) Mengenal pasti semangat pelajar untuk menceburkan diri dalam bidang keusahawanan

Kajian Literatur

Menurut Pelan Tindakan Keusahawanan Intitusi Pendidikan Tinggi 2016 -2020, pendidikan dan keusahawanan merupakan aspek yang sentiasa diberi penekanan dalam usaha menjadikan Malaysia sebagai negara maju dan berpendapatan tinggi. Pembudayaan nilai – nilai keusahawanan adalah proses pembelajaran yang dapat membuka peluang kepada pelajar supaya menjadi lebih kreatif, inovatif dan berdaya saing.

Dalam persedian menghadapi alam pekerjaan yang serba mencabar ini, kemahiran keusahawanan perlu dikuasai oleh graduan bagi mengorak langkah yang lebih cemerlang dalam mewujudkan kerjaya. Masalah yang sering diperkatakan hari ini, berapa ramai pelajar bidang perniagaan mempunyai kecenderungan untuk menceburkan diri dalam bidang keusahawanan di tempat mereka belajar. Oleh itu satu kajian diperlukan bagi mengenalpasti sejauh mana kenderungan tersebut boleh menghasilkan graduan yang berpotensi menjadikan bidang keusahawanan sebagai kerjaya setelah tamat di institusi. Berdasarkan penyataan

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13th – 14th December 2020

masalah yang dinyatakan, kajian ini dijalan kepada pelajar bisnes di Kolej Komuniti Jasin dan Politeknik Merlimau, Melaka.

Kecenderungan pelajar dalam peringkat keusahawanan adalah perlu dimulakan dari peringkat awal bagi memupuk minat dan mengasah kebolehan pelajar bagi pelan rancangan keusahawanan yang bakal diceburi pada masa hadapan. Mereka perlu diberi ruang di peringkat kampus bagi memulakan perniagaan lebih awal dalam masa yang sama bakal melahirkan usahawan yang mampu meningkatkan taraf ekonomi negara dengan cara menyumbang dari sudut pendapatan dan menawarkan peluang kerjaya yang lebih terjamin. Di Malaysia, perlaksanaan pendidikan keusahawan telah dianggap begitu penting dan pendidikan ini telah dimulakan di peringkat sekolah rendah (Zaidatol Akmaliah Lope, 2001). Asas dalam bidang keusahawanan akan lebih memberi keyakinan kepada setiap individu dalam menceburi bidang keusahawanan. Peluang kerjaya setiap individu lebih jelas di masa hadapan apabila pemilihan kerjaya keusahawanan berkembang seiring dengan kemodenan. Kerjaya merupakan agenda penting kepada setiap individu kerana akan mempengaruhi dan mencorak kehidupan seseorang (Sidek,2016). Keusahawanan adalah peluang yang begitu cemerlang di masa hadapan apabila berjaya diterjemahkan dengan ilmu pengetahuan dan kemahiran yang tinggi di kalangan pelajar.

Menurut kajian, kecenderungan ke arah meningkatkan budaya keusahawanan di kalangan pelajar, sebahagian besar pelajar atau graduan memahami aktiviti keusahawanan itu sangat berfaedah (Mohamad Zaini Zainudin, 2015). Jadi tidak asing lagi bidang keusahawanan pada masa kini adalah amat popular menjadi pilihan di kalangan pelajar sebagai cabang ilmu yang wajib didalami oleh semua individu. Peluang dan ruang akan terbuka lebih luas sekiranya individu tersebut mempunyai satu cabang ilmu keusahawanan walaupun individu tersebut berada di bidang yang berbeza. Keusahawanan adalah satu keistimewaan yang diperolehi oleh individu bagi menjamin masa depan yang lebih lengkap untuk menempuh dunia selepas bergelar graduan agar tidak menunggu pekerjaan (job seeker), tetapi mampu mencipta pekerjaan sendiri (job creator) yang pastinya menjamin pendapatan, (Mohamad Zaini Zainudin, 2015). Keusahawanan mampu memberi ruang kepada semua individu tanpa mengira jantina,bangsa dan status individu tersebut. Menurut kajian kecenderungan pelajar berkeperluan khas dalam menceburi bidang keusahawanan, (Nor Ain Binti Abdul Rahman, 2016) keusahawanan juga menjadi pilihan pelajar berkeperluan khas dalam usaha menempuh kehidupan berdikari dalam masa yang sama mampu membantu menyara keluarga. Jadi, adakah individu yang berkeperluan normal menafikan peluang ini sedangkan individu yang berkeperluan khas mampu untuk mengorak langkah dalam bidang keusahawanan.

Keusahawanan ini juga harus disertai dengan minat individu. Sekiranya pelajar yang menceburi bidang perniagaan atas desakan ahli keluarga atau sekadar mewarisi perniagaan keluarga, kecenderungan untuk menceburi keusahawanan berkemungkinan tidak menghasilkan kualiti usahawan yang benar-benar berkaliber. Kecenderungan mempunyai ahli keluarga yang terlibat dalam bidang keusahawanan tidak menjadi faktor penentu kejayaan seorang usahawan (Mazirah Mohammad, Norasmah Othman, 2018) Persepsi terhadap keinginan ini merupakan tahap di mana seseorang individu itu mendapati bahawa memulakan sesebuah perniagaan adalah suatu perkara yang menarik yang boleh dilakukan (Shaper , 1982). Minat adalah penting, yang bakal menjadi tonggak kejayaan dalam menceburi bidang keusahawanan. Keinginan untuk berusaha meningkatkan kualiti perniagaan pada tahap yang optimum pastinya akan menghasilkan usahawan yang berjaya. Burch (1986) telah menghuraikan sembilan ciri-ciri ketara yang membentuk kecenderungan keusahawanan seseorang. Antara ciri-ciri tersebut ialah keinginan untuk mencapai sesuatu, bekerja keras,

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13th – 14th December 2020

menjaga kualiti, boleh menerima tanggungjawab, berorientasikan ganjaran, optimisma, bijak mengurus, berorientasikan kecemerlangan dan berorientasikan wang.

Tahap keyakinan dan motivasi di kalangan pelajar yang telah melalui cabang perniagaan perlu sentiasa konsisten bagi meneruskan usaha membawa perniagaan yang diceburi pada peringkat yang lebih tinggi. Daya ketahan diri dan tidak mudah berputus asa perlu sentiasa diterapkan dalam diri supaya jatuh bangunnya sesuatu perniagaan akan sentiasa membakar semangat untuk terus berjaya. Setiap orang akan melalui pengalaman jatuh bangunnya perniagaan dengan cara berbeza. Niat yang betul di samping ilmu kemahiran yang mencukupi di dalam bidang yang diceburi mampu menjadi rahsia kejayaan untuk menjadi usahawan yang berjaya. Menurut kajian, (Azmi Abdul Manaf, Nik Hairi Omar & Lee Kuan Yee, 2012) pengalaman pengurusan, pengalaman industri, keadaan ekonomi dan kemahiran perancangan adalah faktor yang mampu memberi tanda aras kepada kejayaan dalam bidang keusahawanan yang diceburi. Ini menunjukkan kepentingan bagi usahawan yang mula berjinak-jinak dalam perniagaan perlu dimulakan pada peringkat awal sehingga menjadi usahawan yang berjaya perlu melalui pengalaman yang berbagai bidang. Jadi tidak hairanlah pengalaman yang dilalui oleh setiap individu dalam bidang keusahawanan yang diceburi sama ada pernah mengalami kejatuhan yang teruk atau sebaliknya menjadikan seorang individu tersebut mampu mencapai satu tahap kejayaan yang dingininya.

Hasil daripada kaijian yang dijalankan (Azmi Abdul Manaf, Nik Hairi Omar & Lee Kuan Yee, 2012) Majoriti usahawan terdiri daripada kelompok usia 41-50 tahun (41.4%). Skala lingkungan umur tersebut adalah lebih kepada golongan pertengahan yang telah lama dalam perniagaan dan telah melalui pelbagai asam garam dalam perniagaan. Sikap dan motivasi diri yang tinggi menjadikan individu tersebut mampu peroleh kejayaan. Pengalaman ujian yang lalu seharusnya membuatkan pelajar itu lebih matang dalam mendepani ujian yang akan datang. Semakin banyak kecundang atau jatuh dalam perniagaan, semakin kenal warna warni sebenar dalam perniagaan dan keusahawanan. Pelajar bidang perniagaan juga harus mempunyai sifat berpandangan jauh dan bijak merancang, menganalisis dan mempunyai sikap merebut peluang yang ada di depan mata. Melihat kepada statistik jumlah pendaftaran perniagaan di Suruhanjaya Syarikat Malaysia yang didaftarkan oleh penduduk Malaysia yang berumur di antara 23-26 tahun (Perbadanan Produktiviti Malaysia (MPC), 2015) bermula pada 2010-2014 menunjukkan peningkatan yang ketara. Kebanyakannya adalah pelajar lepasan IPT yang mula menyedari kepentingan perniagaan yang mereka ceburi dan mula mengorak langkah menyusun strategi bagi mengembangkan bidang keusahawanan. Sehubungan itu, penerapan elemen keusahawanan perlu diberikan perhatian yang serius dalam perancangan. Sokongan dan penyertaan ahli akademik, penyelidik dan pentadbir harus sentiasa berterusan supaya pelajar sentiasa diberi semangat, panduan dan berjaya mengenalpasti arah tuju dalam sesuatu perniagaan yang diceburi.

Dalam Rancangan Malaysia Ke -11, keusahawanan adalah aktiviti yang telah dikenal pasti sebagai satu aspek penting dalam pembangunan modal insan. Ianya mampu menyokong peralihan sektor-sektor ekonomi kepada aktiviti berintensif pengetahuan dan inovasi. Merujuk Pelan Tindakan Keusahawanan 2016-2020, pelbagai inisiatif telah disediakan oleh pihak kerajaan dalam membangunkan kurikulum holistik dan bersepadu di samping mengukuhkan sistem sokongan pembelajaran. Pelbagai usaha telah dijana bagi menyokong atau melahirkan pelajar yang berwawasan dan sentiasa mempunyai sifat daya saing menuju bidang keusahwanan yang cemerlang. Kerajaan berharap dengan pelbagai inisiatif yang dicadangkan mampu memberikan impak yang besar di kalangan pelajar dalam menceburi bidang keusahawanan di mana institusi-institusi menjadi pemangkin dalam membentuk kecenderungan pelajar dalam bidang keusahwanan. Selaras dengan matlamat serta objektif

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13th – 14th December 2020

yang telah ditetapkan, pelbagai program pembangunan keusahawanan telah diadakan di semua institusi amnya Kolej Komuniti. Sambutan yang menggalakkan daripada program keusahawanan yang dijalankan pastinya melahirkan pelajar - pelajar yang cemerlang dalam bidang keusahawanan.

Metodologi Kajian

Kajian ini menggunakan kaedah kuantitatif di mana Borang Soal Selidik diedarkan kepada pelajar-pelajar Program Diploma Jabatan Perdagangan di Politeknik Merlimau dan pelajar-pelajar Sijil Pengoperasian Perniagaan di Kolej Komuniti Jasin secara rawak. Soal selidik tersebut mengandungi item soalan yang disediakan dengan pilihan jawapan berdasarkan Skala Likert. Borang Soal selidik diedar menggunakan medium *google form* di mana ianya mudah dikumpul di mana sahaja dan pada bila-bila masa sahaja.

Antara kelebihannya adalah ia mempunyai tahap kebolehpercayaan dan ketepatan yang baik iaitu 85% (Mohamad Najib, 1996).

Jadual 1 Format Skala Likert

Skala	1	2	3	4	5
	Sangat tidak setuju	Tidak setuju	Tidak pasti	Setuju	Sangat setuju

Data yang telah dikumpulkan dianalisis dengan menggunakan SPSS 23 dan diinterpretasikan dalam bentuk jadual. Skala Likert dianalisis dalam bentuk min bagi menunjukkan tahap kepuasan responden terhadap sesuatu soalan kajian.

Menurut Mohd Najib (2010) menjelaskan penyelidikan deskriptif adalah satu bentuk penyelidikan yang bertujuan untuk mengumpul maklumat dan menerangkan sesuatu perkara yang berlaku. Ahmad Munawar dan Mohd Nor Shahizan (2014) menyatakan bahawa kajian berbentuk deskriptif dapat memberi gambaran atau maklumat mengenai sesuatu keadaan pada suatu masa tertentu, di samping membantu membuat perancangan pada masa akan datang.

Sesuatu penyelidikan berbentuk deskriptif dapat menerangkan dan memperincikan sesuatu fenomena yang berlaku (Majid, 2010). Oleh itu, ia sangat sesuai digunakan di dalam kajian ini kerana dapatan kajian ini merupakan maklumat peristiwa yang sedang berlaku dan boleh digunakan untuk menyelesaikan masalah yang berkaitan pada masa akan datang. Analisis data yang dilakukan adalah dalam bentuk peratusan dan dibentangkan di dalam graf, carta dan jadual.

Kajian ini menggunakan interpretasi min terhadap skor min menggunakan tafsiran daripada Nunnaly & Bernstein (1994) seperti dalam Jadual 2. Ia menjelakan empat tafsiran terhadap skor min yang dihasilkan daripada Skala Likert iaitu rendah, sederhana rendah, sederhana tinggi dan tinggi.

Jadual 2 Interpretasi Skor Min

Skor Min	Interpretasi Skor Min
1.00 – 2.00	Rendah
2.01 – 3.00	Sederhana Rendah
3.01 – 4.00	Sederhana Tinggi
4.01 – 5.00	Tinggi

eISBN 978-967-2426-22-6
13th – 14th December 2020

Dapatan Kajian

Latar Belakang Responden

Responden kajian terdiri daripada pelajar-pelajar Jabatan Perdagangan Politeknik Merlimau dan Program Sijil Pengoperasian Perniagaan Kolej Komuniti Jasin yang dipilih secara rawak untuk menjawab soalan kajian. Mereka adalah pelajar-pelajar yang mengikuti program Diploma Akauntansi, Diploma Pemasaran, Diploma Pengajian Perniagaan dan Sijil Pengoperasian Perniagaan. Responden ini dipilih kerana bidang pengajian mereka adalah dalam bidang "Bisnes" berdasarkan Daftar Kelayakan Malaysia (MQR).

Jadual 3 Taburan Responden Mengikut Jantina

Jantina Responden	Frekuensi	Peratus
Lelaki	19	10.3
Perempuan	165	89.7
Jumlah	184	100.0

Jadual 3 menunjukkan taburan responden mengikut jantina dari Politeknik Merlimau dan Kolej Komuniti Jasin. 10.3 peratus responden adalah terdiri daripada lelaki manakala 89.7 peratus lagi merupakan pelajar perempuan. Kebiasaannya Fakulti Bisnes/ Perdagangan dan Program Sijil Pengoperasian Perniagaan dimonopoli oleh pelajar-pelajar perempuan berbanding lelaki. Pensyarah-pensyarah Fakulti ini juga dimonopoli oleh wanita.

Jadual 4 Latar Belakang Responden Dalam Perniagaan Keluarga

Adakah Keluarga Anda Mempunyai Perniagaan Sendiri?	Frekuensi	Peratus
Ya	109	59.2
Tidak	75	40.8
Jumlah	184	100.0

Jadual 4 menunjukkan lebih daripada separuh responden adalah terdiri daripada keluarga yang mempunyai perniagaan sendiri. 59.2 peratus pelajar adalah daripada keluarga yang menjalankan perniagaan sendiri manakala 40.8 peratus lagi bukan daripada latar belakang keluarga yang mempunyai perniagaan. Dapatan ini menunjukkan bahawa lebih daripada separuh responden mungkin dipengaruhi oleh keluarga mereka untuk menceburkan diri dalam bidang bisnes, lantaran mereka menyambung pengajian dalam bidang bisnes.

Ia berlawanan dengan dapatan kajian yang telah dijalankan oleh Nooraini Othman & Siti Soleha Binti Misman (2015) dalam kajian mereka yang bertajuk Persepsi Terhadap Faktor-Faktor Yang Mempengaruhi Minat Pelajar 4SPH Dalam Bidang Keusahawanan yang menyatakan bahawa faktor keluarga adalah yang paling rendah sekali dalam mempengaruhi pelajar untuk menjadi usahawan.

Jadual 5 Pengalaman Responden Dalam Bidang Keusahawanan

Pengalaman Dalam Bidang Keusahawanan	Frekuensi	Peratus
Ada	48	26.1
Tiada	136	73.9
Jumlah	184	100.0

Hanya 26.1 peratus sahaja responden yang mempunyai pengalaman dalam bidang keusahawanan mengikut Jadual 5. Baki 73.9 peratus lagi menyatakan bahawa mereka tidak mempunyai pengalaman dalam bidang keusahawanan. Meskipun lebih 50 peratus responden

eISBN 978-967-2426-22-6
13th – 14th December 2020

adalah terdiri daripada keluarga yang mempunyai perniagaan, namun mungkin mereka tidak membantu atau tidak diberi peluang untuk berkecimpung dalam perniagaan keluarga mereka.

Jadual 6 Program Keusahawanan Yang Telah Disertai Oleh Responden

Berapakah Program Keusahawanan (Termasuk Program Inkubator) Yang Telah Disertai Di Institusi Pengajian Anda?	Frekuensi	Peratus
1 - 3 program	157	85.3
4 - 8 program	19	10.3
Lebih daripada 8 program	8	4.3
Jumlah	184	100.0

Jadual 6 menunjukkan Program Keusahawanan yang telah disertai oleh responden. 85.3 peratus responden menyatakan bahawa mereka telah mengikuti 1 hingga program keusahawanan. Sejumlah 10.3 peratus pula telah mengikuti 4 hingga 8 program keusahawanan di institusi pengajian manakala hanya 4.3 peratus responden sahaja yang pernah mengikuti lebih daripada 8 program di institusi pengajian.

Menurut kajian Mohamad Zaini Zainudin (2015), kecenderungan ke arah meningkatkan budaya keusahawanan di kalangan pelajar, sebahagian besar pelajar atau graduan perlu memahami bahawa aktiviti keusahawanan itu sangat berfaedah. Daripada kajian ini, program keusahawanan yang berterusan dalam institusi pengajian sangatlah digalakkan di mana pelajar dapat mengadaptasi ilmu yang dipelajari dengan mengaplikasikannya dalam urusan seharian.

Jadual 7 Pendapatan Keluarga, Keluarga Memiliki Perniagaan Sendiri Dan Pengalaman Responden Dalam Bidang Keusahawanan

Pendapatan Keluarga	Adakah keluarga anda mempunyai perniagaan sendiri?	Pengalaman dalam bidang keusahawanan				Jumlah	
		Ada		Tiada			
		Frekuensi	Peratus	Frekuensi	Peratus	Frekuensi	Peratus
Bawah RM1,000	Ya	3	75.0	11	52.4	14	56.0
	Tidak	1	25.0	10	47.6	11	44.0
	Jumlah	4	100	21	100	25	13.6
RM1,001 - RM1,500	Ya	7	53.8	22	51.2	29	51.8
	Tidak	6	46.2	21	48.8	27	48.2
	Jumlah	13	100	43	100	56	30.4
RM1,500 - RM2,000	Ya	7	77.8	7	63.6	14	70.0
	Tidak	2	22.2	4	36.4	6	30.0
	Jumlah	9	100	11	100	20	10.9
RM2,000 ke atas	Ya	20	90.9	32	52.5	52	62.7
	Tidak	2	9.1	29	47.5	31	37.3
	Jumlah	22	100	61	100	83	45.1
Jumlah		48	26.1	136	73.9	184	100

Jadual 7 menunjukkan pendapatan keluarga dan keluarga yang mempunyai perniagaan sendiri di mana analisa ini dibuat untuk menilai adakah responden terdiri daripada keluarga yang mempunyai perniagaan. Dapatan ini dapat mengaitkan responden dengan pilihan mereka menyambung pengajian dalam bidang bisnes di Politeknik Merlimau dan Kolej Komuniti Jasin.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Pendapatan keluarga dalam kategori RM2,000 ke atas merupakan golongan tertinggi responden di mana kategori ini juga menunjukkan peratusan tertinggi yang mempunyai perniagaan sendiri iaitu 62.7 peratus dan mewakili 45 peratus responden. Ia berkesinambungan dalam kajian Norfadhilah Nasharudin dan Halimah Harun (2010) yang bertajuk Aspirasi Kerjaya Keusahawanan Dalam Kalangan Pelajar Institusi Pengajian Tinggi Awam menyatakan bahawa 63.1 peratus pelajar beraspirasi untuk menjadi usahawan kerana pengaruh keluarga.

Minat Pelajar Dalam Bidang Keusahawanan

Menurut Kamus Dewan Edisi Keempat, minat merupakan keinginan (kesukaan, kecenderungan) kepada sesuatu. Objektif kajian yang pertama adalah mengetahui minat pelajar atau responden dalam bidang keusahawanan. Secara umumnya, kita sebagai manusia akan melakukan sesuatu atas faktor minat. Menurut kajian Norfadhilah et.al dalam Aspirasi Kerjaya Keusahawanan Dalam Kalangan Pelajar IPTA, hanya 58.8 peratus sahaja pelajar yang berminat untuk memilih usahawan sebagai kerjaya mereka. Selebihnya memilih untuk makan gaji sama ada dengan kerajaan atau swasta.

Jadual 8 menunjukkan minat pelajar Politeknik Merlimau dan Kolej Komuniti Jasin dalam bidang bisnes adalah 3.80 iaitu berada di tahap sederhana tinggi. Min terendah untuk atribut minat adalah 3.72 iaitu responden mula meneroka ilmu keusahawanan yang boleh diperolehi melalui medium tradisional dan moden. Min tertinggi pula adalah keluarga turut memberikan galakan kepada responden untuk menceburi bidang keusahawanan iaitu 3.96.

Ini bertepatan dengan dapatan kajian oleh Norfadhilah et.al (2010) dan Noraini Othman et.al (2015) yang menyatakan bahawa dorongan keluarga mencetuskan minat pelajar untuk menceburi bidang keusahawanan. Mungkin faktor dorongan keluarga juga menyebabkan mereka menyambung pengajian dalam bidang bisnes.

Jadual 8 Minat Pelajar Dalam Bidang Keusahawanan

Minat Pelajar Dalam Bidang Keusahawanan	Min
Saya mula meneroka ilmu keusahawanan yang boleh diperolehi melalui medium tradisional dan moden	3.72
Saya telah membuat perancangan untuk menceburi bidang keusahawanan	3.72
Saya telah mendapat idea untuk menceburi bidang keusahawan melalui modul yang telah dipelajari	3.78
Saya mengikuti program bisnes kerana bercita-cita untuk menjadi seorang usahawan	3.83
Keluarga turut memberikan galakan kepada saya untuk menceburi bidang keusahawanan	3.96
Min Keseluruhan	3.80

Kebolehan Dan Keyakinan Pelajar Untuk Menceburkan Diri Dalam Bidang Keusahawanan

Niat yang betul di samping ilmu kemahiran yang mencukupi dalam bidang yang diceburi mampu menjadi rahsia kejayaan dalam bidang keusahawanan yang diceburi. Menurut kajian Azmi Abdul Manaf et.al (2012), pengalaman pengurusan, pengalaman industri, keadaan ekonomi dan kemahiran perancangan adalah faktor yang mampu memberi tanda aras kepada kejayaan dalam bidang keusahawanan. Ini menunjukkan kepentingan berjinak-jinak atau menceburi bidang keusahawanan pada peringkat awal terutamanya semasa di institusi pengajian tinggi.

Jadual 9 menunjukkan faktor kebolehan dan keyakinan pelajar untuk menceburkan diri dalam bidang keusahawanan. Min keseluruhan untuk kebolehan dan keyakinan pelajar adalah berada pada tahap sederhana tinggi iaitu 3.65. Pelajar menyatakan bahawa mereka telah mula melaksanakan promosi bagi meningkatkan jualan merupakan min terendah iaitu 3.48 iaitu

eISBN 978-967-2426-22-6
13th – 14th December 2020

berada di tahap sederhana tinggi. Manakala min tertinggi dalam aspek penilaian ini adalah 3.89 iaitu mereka menyatakan bahawa pengetahuan mereka tentang pengurusan keusahawanan bertambah baik apabila belajar dalam bidang bisnes di institusi pengajian masing-masing.

Ia selaras dengan Pelan Tindakan Keusahawanan Institusi Pendidikan Tinggi 2016-2020 menyatakan bahawa pendidikan dan keusahawanan merupakan aspek yang sentiasa diberi penekanan dalam usaha untuk menjadikan Malaysia sebagai negara maju dan berpendapatan tinggi. Lantaran itu, pembudayaan nilai-nilai keusahawanan adalah proses pembelajaran yang dapat membuka peluang kepada pelajar supaya menjadi lebih kreatif, inovatif dan berdaya saing.

Jadual 9 Kebolehan Dan Keyakinan Pelajar Untuk Menceburkan Diri Dalam Bidang Keusahawanan

Kebolehan Dan Keyakinan Pelajar Untuk Menceburkan Diri Dalam Bidang Keusahawanan	Min
Saya mula melaksanakan promosi bagi meningkatkan jualan	3.48
Saya mula menjalankan perniagaan secara kecil-kecilan di institusi dan di laman sosial	3.49
Saya yakin dapat bersaing dengan usahawan lain yang telah lama bertapak	3.63
Saya telah memulakan langkah pertama untuk menjadi usahawan dengan mengkaji prospek perniagaan yang bakal dan sedang diceburi	3.68
Saya yakin dapat membuat keputusan dalam menguruskan perniagaan dengan betul dan tepat	3.73
Asas pengetahuan saya tentang pengurusan keusahawanan bertambah baik	3.89
Min Keseluruhan	3.65

Semangat Pelajar Untuk Menceburkan Diri Dalam Bidang Keusahawanan

Semangat pelajar untuk menceburkan diri dalam bidang keusahawanan perlu dipertimbangkan. Mohamad Zaini Zainudin (2015) dalam kajiannya telah menyatakan bahawa keusahawanan adalah satu keistimewaan yang diperolehi oleh individu bagi menjamin masa depan yang lebih lengkap untuk menempuh dunia selepas bergelar graduan agar tidak menunggu pekerjaan (*job seeker*) sebaliknya mampu mencipta pekerjaan sendiri (*job creator*) yang pastinya menjamin pendapatan. Ia pastinya dapat menyuntik semangat pelajar-pelajar ini untuk menceburkan diri dalam bidang keusahawanan sekiranya ia diterapkan secara berterusan dalam proses pengajaran dan pembelajaran mereka.

Jadual 10 menunjukkan min bagi semangat pelajar untuk menceburkan diri dalam bidang keusahawanan dalam kalangan pelajar bisnes di Politeknik Merlimau dan Kolej Komuniti Jasin. Min keseluruhan bagi faktor ini adalah 3.94 iaitu sangat tinggi berbanding faktor lain. Min terendah adalah dari aspek memulakan langkah dengan mempelajari kejayaan seseorang usahawan melalui media sosial dan media cetak dan menjadikan mereka sebagai mentor dalam keusahawanan.

Min tertinggi pula adalah dalam aspek keluarga turut menyuntik semangat kepada mereka untuk menjadi usahawan yang berjaya. Ini berpadanan dengan latar belakang mereka di mana kebanyakan pelajar adalah terdiri daripada keluarga yang mempunyai perniagaan sendiri iaitu 45 peratus. Namun mempunyai keluarga yang terlibat dalam bidang keusahawanan tidak menjadi faktor penentu kejayaan seseorang usahawan menurut kajian Mazirah Mohamad et.al (2018).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 10 Semangat Pelajar Untuk Menceburkan Diri Dalam Bidang Keusahawanan

Semangat Pelajar Untuk Menceburkan Diri Dalam Bidang Keusahawanan	Min
Saya memulakan langkah dengan mempelajari kejayaan seseorang usahawan melalui media sosial dan media cetak dan menjadikan mereka sebagai mentor dalam keusahawanan	3.85
Saya telah menetapkan matlamat untuk menjadi seorang usahawan yang berjaya suatu hari nanti	3.95
Saya akan pastikan perniagaan yang bakal dan sedang dijalankan akan sentiasa maju dan berdaya saing	3.97
Keluarga turut menyuntik semangat kepada saya untuk menjadi usahawan yang berjaya	3.99
Min Keseluruhan	3.94

Rumusan Dan Cadangan

Secara keseluruhannya dapatlah dirumuskan bahawa kecenderungan pelajar-pelajar dalam bidang bisnes di Politeknik Merlimau dan Kolej Komuniti Jasin adalah berada pada tahap sederhana tinggi iaitu mereka sememangnya cenderung untuk menjadi usahawan namun perlu sentiasa digilap dan dimotivasikan agar mereka terus tekad untuk menjadi usahawan apabila tamat belajar kelak.

Semangat untuk menceburkan diri dalam bidang keusahawanan merupakan aspek yang paling tinggi dalam mempengaruhi kecenderungan mereka untuk menjadi usahawan. Faktor keluarga adalah faktor yang paling tinggi dalam mempengaruhi kecenderungan mereka untuk menjadi seorang usahawan yang berjaya.

Minat pelajar dalam bidang keusahawanan pula merupakan aspek kedua yang mempengaruhi mereka untuk bergelar usahawan. Faktor minat ini boleh dipupuk melalui aktiviti-aktiviti keusahawanan yang dianjurkan oleh institusi pengajian terutamanya program inkubator di mana para pelajar akan diberikan latihan, ilmu pemasaran, mendaftarkan perniagaan seterusnya mereka dibenarkan beroperasi seperti sebuah perniagaan yang sebenar dalam institusi dengan pemantauan dan pementoran oleh Ketua Unit Keusahawanan di institusi.

Aspek kebolehan dan keyakinan pelajar untuk menceburkan diri dalam bidang keusahawanan merupakan faktor yang paling rendah dalam mempengaruhi kecenderungan mereka untuk menjadi usahawan. Mungkin ia dipengaruhi oleh responden yang terdiri daripada pelajar-pelajar semester 1 yang belum banyak lagi pendedahan berkenaan ilmu keusahawanan yang telah disediakan oleh institusi.

Usaha yang berterusan terutamanya oleh Institusi Pengajian Tinggi dalam merealisasikan Pelan Strategik Pengajian Tinggi iaitu dalam Teras 1 iaitu menambahbaik ekosistem keusahawanan dengan mewujudkan inkubator dan melaksanakan pelbagai program keusahawanan adalah salah satu cara untuk meningkatkan kecenderungan pelajar untuk menjadi usahawan selepas tamat pengajian terutamanya pada musim pandemik Covid-19 yang sangat memberi impak kepada sektor pekerjaan.

Kajian ini juga dapat menunjukkan bahawa program-program inkubator dan latihan keusahawanan yang telah disediakan oleh institusi pengajian sangat memberi impak kepada pelajar-pelajar untuk cenderung menjadi usahawan selepas tamat pengajian. Namun, institusi perlu mencari alternatif bagaimana untuk mengekalkan kecenderungan pelajar-pelajar ini untuk menjadi usahawan selepas tamat pengajian seterusnya mereka kekal menjadi usahawan yang berjaya apabila telah selesai berkonvokesyen dan bagi mencapai Objektif Program Pengajian atau *Programme Educational Objective* (PEO) dalam bidang bisnes yang akan diukur selepas 3 hingga 5 tahun pelajar menamatkan pengajian.

Pelan Tindakan Keusahawanan Kementerian Pengajian Tinggi akan tamat pada 2020 juga seharusnya akan ada pembaharuan bagi meningkatkan lebih ramai lagi graduan yang

menjadi usahawan terutamanya dalam tempoh ekonomi yang tidak stabil ini. Pelbagai program bersasar terhadap graduan turut dirangka oleh Kerajaan Malaysia dalam melahirkan lebih ramai usahawan dan juga membantu usahawan-usahawan kecil dan sederhana dalam kalangan orang muda atau graduan.

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PENGHASILAN *STAR FRUIT SYRUP* SEBAGAI KANDUNGAN TAMBAHAN DALAM MAKANAN DAN MINUMAN

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Abstrak: *Buah belimbing adalah buah tropika namun ianya kurang popular di kalangan masyarakat. Buah belimbing ini mengandungi Vitamin C dan Vitamin A yang membantu memberikan kesegaran kepada kulit dan mampu melambatkan proses penuaan. Sumber nutrisi buah belimbing dapat dimanfaatkan sebagai terapi dan rawatan pencegahan di dalam menurunkan tekanan darah tinggi, kolesterol, anti-oksidan, anti kanser, membantu proses pencernaan yang lebih baik dan pembersihan usus. Walaupun buah belimbing mempunyai kandungan nutrisi yang tinggi, ianya mudah rosak dan mempunyai jangka hayat yang pendek. Oleh itu, kajian ini bertujuan menghasilkan Star Fruit Syrup sebagai kandungan tambahan dalam makanan dan minuman. Objektif kajian ini adalah untuk mengkaji tahap penerimaan Star Fruit Syrup di kalangan pelajar Diploma Pengurusan Hotel, Politeknik Merlimau, Melaka dan penggunaan Star Fruit Syrup sebagai kandungan tambahan dalam Pengajaran dan Pembelajaran (PdP) bagi kursus Food & Beverage. Seramai 40 orang responden telah dipilih terdiri daripada pelajar Semester 2 Program Diploma Pengurusan Hotel dan Diploma Perkhidmatan Makanan Amalan Halal. Instrumen kajian yang digunakan adalah borang soal selidik dengan menggunakan Skala Hedonik. Statistical Package for Social Science (SPSS) versi 25.0 pula digunakan untuk menganalisis data yang dikumpulkan. Hasil kajian menunjukkan bahawa skor min keseluruhan adalah 4.45 dengan tahap penerimaan tinggi melalui ujian organoleptik dari aspek bau, rasa, warna dan pembungkusan pada produk. Selain itu, ia juga mengandungi nutrisi yang terdiri daripada 348kcl / 100g tenaga 8.63g / 100g karbohidrat, 0.54g / 100g protein dan 0.0g / 100g lemak. Kesimpulannya, produk ini telah diterima dengan baik dan ianya dapat memberikan manfaat kepada responden.*

Katakunci: *(Buah Belimbing, Nutrisi, Skala Hedonic)*

Abstract: *Starfruit is a tropical fruit but less popular among the people. This star fruit contains Vitamin C and Vitamin A which help to refresh the skin and delay aging process. Starfruit nutrients can be used as preventive therapy and treatment in lowering high blood pressure, cholesterol, anti-oxidants, anti-cancer, improved digestion and intestines cleansing. Although starfruit has high nutritional content, it is scarce, easily damage and has short shelf life. Therefore, this study aims to produced Star Fruit Syrup as a new ingredient in food and beverage. The objectives of these study are to study the level of acceptance of Star Fruit Syrup among students Diploma in Hotel Management, Politeknik Merlimau, Melaka and applying Star Fruit Syrup as a new ingredient in Teaching and Learning (T&L) for Food & Beverage courses. A total number of 40 respondents were selected from semester 2 students of Diploma in Hotel Management Program and Diploma in Halal Food Service Services. Questionnaire using Hedonic Scale was used as research instrument. Statistical Package for Social Science*

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13th – 14th December 2020

(SPSS) version 25.0 was used to analyze the data collected. The finding showed that the overall mean score is 4.45 with the level of acceptance is high based on organoleptic test in the aspects of smell, taste, color and product packaging. Besides, it was also found that the nutrient content are 348kcl/100g energy nutrient 8.63g/100g carbohydrate, 0.54g/100g protein and 0.0g/100g fat. In conclusion, this product has been accepted and give benefits to respondents.

Keywords: *(Starfruit, Nutrition, Hedonic Scale)*

Pengenalan

Pengambilan makanan dan minuman tambahan penting dalam usaha menjayakan pemakanan sihat oleh masyarakat. Malah ianya dijadikan sebagai alternatif gaya hidup masyarakat moden kini dalam pelbagai jenis makanan dan minuman tambahan seperti spriluna, pil-pil vitamin, makanan organik dan lain-lain. Masyarakat juga menjadikan pengambilan makanan atau minuman tambahan secara berkala atau sampingan yang dapat memberikan banyak manfaat. Hal ini adalah disebabkan umumnya mereka sibuk dengan kerjaya dan adakalanya tidak punyai masa rehat yang cukup serta kurang melakukan aktiviti riadah dan senaman. Oleh itu, pengambilan kandungan tambahan dalam makanan dan minuman tentunya dapat membantu dan memberikan faedah kepada pengguna.

Buktinya kandungan tambahan ini dapat dijadikan sebagai faktor penyedap di dalam makan dan minuman. Secara tidak langsung ianya memberi kesan positif semasa proses pembesaran baik dari segi fizikal mahupun mental kerana kandungan yang ditambah di dalam makanan dan minuman mengandungi nutrisi tambahan. Ia juga dapat mampu memberikan tenaga sepanjang hari. Contohnya nutrisi tambahan seperti kandungan protein, karbohidat, zat besi dan serat dapat membantu tumbesaran dari segi fizikal.

Kini, pelbagai jenis kandungan tambahan dalam makanan dan minuman yang ada di pasaran. Salah satunya terdiri daripada buah-buahan estraknya yang digunakan untuk dijadikan vitamin dalam bentuk pil, kapsul, tablet, *sachet*, esen dalam pembuatan kek, roti dan lain lain lagi.

Oleh itu, kajian ini bertujuan untuk menghasilkan *Star Fruit Syrup* sebagai kandungan tambahan makanan dan minuman dalam Pengajaran dan Pembelajaran (PdP) bagi kursus Food & Beverage yang melibatkan pelajar Semester 2, Jabatan Pelancongan & Hospitaliti Politeknik Merlimau Melaka. Selain itu, penyelidikan ini juga merupakan salah satu inovasi terhadap variasi sirap yang sedia ada di pasaran.

Penyataan Masalah

Buah belimbing adalah buah mempunyai rasa masam dan manis dan punyai bentuk yang unik. Namun, buah tropika ini yang kurang popular. (Gusto, Julai 2017). Buah belimbing ini mudah rosak dan perlu diproses dalam kaedah yang lain supaya tahan lama. Jangka hayatnya bergantung pada suhu bilik selama dua hingga lima hari sehingga masak, satu hingga dua minggu setelah matang di dalam peti sejuk atau sepuluh hingga dua belas bulan di dalam peti sejuk beku. (Jurnal Global, 2016)

Menurut Widodo pada 2018, beliau juga menyatakan buah belimbing di pasaran amat terhad dan sukar untuk diperolehi kerana buahnya mudah rosak dan jangka hayatnya yang pendek.

Buah belimbing yang boleh diperolehi di pasaran kebanyakannya dalam bentuk jem dan jeli namun tiada dihasilkan dalam cecair seperti sirap. Di antara jenis sirap yang dijual dan dikomersialkan di pasaran adalah seperti sirap coklat, sirap madu, sirap jagung dan lain-lain.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kebiasanya digunakan sebagai topping pencuci mulut. Fakta bahawa sirap mengandungi fruktosa tinggi dari bahan kimia dan toksin tambahan ini mengakibatkan kerosakkan pada tubuh badan. Pengambilan gula secara berlebihan juga menyebabkan kenaikan berat badan dan obesiti. (JenniferAndrews, 2018)

Sirap ini banyak digunakan secara umum dalam makanan segera. Ianya mengurangkan tahap keseimbangan badan,. Oleh kerana terlalu murah, sirap glukosa banyak digunakan dalam produk komersial. (AtiyeLacin, 2015)

Fruktosa tinggi tidak hanya menjadikan tubuh manusia gemuk, tetapi juga menjadikan jantung manusia gemuk. Terdapat kaitan kuat antara penggunaan sirap jagung fruktosa tinggi dan tahap trigliserida dan LDL (kolesterol jahat) yang tidak bertanggungjawab. Bersama-sama, ini boleh menyebabkan penumpukan plak arteri dan membawa kepada masalah jantung termasuk hipertensi, penyakit jantung, dan juga strok. (Dr.Edward, 2015)

Objektif kajian

Objektif kajian ini adalah untuk mengkaji tahap penerimaan *Star Fruit Syrup* di kalangan pelajar Semester Diploma Pengurusan Hotel dan Diploma Perkhidmatan Makanan Amalan Halal, Politeknik Merlimau, Melaka dan penggunaan *Star Fruit Syrup* sebagai kandungan tambahan dalam Pengajaran dan Pembelajaran (PdP) bagi kursus *Food & Beverage.*

Tinjaun Literatur

Buah Belimbing dikenali sebagai *Averrhoea Carambola* secara saintifik merupakan buah-buahan tropika berbentuk bintang dengan rasa masam dan manis. Carambola berasal dari semenanjung Tanah Melayu dan ditanam di banyak kawasan di Asia Tenggara, Kepulauan Pasifik dan China kerana buahnya. Walaupun *Carambola* masih kurang dikenali di dunia barat. (Gusto, 2017)

Di Amerika Utara dan Selatan buah belimbing pertama kali diperkenalkan ke Florida pada tahun 1887 tetapi ianya merupakan buah hiasan dan belum ditanam secara meluas. Seterusnya buah ini diperkenalkan ke kepulauan Caribbean, Amerika Tengah, Amerika Selatan, dan Hawaii pada tahun 1935. Kini, buah belimbing banyak ditanam dan dimakan di Asia dan semakin popular di Amerika Syarikat. memenuhi keperluan yang semakin meningkat ini ditanam secara komersial di Florida, Hawaii, dan Puerto Rico. (PublicInstruction, 2018)

Rajah 1 Buah Belimbing *Averrhoea Carambola*

eISBN 978-967-2426-22-6
13th – 14th December 2020

Buah ini juga merupakan salah satu buah yang sering digunakan di dalam pengubatan ayurveda di India, Cina, dan Brazil. Selain kaya serat dan vitamin, buah belimbing juga dikenali rendah kalori. Dalam satu buah belimbing yang berukuran sederhana, ianya mengandungi di antara 30 kalori dan 5 gram karbohidrat sahaja. Buah belimbing juga mengandung mineral yang baik untuk kesihatan, di antaranya adalah zat besi, magnesium, mangan, potasium, β-karoten, Vitamin A, Vitamin B9, Vitami B3 dan Vitamin C. (Marianti, 2020)

Berikut merupakan Jadual 1 yang menunjukkan kandungan zat buah belimbing di Malaysia.

Jadual 1: Kandungan Zat Buah Belimbing

Kandungan	Unit/100gm
Kalori	24 kcl
Protein	0.7g
Lemak	1.9g
Serabut	1.8g
Kalsium	7mg
Besi	0.4mg
Vitamin A	26mg
Vitamin B1	0.07mg
Vitamin B2	0.07mg
Vitamin C	25.8mg

(Jabatan Pertanian Pulau Pinang, 2020)

Di Malaysia, tanaman belimbing boleh didapati di seluruh semenanjung Malaysia terutamanya di Johor, Perak, Selangor Perak, Melaka dan Negeri Sembilan. Tanaman belimbing sesuai pada iklim tropika dan memerlukan cuaca panas dan curahan hujan yang banyak. Buah berbentuk bujur dan terdapat 5 atau 6 sudut. Jika dipotong berbentuk bintang. Buah ini berwana hijau muda dan bertukar menjadi kuning atau oren apabila masak. Isinya lembut, berair, rangup dan manis serta sedikit kelat.

Sektor ekonomi negara membuktikan bahawa jumlah kos pengeluaran buah belimbing dalam tempoh 15 tahun dianggarkan RM 227,581.00. Berdasar kepada harga di ladang RM 1.00/kg IRR 43%. Nilai kini bersih 10% ialah RM 54,198.00 dan Nisbah Faedah/Kos pada 10% ialah RM1.45 (Jabatan Pertanian, 2020)

Metodologi Kajian

Kajian direka dengan menyediakan resepi standard yang diformulasikan untuk memastikan bahan yang digunakan mengikut sukatan yang tepat dan proses penyediaan penghasilan produk *Star Fruit Syrup.*

Resepi Standard yang digunapakai adalah seperti Jadual 1 di bawah:

Jadual 2: Resepi Standard *Star Fruit Syrup*

Bahan	Kuantiti
Buah Belimbing	180 g
Gula Batu	60 g
Air	70 ml

Tiga bahan ini digunakan untk menghasilkan *Star Fruit Syrup* yang mengandungi buah belimbing, gula batu dan air.

Star Fruit Syrup dihasilkan secara berperingkat. Rajah 2 menunjukkan proses penghasilan dengan mengupas dan membuang kulit buah belimbing. Kemudiannya ianya

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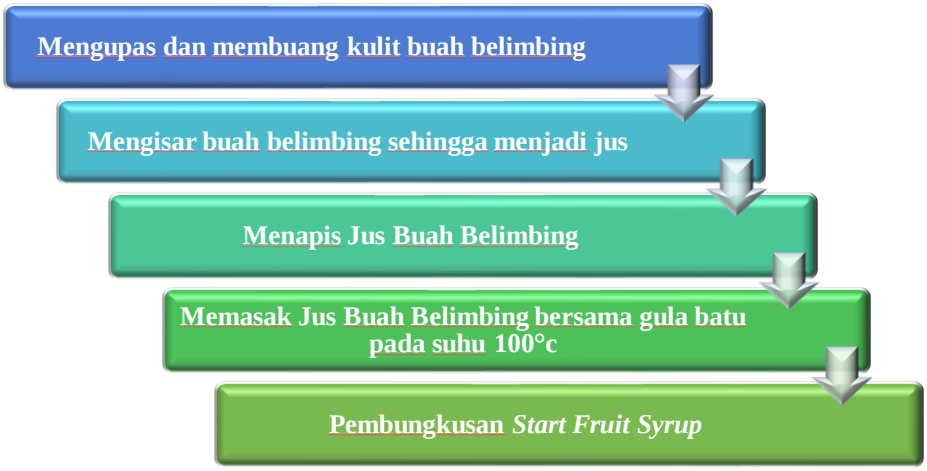
13th – 14th December 2020

dikisar halus sehingga menjadi jus belimbing. Proses seterusnya adalah dengan menapis jus tersebut dan di masak bersama dengan gula batu pada suhu 100°c. Tempoh masa yang digunakan hanya 3 minit sahaja, *Star Fruit Syrup* disejukkan terlebih dahulu sebelum dimasukkan di dalam bekas yang bersesuaian bagi tujuan pembungkusan.



Rajah 2: Proses Penghasilan *Star Fruit Syrup*

Sampel Kajian

Sampel kajian adalah secara rawak dan responden yang dipilih oleh penyelidik kalangan pelajar Semester 2 Program Diploma Pengurusan Hotel dan Diploma Perkhidmatan Makanan Amalan Halal Diploma Pengurusan Hotel, Politeknik Merlimau, Melaka. Seramai 40 orang pelajar Semester 2 ini dipilih kerana kedua-dua program ini mengambil kursus yang sama iaitu Food & Beverage. Oleh itu penghasilan Star Fruit Syrup ini digunakan ketika sesi dalam Pengajaran dan Pembelajaran (PdP) yang terdapat di dalam sub topik kursus tersebut.

Analisis Data

Analia data yang digunakan adalah melalui borang soal selidik dengan menggunakan Skala Hedonik melalui ujian organoleptik dari aspek bau, rasa, warna dan pembungkusan pada produk. *Statistical Package for Social Science* (SPSS) versi 25.0 digunakan untuk menganalisis data yang dikumpulkan melalui responden.

Maklumat yang diperoleh dari data ini adalah untuk mendapatkan maklum balas daripada hasil kajian penyelidik dalam bentuk peratusan, tahap interpritasi min dan analisis kandungan nutrisi.

Jadual 3: Peratusan Pelajar Berdasarkan Jantina

Jantina	Frekuensi	Peratusan (%)
Lelaki	18	45
Perempuan	22	55
Jumlah	**40**	**100**

Jadual 3 di atas menunjukkan peratusan pelajar berdasarkan jantina. Hasil peratusan menunjukan nilai peratusan sebanyak 55 % pelajar perempuan dari kedua-dua program iaitu seramai 22 orang. Manakala pelajar lelaki nilai peratusan adalah sebanyak 45% iaitu seramai 18 orang. Pelajar perempuan dilihat lebih cenderung untuk menjalankan ujian organoletik.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 4: Tahap Interpretasi Min bagi *Star Fruit Syrup*

Kriteria	Skor Min	Tahap
Rasa	4.65	Tinggi
Warna	4.20	Tinggi
Bau	4.30	Tinggi
Pembungkusan	4.65	Tinggi
Purata Min Skor	**4.45**	**Tinggi**

Hasil kajian mendapati Jadual 4 menunjukkan bahawa tahap skor min keseluruhan adalah 4.45 dengan tahap penerimaan tinggi melalui ujian organoleptik dari aspek bau, rasa, warna dan pembungkusan pada produk berdasarkan Jadual Tahap Interpretasi Min (Mohd Najib Abd Ghaffar, 2014)

Skor min tertinggi ialah rasa dan pembungkusan 4.65 dengan skor min tinggi. Kedua adalah bau 4.30 dengan skor min tinggi. Manakala skor min terendah adalah warna 4.20 dengan tafsirannya juga tinggi dan tahapnya baik.

Jadual 5: Analisis Kandungan Nutrisi *Star Fruit Syrup*

Ujian Parameter	Unit	Keputusan
Moisture	g/100g	12.5
Crude Ash	g/100g	0.6
Kandungan Lemak	g/100g	0
Protein	g/100g	0.54
Karbohidrat	g/100g	86.3
Tenaga	kcal/100g	3.48

(Melaka Biotechnology Corporation, 2019)

Berdasarkan Jadual 5 Analisis kandungan Nutrisi yang diperolehi Melaka Biotechnology Corporation pada tahun 2019, ianya menunjukkan *Star Fruit Syrup* mengandungi nutrisi yang terdiri daripada 348kcl / 100g tenaga 8.63g / 100g karbohidrat, 0.54g / 100g protein dan 0.0g / 100g lemak.

Kesimpulan

Kajian ini diharapkan dapat menjadi panduan dan rujukan. Hasil dapatan kajian yang diperolehi ianya telah mempengaruhi dan diperakukan. Ini kerana produk ini telah diterima dengan baik dan dapat memberikan manfaat kepada para pelajar Semester 2 Program Diploma Pengurusan Hotel dan Diploma Perkhidmatan Makanan Amalan Halal di dalam penggunaan *Star Fruit Syrup* sebagai kandungan tambahan dalam Pengajaran dan Pembelajaran (PdP) bagi kursus Food & Beverage. Di samping kandungan nutrisi yang ada Star Fruit Syrup yang dijadikan ini lebih bersifat semulajadi, selamat dan tidak mengandungi bahan kimia.

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KEYAKINAN DIRI PELAJAR FESYEN KOLEJ KOMUNITI GERIK SEBAGAI PERSEDIAAN KE ALAM PEKERJAAN: SATU TINJAUAN SEMASA PANDEMIK COVID-19

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Abstrak: *Keyakinan diri mempengaruhi seluruh kehidupan manusia. Kebolehan untuk mengatasi segala halangan banyak dipengaruhi oleh keyakinan diri yang ada dalam diri seseorang individu. Memang sering dikatakan, keyakinan diri berkait rapat dengan kejayaan seseorang itu. Seseorang perlu mempunyai keyakinan pada diri sendiri untuk mencapai kejayaan. Secara umumnya, keyakinan diri boleh ditafsirkan sebagai kemampuan individu mempercayai dan yakin di atas kemampuan dirinya untuk melakukan sesuatu. Kajian ini dijalankan adalah bertujuan untuk meninjau keyakinan diri pelajar semester akhir sebagai persediaan mereka dalam memasuki alam pekerjaan semasa pandemik covid-19. Sampel kajian dalam kajian ini terdiri daripada pelajar-pelajar semester akhir Program Sijil Fesyen dan Pakaian Sesi Jun 2020 di Kolej Komuniti Gerik, KPT. Instrumen kajian yang digunakan adalah borang soal selidik yang telah dijalankan di atas talian melalui aplikasi Google Form untuk mendapatkan data-data yang diperlukan. Data dianalisis menggunakan teknik analisis diskriktif dengan menggunakan pendekatan kuantitatif. Analisis dijalankan berdasarkan aspek intelektual, faktor emosi dan rohani serta fizikal. Hasil dapatan kajian menunjukkan pelajar semester akhir Program Sijil Fesyen dan Pakaian Sesi Jun 2020 di Kolej Komuniti Gerik (KKGP) mempunyai tahap keyakinan diri yang tinggi dalam faktor intelek, emosi & rohani serta fizikal sebagai persediaan mereka untuk memasuki alam pekerjaan walaupun berdepan dengan pandemik covid-19.*

Kata Kunci: *Keyakinan Diri, Faktor Intelek, Faktor Emosi dan Rohani, Faktor Fizikal*

Pengenalan

Dewasa ini sistem pendidikan dan latihan di negara kita sentiasa diperkembangkan serta ditingkatkan untuk membentuk setiap individu menjadi rakyat Malaysia yang lebih sempurna dan bersikap positif terhadap kehidupan dan pekerjaan serta melengkapkan mereka dengan pengetahuan dan kemahiran yang diperlukan ke arah memenuhi kehendak pembangunan negara.

KPT berperanan penting dalam mewujudkan ekosistem pengajian tinggi yang terbaik di universiti awam (UA), institusi pengajian tinggi swasta (IPTS), politeknik dan juga kolej komuniti. Semua institusi ini merupakan komponen utama ekosistem pendidikan dan latihan negara yang akan menjana para pemikir, ilmuwan, sarjana, tenaga kerja mahir dan separa mahir sesuai dengan peranan masing-masing (Kementerian Pengajian Tinggi).

Sejajar dengan visi kolej komuniti untuk menjadi peneraju institusi tvet yang unggul, maka kolej komuniti menyemai cita dan azam untuk menjadi sebuah institusi utama dalam memberi pendidikan teknikal yang berkualiti. Ts Mohamad Amin menyatakan kebolehpasaran juga dimantapkan lagi melalui program pengajian yang responsif dengan keperluan industri

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13th – 14th December 2020

menerusi semakan dan penjajaran program pengajian dari semasa ke semasa, bagi membolehkan pelajar bersedia untuk bekerja (Kementerian Pengajian Tinggi).

Namun begitu, menurut Noor Azmi (1998), selain menyediakan pelajar menjadi tenaga kerja yang terlatih dalam pelbagai ilmu pengetahuan dan kemahiran, pelajar yang telah melalui sistem pendidikan yang ada seharusnya diharap akan menjadi individu yang berilmu dan seimbang dari segi pertumbuhan rohani, intelek, emosi dan jasmani.

Pernyataan Masalah

Isu pelajar yang kurang berkemahiran dalam aspek interpersonal dan kemahiran bersosial semasa mereka memulakan kerjaya sudah lama diperkatakan. Selain daripada itu pelajar juga kurang berkeyakinan dan berdaya saing dalam menempatkan diri di dunia pekerjaan. Ditambah lagi dengan pandemik covid-19 yang sedang melanda. Sedangkan keyakinan diri itu penting dalam diri mereka sebelum memasuki alam pekerjaan selain daripada kemahiran-kemahiran kerana aspek tersebut akan mempengaruhi prestasi kerja seseorang.

Pelbagai usaha telah dijalankan oleh pelbagai pihak bagi mengatasi masalah ini. Contohnya pihak institusi bekerjasama dengan pihak industri dalam menjayakan latihan industri bagi membolehkan para pelajar mempraktikkan apa yang dipelajari untuk disesuaikan dalam keadaan sebenar alam pekerjaan. Tidak ketinggalan juga khidmat nasihat serta bengkel bagi tujuan meningkatkan prestasi kerja serta menimbulkan keyakinan diri dalam diri pelajar terbabit. Semua ini bertujuan supaya bakal pekerja dapat menyumbangkan tenaga dan pemikiran mereka dengan lebih berkualiti.

Oleh yang demikian, keyakinan diri pula merupakan asas penting kepada pelajar dalam menempatkan diri di alam pekerjaan selepas tamat belajar kelak bagi mewujudkan pekerja yang berkualiti untuk kebaikan kepada agama, bangsa dan negara. Justeru itu, pengkaji merasakan adalah perlu untuk meninjau sejauh mana keyakinan diri yang ada dalam diri pelajar yang meliputi aspek intelektual, faktor emosi & rohani serta faktor fizikal dalam bidang sebagai persediaan pelajar dalam memasuki alam pekerjaan kelak agar memenuhi keperluan industri.

Objektif

Objektif kajian yang dijalankan ini adalah bertujuan untuk:

i. Mengetahui keyakinan diri pelajar dari aspek intelektual sebelum memasuki alam pekerjaan
ii. Mengetahui keyakinan diri pelajar dari faktor emosi dan rohani sebelum memasuki alam pekerjaan yang mana pelajar akan menerima tawaran pekerjaan daripada sektor yang bersesuaian
iii. Mengetahui keyakinan diri pelajar dari segi fizikal sebelum memasuki alam pekerjaan.

Kajian Literature

Keyakinan Diri

Dalam hadith nabi ada menyebut " *Tidak ada suatu kurnia yang diberikan oleh Allah kepada manusia lebih utama dari keselamatan, kecuali keyakinan (diri) sahaja* ." Hadith ini memperingatkan kepada kita bahawa keyakinan diri adalah merupakan faktor yang penting ke arah menggerakkan diri kita ke arah yang lebih dinamik serta berwawasan. (Ismail, 2003).

Walaupun manusia dilahirkan dalam keadaan lemah, tetapi mereka tetap berpotensi untuk maju. Mereka walaupun lahir dalam keadaan lemah, namun tidak bermakna berterusan berada dalam keadaan yang lemah itu. Ini juga tidak bermakna mereka tidak mempunyai sebarang kelemahan.

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13th – 14th December 2020

Lantaran dilahirkan dalam keadaan serba kekurangan, ia sememangnya menimbulkan rasa rendah diri kerana menyedari kekurangan yang ada. Tetapi bukanlah sesuatu yang wajar jika menyesali diri yang dilahirkan serba kekurangan. Sebaliknya, ia akan mengundang pelbagai kemudaratan yang tidak terlintas di fikiran, maka akan terbentuk satu tekanan psikologi yang dikenali sebagai gangguan rendah diri.

Gangguan rendah diri adalah keadaan di mana seseorang itu merasakan dirinya berterusan berada dalam serba kekurangan. Kekurangan yang dirasai membantutkan segala usaha untuk mencapai kemajuan dalam kehidupannya walaupun ia berpotensi untuk maju. Potensi untuk maju dilindungi oleh ketiadaan keyakinan diri, pemikiran negatif dan kegembiraan yang terbantut.

Menurut Ismail (2003), keyakinan diri merupakan kelakuan yang membenarkan atau mengizinkan individu untuk mempunyai pandangan positif atau realistik tentang diri mereka sendiri ataupun situasi yang mereka akan atau bakal ditempuhi. Keyakinan diri pada seseorang individu itu juga membolehkan mereka mempercayai kepada kebolehan diri mereka sendiri serta mempunyai deria yang kebiasaannya digunakan untuk mengawal kehidupan mereka dan mempercayai bahawa tanpa sebarang sebab mereka akan berjaya atau boleh melakukan apa yang mereka inginkan, rancangkan dan jangkakan dalam kehidupan mereka.

Selain daripada itu menurut Khairul Azhar (2004), keyakinan diri juga adalah sumber kekuatan peribadi dan idola yang baik merupakan contoh yang dapat menyokong ketrampilan personaliti mereka. Generasi muda Islam memang wajar menjadikan Rasulullah S.A.W sebagai contoh dan ikutan sahsiah mereka. Firman Allah dalam surah Al Ahzab ayat 21 bermaksud:

> *"Sesungguhnya ada pada diri Rasululluh itu contoh teladan yang baik bagi orang yang mengharap rahmat Allah dan kebaikan hari Kiamat dan banyak pula mengingati Allah."*

Taidin (2004) pula menyatakan bahawa punca-punca utama ketidakyakinan diri pada seseorang individu berpunca daripada tiga perkara iaitu kurang pengetahuan, pengalaman, pendedahan dan kurang persediaan dan kemahiran serta tidak mempunyai matlamat dalam hidup yang mantap dan jelas. Beliau juga telah menyatakan bahawa petanda-petanda orang yang kurang keyakinan diri adalah seperti kurang senyum, kelihatan risau, kelihatan gugup, kurang berinteraksi serta malas bekerja.

Seterusnya keyakinan diri juga mempengaruhi seluruh kehidupan manusia. Kebolehan untuk mengatasi segala halangan banyak dipengaruhi oleh keyakinan diri yang ada pada individu. Lazimnya, semakin mencabar kehidupan yang dilalui oleh seseorang itu, lebih besarlah keperluan untuk menghargai nilai dalaman pada dirinya. Kerana itu, jika individu tersebut fikirkan boleh, maka akan dapatlah menangani segala cabaran hidup. Itulah sebabnya kita perlu berfikiran luas. Levitt dalam Shiv Khera (1999) berkata bahawa:

> *"..when you think and behave positively, you guide your mind toward your goals and generate mental, physical, energy " (Levitt, 1996)*

Terdapat empat jenis keyakinan diri utama yang harus dimiliki oleh setiap individu seperti yang telah dinyatakan oleh Taidin (2004) iaitu keyakinan kepada Tuhan dan KeesaanNya, keyakinan diri sendiri, keyakinan kita terhadap orang lain dan akhir sekali keyakinan orang lain terhadap kita.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Aspek Intelektual

Apabila memperkatakan tentang intelek, kita semestinya membayangkan otak yang ada pada setiap individu. Menurut Edison dalam Ainon dan Abdullah (2002), otak merupakan penyebab segala hal, aktiviti, kejayaan dan lain-lain fikiran mempengaruhi nasib seseorang dan dari sudut pandangan lain fikiran kita atau intelek merupakan sebahagian daripada setiap individu.

Menurut Mak Soon Sang (1993), penekanan pada faktor ini adalah meliputi pengetahuan ilmu yang ada pada pelajar. Selain itu ia juga menekankan kepada kekreatifan dalam menghasilkan idea-idea yang baik dan bernas untuk mendapatkan hasil dalam proses pembelajaran bagi individu pelajar terbabit. Faktor intelek juga merangkumi ilmu sebenar, daya pemikiran yang inovatif, logikal, analitis dan ilmu yang bermanfaat.

Dalam kajian ini, faktor intelektual adalah meliputi persediaan ilmu pengetahuan pelajar dalam bidang serta pengetahuan kerjaya yang akan diceburi. Selain daripada itu penekanan juga diberikan kepada kemahiran konsep yang terdapat pada pelajar sebelum mereka menceburi alam pekerjaan.

Faktor Emosi & Rohani

Peale dalam Shiv Kehra (1999) telah menyatakan bahawa disamping kepercayaan serta keyakinan pada diri sendiri dan pada orang lain, iman keagamaan atau rohaniah juga adalah bahagian yang penting dari sudut formula. Ini bermaksud rohaniah bukan hanya membantu untuk mencapai kejayaan tetapi untuk mengatasi masalah. Bagi individu muslim kerohanian adalah untuk mengimbangi kehidupan dunia dan akhirat.

Seterusnya santapan rohani merupakan tuntunan yang luhur yang dapat menyuburkan dan menyihatkan rohani yang amat penting bagi kesempurnaan hidup manusia termasuklah dalam alam pekerjaan. Antara faktor yang penting untuk membina rohani yang sihat supaya manusia di dalam hidupnya memiliki jiwa, fikiran, niat yang sihat adalah penting berusaha untuk membersihkan hati dari hal yang mungkar dan sifat-sifat yang tercela dengan zikrullah (Yusof, 2001).

Mengikut Gael Lindenfield (1997) pula dalam bukunya *"Emotional Confidence"* keyakinan emosi bermaksud satu keadaan dimana kita dapat menaruh kepercayaan terhadap kebolehan diri kita untuk mengawal perasaan. Ia juga merupakan salah satu komponen dalam konsep keyakinan diri *(self-confidence)* (Ismail, 2003).

Bagi golongan usahawan, pekerja, pegawai dan para pemimpin kurangnya keyakinan dalam faktor emosi & rohani ini akan menyebabkan kurangnya minat dan keberanian untuk mengambil risiko, membuat keputusan atau menyampaikan pendapat serta membuat satu anjakan paradigma dalam bidang yang diceburinya.

Di samping itu, faktor emosi & rohani ini tidak memerlukan seseorang itu berpangkat tinggi atau berpelajaran tinggi untuk mencapainya kerana ia melibatkan perasaan dan jiwa. Ia dapat dicapai melalui perhubungan yang mesra, bertindak tidak mengikut perasaan, menghormati orang lain, serta menyedari bahawa setiap insan mempunyai kekuatan dan kelemahan masing-masing. Sesuailah dengan matlamat faktor emosi & rohani yang mementingkan kesedaran dan ketenangan diri kerana faktor ini merupakan nilai dalam domain kehidupan manusia.

Dalam kajian ini pula, faktor emosi & rohani pula merujuk kepada persediaan-persediaan yang berkaitan dengan keupayaan pelajar dalam memikul tugas dan tanggungjawab yang semakin mencabar dalam bidang yang akan diceburi kelak. Ia juga berkaitan dengan keberanian mereka untuk menghadapi temuduga dan melaksanakan tugas-tugas mereka kelak dengan baik. Selain itu juga, sekiranya kebolehan dalam berkomunikasi adalah baik serta mempunyai kemahiran kemanusiaan dan memegang nilai-nilai murni dalam budaya dan etika

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13th – 14th December 2020

kerja yang berlandaskan agama, membolehkan mereka lebih berkeyakinan dalam melaksanakan tugas yang diberi

Faktor Fizikal

Seperti yang dinyatakan oleh Levitt dalam Shiv Khera (1999) bahawa apabila kita berfikiran secara positif, secara tidak lansung kita mengawal minda supaya melakukan semua perkara yang dikehendaki dengan menjana semua faktor termasuk faktor fizikal.

Dalam faktor fizikal ini, penekanan diberikan kepada persediaan-persediaan yang berkaitan dengan persepsi individu itu sendiri tentang kecerdasan fizikal, kesihatan diri dan personaliti yang dimiliki bagi memenuhi kehendak dalam bidang masing-masing.

Menurut Samuel (2000), disiplin diri mungkin dapat digunakan secara lebih efektif dalam memelihara kesihatan fizikal. Ini adalah perlu bagi mencapai kejayaan seperti berfikir secara tepat dan positif di samping dapat menambahkan keyakinan diri seseorang individu tersebut.

Pihak majikan juga pastinya akan memilih pekerja yang mempunyai kesihatan yang baik berbanding dengan pekerja yang kurang kesihatannya. Ini kerana apabila mempunyai pekerja yang bermasalah dalam kesihatan, pekerja tersebut akan sentiasa memohon cuti di atas sebab keuzuran dan ini akan mengganggu perjalanan sesebuah organisasi tersebut kerana tugas-tugas mereka akan terbengkalai.

Selain daripada itu, persediaan pelajar dalam mencari pekerjaan juga dititikberatkan seperti pendaftaran diri dengan agen-agen pencari kerja, penghantaran surat permohonan pekerjaan dan lain-lain.

Bagi menguatkan lagi keyakinan pihak majikan, penglibatan dalam bidang kokurikulum perlulah diambil kerana ia dapat memberikan pengalaman dan kekuatan diri individu. Penglibatan dalam kokurikulum juga membuktikan diri pelajar tersebut mempunyai sifat proaktif dan sentiasa mencari peluang untuk mengembangkan kebolehan yang ada dalam diri mereka serta mengembangkan potensi diri mereka sendiri. Selain daripada itu pelajar yang bergiat aktif dalam kokurikulum dapat melahirkan serta melatih pemimpin di kalangan masyarakat pelajar untuk menjadi galang ganti kepimpinan pada masa depan (Omardin Ashaari, 1999).

Seterusnya menurut Samuel (2000) juga personaliti atau keperibadian atau watak seseorang individu itu adalah salah satu landasan untuk berjaya dengan penuh keyakinan. Ini dipengaruhi dengan cara seseorang itu berpakaian yang sesuai dengan usia, bentuk tubuh serta kerjaya masing-masing. Apabila kualiti dan layanan lebih kurang sama, individu akan memilih untuk berurusan dengan individu yang mereka sukai.

Oleh yang demikian untuk menambahkan keyakinan diri dalam berurusan dengan pelanggan personaliti merupakan salah satu faktor fizikal yang haruslah diberikan penekanan oleh bakal-bakal graduan yang akan menceburi bidang pekerjaan kelak.

Pandemik Covid-19

Covid-19 atau coronavirus adalah virus yang menyebabkan pelbagai penyakit dari selsema hingga ke penyakit lebih teruk seperti MER-CoV dan SARS-CoV. Ia mempunyai beberapa simptom iaitu pening kepala, batuk, demam, sukar bernafas serta sakit badan.

Pandemik Covid-19 telah mendidik rakyat Malaysia untuk hidup dalam norma baharu. Kehidupan dan aktiviti harian masyarakat kini telah banyak berubah. Ia telah menjangkiti beratus-ratus ribu orang diseluruh dunia mulai Mac 2020. Walaupun diperingkat awal ini vaksin masih belum ada, saintis mencadangkan agar masyarakat mempraktikkan jarak sosial, mencuci tangan dengan sabun selama 20 saat, menggunakan *sanitizer*, mengelakkan berjabat

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13th – 14th December 2020

tangan, memerhatikan etika batuk dan bersin dan memakai topeng muka untuk mencegah penyebaran virus.

Salah satu bidang yang terkesan akibat pandemik ini adalah dalam sektor pendidikan sama ada di peringkat rendah atau Institusi Pengajian Tinggi (IPT). COVID-19 telah menjejaskan sektor pendidikan tinggi Malaysia dengan serius. Bersama dengan inisiatif kerajaan, pihak pengurusan tertinggi universiti dan kolej-kolej telah mengambil tindakan dengan pantas dalam menerapkan strategi krisis untuk melindungi pihak yang berkepentingan iaitu para pelajar.

Bagi memastikan sesi akademik dapat diteruskan dalam norma kehidupan yang baharu dalam jarak sosial dan PKP, pembelajaran dalam talian telah dilaksanakan untuk memastikan proses pengajaran dan pembelajaran berjalan lancar. Ini merupakan satu cabaran besar bagi universiti kerana akan berlaku perubahan besar tentang operasi biasa dalam pendaftaran, pengajaran, pembelajaran, penyelidikan, seminar, persidangan, mesyuarat dan konvokesyen pelajar yang akan berubah.

Inilah masanya pelajar universiti menggunakan masanya untuk mengasah kemahiran pembelajaran sepanjang hayat supaya mereka bersedia untuk menghadapi alam pekerjaan. Pelajar perlu menyusun jadual pembelajaran sendiri, mencari bahan pembelajaran selain yang diberikan oleh pensyarah, menyusun waktu perbincangan bagi tugasan berkumpulan, menentukan tarikh akhir pecahan kerja-kerja tugasan kumpulan supaya boleh dilengkapkan sebelum tarikh tutup tugasan, serta membuat pelbagai keputusan yang memerlukan kemahiran penyelesaian masalah seperti masalah internet yang tidak stabil atau lemah, kawan kumpulan tugasan yang tidak ada akses internet, laptop dan speaker bermasalah, dan sebagainya.

Banyak kajian yang menyokong kesan COVID-19 kepada psikososial, mental dan fizikal seperti perasaan pengasingan, kemurungan, perubahan psikologikal, takut, demoralisasi, gangguan emosi dan kebimbangan . Rajkumar (2020) dan Bao, et. al (2020) menjelaskan individu yang berhadapan dengan bencana mengalami gangguan emosi. Mereka berada dalam kebimbangan, sentiasa risau, menghadapi masalah kekurangan tidur dan simptom kemurungan yang lain. Sesetengah dari mereka boleh pulih dan menjalani kehidupan seperti biasa. Namun, yang lain memerlukan bantuan sokongan untuk pulih seperti sediakala.

Metodologi Kajian

Instrumen Kajian

Kajian yang dijalankan adalah kajian kuantitatif berbentuk deskriptif dengan menggunakan borang soal selidik. Soal selidik yang dijalankan di atas talian melalui aplikasi *Google Form* telah direkabentuk untuk pengumpulan data. Menurut Noraini (2010), kajian deskriptif berguna apabila penyelidik hendak mengumpul data berhubung dengan fenomena yang tidak dapat diperhatikan secara langsung**.** Soalan-soalan yang dikemukakan adalah berhubung dengan keyakinan diri pelajar semester akhir Program Fesyen dan Pakaian dalam memasuki alam pekerjaan. Melalui kaedah ini, banyak data yang telah diperolehi daripada responden. Jawapan yang diperolehi adalah lebih konsisten selain daripada penggunaan instrumen ini adalah bebas dan tidak dipengaruhi oleh perilaku pengkaji. Soal selidik ini mengandungi 4 bahagian iaitu Bahagian A maklumat diri responden, Bahagian B faktor intelek, Bahagian C faktor emosi dan rohani serta Bahagian D faktor fizikal. Kajian hanya dilakukan ke atas pelajar semester akhir Program Sijil Fesyen dan Pakaian Sesi Jun 2020 di Kolej Komuniti Gerik, Kementerian Pengajian Tinggi.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Dapatan Kajian Dan Perbincangan

Jadual 1: Analisis Maklumat Responden

Perkara	Bilangan	Peratus (%)
1. JANTINA		
Lelaki	2	5
Perempuan	38	95
Jumlah	**40**	**100**
2. UMUR		
18-20 tahun	38	95
21-23 tahun	2	5
Jumlah	**40**	**100**
3. BANGSA		
Melayu	39	97.5
Cina	0	0
India	1	2.5
Jumlah	**40**	**100**

Hasil kajian yang dijalankan ke atas 40 orang pelajar menunjukkan majoriti responden yang terlibat dalam kajian ini adalah perempuan iaitu seramai 38 orang (95%). Hanya terdapat 2 orang (5%) responden lelaki. Analisis berkaitan umur pula mendapati seramai 38 responden yang menjawab berada dalam lingkungan umur 18 – 20 tahun (95%) manakala 2 orang terdiri daripada lingkungan umur 21 – 23 tahun (5%). Bagi analisis berkaitan bangsa, didapati majoritinya adalah berbangsa melayu iaitu seramai 39 orang (97.7%) dan hanya sorang (2.5%) berbangsa india.

Data-data ditafsirkan dengan merujuk kepada Jadual 2 yang telah diadaptasi daripada Wiersman (1995) dalam Fauzan (2002). Oleh yang demikian, semua skor min daripada hasil dapatan kajian dalam analisis ini adalah berdasarkan kepada Jadual 2**.**

Jadual 2: Jadual Tahap Kecenderungan

Min Skor	Tahap Kecenderungan
1.00 – 2.49	Rendah
2.50 – 3.49	Sederhana
3.50 – 5.00	Tinggi

Keyakinan Diri Pelajar Sebagai Persediaan Memasuki Alam Pekerjaan Dari Faktor Intelektual

Jadual 3 menunjukkan keputusan keseluruhan bagi setiap aspek keyakinan diri dari faktor intelek dinilai menggunakan 12 item. Analisis yang dijalankan adalah berbentuk skor min. Ia terbahagi kepada 2 indikator iaitu Ilmu Pengetahuan (item 1-7) dan Kemahiran Konsep (item 8- 12) Berdasarkan data yang diperolehi daripada jadual 3 bahagian ilmu pengetahuan, skor min tertinggi 4.40 adalah pada item 4 iaitu Saya suka melakukan perkara-perkara yang berkaitan dengan fesyen dan pakaian.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 3: Skor Min Bagi Keyakinan Diri Dari Faktor Intelektual

	Faktor Intelektual	Min Purata
1.	Saya tahu apa yang dimaksudkan dengan fesyen	**4.20**
2.	Saya mampu mengendalikan masalah dalam menggunakan mesin tanpa bantuan sesiapa	**3.33**
3.	Saya tahu menggunakan mesin untuk menjahit pakaian tanpa bantuan sesiapa	**3.45**
4.	Saya suka melakukan perkara-perkara yang berkaitan dengan fesyen dan pakaian	**4.40**
5.	Saya mempunyai pengetahuan yang jelas tentang kerjaya-kerjaya yang terdapat dalam bidang fesyen dan pakaian	**3.75**
6.	Seorang pakar dalam bidang fesyen mestilah mengikuti perkembangan fesyen semasa	**4.33**
7.	Saya gemar membaca bahan-bahan yang berkaitan dengan fesyen dan pakaian	**3.85**
8.	Saya mampu untuk melihat sesuatu dari sudut yang berbeza dengan orang lain	**3.58**
9.	Saya adalah orangyang berpandangan jauh ke hadapan	**3.88**
10.	Saya mampu menghasilkan idea-idea yang bernas	**3.70**
11.	Idea-idea saya selalu digunapakai oleh orang lain	**3.25**
12.	Saya mampu mempelajari sesuatu kemahiran yang baru	**4.28**

Pengkaji melihat perkara ini ada kaitan dengan responden yang terdiri daripada pelajar Program Fesyen dan Pakaian. Apabila seseorang minat kepada sesuatu, pengetahuan kepada perkara tersebut meningkat. Minat dan kecenderungan memainkan peranan penting dalam proses pengajaran dan pembelajaran. Setiap individu yang berminat dalam perkara yang dipelajari akan menunjukkan pencapaian yang tinggi dalam perkara yang diceburi. Dalam proses pemilihan, minat memainkan peranan yang sangat penting sebagaimana yang telah disarankan oleh Holland (1973), dalam kajiannya iaitu pemilihan kerjaya adalah dipengaruhi atau didorong oleh minat seseorang. Mengikut Mohd Shariff, M.S. (1999), keyakinan diri seseorang itu akan bertambah jika mereka dapat menguasai pengetahuan dan kemahiran secara teori dan amali tentang apa yang hendak dilakukan. Manakala bagi kemahiran konsep, data mendapati keseluruhan skor min adalah pada tahap tinggi kecuali item 11 iaitu Idea-idea saya selalu digunapakai oleh orang lain berada pada tahap sederhana, mengikut Jadual Tahap Kecenderungan pada jadual 1. Pengkaji berpendapat kemungkinan pelajar masih dalam proses belajar, idea mereka masih belum diketengahkan untuk kegunaan oleh orang lain. Menurut Nordin dan Abdul Rani (1995), kurangnya keyakinan seseorang itu boleh mengakibatkan kebimbangan dan kerisauan yang mungkin akan mengakibatkan gangguan di dalam menjalankan apa juga jenis pekerjaan. Idea yang diutarakan juga mungkin masih belum di tahap baik untuk digunapakai oleh orang lain.

Keyakinan Diri Pelajar Sebagai Persediaan Memasuki Alam Pekerjaan Dari Faktor Emosi Dan Rohani

Jadual 4: Skor Min Bagi Keyakinan Diri Dari Faktor Emosi & Rohani

	Faktor Emosi dan Rohani	Min Purata
1.	Saya mampu berkomunikasi secara bertulis dengan baik	**4.15**
2.	Saya mampu berkomunikasi secara lisan dengan baik	**3.88**
3.	Saya boleh berkomunikasi secara berkesan dengan pihak atasan	**3.60**
4.	Saya boleh berkomunikasi secara berkesan dengan rakan sekerja	**4.13**
5.	Saya mudah menyesuaikan diri dalam situasi yang baru	**4.20**
6.	Saya suka bekerja secara berkumpulan	**4.30**
7.	Saya menerima pendapat dan pandangan setiap ahli kumpulan dengan hati yang terbuka	**4.50**
8.	Saya bersedia untuk bekerja di luar waktu pejabat jika diberi arahan	**4.20**
9.	Saya dengan rela hati boleh bekerja lebih masa jika diperlukan	**4.23**

eISBN 978-967-2426-22-6
13th – 14th December 2020

10.	Saya bersedia membuat kerja tambahan untuk memastikan kehendak organisasi diperolehi	**4.18**
11.	Saya mampu bekerja luar kawasan (outstation) jika perlu	**4.25**
12.	Saya bersedia untuk bekerja walaupun di dalam beban tugas yang berat (under pressure)	**3.88**
13.	Saya boleh melakukan tugas yang sama berulang kali	**3.98**
14.	Saya boleh melakukan tugas yang pelbagai	**4.03**
15.	Saya boleh membuat keputusan sendiri tanpa bantuan orang lain	**3.38**
16.	Saya boleh menanggung sesuatu risiko	**3.63**
17.	Saya boleh membuat keputusan sendiri tanpa bantuan orang lain	**3.35**
18.	Saya akan pastikan semua maklumat syarikat tidak akan disebarkan kepada orang yang tidak berkaitan	**4.40**

Analisis kajian di atas berdasarkan keyakinan diri pelajar dari faktor emosi dan rohani. Jadual 4 menunjukkan 18 item yang merangkumi 3 indikator iaitu komunikasi (item 1-5), kemahiran kemanusiaan (item 6-10) serta budaya dan etika kerja (item 11-18). Hasil dapatan kajian mendapati skor min dari responden berkaitan komunikasi dan kemahiran kemanusiaan berada pada tahap tinggi. Manakala item 17 berkaitan budaya dan etika kerja iaitu Saya boleh membuat keputusan sendiri tanpa bantuan orang lain berada pada tahap sederhana. Memandangkan responden terdiri daripada pelajar semester akhir, keputusan yang dibuat masih dipengaruhi oleh pensyarah atau mereka yang lebih berpengaruh. Ini menyebabkan pelajar kurang yakin untuk membuat keputusan sendiri. Namun, Menurut Hossein, Amene, Habib-Allah, dan Behrouz (2014), keyakinan diri mampu dipertingkatkan melalui latihan-latihan kemahiran dalam kehidupan. Keyakinan diri yang terbentuk dalam diri seseorang individu dapat memberikan kekuatan dalam menyelesaikan masalah.

Keyakinan Diri Pelajar Sebagai Persediaan Memasuki Alam Pekerjaan Dari Faktor Fizikal

Jadual 5: Skor Min Bagi Keyakinan Diri Dari Faktor Fizikal

	Faktor Fizikal	Min Purata
1.	Saya seorang yang mempunyai personaliti menarik	**3.85**
2.	Saya sentiasa berpakaian kemas apabila keluar dari rumah atau tempat kediaman	**4.25**
3.	Saya sudah mencari iklan-iklan pekerjaan dalam media cetak atau elektronik	**3.78**
4.	Saya sudah menghantar resume kepada syarikat yang mengeluarkan iklan pekerjaan	**3.70**
5.	Saya adalah seorang ahli kelab atau persatuan yang memegang jawatan yang penting pada masa kini atau sebelum ini.	**3.60**

Analisis terakhir pula adalah merupakan keputusan kajian berdasarkan keyakinan diri pelajar dari faktor fizikal. Pengkaji mendapati pelajar bersetuju keyakinan diri dari faktor in merupakan faktor yang penting sebagai persediaan ke alam pekerjaan dengan min purata yang tinggi bagi keseluruhan item seperti di Jadual 5. Penampilan diri yang baik dan menarik akan menjadikan seseorang itu tampil dengan lebih yakin dan bergaya. Penampilan diri merupakan faktor asas untuk meningkatkan keyakinan diri dan menjadikan seseorang itu dilihat sempurna dari aspek mental dan fizikal. Ia perlu dilihat secara menyeluruh dari hujung rambut hingga hujung kaki. Begitulah yang sering dilihat oleh majikan diluar sana ketika waktu temuduga dan sebagainya. Penampilan diri merupakan perkara pertama yang dinilai ketika kita berjumpa dengan seseorang untuk kali pertama. Ia juga sering dikaitkan dengan 'first

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13th – 14th December 2020

impression'. Kesediaan yang cukup dari segi mental dan fizikal mampu mengelakkan bakal graduan daripada mengalami kejutan budaya apabila mula memasuki alam pekerjaan, (Arsat & Rasid, 2010). Disamping persediaan fizikal, persediaan dari segi permohonan pekerjaan dan dokumentasi juga penting bagi menimbulkan minat majikan untuk memilih pelajar tersebut sebagai pekerja.

Kesimpulan

Secara keseluruhannya kajian ini telah memenuhi objektif kajian. Keyakinan diri merupakan faktor yang penting bagi seseorang pelajar sebagai persediaan melangkah ke alam pekerjaan. Dengan keyakinan diri yang tinggi, pelajar dapat mengimbangi potensi diri mereka. Boleh disimpulkan di sini keyakinan adalah kepercayaan pada diri sendiri. Analisis-analisis yang telah dibuat terhadap borang soal selidik yang merangkumi maklumat responden dan juga keyakinan diri pelajar terbahagi kepada tiga faktor iaitu faktor intelektual, faktor emosi & rohani dan faktor fizikal. Dalam faktor intelek pula telah dibahagikan kepada dua indikator iaitu ilmu pengetahuan dan kemahiran konsep. Manakala bagi faktor emosi & rohani terdapat tiga indikator iaitu komunikasi, kemahiran kemanusiaan dan budaya dan etika kerja bidang masing-masing. Berdasarkan kepada keseluruhan hasil dapatan kajian yang didapati, menunjukkan bahawa pelajar semester akhir Program Fesyen dan Pakaian Kolej Komuniti Gerik mempunyai tahap keyakinan diri yang tinggi dari segi intelektual, emosi & rohani serta fizikal sebagai persediaan sebelum menceburi alam pekerjaan selepas tamat pengajian kelak walaupun berdepan dengan pandemik covid-19 kini. Namun ia masih lagi boleh ditingkatkan kerana keyakinan diri adalah faktor terpenting dalam kejayaan, dan walau sehebat manapun kebolehan semulajadi anda, hanya ada satu cara sahaja untuk memperoleh dan mengekalkannya iaitu usaha.

Cadangan

Justeru itu, setiap tindakan yang diambil memerlukan keyakinan terhadap diri yang tinggi untuk berjaya. Keyakinan ialah bagaimana seseorang itu bertindak dalam mengatasi masalah yang dihadapi. Oleh itu pelajar seharusnya dapat memperbaiki kelemahan dan mempertingkatkan lagi keyakinan diri yang ada bagi mempersiapkan diri bagi menempuh alam pekerjaan yang lebih mencabar pada masa akan datang. Diharapkan kajian ini dapat membantu pihak pengurusan kolej dan pensyarah bagi meningkatkan lagi kerjasama dengan pihak industri agar pelajar dapat menyesuaikan diri dengan keadaan sebenar alam pekerjaan. Khidmat nasihat serta bengkel boleh dipergiat bagi tujuan meningkatkan prestasi kerja serta boleh menimbulkan keyakinan diri dalam diri pelajar. Bagi meredakan kegusaran mereka dan menambah keyakinan diri menuju ke alam pekerjaan, perjumpaan pelajar bersama alumni juga boleh dibuat bagi berkongsi pengalaman berdepan dengan cabaran menempuh alam pekerjaan.

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TINJAUAN KESEDARAN PELAJAR TERHADAP KESELAMATAN BENGKEL FESYEN DI KOLEJ KOMUNITI GERIK

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Abstrak: *Kesedaran terhadap keselamatan di bengkel fesyen adalah amat penting bagi mengelakkan berlakunya kemalangan semasa menjalankan sesi Pengajaran dan Pembelajaran (PdP) terutamanya apabila sesi yang melibatkan penggunaan mesin, peralatan elektrik dan alatan tajam. Pengetahuan dan pelaksaan amalan keselamatan perlu dititikberatkan supaya kemalangan dapat dielakkan. Kajian ini bertujuan untuk mengenalpasti pengetahuan pelajar terhadap keselamatan di bengkel fesyen, mengenalpasti pelaksanaan amalan keselamatan yang dipraktikkan oleh pelajar seperti yang termaktub dalam peraturan di bengkel fesyen dan juga bertujuan untuk mengenalpasti perbezaan pengetahuan keselamatan dan pelaksanaan amalan keselamatan pelajar di antara kelas. Instrumen yang digunakan adalah soal selidik melalui aplikasi Google Form diedarkan kepada 33 orang responden. Responden terdiri daripada pelajar semester 1 Sijil Fesyen dan Pakaian, Kolej Komuniti Gerik. Kajian ini adalah kajian kuantitatif yang berbentuk deskriptif iaitu menggunakan soal selidik sebagai instrument kajian. Analisis yang dijalankan berbentuk skor min dan t-test. Secara keseluruhannya, dapatan kajian menunjukkan pengetahuan terhadap keselamatan di bengkel fesyen dan pelaksanaan amalan keselamatan di bengkel fesyen berada di tahap yang baik. Ujian t.test juga mendapati tiada perbezaan yang signifikan di antara kelas pelajar terhadap pengetahuan dan pelaksanaan amalan keselamatan di bengkel fesyen. Ini menandakan bahawa kesedaran pelajar terhadap keselamatan bengkel fesyen di Kolej Komuniti Gerik berada di tahap yang baik.*

Kata Kunci*: Pengetahuan Keselamatan, Pelaksanaan Amalan Keselamatan, Kesedaran, Bengkel Fesyen*

Pengenalan

Keselamatan tempat bekerja merupakan satu aspek penting di dalam sesebuah organisasi. Keselamatan itu sendiri tidak akan wujud tanpa kita mengamalkan sifat-sifat yang positif dan baik. Keselamatan didefinasikan sebagai ketiadaan bahaya, ketiadaan ruang yang membantu mewujudkan suasana bahaya, satu tahap perlindungan dan keadaan yang tidak melibatkan risiko (Holt, 2005). Keselamatan juga diertikan sebagai keadaan yang selamat dan bebas daripada bahaya, termasuk kecederaan dan risiko, pengetahuan atau kemahiran dalam mengelakkan kemalangan atau penyakit dan kualiti atau keadaan yang tidak membawa risiko (Bahari, 2006).

Kerajaan telah mengambil langkah-langkah perlu dengan memperkenalkan Akta Keselamatan dan Kesihatan Pekerjaan 1994 pada 25 Februari 1994. Akta ini bukan sahaja melindungi pekerja yang sedang bekerja tetapi juga melindungi orang-orang yang berada di persekitarannya termasuklah kepada para pelajar.

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13th – 14th December 2020

Isu keselamatan perlu dititikberatkan terutamanya di bengkel fesyen yang melibatkan kerja-kerja yang menggunakan mesin jahit, peralatan elektrik dan alatan tajam. Keselamatan khususnya di dalam bidang kejuruteraan, tertumpu bukan sahaja kepada individu malahan meliputi alatan, mesin, perkakasan, persekitaran dan keselamatan individu lain yang terlibat sama (Jamaludin, 2001)

Pernyataan Masalah

Isu keselamatan semasa proses Pengajaran dan Pembelajaran di bengkel fesyen seringkali dititikberatkan. Seperti di tempat bekerja yang lain, bengkel fesyen juga terdedah dengan sebarang kemalangan dan kecederaan sekiranya amalan keselamatan tidak diamalkan. Dalam melahirkan Pereka Fesyen dan Tukang Jahit yang mempunyai amalan kerja yang selamat dan sihat, pelajar perlu diberikan ilmu yang sewajarnya supaya ia dapat diserap dan menjadi amalan mereka setiap masa terutamanya ketika masuk ke alam pekerjaan nanti. Oleh sebab itu, amalan keselamatan di bengkel fesyen perlu selalu diterapkan bagi melahirkan pekerja yang berdisiplin dan mementingkan keselamatan di tempat bekerja.

Walaupun amalan keselamatan telah dijalankan, namun masih terdapat kejadian yang tidak diingini berlaku. Pelajar baru juga tidak terkecuali menghadapi masalah ini. Oleh yang demikian tinjauan dan tindakan diperlukan bagi mengatasi kelemahan yang ada sekaligus dapat memastikan keselamatan pelajar berada pada tahap yang lebih baik. Aspek yang diambil kira adalah dari segi pengetahuan, sikap, persekitaran, kemahiran pengendalian peralatan dan pelaksanaan amalan keselamatan.

Objektif Kajian

i. Mengenalpasti pengetahuan pelajar terhadap keselamatan di bengkel fesyen.
ii. Mengenalpasti pelaksanaan amalan keselamatan yang dipraktikkan oleh pelajar seperti yang termaktub dalam peraturan di bengkel fesyen.
iii. Mengenalpasti perbezaan pengetahuan pelajar terhadap keselamatan di bengkel fesyen antara kelas.
iv Mengenalpasti perbezaan pelaksanaan amalan keselamatan pelajar semasa berada di bengkel fesyen antara kelas.

Persoalan Kajian

Kajian dibuat bagi mendapatkan jawapan kepada persoalan-persoalan yang diutarakan seperti berikut:

i. Sejauhmanakah pengetahuan dalam kalangan pelajar baru terhadap keselamatan semasa menjalani sesi pembelajaran di bengkel fesyen?
ii. Sejauhmanakah pelaksanaan amalan keselamatan yang dipraktikkan oleh pelajar seperti yang termaktub dalam peraturan di bengkel fesyen dalam kalangan pelajar baru?
iii. Adakah terdapat perbezaan pengetahuan di antara kelas terhadap keselamatan di bengkel fesyen ?
iv. Adakah terdapat perbezaan pelaksanaan di antara kelas terhadap amalan keselamatan di bengkel fesyen ?

Hipotesis Kajian

Berdasarkan persoalan kajian di atas, kajian ini menguji hipotesis berikut :

i Ho Tidak terdapat perbezaan pengetahuan terhadap keselamatan bengkel fesyen di antara kelas.

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13th – 14th December 2020

ii Ho Tidak terdapat perbezaan pelaksanaan terhadap amalan keselamatan di bengkel fesyen di antara kelas.

Kajian Literatur

Adalah penting di dalam sesi Pengajaran dan Pembelajaran (PdP) untuk Program Fesyen dan Pakaian, setiap pelajar perlu maklum mengenai tahap keselamatan bengkel fesyen. Untuk program ini yang banyak menggunakan mesin jahit, peralatan elektrik dan alatan tajam dalam sesi pembelajarannya, keselamatan tidak perlu diabaikan. Keselamatan bengkel perlu dititikberatkan bagi mengelakkan kemungkinan berlakunya kemalangan dan kecederaan kepada setiap penggunaan mesin dan peralatan bengkel (Ezra Loganathan Muniandi, 2008). Oleh itu tahap keselamatan dan kesedaran dalam pelaksanaan amalan keselamatan di bengkel fesyen tidak boleh dipandang remeh bagi mengelakkan kejadian yang tidak diingini berlaku semasa proses Pengajaran dan Pembelajaran (PdP).

Pengetahuan Aspek Keselamatan

Pengetahuan tentang aspek-aspek keselamatan ketika proses pengajaran dan pembelajaran dibengkel fesyen adalah satu perkara yang amat penting. Kekurangan pengetahuan ini boleh menyebabkan pelbagai masalah berlaku terutamanya kemalangan dan kecederaan. Pengetahuan dan kemahiran yang tinggi dalam mengendalikan mesin jahit, peralatan elektrik dan alatan tajam di bengkel fesyen amat penting kerana dengan kurangnya pengetahuan, para pelajar tidak dapat mengaplikasikannya dengan baik. Menurut Langley (1969) pekerja yang kurang latihan terhadap bidang tugasnya lebih cenderung melakukan kesilapan dan lebih terdedah terhadap kemalangan.

Pelajar-pelajar juga perlu menguasai pengetahuan dari aspek peraturan keselamatan seperti peraturan penggunaan bengkel. Mereka juga perlu memahami arahan laluan keselamatan dan memahami tanda keselamatan supaya dapat meminimakan risiko kemalangan dari berlaku. Willie Hammer dan Dennis Price (2001) menyatakan bahawa para pekerja yang mengalami kemalangan serta kematian semasa bekerja adalah kerana kegagalan untuk menguatkuasakan undang-undang.

Pelaksanaan Amalan Keselamatan

Peraturan keselamatan bengkel adalah satu perkara yang wajib diketahui oleh setiap pelajar atau sesiapa sahaja yang bekerja di dalam bengkel. Malah bukan sahaja perlu diketahui, tetapi perlu dilaksanakan dengan betul bagi mengurangkan risiko kemalangan. Peraturan keselamatan seperti perlu berpakaian kemas, memakai kasut bertutup serta tidak bergurau senda ketika menjalani kelas di bengkel fesyen perlu diamalkan dengan baik supaya dapat melindungi pelajar dari kemalangan yang tidak diingini. Menurut Abdul Rahman Saari (1993), salah satu punca kemalangan adalah tidak mengikuti peraturan keselamatan ketika menjalankan suatu tugas.Keadaan ini berlaku adalah disebabkan kurangnya pendedahan terhadap peraturan keselamatan. Sesuai dengan pendapat Willie Hammer (2001) yang menyatakan bahawa setiap peraturan umum adalah perlu dinyatakan dan setiap peraturan adalah perlu dinyatakan dengan jelas dan tidak kabur.

Kesedaran Keselamatan

Kesedaran keselamatan merupakan unsur dalaman setiap manusia yang mempengaruhi tindakan seseorang terhadap aspek keselamatan (Hwang et al., 2000). Menurut Mardziah (2002), kesedaran keselamatan adalah aspek paling penting dalam organisasi untuk memastikan peraturan keselamatan dipatuhi dan mengurangkan kadar kemalangan dalam

eISBN 978-967-2426-22-6
13th – 14th December 2020

kalangan pekerja. Oleh itu, faktor kesedaran perlu wujud di dalam diri para pelajar untuk menerapkan nilai dan amalan keselamatan di dalam diri masing-masing.

Menurut Garza (2009), kesedaran keselamatan merujuk kepada sifat kepekaan dan disiplin semasa menjalankan kerja atau ketika berada di tempat kerja. Sifat-sifat seperti ini perlulah diterapkan dalam kalangan pekerja bagi memastikan aspek keselamatan di tempat kerja dapat dipatuhi. Abba et al., (2004) menyatakan bahawa kesedaran keselamatan merupakan kriteria utama bagi mengelak daripada berlakunya kemalangan dan kecederan dalam kalangan pekerja di tempat kerja.

Kesedaran keselamatan juga boleh dirujuk sebagai keupayaan dalam mengenalpasti tindakan tidak selamat di kawasan bekerja, mempunyai sikap yang betul tentang keselamatan serta mahir dalam menangani situasi kecemasan dengan pantas dan berkesan (Chang dan Liao, 2010).

Oleh, itu kesedaran keselamatan mestilah menjadi salah satu perkara asas yang dititikberatkan oleh pelajar dan pensyarah itu sendiri bagi memelihara aspek keselamatan di bengkel fesyen. Antara langkah-langkah yang boleh diambil oleh pensyarah atau pihak pengurusan kolej dalam meningkatkan kesedaran pelajar untuk sentiasa menjaga keselamatan adalah dengan cara menyediakan garis panduan, pendidikan dan latihan kepada para pelajar. Ia sejajar dengan apa yang dinyatakan oleh Lai, Liu, & Ling, (2011) iaitu, latihan keselamatan adalah merupakan salah satu medium yang sangat berkesan untuk mengurangkan kes kemalangan kerana membantu para pekerja mengenalpasti bahaya yang mungkin akan berlaku semasa berada di tempat kerja. Ia juga telah dibuktikan oleh Wan Rosmini (2000) di dalam kajiannya yang mendapati latihan keselamatan dan kesihatan adalah mempengaruhi tahap kesedaran pekerja semasa di tempat kerja.

Semua pihak perlu memainkan peranan penting dalam memupuk kesedaran mengutamakan keselamatan ini. Kesedaran mengutamakan keselamatan bukan hanya pada diri sendiri sahaja tetapi juga terhadap rakan-rakan yang bekerja bersama, terhadap persekitaran dan keselamatan harta benda (Abd. Mukti, M.A. 1990). Kesedaran mengutamakan keselamatan hanya akan timbul sekiranya pelajar itu sendiri mengambil berat untuk mengetahui dan memahami akan kegunaan alatan kelengkapan yang ada di dalam bengkel (Jaafar, M.I. 2001). Kesedaran terhadap amalan keseamatan ini dapat memberikan kepercayaan kepada pelajar bahawa sesuatu kemalangan akan berlaku jika peraturan keselamatan yang ada dalam bengkel tidak diamalkan

Keselamatan Bengkel

Keselamatan bengkel adalah salah satu aspek yang perlu menjadi fokus utama di dalam melakukan kerja-kerja amali ketika berada di dalam bengkel. Ianya hendaklah di titikberatkan bukan sahaja ketika melakukan kerja-kerja amali malahan pada bila-bila masa sahaja ketika pelajar berada didalam bengkel. Keselamatan boleh dianggap sebagai suatu kebiasaan atau sebagai satu bentuk sikap yang positif. Ianya tidak akan lahir dengan sendiri kecuali manusia itu sendiri yang membentuknya sama ada hendak menganggapnya sebagai keutamaan ataupun tidak. Menurut Mohd Anuar Bin Abdul Rahman & Mohamad Zulhilmi Bin Abdul Wahab (2010), peraturan keselamatan di bengkel atau tempat kerja perlu diamalkan dari semasa ke semasa. Seseorang harus mempunyai sikap bertanggungjawab dan kesedaran yang tinggi untuk mengelakkan kemalangan dan kecelakaan.

Metodologi Kajian

Kajian yang dijalankan adalah kajian kuantitatif berbentuk deskriptif dengan menggunakan reka bentuk kajian secara tinjauan dengan menggunakan borang soal selidik. Soal selidik telah

eISBN 978-967-2426-22-6
13th – 14th December 2020

diedarkan secara dalam talian menggunakan *Google Form*. Populasi dalam kajian tinjauan ini adalah terdiri daripada 33 orang pelajar baru semester 1, Program Sijil Fesyen dan Pakaian dari Kolej Komuniti Gerik, Perak. Sampel merupakan keseluruhan populasi. Soal Selidik ini mengandungi 3 bahagian iaitu Bahagian A mengandungi maklumat demografi respondan, bahagian B mengandungi item-item Pengetahuan Pelajar Tentang Keselamatan Bengkel Fesyen dan bahagian C adalah item Pelaksanaan Amalan Keselamatan Pelajar di Bengkel Fesyen.

Dapatan Kajian dan Perbincangan

Analisis yang dijalankan berbentuk skor min dan *t-test*.

Jadual 1 : Analisis Maklumat Responden

Perkara	Bilangan	Peratus (%)
1. JANTINA		
Lelaki	2	6.1
Perempuan	31	93.9
Jumlah	**33**	**100**
2. KELAS		
SFP 1A	17	51.5
SFP 1B	16	48.5
Jumlah	**33**	**100**

Data-data ditafsirkan dengan merujuk kepada Jadual 2 yang telah diadaptasi daripada Wiersman (1995) dalam Fauzan (2002).

Jadual 2 : Jadual Tahap Kecenderungan

Min Skor	Tahap Kecenderungan
1.00 – 2.49	Rendah
2.50 – 3.49	Sederhana
3.50 – 5.00	Tinggi

Oleh yang demikian, semua skor min daripada hasil dapatan kajian dalam analisis ini adalah berdasarkan kepada Jadual 2**.** Kaedah analisis skor min adalah digunakan untuk menjawab semua persoalan kajian.

Objektif 1 ialah untuk mengenalpasti pengetahuan pelajar terhadap keselamatan di bengkel fesyen. Berdasarkan skor min dalam Jadual 3 menunjukkan semua item mendapat skor min yang tinggi menandakan bahawa setiap pelajar mempunyai pengetahuan yang baik terhadap keselamatan di bengkel fesyen.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 3: Skor Min Bagi Pengetahuan Pelajar Terhadap Keselamatan Bengkel Fesyen

	PENGETAHUAN PELAJAR TERHADAP KESELAMATAN BENGKEL FESYEN	MIN PURATA
1.	Saya mengetahui peraturan penggunaan bengkel fesyen.	4.52
2.	Saya memahami arahan laluan keselamatan ketika berlaku kecemasan.	4.30
3.	Saya memahami tanda keselamatan yang terdapat di dalam bengkel fesyen.	4.36
4.	Penjagaan keselamatan di bengkel fesyen amat penting bagi mengelakkan kemalangan di bengkel.	4.82
5.	Penggunaan alatan tajam yang tidak cekap akan mengakibatkan kemalangan.	4.67
6.	Saya mengetahui cara penggunaan mesin jahit dengan baik.	4.36
7.	Saya mengetahui cara mengendalikan alat pemadam api.	4.24
8.	Saya mengetahui fungsi setiap bahan di dalam peti pertolongan cemas.	3.88

Pengkaji melihat walaupun tinjauan ini dibuat terhadap pelajar semester 1 yang merupakan pelajar baru, namun pengetahuan terhadap keselamatan bengkel amat baik. Item keempat bagi soalan pengetahuan pelajar terhadap keselamatan bengkel fesyen iaitu persoalan mengenai penjagaan keselamatan di bengkel fesyen amat penting bagi mengelakkan kemalangan di bengkel.menjadi nilai skor min yang tertinggi iaitu 4.82. Nilai ini membuktikan bahawa pelajar tahu betapa pentingnya penjagaan keselamatan bagi mengelakkan kemalangan dari berlaku. Ini menandakan adanya pendedahan awal yang diterima oleh pelajar samada daripada pembacaan ataupun daripada pengalaman di sekolah. Menurut Fong (2000), langkah yang baik untuk mengurangkan kemalangan industri ialah pendedahan awal terhadap penuntut-penuntut di bangku sekolah mengenai isu-isu keselamatan dan kesihatan pekerjaan. Manakala item kelapan iaitu persoalan mengenai pengetahun berkaitan fungsi setiap bahan di dalam peti pertolongan cemas mendapat nilai skor min yang rendah daripada nilai yang lain iaitu 3.88. Bagi pengkaji pengetahuan terhadap setiap fungsi bahan di dalam peti pertolongan cemas amat penting untuk tindakan awal sekiranya berlaku kemalangan dan kecemasan.

Jadual 4: Skor Min Bagi Pelaksanaan Amalan Keselamatan Pelajar Semasa Di Bengkel Fesyen

	PELAKSANAAN AMALAN KESELAMATAN PELAJAR SEMASA DI BENGKEL FESYEN	MIN PURATA
1.	Saya sentiasa mematuhi peraturan penggunaan bengkel fesyen.	4.67
2.	Saya menitikberatkan soal keselamatan ketika berada di kawasan bengkel fesyen.	4.70
3.	Saya diberi taklimat mengenai keselamatan bengkel fesyen.	4.55
4.	Saya memakai kasut bertutup semasa di bengkel fesyen.	4.61
5.	Saya bermain dan bergurau senda ketika sesi pembelajaran di bengkel fesyen.	4.48
6.	Saya berpakaian kemas dan bersesuaian ketika memasuki bengkel fesyen.	4.63
7.	Saya mengendalikan mesin jahit dan alatan elektrik secara berhemah.	4.67
8.	Saya menyimpan peralatan tajam di tempat yang selamat.	4.73
9.	Saya mengemaskan dan memastikan bengkel fesyen bersih dan tersusun setelah tamat kelas.	4.73
10.	Saya sentiasa memastikan suis-suis peralatan elaktrik ditutup sebelum meninggalkan bengkel fesyen.	4.73

Seterusnya, objektif 2 adalah untuk mengenalpasti pelaksanaan amalan keselamatan yang dipraktikkan oleh pelajar seperti yang termaktub dalam peraturan di bengkel fesyen. Berdasarkan skor min dalam Jadual 4 menunjukkan 3 item iaitu soalan item ketujuh, kelapan dan kesembilan mendapat skor min yang tinggi iaitu 4.73. Ini juga menandakan bahawa setiap

eISBN 978-967-2426-22-6
13th – 14th December 2020

pelajar berdisiplin dan mempraktikan amalan keselamatan semasa berada di bengkel fesyen. Walaupun keseluruhan item didapati mendapat nilai skor yang tinggi tetapi item kelima iaitu persoalan pelajar bermain dan bergurau ketika sesi pembelajaran di bengkel fesyen mendapat nilai terendah. Ini mungkin disebabkan faktor jiwa remaja para pelajar yang cenderung bergurau dan bermain, ini disokong oleh (Mahmood Nazar Mohamed, 1990) yang menyatakan bahawa zaman remaja ialah satu masa peralihan sementara daripada zaman kanak-kanak kepada zaman dewasa Walau bagaimanapun, bukanlah sedikit masa dan usaha diperlukan untuk mewujudkan pelajar yang prihatin terhadap keselamatan. Oleh itu, "kalau hendak melentur buluh, biar dari rebungnya", iaitu bermula semasa dia berada di sekolah (Merle,1975)

Jadual 5: Data analisis T-Test Bagi Pengetahuan Pelajar Terhadap Keselamatan Bengkel Fesyen

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Min_ Pengetahuan	Equal variances assumed	1.333	.257	1.105	31	.278	.14292	.12932	-.12082	.40667
	Equal variances not assumed			1.112	30.462	.275	.14292	.12853	-.11941	.40525

Jadual 6 : Data analisis T-Test Bagi Pelaksanaan Amalan Keselamatan Pelajar Semasa Di Bengkel Fesyen

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Min_ Pelaksanaan	Equal variances assumed	2.879	.100	1.199	31	.240	.16691	.13922	-.11704	.45086
	Equal variances not assumed			1.193	29.629	.242	.16691	.13989	-.11894	.45276

Objektif 3 adalah untuk mengenalpasti perbezaan pengetahuan pelajar terhadap keselamatan di bengkel fesyen. Berdasarkan Jadual 5 didapati tidak terdapat perbezaan terhadap pengetahuan keselamatan di kalangan pelajar antara kelas tersebut. Begitu juga dengan objektif 4 iaitu perbezaan pelaksanaan amalan keselamatan di antara 2 kelas semester 1 ini, tidak menunjukkan sebarang perbezaan. Ia boleh dilihat berdasarkan Jadual 6. Melalui uji kaji t-test untuk kedua-dua data ini didapati nilai t-test adalah melebihi 0.05 maka dapat

eISBN 978-967-2426-22-6
13th – 14th December 2020

disimpulkan Ho diterima. Ini selari dengan kajian Mohd Anuar dan Irulnizam (2011) yang menunjukkan tidak terdapat perbezaan yang signifikan antara pengetahuan keselamatan bengkel berdasarkan semester. Selain itu, pengkaji mendapati pengetahuan keselamatan dan pelaksaan amalan keselamatan telah sebati dalam diri para pelajar , kerana amalan keselamatan tetap perlu dilaksanakan dan diamalkan walau di mana kita berada. Justeru pihak pengurusan kolej perlu mengekalkan amalan baik ini dengan pemberian latihan yang lebih efektif supaya pengetahuan dan pelaksaan amalan keselamatan ini dapat dipertingkatkan.

Kesimpulan

Secara keseluruhannya, analisis yang telah dibuat terhadap borang soal selidik merangkumi aspek pengetahuan dan pelaksanaan amalan keselamatan di bengkel fesyen termasuk sikap, persekitaran, kemahiran dan pengendalian peralatan. Dapatlah disimpulkan bahawa tahap kesedaran pelajar terhadap keselamatan di bengkel fesyen berada di tahap baik. Ianya dapat dilihat melalui pengetahuan pelajar dan pelaksanaan pelajar terhadap amalan keselamatan di bengkel fesyen adalah seimbang dan ia menjadi sesuatu yang positif bagi mengelakkan kemalangan semasa berlangsungnya sesi Pengajaran dan Pembelajaran (PdP) . Walaupun populasi pelajar ini adalah di kalangan pelajar semester 1 yang merupakan pelajar baru di Kolej Komuniti Gerik, tetapi tahap pengetahuan dan pelaksanaan amalan keselamatan di bengkel amat membanggakan. Ini bermakna nilai-nilai murni dan disiplin diri dalam menjaga keselamatan telah diterapkan daripada keluarga dan di alam persekolahan.

Saranan

Walaupun tahap kesedaran dan pelaksanaan amalan keselamatan di bengkel fesyen adalah tinggi tetapi kemungkinan faktor kecuaian akan menjadi punca berlakunya kemalangan di bengkel. Ini disokong oleh tulisan Charles (1998) yang berpendapat, kemalangan ini boleh berlaku dalam dua keadaan. Dalam keadaan pertama ia terjadi kerana tidak disengajakan setelah semua langkah keselamatan diambil. Dalam keadaan kedua, kemalangan berlaku hasil daripada kelemahan prosedur pencegahan keselamatan. Oleh itu, Pihak Pengurusan Kolej Komuniti Gerik perlu menjalankan beberapa inisiatif bagi memantapkan tahap kesedaran pelajar terhadap keselamatan di bengkel fesyen. Antara yang boleh dijalankan adalah :

1. Kursus pendedahan kepada pelajar terhadap nama dan fungsi setiap alat dan bahan di dalam peti pertolongan cemas yang terdapat di bengkel bagi persediaan awal sekiranya berlaku kemalangan atau kecemasan di bengkel fesyen.
2. Memperbanyakkan program keselamatan bagi memantapkan lagi pengetahuan pelajar terhadap sebarang kemalangan dan kecemasan yang boleh berlaku di bengkel fesyen dan cara mengatasinya.
3. Menerapkan nilai-nilai murni seperti mengadakan bengkel-bengkel kesedaran keselamatan supaya pelajar sentiasa terdedah dengan amalan keselamatan. Dengan ini dapat mngelakkan para pelajar daripada kecuaian terhadap keselamatan.

Dengan kajian ini juga diharap dapat membantu Ahli Jawatankuasa Pengurusan Risiko Kolej dalam menilai risiko yang mensasarkan isu kemalangan di bengkel fesyen dapat diselesaikan.

Semoga dengan ini dapat mengekalkan dan meningkatkan kesedaran pelajar terhadap amalan keselamatan di bengkel fesyen dengan lebih berkesan.

eISBN 978-967-2426-22-6
13th – 14th December 2020

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13th – 14th December 2020

PEMBANGUNAN APLIKASI PENILAIAN PROJEK AKHIR PELAJAR MENGGUNAKAN 'GOOGLE SHEET' DAN 'GLIDE APPS'

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Abstrak: *Pandemik novel coronavirus (COVID 19) kini merupakan darurat kesihatan global yang mengubah situasi semasa di seluruh dunia dengan semakin teruk. Di Malaysia, virus tersebut telah menular sehingga memberi impak kepada sistem pendidikan di Malaysia. Permasalahan dalam menilai projek akhir pelajar oleh panel-panel industri turut berlaku bermula penyebaran wabak Covid-19 hingga kini. Ini menyukarkan lagi usaha mengekalkan kualiti hasil projek akhir pelajar tanpa perbincangan dan komen daripada pihak yang terlibat. Oleh itu, satu aplikasi bagi memudahkan kaedah penilaian projek akhir pelajar bersama penyelia dan panel industri dibangunkan bagi memantapkan lagi proses pengajaran dan pembelajaran atas talian selaras dengan usaha untuk memperkasakan penggunaan teknologi dalam sistem pendidikan kearah revolusi industri 4.0. Objektif kajian adalah untuk merekabentuk kerangka idea aplikasi penilaian projek akhir pelajar berdasarkan silibus dan kurikulum dan seterusnya membangunkan aplikasi penilaian projek akhir menggunakan 'google sheet' dan 'glide apps'. Kerangka idea direkabentuk berdasarkan kerangka teori pedagogi pembelajaran mudah alih, Model Mabry's dan 'mobility hierarchy'. Kerangka yang dihasilkan menggabungkan pelbagai kaedah pedagogi kedalam elemen Model Mabry's iaitu psikrometrik terdiri daripada 'Course Learning Outcome'(CLO), konstektual iaitu kemahiran merekod buku log, kolaboratif, komunikasi, penulisan laporan, menjawab soalan, pengurusan projek, mencari maklumat, kerja berpasukan serta pembelajaran individual dan sosialiti. Manakala, pembangunan aplikasi adalah melibatkan penggunaan borang 'google sheet' dan komponen aktiviti dalam 'glideapps'. Baki data penggunaan percuma aplikasi iaitu antara 44.4% hingga 98.9% menunjukkan had penggunaan data percuma yang dibenarkan oleh perisian tersebut masih tinggi selepas satu kitaran lengkap proses pengajaran dan pembelajaran dijalankan dalam tempoh satu semester. Justeru itu, penggunaan 'google sheet' dan 'glide apps'dalam membangunkan aplikasi penilaian projek akhir pelajar ini adalah mudah digunakan dan fleksibel dalam menghasilkan aktiviti pengajaran dan pembelajaran serta bersesuaian dengan pembelajaran jarak jauh berdasarkan keperluan kurikulum.*

Kata Kunci: *Aplikasi, google sheet, glide apps, pembelajaran jarak jauh, projek akhir*

Pengenalan

Kini semua negara dilanda dengan pandemik novel coronavirus (COVID 19) di mana ia memberi impak yang serius dalam semua sektor. Pendidikan tinggi adalah sektor yang menerima kesan yang signifikan daripada pandemik COVID-19 (Izani, 2020). Kesan dalam sektor pendidikan ini bukan sahaja berlaku di Malaysia malah di seluruh pelusuk dunia. Tindakan pertama sektor pendidikan dengan penutupan dan menghentikan operasinya dalam tempoh yang lama akibat wabak COVID-19 ini menyebabkan beribu-ribu sekolah dan institusi pengajian tinggi serta berjuta-juta pelajar terjejas (Crawford et al., 2020).

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13th – 14th December 2020

Empat aspek utama iaitu governan dan sistem pengurusan institusi pengajian tinggi, pengajaran dan pembelajaran, penyelidikan dan inovasi serta pengantarabangsaan dan perancangan strategik sedang mengalami proses pembetulan seiring dengan impak COVID-19 (Izani, 2020). Selain itu, kursus dan mesyuarat turut dipindahkan kaedah pelaksanaannya iaitu secara dalam talian (Weissgerber et al., 2020). Manakala, hasil kajian lain menyatakan terdapat universiti atau institusi pengajian tinggi menghentikan operasi pengajian secara bersemuka dan beralih kepada pengajian secara digital (Crawford et al., 2020). Di samping itu, sektor pengajian tinggi juga perlu bersatu merealisasikan peralihan ini di mana pelajar disokong secara digital tanpa merendahkan kualiti dan standard kurikulum.

Revolusi industri 4.0 yang merangkumi perubahan teknologi baru menggunakan automasi, 'big data', 'internet of things' (IOT), integrasi sistem dan lain-lain. Ia juga hangat diperkatakan di setiap sektor dan tidak ketinggalan juga dalam sektor pendidikan yang memerlukan pelajar keluar dari zon keselesaan. Manakala, kemudahan capaian maklumat seperti penggunaan telefon pintar perlu dimanfaatkan sepenuhnya bagi memastikan bahawa sekiranya mereka tidak dapat hadir ke institusi, aktiviti pengajaran dan pembelajaran perlu hadir kepada mereka dalam mod yang pelbagai, tertumpu dan terbeza (Haryati, 2020). Penilaian dengan menggunakan teknologi baru perlu diterokai dan diperkasakan berdasarkan keperluan kurikulum terutamanya dalam aktiviti seminar penyelidikan di mana ia juga tidak terlepas daripada menerima impak pendemik Covid-19. Aplikasi dari pembelajaran mudah alih digunakan meluas, dari K – 12 hingga pengajian tinggi dan pembelajaran korporat (Park, 2011). Pembelajaran mudah alih merujuk kepada penggunaan peranti mudah alih tanpa wayar untuk tujuan pembelajaran dalam kedudukan yang pelbagai. Contoh khas peranti yang digunakan untuk pembelajaran mudah alih termasuk telefon bimbit, telefon pintar, 'PC tablet', komputer riba dan pemain media peribadi juga boleh masuk dalam skop ini (Park, 2011).

Permasalahan dalam menilai projek akhir pelajar pada jarak jauh menarik minat pengkaji membina satu aplikasi bagi memudahkan kaedah penilaian projek akhir pelajar bersama penyelia dan panel industri selaras dengan penggunaan teknologi terkini dalam sistem pendidikan. Oleh itu, objektif bagi kajian ini adalah seperti berikut:

a) merekabentuk kerangka idea aplikasi penilaian projek akhir berdasarkan silibus dan kurikulum
b) membangunkan aplikasi penilaian projek akhir menggunakan *google sheet* dan *glide apps*.

Kajian Literatur

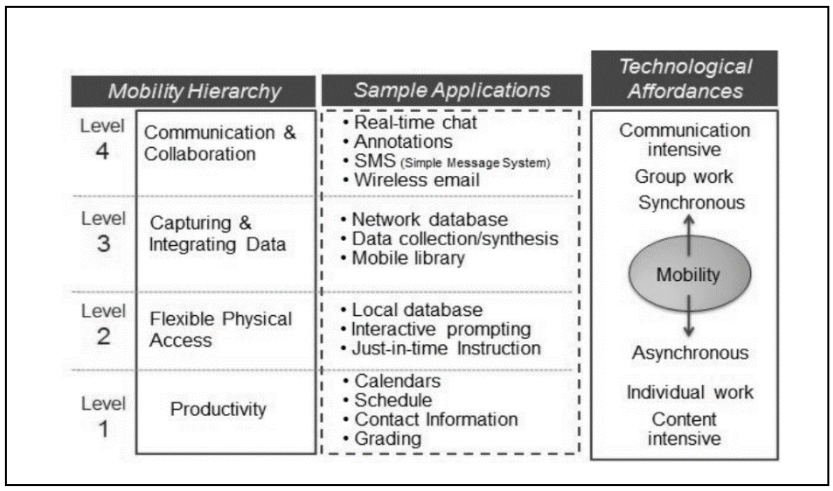
Dalam **k**ajian literatur, penelitian terhadap kaedah dan penggunaan teknologi serta teori pedagogi pembelajaran jarak jauh bagi merangka kerangka teori dalam kajian ini.

Atribut Teknologi dan Kesesuaian Pembelajaran Mudah Alih

Atribut teknologi yang bersesuaian perlu diterokai dan berkesinambungan dengan teknologi semasa supaya keberkesanan terhadap pedagogi serta standard kurikulum tercapai. Pemudah alih merujuk kepada pembelajaran di mana-mana dalam keadaan formal atau tidak formal dengan mengurangkan kebergantungan pada lokasi tetap untuk bekerja dan belajar di mana seterusnya mengubah cara bekerja dan belajar (Cluskyey, 2015). *Mobility hierarcy* mengembangkan empat tahap objektif yang mendorong penggunaan komputer mudah alih dalam persekitaran pendidikan (Gay et al., 2013). Hierarki ini menunjukkan atribut peranti mudah alih yang berbeza seperti ditunjukkan dalam Rajah 1. Tahapnya adalah merangkumi produktiviti (tahap 1) adalah intensif kandungan, manakala kolaborasi dan komunikasi (tahap 4) adalah intensif komunikasi. Tahap 1 bertujuan untuk pembelajaran individu dan tahap 4

eISBN 978-967-2426-22-6
13th – 14th December 2020

adalah pembelajaran kolaboratif oleh pelbagai pengguna. Tahap 2 dan 3 adalah termasuk dalam aplikasi jarak pertengahan seperti petunjuk berbantukan komputer, aktiviti pangkalan data, perpustakaan bergerak dan penghantaran elektronik.



Rajah 1: 'Hierarchy Mobility', Sampel Penggunaan dan Kemampuan Teknologi
Source: (Park, 2011)

Aplikasi individu dan teknologi mudah alih rangkaian komunikasi segerak dan tak segerak, dan komunikasi berasaskan teks dipengaruhi bukan hanya oleh satu media komunikasi tunggal tetapi juga oleh pelbagai konteks pembelajaran (Park, 2011). Kepelbagaian konteks pembelajaran ini dapat dicapai dengan menstrukturkan sesuatu program atau program pembelajaran yang dilaksanakan dengan merangkumi kepelbagaian kaedah. Kebijaksanaan pengurus program adalah bergantung kepada proses berstruktur dalam mengumpulkan, mengkodifikasi dan menguruskan pengetahuan (Cluskyey, 2015). Dalam kajian ini pelbagai konteks digunakan iaitu komunikasi dan kolaborasi, kawalan dan integrasi data, fleksibel capaian fizikal serta produktiviti. Manakala kaedah penggunaan merangkumi perbincangan secara nyata, pangkalan data rantaian, penjadualan dan lain-lain bagi mencapai kehendak kurikulum. Di samping itu juga, teknologi mudah alih berpotensi mengurangkan penggunaan kertas.

Merangka satu persekitaran pembelajaran yang baru dalam satu program adalah perlu selaras dengan keperluan bidang dan kurikulum. Di samping itu, keperluan merancang persekitaran pembelajaran konstruktiviti dan persekitaran pembelajaran berpusatkan pelajar adalah juga memberi impak yang lebih berkesan dalam pembelajaran menggunakan teknologi. Rajah 2 menunjukkan empat jenis teknologi pembelajaran mudah alih yang dihasilkan dalam konteks pendidikan jarak jauh merangkumi (1) tinggi jarak transaksional m-pembelajaran sosialisasi, (2) tinggi jarak transaksional m-pembelajaran individu, (3) rendah jarak m-pembelajaran sosialisasi, dan (4) rendah jarak transaksional m-pembelajaran individu (Park, 2011). Dalam kajian ini, jenis kedua digunakan bersesuaian dengan kurikulum projek akhir pelajar yang mana pelajar perlu diterapkan dengan lebih psikologi dan mempunyai ruang untuk komunikasi dengan penyelia dan panel. Di samping itu juga, pelajar akan menerima arahan yang padat dan dibenarkan menguruskan kandungan dan rujukan untuk dipantau oleh penyelia atau panel melalui alatan mudah alih. Jenis ini menunjukkan peluasan e-pembelajaran yang membolehkan fleksibiliti dan mudah alih yang lebih besar (Park, 2011). Pelajar secara individu menyesuaikan pembelajaran fleksibel ini dengan gaya hidup mudah alih mereka. Malah,

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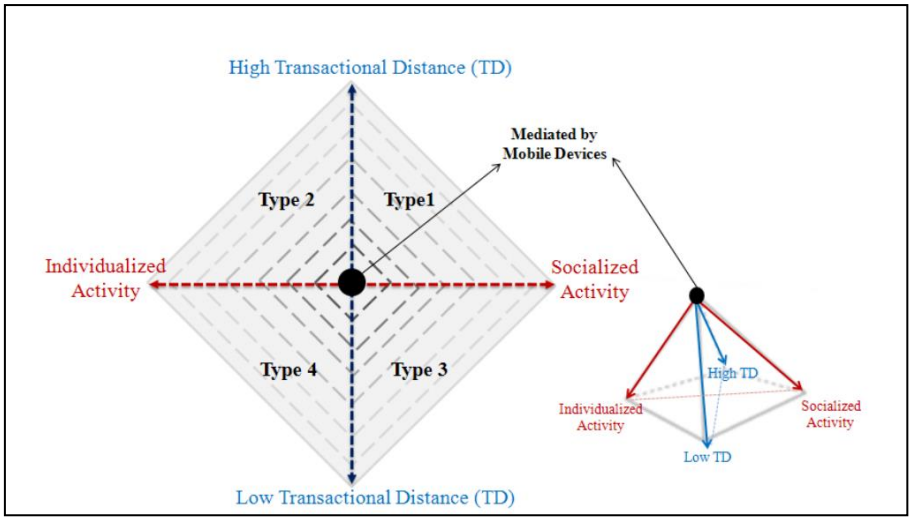
13th – 14th December 2020

penggunaannya juga banyak dipengaruhi oleh konteks mengenai waktu, tempat belajar dan capaian ke sistem bagi pelajar di luar bandar.



Rajah 2: 4 Jenis Pembelajaran Mudah Alih dan Kerangka Pedagogi

Source: (Y.Park,2011)

Penilaian Menggunakan Teknologi Terkini

Penilaian menggunakan teknologi digital memerlukan beberapa proses sebelum melaksanakannya. Satu kajian yang dipetik daripada (Perevalova et al., 2020) telah melaksanakan penilaian projek pelajar secara e-viva yang merangkumi refleksi dan dialog. Dalam kajian ini, model paradigma penilaian (Model Marby's) digunakan bagi menghasilkan perisian dan proses penilaian e-viva di mana ia menjadikan pelajar adalah pusat sistem berbanding pengajar serta penekanan adalah pada penilaian formatif bukan sumatif. Oleh itu, paradigma ipsatif adalah mempengaruhi rekabentuk dan menunjukkan e-viva ini adalah singkatan penilaian ipsatif maya elektronik. Penilaian ipsatif maya elektronik e-viva menggunakan perisian VXML dan SMS yang mana mempunyai masalah semasa proses penghantaran bahan penilaian kerana dirancang untuk menyokong proses pembelajaran dan pengajaran dengan modul interaktif kecil. Kandungan modul dalam pembelajaran ini bercirikan digunakan secara langsung dalam bahan pembelajaran dan juga untuk belajar sendiri.

Data penilaian digital lebih mudah untuk disusun, disintesis dan dianalisis di mana ia dapat dipantau penilaian berdasarkan gambaran yang lengkap berkenaan kompetensi dan refleksi pelatih atau tinjauan oleh pelatih dan pengajar yang dapat menyokong maklumbalas dan bimbingan (Thoma et al., 2019). Ia disokong oleh pengkaji lain di mana penilaian digital ini dapat meningkatkan keupayaan untuk menghubungkan data pelatih dengan hasil pembelajaran, melakukan penilaian program serta memudahkan perkembangan sesuatu fakulti (Arora, 2018). Dalam konteks ini, pelatih adalah pelajar dan pengajar adalah penyelia dan penilai atau panel.

Menurut (Islam & Mazumder, 2010), aplikasi mudah alih atau 'mobile app' merupakan sebuah program yang dimuatkan ke dalam alat mudah alih dan boleh digunakan pada bila-bila masa dan di mana-mana sahaja. Terdapat pelbagai jenis aplikasi di pasaran yang boleh dimuat turun secara percuma dan penggunaannya berkesan serta mudah untuk digunapakai. Antara aplikasi mudah dimuat turun secara percuma adalah *glide apps* yang mana pengguna hanya mendaftar dengan menggunakan email. *Glide apps* adalah aplikasi yang mudah dihasilkan

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13th – 14th December 2020

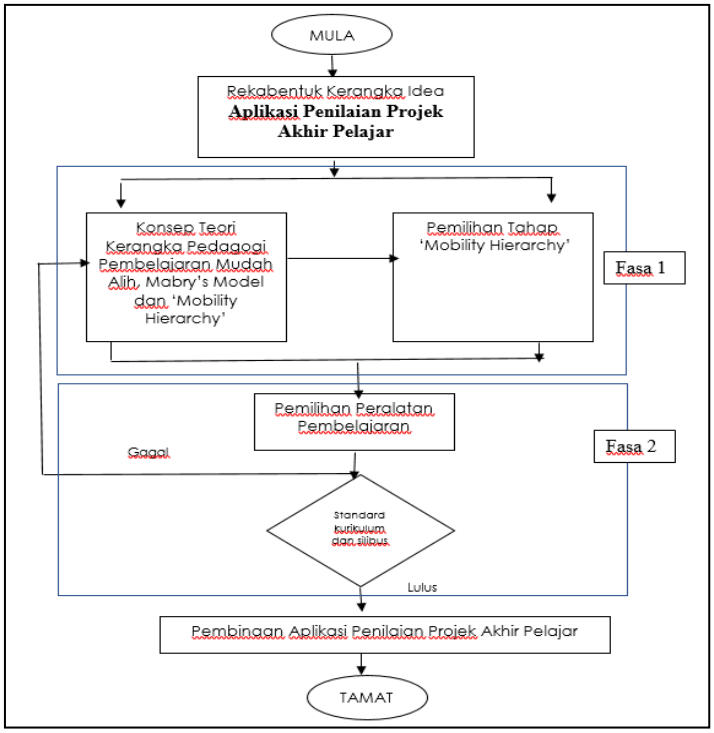
dengan menggunakan *google sheet*. Pelbagai komponen yang terdapat dalam aplikasi ini iaitu paparan data, muat turun dokumen, menghubungkan capaian ke laman web lain, paparan video, komen, sesi dialog dan pelbagai lagi. Komponen-komponen ini boleh direkabentuk dengan mudah bersesuaian dengan keperluan kurikulum di mana templat dibangunkan tanpa menggunakan sistem pengkodan. Aplikasi *google sheet* adalah merupakan salah satu produk yang disediakan kepada pemilik akaun *google* yang ingin menghasilkan dokumen atas talian secara percuma yang ditawarkan menerusi perkhidmatan *Google Drive* (Fariz & Abdul, 2020). Dalam pembinaan aplikasi penilaian projek akhir pelajar ini menggunakan kedua-dua aplikasi ini.

Metodologi

Rajah 3 dan Rajah 4 adalah merupakan dua kerangka metadologi kajian merangkumi tiga fasa di mana fasa pertama dan fasa kedua adalah fasa merekabentuk kerangka idea aplikasi. Manakala fasa ketiga adalah fasa pembangunan aplikasi penilaian projek akhir pelajar.

Rekabentuk Kerangka Idea Aplikasi Penilaian Projek Akhir Pelajar

Kerangka idea aplikasi penilaian projek akhir pelajar adalah berdasarkan gabungan *Mabry's Model* iaitu model penilaian paradigma dan juga kerangka pedagogi pembelajaran mudah alih jenis kedua. Kaedah penghasilan kerangka adalah seperti ditunjukkan dalam Rajah 3.



Rajah 3: Proses Merekabentuk Kerangka Idea Aplikasi Penilaian Projek Akhir Pelajar

Kerangka pedagogi adalah memaparkan jenis pembelajaran mudah alih manakala Mabry's Model menyatakan tiga paradigma penting dalam penilaian. Jenis pembelajaran mudah alih yang dipilih berdasarkan aktiviti yang perlu dilaksanakan dalam proses pengajaran dan pembelajaran projek akhir mengikut silibus dan kehendak kurikulum. Silibus yang dipilih dalam penghasilan aplikasi ini adalah silibus DCB6194 iaitu *Project 2* bagi program pengajian Diploma Kejuruteraan Perkhidmatan Bangunan (DPB) Politeknik Sultan Azlan Shah.

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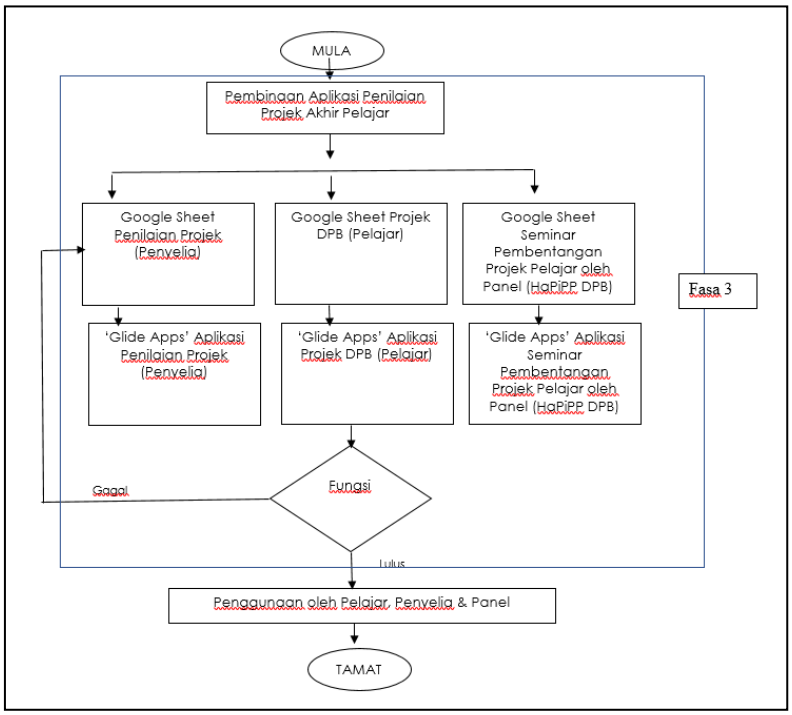
13th – 14th December 2020

Berdasarkan silibus projek akhir pelajar politeknik, pembentangan projek akhir adalah dilaksanakan setelah projek pelajar selesai dan dibentangkan serta dinilai kualiti hasil projek oleh panel penilai industri. Silibus merangkumi pembelajaran secara bersemuka dan atas talian antara pelajar dan penyelia yang bertindak sebagai pembimbing pelajar. Penilaian bagi kursus ini adalah merangkumi buku log, laporan dan pembentangan projek. Di samping itu, ia juga perlu menerapkan kemahiran kerja berpasukan, komunikasi, perancangan kerja, membuat keputusan dan kreativiti untuk mencapai keputusan akhir selaras keperluan industri dalam bidang pengajian. Kolaborasi bersama panel dari industri atau organisasi luar juga diterapkan dalam kerangka idea yang dihasilkan.

Tahap *mobility hierarchy* dimasukkan dalam kerangka berdasarkan kaedah pengajaran yang diperlukan dan selaras dengan matlamat memperkasakan teknologi di kalangan pelajar dan penyelia atau penal. Kesesuaian kerangka idea yang dibentuk dengan silibus dan kurikulum membolehkan pemilihan peralatan dan komponen aktiviti dalam aplikasi mengikut keperluannya.

Pembangunan Aplikasi Penilaian Projek Akhir Pelajar

Aplikasi penilaian projek akhir pelajar dibangunkan menggunakan *google sheet* dan seterusnya dimasukkan dalam *glide apps* bagi memudahkan penggunaan pembelajaran mudah alih dengan alatan telefon pintar. Pembinaan *google sheet* adalah sebagai pangkalan data di bawah pengendalian penyelaras projek atau jawatankuasa program seminar. Manakala aplikasi yang dibina menggunakan *glide apps* juga boleh dikendalikan secara terus oleh penyelia, pelajar atau panel. Justeru itu, formula *importrange* dalam *google sheet* digunakan bagi menghubungkan 3 aplikasi iaitu untuk paparan penyelia, pelajar dan panel. Tiga aplikasi dengan paparan berbeza dibina bagi menjamin keselamatan data penilaian. Ia melibatkan pelbagai komponen yang ada dalam *glide apps* (Jack, 2020). Proses pembinaan aplikasi penilaian projek akhir pelajar ditunjukkan dalam Rajah 4.



Rajah 4: Proses Pembinaan Aplikasi Penilaian Projek Akhir Pelajar DPB

eISBN 978-967-2426-22-6
13th – 14th December 2020

Keputusan

Hasil kajian menunjukkan kerangka idea aplikasi penilaian projek akhir pelajar yang direkabentuk dan membincangkan kefungsian aplikasi yang dibangunkan.

Rekabentuk Kerangka Idea Aplikasi Penilaian Projek Akhir Pelajar

Kerangka idea aplikasi seminar pembentangan projek akhir dibentuk daripada kajian literatur dan kerangka teori melalui kerangka pedagogi pembelajaran mudah alih dan Mabry's Model kepada hierarki pembelajaran mudah alih yang merangkumi perancangan, penjadualan dan pengawalan yang mengandungi pembentukan kerja atau tugas yang berasingan oleh berbagai pelajar, penyelia dan lain-lain. Hasil projek akhir ini adalah 100 peratus daripada usaha pembelajaran pelajar secara individu. Namun, proses penghasilan projek akhir ini memerlukan aktiviti perbincangan dan maklumbalas bersama penyelia dan panel. Jadual 1 menunjukkan kerangka pedagogi bagi penilaian projek akhir pelajar bagi silibus DCB6194-Project 2. Jadual 1 menunjukkan kerangka pedagogi bagi aplikasi penilaian projek akhir pelajar menggunakan elemen seperti psikrometrik, kontekstual, individu dan ipsatif. Kemahiran-kemahiran yang disenaraikan diterapkan menggunakan teknologi yang dicipta bagi memudahkan pencapaian keberkesanan pembelajaran jarak jauh antara pelajar, penyelia dan panel dan juga CLO silibus yang ingin dicapai (Rajah 5).

Jadual 1: Kerangka Pedagogi Penilaian Projek Pelajar Diploma Kejuruteraan Perkhidmatan Bangunan DCB6194-*Project 2*

Psikrometrik	Kontekstual	Individu atau Ipsatif	
Course Learning Outcome (CLO)		Individu	Sosialiti
(CLO1) *Complete the implementation of a building services project based on relevant standards and regulations successfully.*	Buku Log Kemahiran kolaboratif	Pelajar merekod kemajuan kerja projek Pelajar berbincang untuk menyelesaikan masalah dengan penyelia	Bimbingan daripada penyelia Penilaian oleh Penyelia Taklimat oleh penyelaras projek
(CLO2) *Demonstrate good oral and written communication skills in a report on an assigned project following a specified format.*	Kemahiran pembentangan Kemahiran penulisan laporan Kemahiran komunikasi Kemahiran menjawab soalan	Menyediakan video mengikut teknologi terkini dan kandungan slide adalah yang berkesan Laporan disediakan mengikut format dan kandungan yang bersesuaian dengan objektif projek masing-masing	Bimbingan daripada penyelia dalam menentukan video dan slide pembentangan berkesan Bimbingan daripada penyelia terhadap hasil laporan pelajar Penilaian dan maklumbalas oleh penal terhadap hasil projek
(CLO3) *Demonstrate management skills while engaging in independent acquisition of new knowledge and skills to develop a project.*	Kemahiran Pengurusan Projek	Penghantaran dokumen mengikut tempoh masa Jadual pembentangan dan Q&A	Pemantauan oleh penyelia
(CLO4) *Demonstrate continuous learning while engaging in independent acquisition of new knowledge and skills to develop a project.*	Kemahiran mencari maklumat Kemahiran kerja berpasukan	Merekod dan menganalisis data atau maklumat yang diperolehi	Taklimat penggunaan teknologi oleh penyelaras

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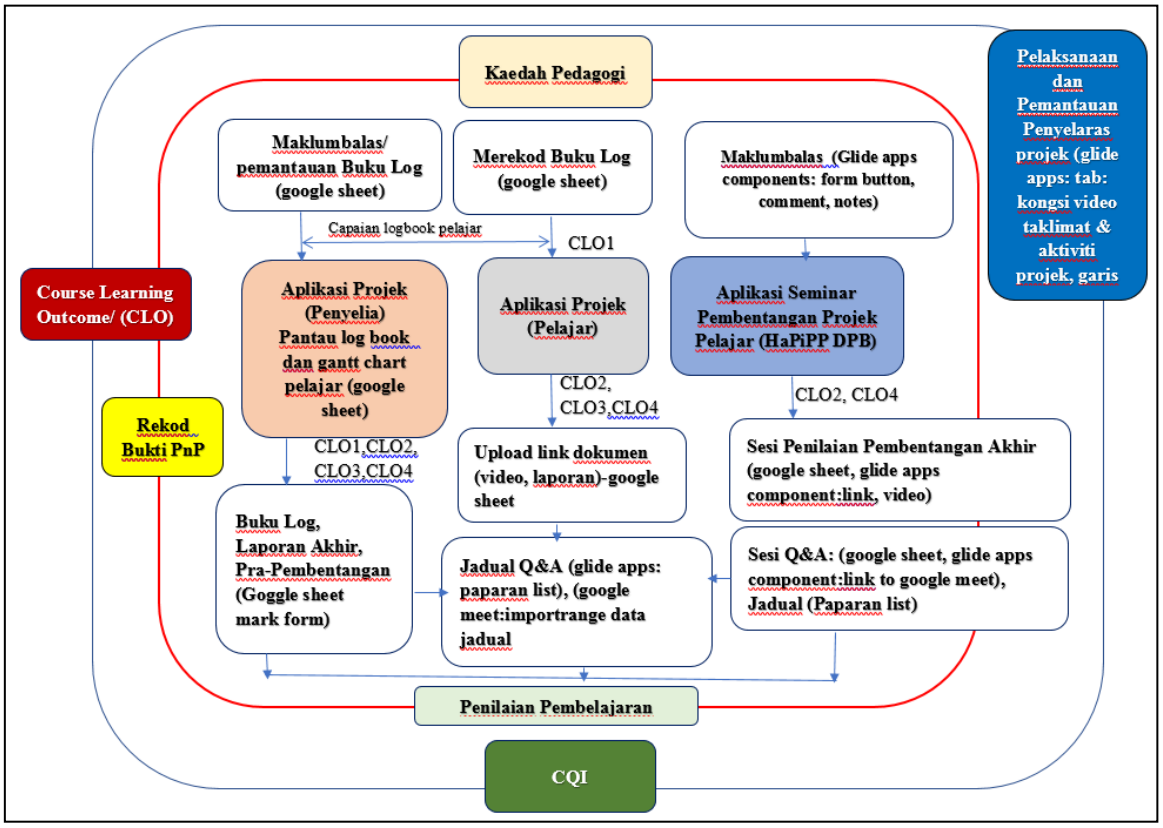
13th – 14th December 2020



Rajah 5: Kerangka Idea Aplikasi Penilaian Projek Akhir Pelajar DPB

Pembentukan kerangka idea merangkumi 3 elemen utama silibus dan kurikulum iaitu CLO, penyelarasan kandungan oleh penyelaras projek dan *Continuous Quality Improvement* (CQI) yang bertindak sebagai kawalan kepada aktiviti dalam aplikasi. CLO juga adalah psikrometrik bagi pelaksanaannya berdasarkan keperluaan silibus dan kurikulum. Manakala kaedah pedagogi yang digunakan iaitu maklumbalas, perekodan dan bimbingan dalam buku log oleh pelajar kepada penyelia secara atas talian aplikasi merupakan kontekstual serta penglibatan penggunanya. Pemilihan peralatan iaitu komponen dalam aplikasi yang dibina menggabungkan komponen aktiviti seperti perekodan buku log secara terus, *comment*, *notes*, sambungan ke *google meet*, pengurusan pengkalan data oleh pelajar dan borang penilaian secara terus. Kepelbagaian komponen aktiviti ini membenarkan penglibatan secara individu dan sosialiti iaitu pembelajaran berpusatkan pelajar dan komunikasi antara penyelia pelajar serta pelajar dan pihak industri. Penglibatan ini menunjukkan tinggi penglibatan individu dan pihak sosialiti dalam pembelajaran. Di samping itu, penggunaan teknologi yang pelbagai dalam pembelajaran dan penilaian menunjukkan hirerarki pembelajaran jarak jauh pembangunan aplikasi ini adalah mencapai tahap 4 iaitu komunikasi dan kolaborasi dengan industri. Aktviti ulasan dan pemantauan dari semua pengguna aplikasi dirangka membolehkan CQI dilaksanakan berdasarkan silibus, kurikulum dan kehendak terkini pihak industri.

Aplikasi Penilaian Projek Akhir Pelajar

Aplikasi penilaian projek akhir pelajar yang dihasilkan adalah menggunakan aplikasi *glide apps* dan mempunyai tiga paparan aplikasi yang mengandungi kaedah pedagogi yang berbeza seperti Rajah 6, 7 dan 8. Aplikasi tersebut terdiri daripada Aplikasi Projek 2 DPB (Penyelia), Aplikasi Projek Akhir DPB (Pelajar), Aplikasi e-HaPiPP DPB (Panel). Pembangunan aplikasi

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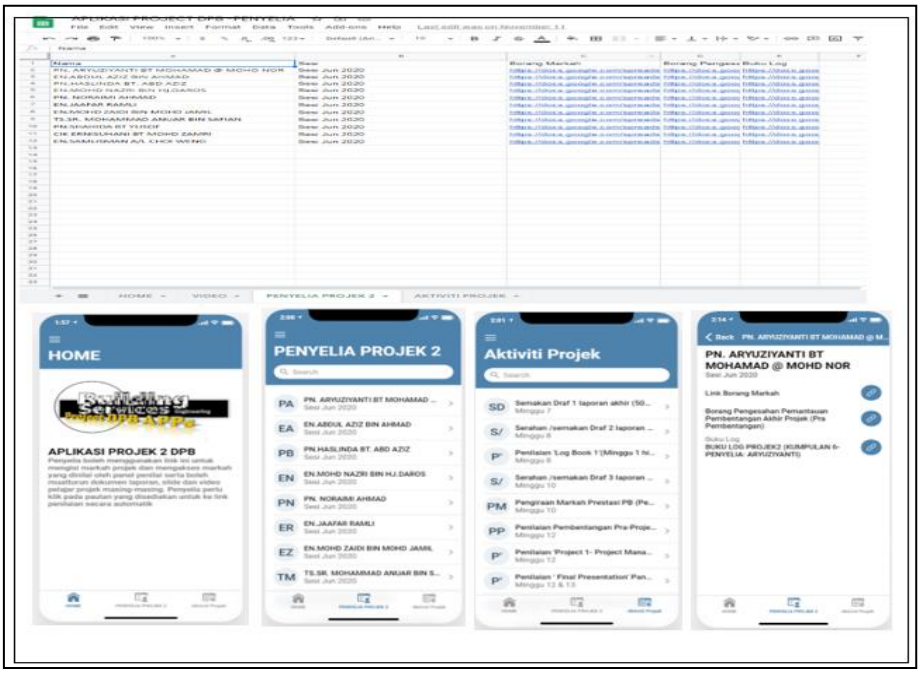
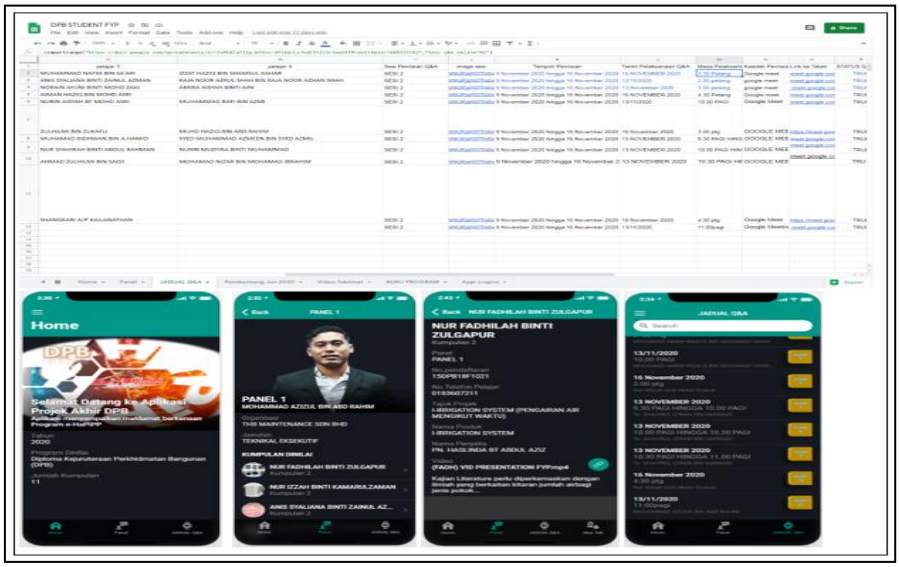
13th – 14th December 2020

ini adalah menggunakan *google sheet* yang bertindak sebagai penyimpanan data dalam *google drive*.

Aplikasi Projek 2 DPB (Penyelia) bagi penyelia menggunakan kaedah pedagogi yang terlibat seperti pemantauan, maklumbalas kepada pelajar dan penilaian kepada hasil kerja pelajar di bawah bimbingan pelajar masing-masing. Manakala Aplikasi Projek Akhir DPB (Pelajar) memaparkan senarai dokumen video, laporan, senarai panel penilai, buku log dan jadual Q&A bersama panel penilai. Aplikasi e-HaPiPP (Panel) merangkumi maklumat panel, senarai dokumen dan kumpulan pelajar dinilai, borang permarkahan dan sesi soal jawab bersama pelajar.



Rajah 6: *Google Sheet* Data dan Paparan Aplikasi Projek 2 DPB bagi Penyelia



Rajah 7: *Google Sheet* Data dan Paparan Aplikasi Projek Akhir DPB bagi Pelajar

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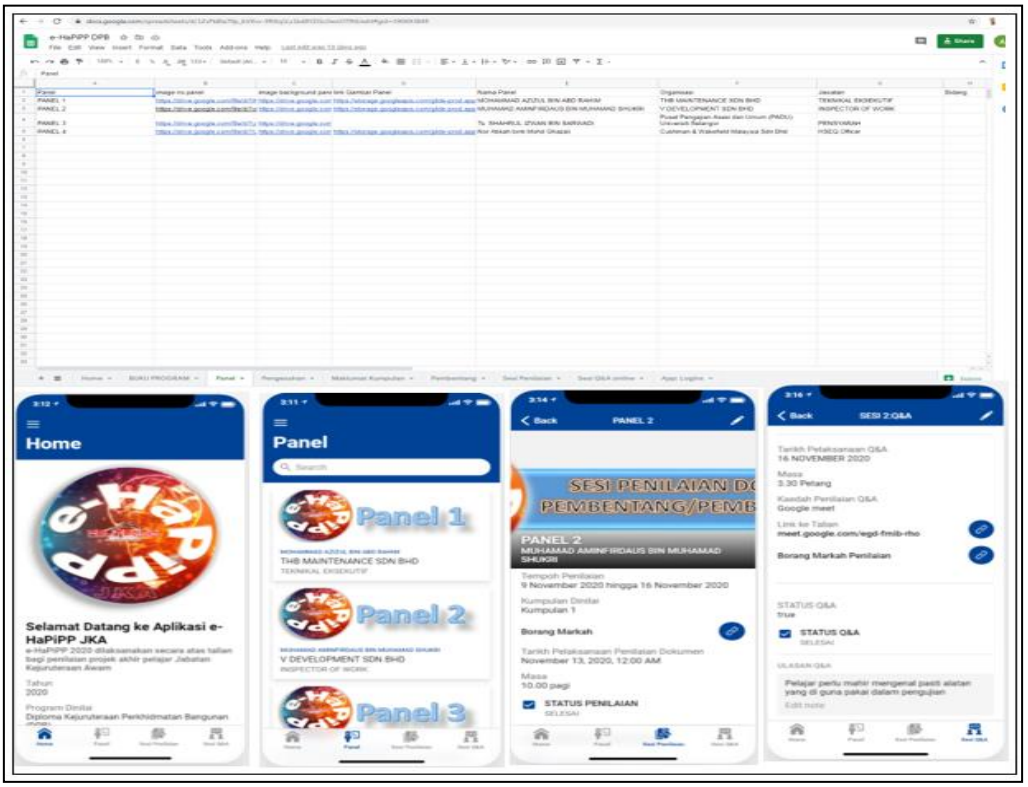
13th – 14th December 2020



Rajah 8: *Google Sheet* Data dan Paparan Aplikasi e-HaPiPP DPB bagi Panel Penilai Industri atau Organisasi Luar

Kefungsian Penggunaan Google Sheet dalam Aplikasi Penilaian Projek Akhir Pelajar

Buku log dan carta gantt adalah dibina menggunakan *google sheet* bagi membolehkan aktiviti perekodan kemajuan kerja oleh pelajar dan proses bimbingan dan perbincangan oleh penyelia masih dilaksanakan walaupun dengan pembelajaran jarak jauh. Buku log serta carta gantt yang dihasilkan ini boleh dijalankan atas talian kerana cirinya yang disimpan secara automatik. Selain daripada itu, borang markah penilaian penyelia kepada pelajar dan panel kepada pelajar juga menggunakan *google sheet*. Dalam penghasilan borang markah penyelia dan panel penilai adalah secara rubrik di mana aplikasinya dengan menggunakan formula *if(isblank)*, *importrange* dan *hyperlink* bagi menjadikan ia interaktif dan boleh dipantau oleh penyelaras projek bagi memastikan keselamatan data penilaian. Rajah 9 menunjukkan paparan borang markah penilaian, buku log dan carta gantt menggunakan *google sheet* dan penggunaannya dalam aplikasi bagi kegunaan penyelia, pelajar dan panel.

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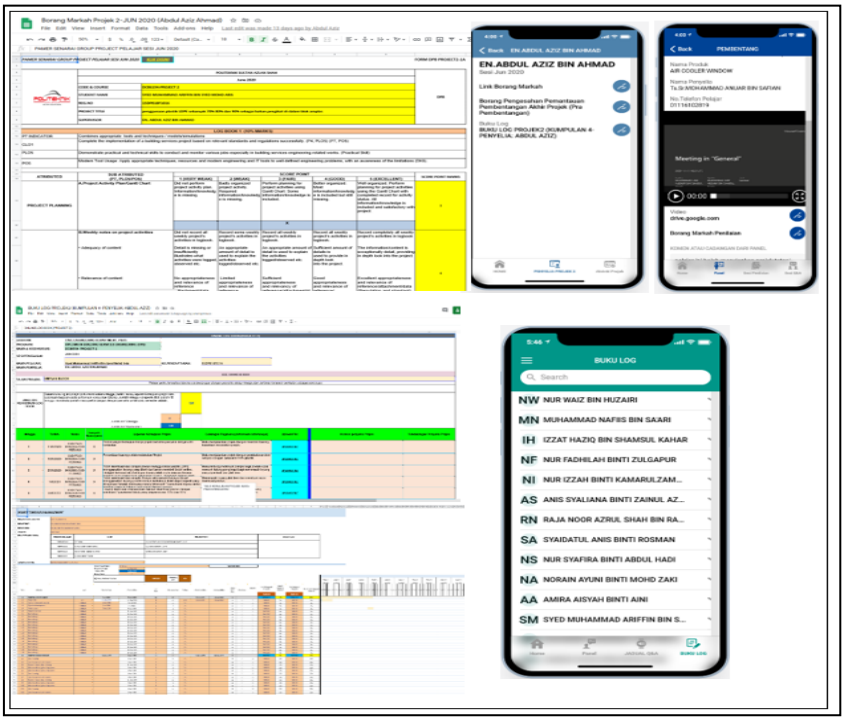
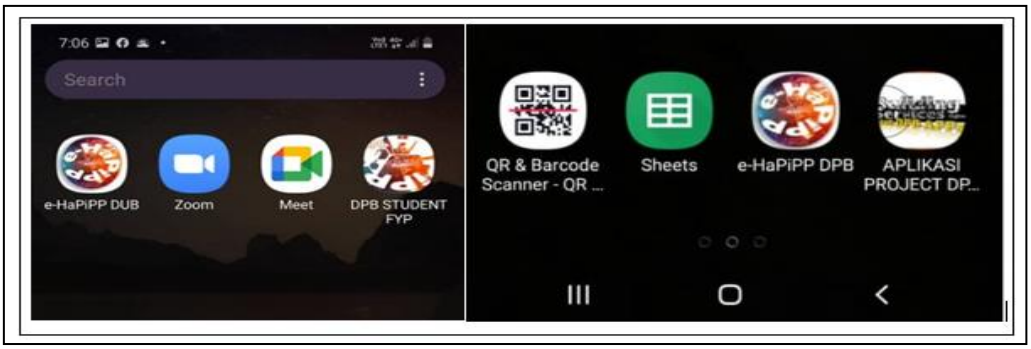
13th – 14th December 2020



Rajah 9: *Google Sheet* Borang Markah Aplikasi Penilaian Projek Akhir Pelajar DPB bagi Penyelia

Rajah 10 menunjukkan aplikasi ini boleh digunakan dan dipasangkan ke telefon pintar yang memudahkan pengguna. Data penderiaan telefon pintar dan tinjauan yang dijalankan menunjukkan penggunaan aplikasi adalah kehidupan pelajar (iOS dan android)(Huckins et al., 2020). Rajah 11 memaparkan aktiviti yang ada dalam aplikasi bagi penyelia, pelajar dan penyelia. Aktiviti-aktiviti ini boleh dipantau dan diselaraskan oleh penyelaras projek yang mana *data sheet* bagi aplikasi boleh diubah mengikut keperluan semasa dan adalah bersifat data *synchronize*. Manakala pelbagai aktiviti digabungkan dalam aplikasi ini seperti ulasan dan komen daripada panel atau penyelia dapat menerapkan sikap tanggungjawab terhadap tugasan yang diberikan. (Thoma et al., 2019) menyatakan data penilaian pelajar dengan hasilnya perlu digabungkan dengan pandangan mengenai hasil prestasi pelajar. Aktiviti-aktiviti dalam aplikasi *glide apps* ini ditunjukkan dalam Jadual 2 menggunakan komponen mengikut kerangka idea aplikasi penilaian projek akhir pelajar.



Rajah 10: Paparan Aplikasi Penilaian Projek Akhir Pelajar DPB bagi Pelajar Pada Telefon Pintar

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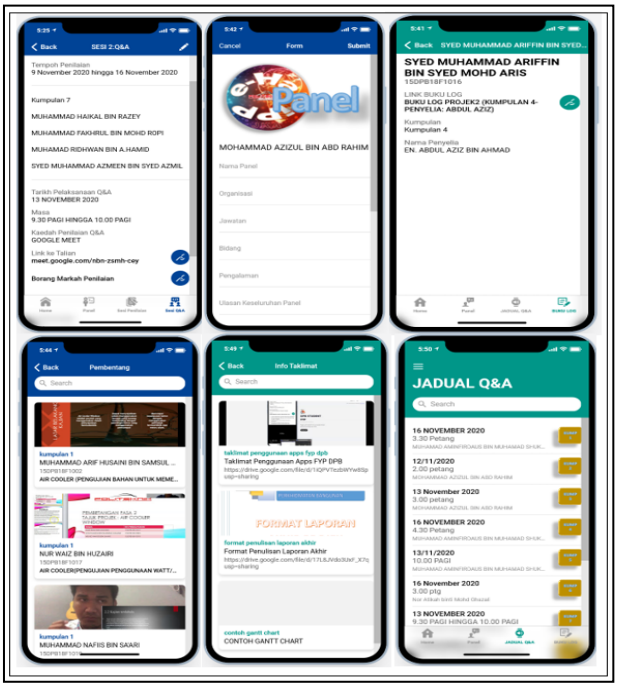
13th – 14th December 2020



Rajah 1: Paparan Aktiviti dalam Aplikasi Penilaian Projek Akhir Pelajar DPB bagi Pelajar dan Panel

Jadual 2: Komponen Aplikasi Penilaian Projek Akhir Pelajar

Komponen	Fungsi dalam Aplikasi Projek Akhir Pelajar
Image	Grafik aplikasi dan dokumen
Title	Tajuk aktiviti
Link	Data disambung ke *google drive* dan *Google Meet*
Action Text	Menghubungkan ke aktiviti
Video	Paparan video
Inline List	Senarai kumpulan, dokumen, panel atau pelajar
Rich Text	Paparan ulasan panel
Separator	Pembahagi antara aktiviti
Form Button	Borang maklumat dan ulasan panel untuk CQI
Text Entry	Merekod dokumen/aktiviti
Switch	Aktiviti menekan status penilai
Signature	Merekod tandatangan sebagai bukti penilaian
Text	Paparan teks yang ada dalam *Data Sheet*
List Relation	Kolaborasi antara aktiviti
Checkbox	Aktiviti menekan status
Notes	Memberi maklumbalas /perbincangan/catatan panel/pelajar
About	Paparan maklumat aplikasi yang membolehkan maklumbalas terhadap aplikasi
	Paparan secara senarai
List	Paparan secara kad
Cards	Paparan secara maklumat
Detail	

Di samping itu, aplikasi *glide apps* menghadkan data penggunaan bagi pakej penggunaan yang percuma. Namun, perbandingan data percuma yang disediakan oleh *glide apps* dan data selepas penggunaan aplikasi bagi satu kitaran pengajaran dan pembelajaran dalam satu semester menunjukkan baki had penggunaan *row* dan *edit data sheet* adalah masih tinggi iaitu antara 44.4% hingga 98.9% selepas penggunaan satu semester proses pengajaran dan pembelajaran bagi pengguna penyelia 12 orang, pelajar 40 orang dan panel 4 orang. Ini

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13th – 14th December 2020

menunjukkan gabungan penggunaan *google sheet* dalam *glide apps* mengurangkan penggunaan data had aplikasi semasa proses pembinaan dan penggunaan oleh pengguna.

Jadual 3: Data Penggunaan Aplikasi Projek Akhir Bagi Satu Semester

Had Penggunaan Data Percuma	Penggunaan (%Baki Had Penggunan)		
	Aplikasi (Penyelia)	Aplikasi (Pelajar)	Apliaksi e-HaPiPP DPB(Panel)
Row (500)	27 (94.6%)	113 (77.4%)	80 (84%)
Edit Data sheet (1000)	11 (98.9%)	31(96.7%)	556 (44.4%)
Signature (10)	-	-	4 (60%)

Kesimpulan

Aplikasi penilaian projek akhir pelajar yang dibangunkan menggunakan *glide apps* dan *google sheet* adalah menunjukkan penggunaan dan fungsi yang bersesuaian dengan kehendak silibus dan kurikulum serta seterusnya mencapai hasil pembelajaran walaupun pelajar adalah berada pada jarak jauh dan pelbagai lokasi. Beberapa kajian menunjukkan pelajar yang menggunakan teknologi mudah alih bagi tujuan menghantar teks, email dan rangkaian sosial lebih baik daripada pelajar yang menjauhkan diri dari tingkah laku ini (Pedro et al., 2018). Aplikasi ini adalah mudah digunakan kerana bersifat boleh dikongsi alamat capaian aplikasi melalui *whatsapp* dan pengguna boleh menggunakan sebagai aplikasi di telefon pintar. Di samping itu, aplikasi ini menyediakan media pengajaran dan pengajaran yang memudahkan penyelia tanpa memerlukan kemahiran teknologi yang tinggi dan tidak membebankan masa penyediaan bahan pengajaran dan pengajaran. Justeru itu, hasil penggunaanya menunjukkan aplikasi ini berpotensi untuk digunakan dengan lebih meluas bagi pengajar dan pelajar dalam pelbagai tahap pengajian berdasarkan kemampuan aplikasi ini dibina berdasarkan kehendak silibus dan kurikulum yang ingin dicapai.

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13th – 14th December 2020

KEBERKESANAN KAEDAH PEMBELAJARAN KOPERATIF TERHADAP PENCAPAIAN PELAJAR MENGULANG KURSUS *MATHEMATICAL COMPUTING*

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Abstrak: *Kaedah pembelajaran koperatif merupakan kaedah pembelajaran yang dikatakan efisien serta seiring dengan transformasi sistem pendidikan pada masa kini. Kaedah pembelajaran berpusatkan pelajar serta menekankan interaksi sosial dan sikap kerjasama di antara pelajar untuk mencapai hasil pembelajaran yang ditetapkan. Hasil pemerhatian awal, didapati tahap pencapaian pelajar dalam kursus Mathematical Computing di Politeknik Muadzam Shah agak membimbangkan dengan peratus kegagalan sehingga 36.75%. Justeru itu, sebagai satu strategi pengajaran dan pembelajaran bagi mengatasi masalah ini, kaedah pembelajaran koperatif dilaksanakan ke atas pelajar yang mengulang kursus Mathematical Computing. Kajian ini bertujuan untuk mengkaji keberkesanan kaedah pembelajaran koperatif terhadap pencapaian pelajar dalam kursus ini. Kajian ini menggunakan kaedah kuasi eksperimen yang terdiri daripada dua kumpulan responden yang masing-masing terdiri daripada 20 orang pelajar daripada kumpulan kawalan dan kumpulan eksperimen. Ujian pra untuk menguji pencapaian pelajar sebelum rawatan diberikan dan ujian pos untuk menguji keberkesanan rawatan yang diberikan. Analisis dibuat berdasarkan peratus pencapaian pelajar bagi kumpulan eksperimen dan kumpulan kawalan. Dapatan kajian menunjukkan kaedah pembelajaran koperatif telah berjaya meningkatkan pencapaian pelajar dalam kursus tersebut. Ini menunjukkan kaedah pembelajaran koperatif ddalam pengajaran dan pembelajaran adalah efektif dan sesuai digunakan sebagai pendekatan dalam proses pengajaran dan pembelajaran kursus Mathematical Computing.*

Kata Kunci: *pembelajaran koperatif, kuasi eksperimen, pengajaran dan pembelajaran.*

Pengenalan

Usaha membangunkan modal insan yang berpengetahuan, mempunyai jati diri yang kukuh, berketerampilan, dan berkemahiran tinggi bagi memenuhi keperluan negara maju akan dapat dicapai melalui pendidikan. Pendidikan sains, matematik dan teknologi yang memberi tumpuan kepada kemahiran berfikir secara kreatif dan kritis, kemahiran manipulatif dan juga kemahiran saintifik adalah usaha yang berterusan untuk mewujudkan masyarakat saintifik dan progresif serta berilmu. Dari aspek pedagogi, pendidikan memerlukan strategi pengajaran yang lebih menitikberatkan penglibatan pelajar bagi memenuhi keperluan melahirkan modal insan yang berkemahiran dan berilmu. Becker et. Al (1999) menyatakan pendekatan konvensional dalam pengajaran dan pembelajaran iaitu *chalk and talk* digunakan bagi mengatasi masalah bilangan pelajar yang ramai dan menghabiskan sukatan pelajaran mengikut masa yang ditetapkan. Namun begitu, kajian telah membuktikan kaedah ini telah membataskan keterlibatan pelajar dalam proses pembelajaran di dalam kelas (Effandi et al. (2006)

eISBN 978-967-2426-22-6
13th – 14th December 2020

menegaskan keperluan para pendidik dalam mengubah strategi lama pendidikan yang hanya memindahkan pengetahuan pendidik kepada pelajar kepada kaedah pembelajaran yang lebih interaktif. Pelan Pembangunan Pendidikan Malaysia 2013-2015 (KPM, 2013) telah memperkenalkan kaedah pembelajaran berpusatkan pelajar bagi mempersiapkan pelajar dengan pengetahuan, kemahiran berfikir, kemahiran memimpin, profesion dwibahasa, etika dan kerohanian serta identiti sosial. Transformasi pendidikan ini penting seiring dengan kemajuan teknologi dan sains masa kini.

Salah satu kaedah pembelajaran yang berpusatkan pelajar dan bertepatan dengan transformasi pendidikan terkini adalah pembelajaran koperatif. Pembelajaran koperatif adalah satu kaedah pembelajaran berkumpulan yang melibatkan interaksi sosial serta sikap saling bantu membantu di antara ahli kumpulan untuk mencapai hasil pembelajaran (Azizi, 2017; Nur Syaza et. al., 2017). Effandi et al. (2006) menegaskan kaedah pembelajaran koperatif mampu mengambil alih kaedah pembelajaran tradisional yang melibatkan komunikasi sehala dengan penglibatan pelajar dan interaksi antara pelajar yang minimum. Banyak kajian telah membuktikan bahawa penggunaan kaedah pembelajaran koperatif dapat memberi peningkatan kognitif dan afektif terhadap pelajar (Ahmadi, 2000; Nur Angriani et. al., 2018; Azieyana, et. al., 2018, Nur Syaza et. al., 2017).

Kajian Literatur

Pembelajaran Koperatif

Pembelajaran dalam kumpulan dapat mempertingkatkan sikap pelajar terhadap Matematik, disebabkan pelajar mendapat bantuan daripada rakan yang lain (Effandi et al., 2006). Johnson & Johnson (1986) menjelaskan bahawa terdapat bukti yang menyakinkan bahawa kumpulan yang bekerjasama dapat meningkatkan pemikiran peringkat tinggi dan dapat menyimpan maklumat lebih lama berbanding pelajar yang membuat kerja berseorangan. Pembelajaran koperatif juga memberi ruang kepada pelajar untuk menyelesaikan sesuatu masalah dengan menggunakan beberapa pendekatan yang berbeza. Menurut Azizi (2017), jika pelajar bekerjasama dalam memberikan pendapat dan diberi peluang untuk memberikan idea dalam penyelesaian masalah, mereka akan lebih yakin bahawa masalah boleh diselesaikan dengan pelbagai cara. Ini menunjukkan bahawa apabila pelajar terlibat secara langsung dengan proses pembelajaran, maka pembelajaran itu lebih memberi makna kepada mereka.

Kajian disokong oleh Wahida (2011) yang menyatakan strategi pengajaran yang berpusatkan pelajar adalah lebih praktikal berbanding pengajaran berpusatkan pensyarah. Kajian menegaskan bahawa penglibatan aktif pelajar adalah diperlukan dalam aktiviti pengajaran dan pembelajaran bagi memastikan hasil pembelajaran tercapai. Justeru itu, para pendidik perlu mencari idea, teknik atau pendekatan yang lebih baik untuk diaplikasikan dalam strategi pengajaran mereka. Sistem pendidikan dan kaedah pengajaran yang berkesan adalah penting untuk menghasilkan generasi muda yang berkaliber dan memberi sumbangan yang bermakna demi kemajuan negara (Sarimah, 2015).

Salah satu pendekatan alternatif yang sesuai adalah pembelajaran secara berkumpulan atau pembelajaran koperatif. Pembelajaran koperatif ini memberikan kelebihan kepada pelajar kerana wujud peluang untuk memberikan idea, berbincang dan berinteraksi satu sama lain dan belajar melalui pengalaman mereka sendiri (Ahmad, 2013; Koh et al. 2008). Pendekatan ini merupakan satu inovasi dalam strategi pengajaran dan pembelajaran berpusatkan pelajar (Omar, 2014). Melalui kaedah ini, nilai pembelajaran kendiri dapat diterapkan kerana mereka mampu untuk belajar dan bertanggungjawab ke atas pembelajaran mereka sendiri.

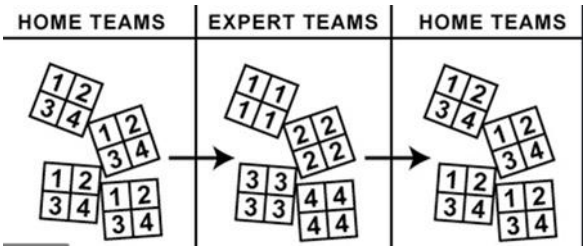
eISBN 978-967-2426-22-6
13th – 14th December 2020

Strategi Pembelajaran Koperatif

Terdapat pelbagai teknik pembelajaran koperatif seperti *Gallery Walk*, kaedah *Jigsaw*, kaedah *Rally Robin*, *Numbered Heads Together* dan *Student Teams Achievement Division* (STAD) (Hailmi, 2016; Mokhzani, 2017). Kajian ini hanya akan menggunakan kaedah-kaedah seperti berikut.

Kaedah Jigsaw

- Kelas dibahagikan kepada beberapa kumpulan, setiap ahli kumpulan diberi nombor 1-2-3-4 .
- Ahli kumpulan yang memegang nombor 1 akan bergerak ke stesen 1 untuk membincangkan soalan yang sama, begitu juga dengan nombor 2, 3 dan 4.
- Selesai perbincangan, mereka akan kembali ke kumpulan masing-masing dan menjadi pakar bagi soalan masing-masing.



Rajah 1: Kaedah Jigsaw

Sumber: Aronson, 1971 dalam Hailmi, 2016; Mokhzani, 2017

Kaedah Rally Robin *(Hailmi, 2016; Mokhzani, 2017)*

- Pensyarah menyoal atau bertanya pelajar.
- Pelajar memberi pendapatnya kepada rakan sebelah kemudian rakan di hadapan seterusnya atau secara bersilang. Boleh juga sehala sahaja.
- Pensyarah meminta wakil kumpulan memberikan pandangan ahli kumpulan

Kaedah Numbered Heads Together *(Right, 2015 dalam Mokhzani, 2017)*

- Pensyarah menyoal atau bertanya pelajar.
- Pelajar memberi pendapatnya kepada rakan sebelah kemudian rakan di hadapan seterusnya atau secara bersilang. Boleh juga sehala sahaja.
- Pensyarah meminta wakil kumpulan memberikan pandangan ahli kumpulan

Penyataan Masalah

Kursus *Mathematical Computing* adalah kursus yang wajib diambil oleh pelajar Diploma Teknologi Maklumat (Teknologi Digital). Pelajar perlu lulus kursus ini bagi melengkapkan jumlah kredit bergraduat sebelum bergraduasi. Walau bagaimanapun, peratusan pencapaian pelajar dalam kursus *Mathematical Computing* ini agak membimbangkan dengan kadar kegagalan yang agak tinggi setiap semester. Nur Syaza et. al. (2017) menegaskan, amalan guru yang mendominasi proses pengajaran dan pembelajaran di dalam bilik darjah telah menyebabkan motivasi pelajar untuk menuntut ilmu secara sendiri dan berdisiplin merundum. Penglibatan murid yang kurang aktif di dalam kelas menyebabkan murid tidak dapat menguasai sesuatu topik dengan baik dan menyebabkan hasil pembelajaran tidak dapat dicapai (Salleh et. al., 2005).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Pendekatan pembelajaran berasaskan hasil merupakan salah satu kaedah pengajaran dan pembelajaran yang dipraktikkan di peringkat institusi pengajian tinggi di Malaysia termasuk di Politeknik Malaysia. Salah satu strategi yang diimplementasi adalah pembelajaran koperatif. Namun, tahap penglibatan pelajar dalam pembelajaran masih kurang menyerlah dan proses pembelajaran dan pengajaran masih terikat dengan kaedah konvensional. Ini di dorong oleh kaedah pengajaran konvensional ini yang mempunyai kelebihannya yang tersendiri terutama sekali dari aspek penjimatan masa dalam menyampaikan sesuatu topik mengikut masa yang ditetapkan.

Melihat kepada situasi pencapaian kursus *Mathematical Computing* dengan peratusan kegagalan yang mencapai sehingga 36.75%, inisiatif harus diambil untuk memperkukuhkan strategi pengajaran dan pembelajaran di dalam kelas. Strategi pembelajaran koperatif diambil sebagai pendekatan di dalam pelaksanaan kajian ini. Oleh itu, kajian ini dilaksanakan bagi melihat keberkesanan kaedah pembelajaran koperatif, sebagai salah satu teknik pembelajaran berasaskan hasil, kepada pelajar mengulang kursus *Mathematical Computing*.

Objektif Kajian

Kajian bertujuan untuk:

1. Mengukur perbezaan pencapaian pelajar dalam pelaksanaan kaedah pembelajaran koperatif berbanding kaedah konvensional.
2. Menentukan keberkesanan kaedah pembelajaran koperatif dalam kalangan pelajar mengulang kursus *Mathematical Computing*.

Metodologi Kajian

Rekabentuk Kajian

Kajian ini menggunakan kaedah rekabentuk kuasi eksperimen yang terdiri daripada dua kumpulan responden yang masing-masing terdiri daripada 20 orang pelajar daripada kumpulan kawalan dan kumpulan eksperimen. Reka bentuk ini dipilih kerana kajian menggunakan kelas sedia ada di dalam organisasi dan tidak boleh dipilih secara rawak (Johnson et. al, 2000). Ujian pra telah dilaksanakan bagi memastikan terdapat kesamaan antara kumpulan dan juga bertujuan untuk digunakan sebagai pengawalan secara statistik. Ujian pasca digunakan bagi menentukan perbezaan antara kumpulan eksperimen dan kumpulan kawalan selepas pelaksanaan rawatan.

Sampel Kajian

Sampel kajian terdiri daripada 40 orang pelajar mengulang kursus *Mathematical Computing* di Politeknik Muadzam Shah. Sebuah kelas dijadikan kelas eksperiman dan sebuah kelas yang lain dijadikan sebagai kelas kawalan. Kelas eksperimen diberikan rawatan pembelajaran koperatif dan kelas kawalan menggunakan kaedah pembelajaran sedia ada.

Pelaksanaan Kajian

Ujian pra diberikan kepada kedua-dua kumpulan pelajar pada awal kajian. Proses pengajaran dan pembelajaran berjalan mengikut topik dan kaedah yang telah ditetapkan bagi kedua-dua kumpulan. Selepas tempoh 14 minggu, pelajar diberikan ujian pasca.

Analisa Data dan Perbincangan

Analisis data dilaksanakan berdasarkan pencapaian skor min ujian pra dan pasca kedua-dua kumpulan. Seterusnya, ujian-t sampel bersandar telah dilakukan terhadap penilaian ujian pasca untuk menentukan sama ada min adalah berbeza secara signifikan di antara kumpulan eksperimen dengan kumpulan kawalan.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Dapatan Kajian

Dapatan kajian dibincangkan berdasarkan dua objektif kajian.

Mengukur Perbezaan Pencapaian Pelajar Dalam Pelaksanaan Kaedah Pembelajaran Koperatif Berbanding Kaedah Konvensional.

Jadual 1 menunjukkan keputusan ujian pra antara kumpulan kawalan dengan kumpulan eksperimen. Hasil kajian menunjukkan bahawa terdapat perbezaan pencapaian pelajar dalam ujian pra dan pasca bagi pelaksanaan kaedah pembelajaran koperatif (kumpulan eksperimen) dan pembelajaran konvensional (kumpulan kawalan).

Berdasarkan kepada analisis data, didapati bahawa terdapat perbezaan yang signifikan antara skor pencapaian ujian pra dan pasca bagi kumpulan kawalan. Nilai min bagi ujian pra untuk kumpulan kawalan ialah 34.68, manakala nilai ujian pasca ialah 58.84. Nilai perbezaan min bagi kumpulan kawalan adalah 24.16%. Sebaliknya, nilai min bagi ujian pra untuk kumpulan eksperimen ialah 39.63, manakala nilai min ujian pasca ialah 68.84. Nilai perbezaan min bagi kumpulan eksperimen adalah lebih tinggi iaitu 29.21%. Perbezaan nilai ujian-t kumpulan kawalan dan eksperimen bagi ujian pra menunjukkan terdapat perbezaan yang signifikan terhadap skor min markah pra dan pasca untuk kedua-dua kumpulan dengan nilai-t bagi kumpulan kawalan adalah 0.034 ($p< 0.05$), lebih besar berbanding nilai-t bagi kumpulan eksperimen -3.692 ($p<0.05$). Perbezaan signifikan yang lebih kecil kepada kumpulan eksperimen menunjukkan bahawa peningkatan markah kepada kumpulan eksperimen selepas rawatan menggunakan kaedah pembelajaran koperatif. Ini menunjukkan terdapat perbezaan pencapaian dalam pelaksanaan kaedah pembelajaran koperatif berbanding kaedah konvensional.

Jadual 1: Analisis ujian-t kumpulan kawalan dan kumpulan eksperimen

	Ujian Pra	Ujian Pasca	Beza min (%)	Nilai-t
Kumpulan Kawalan	34.68	58.84	24.16	0.034
Kumpulan Eksperimen	39.63	68.84	29.21	-3.692

Menentukan Keberkesanan Kaedah Pembelajaran Koperatif Dalam Kalangan Pelajar Mengulang Kursus Mathematical Computing.

Data juga menunjukkan (rujuk Jadual 1) terdapat peningkatan dalam ujian pasca walaupun proses pengajaran dan pembelajaran menggunakan kaedah konvensional. Namun, perbezaan min menunjukkan peningkatan pencapaian pelajar dalam pelaksanaan kaedah pembelajaran koperatif adalah lebih tinggi. Ini menunjukkan rawatan yang diberikan kepada pelajar dalam kumpulan eksperimen dengan menggunakan kaedah pengajaran koperatif telah memberikan kesan kepada pencapaian pelajar. Perbezaan nilai ujian-t kumpulan kawalan dan eksperimen bagi ujian pra menunjukkan terdapat perbezaan yang signifikan terhadap skor min markah pra dan pasca untuk kedua-dua kumpulan. Walau bagaimanapun, nilai-t bagi kumpulan kawalan adalah 0.034 ($p< 0.05$), lebih besar berbanding nilai-t bagi kumpulan eksperimen -3.692 ($p<0.05$). Ini menunjukkan, kaedah pembelajaran koperatif telah menujukkan keberkesanan dalam kalangan pelajar mengulang kursus *Mathematical Computing*.

Kajian ini menyokong dapatan kajian pembelajaran koperatif yang dihasilkan oleh Ahmadi (2000), Nur Angriani et. al. (2018), Azieyana, et. al. (2018) dan Nur Syaza et. al. (2017). Pembelajaran koperatif telah menggalakkan aktiviti peneguhan melalui interaksi bersemuka dan sesi perbincangan di kalangan pelajar, betukar maklumat, membantu rakan-rakan, berkongsi pandangan yang berbeza dan memberikan galakan di antara satu sama lain (Effandi et. al., 2006). Dengan ini, kaedah ini telah memberikan kesan di kalangan pelajar

eISBN 978-967-2426-22-6
13th – 14th December 2020

mengulang kursus *Mathematical Computing* dalam membantu peningkatan pencapaian hasil pembelajaran.

Kesimpulan

Dapatan kajian ini didapati menyokong kajian terdahulu di mana kaedah pembelajaran koperatif yang telah dilaksanakan dapat membantu meningkatkan pencapaian pelajar. Pelajar bukan sahaja dapat meningkatkan kefahaman dalam topik yang diajar malah dapat menggunakan pengetahuan yang diperoleh dari teknik pembelajaran koperatif untuk membuat penyelesaian masalah dengan lebih yakin. Pencapaian pelajar yang meningkat menunjukkan bahawa kaedah pembelajaran koperatif sewajarnya dijadikan strategi utama dalam proses pengajaran dan pembelajaran. Pembelajaran koperatif merupakan salah satu alternatif kaedah pengajaran yang dapat diterapkan di kalangan pelajar untuk meningkatkan kualiti pendidikan nasional.

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13th – 14th December 2020

PERSEPSI PELAJAR TERHADAP PENGGUNAAN myFYP DALAM PELAKSANAAN PROJEK AKHIR PELAJAR

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Abstract: *Kajian ini dilaksanakan bertujuan untuk mengenalpasti persepsi pelajar terhadap rekabentuk interaksi dari paparan ke paparan dalam aplikasi myFYP dan juga kebolehgunaan aplikasi tersebut. Aplikasi myFYP adalah sebuah aplikasi Android yang berfungsi untuk membantu para pelajar dalam penilaian kursus Intergrated Project. Dengan adanya aplikasi ini, pelajar dapat mengakses maklumat berkaitan dengan penilaian projek mereka. Bagi mengenalpasti persepsi pelajar terhadap aplikasi ini, kajian deskriptif telah dilaksanakan melalui penggunaan borang soal selidik yang mempunyai skala Likert lima pilihan. Soalan-soalan dalam soal-selidik tersebut terbahagi kepada empat bahagian iaitu mesra pengguna, interaktif, rekabentuk dan kebolehgunaan. Seramai 28 responden terdiri daripada pelajar yang mengikuti program Diploma Teknologi Maklumat (Teknologi Digital) trek Rangkaian. Daripada hasil dapatan kajian, skor min yang tinggi diperolehi bagi setiap item dalam kesemua bahagian. Oleh itu dapat disimpulkan bahawa berdasarkan daripada hasil dapatan kajian ini, para pelajar mendapati aplikasi myFYP ini mudah digunakan untuk mencapai maklumat yang dikehendaki, rekabentuk menu dalam setiap paparan mudah difahami dan aplikasi ini dapat digunakan dengan lancar tanpa sebarang ralat.*

Keywords: *myFYP, aplikasi Android, projek akhir pelajar*

Pengenalan

Kemajuan dalam bidang teknologi maklumat dan komunikasi membawa impak yang besar dalam kehidupan manusia. Aplikasi alatan telefon pintar juga telah membawa perubahan kepada manusia dalam aktiviti seharian. Kecanggihan telefon pintar yang digunakan secara menyeluruh dalam kehidupan manusia pada masa kini telah membawa kepada pembangunan aplikasi mudah alih. Aplikasi mudah alih adalah aplikasi yang dibangunkan untuk peranti mudah alih seperti telefon bimbit atau telefon pintar (Islam et al., 2010). Aplikasi ini dibangunkan untuk melaksanakan tugas tertentu kepada pengguna. Ianya dapat membantu manusia melaksanakan aktiviti dalam segala bidang seperti melayari Internet, membuat pembelian di atas talian, hiburan, tempahan tiket, pendidikan dan banyak lagi.

Di dalam bidang pendidikan, aplikasi mudah alih yang dibangunkan tidak terhad kepada sesuatu bidang ilmu yang spesifik (Abdelhamid et al., 2018). Ianya juga dapat diaplikasikan dalam pelbagai bidang ilmu dan dengan itu ianya membantu pengguna untuk mempelajari sesuatu perkara dengan lebih mudah. Selain dijadikan sebagai medium saluran ilmu, aplikasi mudah alih juga boleh diaplikasikan sebagai pemudah cara kepada sesuatu proses kerja.

Di Jabatan Teknologi Maklumat dan Komunikasi, setiap pelajar semester lima perlu menghasilkan projek akhir. Sebelum ini, para pelajar perlu mendapatkan maklumat berkaitan dengan penilaian projek akhir pelajar melalui edaran borang atau manual dalam bentuk kertas.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Aplikasi Android myFYP telah dibangunkan khas untuk kegunaan para pelajar di Jabatan Teknologi Maklumat. Aplikasi myFYP adalah aplikasi yang digunakan sebagai pemudah cara kepada para pelajar untuk mengakses kepada maklumat berkaitan dengan penilaian projek. Aplikasi ini dibina untuk kegunaan pelajar yang mengambil kursus Intergrated Project. Dengan adanya aplikasi myFYP, para pelajar boleh mendapatkan terus maklumat tersebut melalui telefon pintar mereka. Antara maklumat yang disediakan menerusi aplikasi myFYP adalah takwim penilaian projek, kandungan kursus, rubrik penilaian, penyelia projek pelajar dan panel penilai yang akan menilai projek akhir pelajar. Para pelajar juga dapat mengakses maklumat berkaitan dengan tarikh penilaian projek yang akan dilaksanakan. Kesemua maklumat tersebut juga dapat diakses tanpa memerlukan talian Internet. Oleh itu capaian ke pada maklumat yang diperlukan menjadi semakin mudah dan ianya boleh diakses pada bila-bila masa dan tempat. Dengan adanya maklumat tersebut, pelajar dapat membuat persediaan yang lebih rapi dalam menghadapi penilaian projek akhir pelajar.

Walaupun aplikasi ini telah digunakan sepenuhnya oleh pelajar dan pensyarah daripada trek Rangkaian program Diploma Teknologi Digital, kajian ke atas penggunaan dari segi perspektif pelajar belum lagi dilaksanakan. Oleh itu, kajian ini dilaksanakan untuk mengenalpasti persepsi pelajar selepas mereka menggunakan aplikasi myFYP. Dalam kajian ini persepsi pelajar akan dilihat dari segi rekabentuk interaksi untuk setiap paparan dan kebolehgunaan aplikasi myFYP. Hasil daripada kajian ini akan digunakan untuk membuat penambahbaikan ke atas aplikasi myFYP. Penambahbaikan tersebut akan juga dapat memenuhi keperluan pengguna berkenaan dengan penilaian projek akhir.

Tinjauan Literatur

Secara umumnya aplikasi mudah alih dibangunkan untuk membantu pengguna melaksanakan sesuatu tugas secara spesifik. Peningkatan penggunaan peranti telefon pintar dan peranti mudah alih yang lain seperti tablet PC dan iPad telah menggalakkan kepada penggunaan aplikasi mudah alih di dalam bidang pendidikan. Saiz kecil peranti mudah alih seperti telefon pintar berbanding dengan komputer menggalakkan pelajar untuk lebih bergantung kepada peranti tersebut terutamanya dalam bidang pendidikan.

Melalui aplikasi mudah alih penyampaian maklumat pembelajaran di antara pendidik dan pelajar menjadi lebih mudah (Fahimah Jaffar et al., 2019). Para pelajar tidak perlu menggunakan komputer ataupun mencetak maklumat tersebut, sebaliknya segala maklumat pembelajaran dengan mudah diakses melalui aplikasi mudah alih. Dengan kelebihan aplikasi mudah alih yang boleh diakses dimana-mana sahaja, para pelajar tidak perlu lagi terikat kepada lokasi fizikal kelas.

Menerusi penggunaan aplikasi mudah alih ianya telah membawa kepada konsep E-pembelajaran. E-pembelajaran merupakan kaedah penyampaian pembelajaran di atas talian melalui komputer, telefon pintar dan peranti elektronik yang lain (Aliff Nawi, 2017). Pendekatan pembelajaran secara E-pembelajaran telah menyemaikan amalan pembelajaran secara berterusan ataupun sepanjang hayat. Akses yang mudah kepada maklumat yang diperlukan dapat membantu pelajar melakukan persediaan awal dan terancang dalam proses pembelajaran mereka. Menurut kajian yang telah dilaksanakan oleh Wahyuni (2018), pelajar memberi maklumbalas yang positif terhadap penggunaan aplikasi android melalui telefon pintar sebagai bahan pembelajaran tambahan untuk proses pembelajaran.

Aplikasi mudah alih yang dibangunkan hendaklah mempunyai rekabentuk paparan yang menarik dan mudah difahami oleh pengguna terutama dari segi arahan dan navigasi paparan. Penggunaan ikon, font dan warna yang sesuai dapat menjadikan aplikasi lebih menarik kepada pengguna (Norhasyimah Hamzah, 2017).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Objektif Kajian

Berikut merupakan objektif-objektif kepada pelaksanaan kajian ini:

a) Mengenalpasti persepsi pelajar terhadap rekabentuk interaksi dari setiap paparan bagi aplikasi myFYP.
b) Mengenalpasti persepsi pelajar terhadap kebolehgunaan aplikasi myFYP.

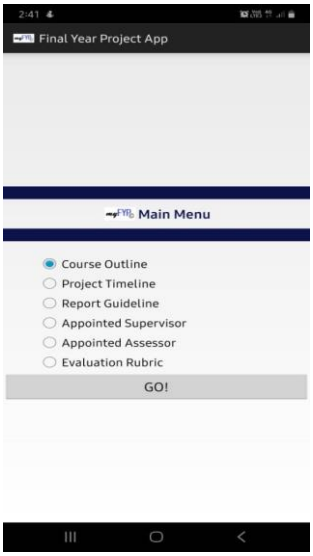
Rekabentuk Sistem

Aplikasi myFYP ini dibangunkan khas untuk platform Android. Bagi menggunakannya, pengguna hendaklah mempunyai telefon pintar yang menyokong aplikasi Java dan Android. Pengguna juga boleh mengakses myFYP menerusi komputer ataupun komputer riba melalui simulator Android seperti aplikasi Bluestack.

Aplikasi myFYP mempunyai enam modul utama. Modul-modul tersebut adalah:

a) Garis panduan kursus (*Course Outline*)
b) Takwim projek (*Project Timeline*)
c) Garis panduan laporan (*Report Guideline*)
d) Penyelia (*Appointed Supervisor*)
e) Penilai (*Appointed Assessor*)
f) Rubric penilaian (*Evaluation rubric*)

Rajah 1 menunjukkan paparan utama bagi aplikasi myFYP. Apabila pengguna memilih modul yang tertera dan klik butang GO!, paparan yang berkaitan dengan modul tersebut akan dipaparkan.



Rajah 1: Paparan utama myFYP

Untuk modul *Course Outline*, pengguna akan dapat mengakses garis panduan bagi program *Integrated Project*. Modul *Project Timeline* akan memaparkan takwim projek dan pelajar boleh merujuk takwim tersebut untuk mengetahui perancangan pelaksanaan projek sepanjang semester. Untuk mengakses garis panduan laporan, pengguna hendaklah memilih modul *Report Guideline.* Bagi mengetahui maklumat penilai dan penyelia projek, pengguna boleh memilih modul *Appointed Supervisor* ataupun *Appointed Assessor*. Modul *Evaluation Rubric* pula akan memaparkan rubrik penilaian projek di mana pelajar boleh merujuk rubrik tersebut mengetahui kriteria penilaian projek akhir. Rubrik yang berbeza disediakan mengikut

eISBN 978-967-2426-22-6
13th – 14th December 2020

jenis penilaian seperti: pembentangan kertas cadangan projek (*Proposal Presentation)*, demonstrasi 1 dan 2, buku log (*Log Book)*, laporan teknikal (*Technical Report)* dan produk akhir (*End Product)*. Rajah-rajah berikut memaparkan antara paparan-paparan yang ada di dalam aplikasi myFYP.

Rajah 2: Takwim Projek

Rajah 3: Garis Panduan Projek

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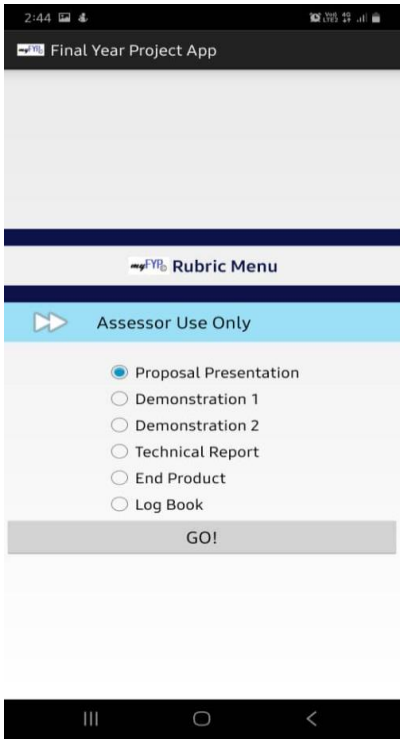
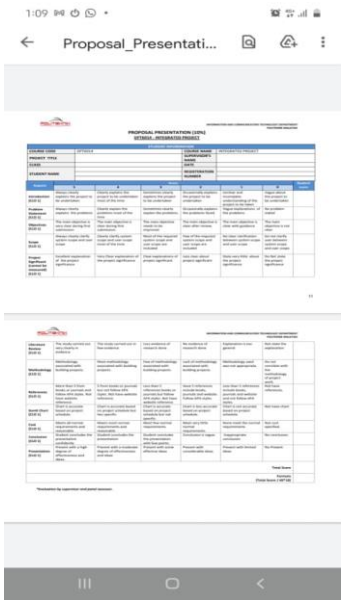
13th – 14th December 2020

Rajah 4: Senarai Penyelia Projek

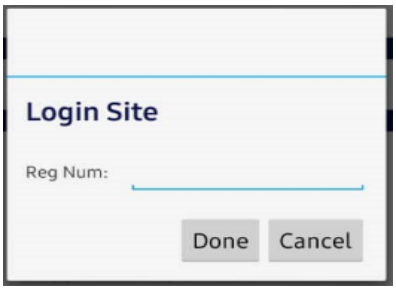


Rajah 5: Menu Rubrik Penilaian

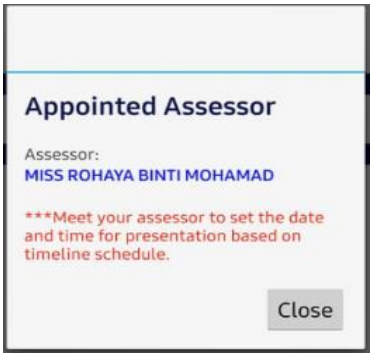
eISBN 978-967-2426-22-6
13th – 14th December 2020



Rajah 6: Contoh Rubrik Penilaian bagi *Proposal Presentation*



Rajah 7: Login Pelajar bagi modul *Appointed Assessor*



Rajah 8: Maklumat penilai projek pelajar

Metodologi Kajian

Kajian yang dilaksanakan adalah berbentuk deskriptif di mana data dikumpulkan melalui borang soal selidik. Responden yang terlibat untuk kajian ini adalah seramai 28 orang pelajar bagi program Diploma Teknologi Maklumat (Teknologi Digital) daripada trek Rangkaian. Pelajar tersebut adalah pelajar yang mengambil kursus *Intergrated Project* dalam sesi Disember 2019. Jadual 1 dibawah menunjukkan taburan pelajar mengikut kelas masing-masing.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 1: Taburan pelajar mengikut kelas

Kelas	Bilangan Pelajar
DNS5A	26
DNS6A	1
DNS6B	1
Jumlah	28

Borang soal-selidik yang digunakan untuk kajian ini mengandungi 15 soalan berdasarkan skala Likert. Skala yang digunakan adalah skala 1 hingga 5 di mana 1- Sangat Tidak Setuju, 2- Kurang Setuju, 3- Memuaskan, 4- Setuju dan 5- Sangat Setuju.
Kesemua soalan tersebut dibahagikan kepada empat kategori iaitu: Mesra Pengguna, Interaktif, Rekabentuk dan Kebolehgunaan.

Dapatan Kajian

Hasil dapatan daripada borang soal selidik dianalisa menggunakan analisis deskriptif statistik iaitu melibatkan skor min dan sisihan piawai. Data daripada soal selidik dianalisa menggunakan perisian IBM *Statistical Package for the Social Science* (SPSS) versi 20. Skor min yang diperolehi dinilai menggunakan skala interpretasi seperti jadual di bawah.

Jadual 2: Skala interpretasi skor min

Skor Min	Tahap Interpretasi
0.00 – 1.66	Rendah
1.67 – 3.33	Sederhana
3.34 – 5.00	Tinggi

Demografik

Jadual 3 menunjukkan taburan pecahan responden melalui jantina lelaki dan perempuan. Daripada jadual tersebut, responden adalah terdiri daripada 17 orang pelajar perempuan dan 11 orang pelajar lelaki.

Jadual 3: Taburan pelajar mengikut jantina

Jantina	Bilangan	Peratusan (%)
Lelaki	17	60.7
Perempuan	11	39.3

Kategori Mesra Pengguna

Jadual 4: Skor min bagi kategori Mesra Pengguna

Bil	Item	Skor min	Sisihan Piawai
1	Penggunaan aplikasi ini memudahkan pengguna memperolehi maklumat yang diperlukan	4.07	.716
2	Paparan menu dalam aplikasi ini dipamerkan secara menyeluruh	4.00	.720
3	Maklumat tertentu (contoh: Takwim Projek Pelajar, kandungan kursus, rubrik penilaian) boleh diakses tanpa talian Internet	3.85	.756
4	Menu yang disediakan membantu penggunaan aplikasi menjadi mudah	3.89	.685
	Purata	3.95	.719

Jadual 4 menunjukkan hasil dapatan berkenaan dengan kategori mesra pengguna bagi aplikasi myFYP. Terdapat tiga item di dalam kategori ini iaitu: penggunaan aplikasi ini memudahkan pengguna memperolehi maklumat yang diperlukan, paparan menu dalam

eISBN 978-967-2426-22-6
13th – 14th December 2020

aplikasi ini dipamerkan secara menyeluruh, maklumat tertentu (contoh: Takwim Projek Pelajar, kandungan kursus, rubrik penilaian) boleh diakses tanpa talian Internet dan menu yang disediakan membantu penggunaan aplikasi menjadi mudah.

Hasil keputusan menunjukkan kesemua item mempunyai tahap interpretasi yang tinggi. Item "Penggunaan aplikasi ini memudahkan pengguna memperolehi maklumat yang diperlukan" mendapat skor min 4.07, item "Paparan menu dalam aplikasi ini dipamerkan secara menyeluruh" mendapat skor min 4.00, item "Maklumat tertentu (contoh: Takwim Projek Pelajar, kandungan kursus, rubrik penilaian) boleh diakses tanpa talian Internet" mendapat skor min 3.85 dan item "Menu yang disediakan membantu penggunaan aplikasi menjadi mudah" mendapatkan skor min 3.89.

Kategori Interaktif

Jadual 5: Skor min bagi kategori Interaktif

Bil	Item	Skor min	Sisihan Piawai
1	Menu yang dipilih berfungsi seperti yang dijangkakan	3.61	.629
2	Aplikasi ini berfungsi dengan baik dan tanpa sebarang ralat	3.75	.928
3	Arahan penggunaan pada aplikasi ini adalah jelas	3.93	.813
4	Peralihan dari paparan ke paparan yang lain adalah lancar	3.89	.737
	Purata	3.79	.777

Jadual 4 menunjukkan skor min bagi item di bawah kategori interaktif. Sebanyak empat item di dalam kategori ini iaitu: menu yang dipilih berfungsi seperti yang dijangkakan, aplikasi ini berfungsi dengan baik dan tanpa sebarang ralat, arahan penggunaan pada aplikasi ini adalah jelas dan peralihan dari paparan ke paparan yang lain adalah lancar.

Daripada hasil kajian ianya menunjukkan kesemua item mendapat skor min yang tinggi. Item "Menu yang dipilih berfungsi seperti yang dijangkakan" mendapat skor min 3.61, item "Aplikasi ini berfungsi dengan baik dan tanpa sebarang ralat" mendapat skor min 3.75, item "Arahan penggunaan pada aplikasi ini adalah jelas" mendapat skor min 3.93 dan item terakhir iaitu "Peralihan dari paparan ke paparan yang lain adalah lancar" mendapat skor min 3.89.

Kategori Rekabentuk

Jadual 6: Skor min bagi kategori Rekabentuk

Bil	Item	Skor min	Sisihan Piawai
1	Menu pada aplikasi adalah tersusun	3.71	.763
2	Teks pada aplikasi mudah difahami	3.93	.766
3	Penggunaan warna dalam aplikasi ini adalah sesuai	3.82	.905
4	Gangguan teknikal tidak berlaku	3.46	.838
	Purata	3.73	.254

Jadual 6 menunjukkan skor min bagi item dibawah kategori rekabentuk. Sebanyak empat item di dalam kategori ini iaitu: menu pada aplikasi adalah tersusun, teks pada aplikasi mudah difahami, penggunaan warna dalam aplikasi ini adalah sesuai dan gangguan teknikal tidak berlaku.

Hasil kajian bagi kategori ini menunjukkan setiap item mendapat skor min tahap tinggi. Nilai skor min bagi item "Menu pada aplikasi adalah tersusun" ialah 3.71, item "Teks pada aplikasi mudah difahami" mendapat skor min 3.93, item "Penggunaan warna dalam aplikasi ini adalah sesuai" mendapat skor min 3.82 dan item "Gangguan teknikal tidak berlaku" mendapat skor min 3.46.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kategori Kebolehgunaan

Jadual 7: Skor min bagi kategori Kebolehgunaan

Bil	Item	Skor min	Sisihan Piawai
1	Pautan pada rubrik disediakan sebagai rujukan	3.93	.813
2	Informasi yang diberikan menerusi aplikasi membantu pelajar membuat persediaan awal	3.96	.793
3	Makluman mengenai panel penilai dan tarikh penilaian dapat diakses	3.86	.705
	Purata	3.92	.770

Jadual 7 menunjukkan skor min bagi item di bawah kategori rekabentuk. Sebanyak empat item di dalam kategori ini iaitu: menu pada aplikasi adalah tersusun, teks pada aplikasi mudah difahami, penggunaan warna dalam aplikasi ini adalah sesuai dan gangguan teknikal tidak berlaku.

Dapatan kajian bagi kategori ini menunjukkan bahawa kesemua item mendapat skor min yang tinggi. Nilai skor min bagi item "Pautan pada rubrik disediakan sebagai rujukan" ialah 3.93, skor min bagi item "Informasi yang diberikan menerusi aplikasi membantu pelajar membuat persediaan awal" ialah 3.96 dan skor min bagi item "Makluman mengenai panel penilai dan tarikh penilaian dapat diakses" ialah 3.86.

Diskusi

Menerusi dapatan kajian yang diperolehi daripada soal selidik, ianya menunjukkan pelajar paling bersetuju dengan item pertama daripada bahagian mesra pengguna. Ianya mempunyai skor min paling tinggi di antara kesemua item iaitu 4.07. Item tersebut menyatakan bahawa penggunaan aplikasi ini memudahkan pelajar memperolehi maklumat yang diperlukan. Aplikasi myFYP menyediakan pelbagai maklumat yang diperlukan oleh pelajar berkaitan dengan penilaian projek mereka. Melalui maklumbalas yang positif daripada pelajar berkenaan dengan akses kepada maklumat, telah membuktikan bahawa aplikasi myFYP membantu pelajar mendapatkan maklumat tersebut.

Item yang mempunyai skor min terendah adalah item keempat dalam bahagian rekabentuk. Item tersebut menyatakan bahawa gangguan teknikal tidak berlaku. Walaupun skor min tersebut ialah 3.46 di mana ianya termasuk dalam kategori tertinggi, tetapi daripada soal selidik didapati ada segelintir pelajar tidak bersetuju dengan item tersebut. Namun begitu jumlah pelajar itu terlalu sedikit berbanding dengan jumlah pelajar yang berpendapat bahawa tiada sebarang gangguan teknikal berlaku semasa menggunakan aplikasi myFYP. Ada kemungkinan gangguan teknikal tersebut berlaku disebabkan oleh telefon mudah alih pelajar tersebut tidak menyokong sebarang aplikasi Android contoh pelantar iOS (iPhone OS). Untuk penambahbaikan bagi versi myFYP yang akan datang, masalah berkaitan gangguan teknikal ini sepatutnya diberi tumpuan yang sewajarnya supaya ianya tidak berulang lagi. Untuk menyelesaikan masalah ini penyelidik disarankan untuk mengadakan bengkel penggunaan aplikasi myFYP di awal semester kepada para pelajar. Bagi pelajar yang menggunakan peranti selain daripada pelantar Android, mereka akan diajar untuk membuat instalasi aplikasi myFYP di komputer peribadi mereka melalui perisian Bluestack.

Kesimpulan

Secara kesimpulannya, persepsi pelajar terhadap aplikasi myFYP adalah positif. Mereka mendapati bahawa aplikasi myFYP mudah untuk digunakan terutamanya dalam mencapai maklumat penilaian projek yang diperlukan. Navigasi di antara paparan juga berjalan dengan lancar dan ianya memberi kepuasan kepada pelajar yang menggunakannya. Bagi perancangan

eISBN 978-967-2426-22-6
13th – 14th December 2020

untuk penambahbaikan, aspek gangguan teknikal hendaklah diperbaiki supaya aplikasi ini dapat digunakan oleh kesemua pengguna dengan baik.

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13th – 14th December 2020

TAHAP KESEDARAN PELAJAR MENGENAI KEPENTINGAN MATEMATIK DALAM BIDANG KEJURUTERAAN DI POLITEKNIK SULTAN HAJI AHMAD SHAH

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Abstrak: *Kajian ini dijalankan bertujuan untuk mengenal pasti tahap kesedaran pelajar Semester 1 mengenai kepentingan matematik dalam bidang kejuruteraan dan mengenal pasti tahap kefahaman pelajar Semester 1 mengenai matematik dalam kursus Engineering Mathematics 1 (DBM10013) di POLISAS. Kajian ini menggunakan pendekatan kuantitatif dan kaedah persampelan strata rawak berkadaran. Sampel kajian terdiri daripada 265 orang pelajar dari jabatan-jabatan kejuruteraan iaitu Jabatan Kejuruteraan Elektrik (JKE), Jabatan Kejuruteraan Mekanikal (JKM) dan Jabatan Kejuruteraan Awam (JKA). Instrumen yang digunakan berbentuk soal selidik yang mengandungi tiga bahagian menggunakan pengukuran skala Likert. Nilai kebolehpercayaan instrumen kajian adalah α = 0.967. Data dianalisis menggunakan perisian Statistical Package for the Social Science (SPSS) versi 17.0 bagi mendapatkan nilai peratusan, kekerapan dan skor min. Hasil analisis didapati tahap kesedaran pelajar mengenai kepentingan matematik adalah pada tahap yang tinggi dengan nilai min keseluruhan 4.34. Begitu juga dengan tahap kefahaman matematik dalam kursus Engineering Mathematics 1 pelajar kejuruteraan turut berada pada tahap yang tinggi dengan min keseluruhan 4.10. Walaupun tahap kesedaran dan kefahaman pelajar terhadap matematik tinggi, mungkin terdapat penambahbaikan yang lain perlu dikaji agar kedua-dua aspek tersebut dapat dikekalkan sebaik mungkin..*

Kata kunci: *Kesedaran, Kefahaman, Matematik, Politeknik, Kejuruteraan*

Pengenalan

Sistem pendidikan di Malaysia sentiasa berubah sejak sebelum merdeka sehingga hari ini, melibatkan aspek-aspek seperti kurikulum, bahasa pengantar, tenaga pengajar dan lain-lain. Semua itu merupakan usaha kerajaan untuk menambahbaik sistem yang sedia ada dari masa ke semasa. Zakaria (2014) menyatakan bahawa pendidikan merupakan perkara paling sesuai untuk menguruskan masyarakat yang berbilang kaum, bahasa, agama dan cara hidup. Manakala Sijil Pelajaran Malaysia (SPM) adalah peperiksaan yang wajib diambil dan lulus untuk membolehkan pelajar melanjutkan pelajaran di institusi pengajian tinggi awam atau swasta. Kelulusan dalam matapelajaran matematik di peringkat SPM sekurang-kurangnya gred C menjadi syarat utama bagi pelajar sekolah untuk melanjutkan pelajaran mereka ke peringkat diploma kejuruteraan di politeknik.

Pembelajaran matematik pula merupakan isu yang sering dibangkitkan dalam kalangan masyarakat kita. Pelbagai faktor dikatakan dapat mempengaruhi penguasaan dan prestasi dalam kalangan pelajar (Arsaythamby, 2010). Pendapat ini dikuatkan lagi dengan Mohd Nihra

eISBN 978-967-2426-22-6
13th – 14th December 2020

(2008), yang mengatakan bahawa matematik merupakan satu cabang ilmu yang melatih minda supaya berfikir secara mantik dan bersistem dalam menyelesaikan masalah dan membuat keputusan. Umumnya matematik terbahagi kepada dua iaitu Matematik Gunaan dan Matematik Tulen. Matematik Gunaan adalah sesuatu unsur manakala Matematik Tulen adalah hasil kajian yang dilakukan oleh pakar-pakar matematik.

Menurut Ahmad Shahrulazhar (2011), matematik adalah kajian berkaitan nombor dan gambarajah meliputi kuantiti, corak struktur, perubahan dan ruang. matematik juga dilihat sebagai lanjutan mudah kepada bahasa perbualan dan penulisan, dengan kosa kata serta tatabahasa yang sangat jelas, untuk menghurai dan mendalami hubungan fizikal dan konsep. Manakala Siti Balqis dan rakan (2017) pula berpendapat bahawa pengiraan asas dalam matematik sangat penting dalam membuat keputusan seharian, di samping mendorong manusia mengkaji pelbagai perkara seperti mengkaji pola, merekacipta sesuatu bentuk yang menarik dan seimbang serta menjadi alat kepada sains mencari kebenaran yang berkaitan dengan fenomena alam sekeliling kita.

Freundenthal (1991) dalam Mohd Nihra (2008) pula menyatakan bahawa matematik harus dikaitkan dengan realiti dan aktiviti manusia. Justru itu, matematik seharusnya rasional dengan kehidupan seharian mereka. Lebih-lebih lagi, dalam pengajian bidang kejuruteraan, sudah semestinya matematik begitu sinonim kepada pelajar-pelajar. Kajian ini dijalankan adalah untuk mengenal pasti tahap kesedaran pelajar mengenai kepentingan matematik dalam bidang kejuruteraan. Seterusnya, untuk mengenal pasti kefahaman pelajar mengenai matematik dalam kursus *Engineering Mathematics 1*, pengajian di Politeknik Sultan Haji Ahmad Shah (POLISAS).

Pernyataan Masalah

Memang tidak dapat dinafikan, matematik merupakan asas dalam pengajian kejuruteraan. Kurikulum politeknik telah digubal sebegitu rupa di mana matematik menjadi tonggak yang amat penting untuk pengajian bidang kejuruteraan. Berdasarkan kurikulum Matematik Kejuruteraan politeknik, pelajar dikehendaki mengambil kursus *Engineering Mathematics 1 (DBM10013)* pada Semester 1, *Engineering Mathematics 2 (DBM20023)* Semester 2 dan *Engineering Mathematics (DBM30033, DBM30043)* Semester 3 pengajian. Ketiga-tiga tahap matematik yang telah digubal menyediakan 3 jam kredit iaitu pemberatan yang agak besar (Sila rujuk Jadual 1 di bawah).

Jadual 1: *Engineering Mathematics* Mengikut Semester Pengajian

Tahap	Nama Kursus	Kod	Jam Kredit
Semester 1	*Engineering Mathematics 1*	*DBM10013*	3
Semester 2	*Engineering Mathematics 2*	*DBM20023*	3
Semester 3	*Engineering Mathematics*	*DBM30033/30043*	3

Pihak politeknik sentiasa berusaha untuk melaksanakan berbagai langkah ke arah memperkasakan matematik dalam kalangan pelajar. Bagi pihak pensyarah pula, akan memastikan pelajar-pelajar dapat menguasai matematik dengan baik untuk menjamin prestasi yang memberangsangkan yang akan dilihat dalam keputusan setiap penilaian dan pentaksiran yang ditetapkan.

Pemerhatian oleh pensyarah-pensyarah matematik di Jabatan Matematik, Sains dan Komputer terhadap pelajar-pelajar kejuruteraan mendapati secara umumnya, mereka tidak menggambarkan sikap yang cakna terhadap matematik. Ini boleh dikaitkan dengan kajian dijalankan oleh Siti Huzaifah dan Nor Sharidah (2017) yang menyatakan tahap kebimbangan

eISBN 978-967-2426-22-6
13th – 14th December 2020

terhadap Matematik adalah 67.9% (dengan skor min 3.24). Fenomena yang sering berlaku adalah lewat hadir ke kelas dengan alasan lewat bangun selain dari tidak sihat. Pelajar ini juga tidak memberi sepenuh perhatian semasa sesi pengajaran berlangsung dalam kelas. Keadaan sering berlaku di mana pelajar tertidur, bercerita sesama sendiri, bermain gajet, tidak mengemukakan soalan jika ada masalah dan tidak proaktif semasa dalam kelas. Seringkali juga kelihatan pelajar menyiapkan tugasan untuk kursus-kursus yang lain semasa mengikuti kelas matematik.

Apabila sesuatu penilaian dan pentaksiran dilaksanakan, didapati mereka tidak begitu membuat persediaan yang wajar untuk menjawab soalan-soalan penilaian yang diberi. Ini menyebabkan pencapaian yang ditunjukkan oleh pelajar-pelajar ini tidak begitu memberangsangkan. Terdapat kes di mana berlakunya pelajar mengulang kursus matematik setiap semester. Keadaan ini menyebabkan pelajar terpaksa menambah bilangan semester pengajian mereka seterusnya menjejaskan peluang pelajar untuk menamatkan pengajian dalam masa yang ditetapkan. Merujuk kepada *Key Performance Index* (KPI) yang ditetapkan oleh politeknik, kadar kelulusan pelajar hendaklah mencapai 90% di mana sekurang-kurangnya 30% pelajar yang lulus mencapai Purata Mata Nilai (PNM) 3.00 bagi setiap kursus.

Keadaan yang berlaku memberi gambaran bahawa persepsi pelajar terhadap Matematik seolah-olah matematik bukannya satu kursus yang penting berbanding dengan kursus kejuruteraan yang lain. Pensyarah juga beranggapan bahawa pelajar-pelajar kejuruteraan memberi lebih tumpuan kepada kursus-kursus teras yang lain di jabatan induk. Dalam masa yang sama, pensyarah telah mengambil pendekatan dengan mempelbagaikan kaedah dalam pelaksanaan pengajaran dan pembelajaran (PdP).

Situasi ini mencetus idea penulis untuk menjalankan kajian terhadap tahap kesedaran pelajar mengenai kepentingan Matematik dan apakah tahap kefahaman pelajar-pelajar ini mengenai matematik dalam *Engineering Mathematics 1*, DBM10013.

Objektif Kajian

i. Mengenal pasti tahap kesedaran pelajar mengenai kepentingan matematik dalam bidang kejuruteraan di POLISAS.
ii. Mengenal pasti tahap kefahaman matematik dalam kursus *Engineering Mathematics 1* (DBM10013) pelajar program kejuruteraan di POLISAS.

Persoalan Kajian

i. Apakah tahap kesedaran pelajar terhadap keperluan matapelajaran matematik dalam bidang kejuruteraan di POLISAS?
ii. Apakah tahap kefahaman matematik dalam kursus *Engineering Mathematics 1* (DBM10013) pelajar kejuruteraan di POLISAS?

Skop Kajian

Kajian ini memberi tumpuan kepada pelajar - pelajar bidang kejuruteraan sahaja. Sampel kajian terdiri daripada 265 orang pelajar POLISAS yang diambil secara rawak melibatkan tiga jabatan iaitu Jabatan kejuruteraan Awam (JKA), Jabatan Kejuruteraan Elektrik (JKE) dan Jabatan Kejuruteraan Mekanikal (JKM). Tumpuan kajian hanya memfokuskan kepada tahap kesedaran pelajar mengenai kepentingan matematik dalam bidang kejuruteraan dan tahap kefahaman pelajar mengenai *Engineering Mathematics 1*, DBM10013, kursus Matematik dalam Semester 1 pengajian di politeknik.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kepentingan Kajian

Kajian ini penting bagi mengenal pasti kesedaran pelajar mengenai kepentingan matematik. Kajian ini juga dijalankan bagi mengenal pasti tahap kefahaman pelajar dalam kursus matematik di politeknik. Kajian ini diharap dapat meningkatkan tahap kesedaran pelajar terhadap kepentingan matematik dalam kehidupan seharian terutamanya untuk menceburi dalam kerjaya sekaligus menimbulkan minat pelajar terhadap matematik yang akan membantu mereka menguasai kursus tersebut seterusnya dapat meningkatkan prestasi dan pencapaian pelajar ke tahap yang lebih cemerlang.

Kajian ini juga diharap dapat membantu jabatan untuk mengenali faktor-faktor yang penting dalam usaha meningkatkan peratus lulus kursus matematik di peringkat politeknik. Selain itu dapat memberi panduan kepada pensyarah kursus matematik untuk lebih fokus kepada keperluan pelajar –pelajar ini dalam meningkatkan prestasi cemerlang dalam matematik ke arah meninggikan martabat profesion pendidikan politeknik.

Kajian Literatur

Siti Huzaifah & Nor Sharidah (2017) menegaskan bahawa matematik merupakan satu kemahiran yang penting dalam bidang pekerjaan, khususnya berkaitan kejuruteraan, teknologi maklumat, perniagaan dan perakaunan. Justeru itu, bakal graduan lepasan institusi pengajian tinggi amat dititikberatkan dengan pengetahuan Matematik. Bahkan graduan aliran *Technical and Vocational Education and Training* (TVET) juga perlu menguasai kemahiran matematik.

Menurut Noor Hazwan (2006), subjek matematik menyumbang kepentingan yang tinggi dalam pembangunan sains dan teknologi ketika ini. Matematik Gunaan memainkan peranan penting sebagai asas kepada pengetahuan lain selain menjadi aplikasi utama dalam menyelesaikan masalah dalam bidang kejuruteraan pembinaan dan pembangunan khususnya. Manakala Nor Azreen Ayub et. al. (2013) pula berpendapat bahawa konsep pembelajaran yang betul dalam matapelajaran Matematik amat sukar untuk dicapai disebabkan oleh ciri-ciri matematik itu sendiri yang mana kebanyakkan konsepnya saling berkait di antara konsep-konsep yang lain.

Yudariah & Roselainy (2001), berpendapat bahawa pelajar yang mendapat keputusan yang lemah di dalam Matematik Tambahan di peringkat sekolah telah menunjukkan prestasi yang kurang memuaskan di dalam keputusan asas matematik dan kalkulus di awal tahun peperiksaan di peringkat universiti. Hal ini disokong dengan kajian yang dilakukan oleh Francesca dan Caterina (2010) dan Glenda (2000), di mana terdapat hubungan dan kesan di antara latar belakang pendidikan matematik di sekolah menengah dengan sikap pelajar terhadap pencapaian Matematik dan Statistik.

Usaha untuk memperkasakan pendidikan matematik dalam Sistem Pendidikan Kebangsaan memerlukan tindakan yang bersungguh-sungguh untuk mengenal pasti dan menangani isu kritikal. Hanya mereka yang berpandangan jauh dan berfikiran terbuka dapat mendukung aspirasi besar untuk membangunkan pendidikan matematik yang cemerlang (Nik Azis, 2008).

Menerusi penguasaan matematik, pemikiran manusia menjadi semakin matang. Setiap masalah akan dikajiselidik dari pelbagai sudut untuk mencari jalan penyelesaian (Nor Azreen Ayub et. al., 2013).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Metodologi Kajian

Rekabentuk Kajian

Kajian ini dijalankan secara kuantitatif dan berbentuk deskriptif. Menurut Mohamad Najib (1999), kajian yang berbentuk deskriptif adalah bersesuaian dan bertepatan dengan permasalahan kajian yang dikaji serta dijalankan pada masa yang telah ditetapkan. Kaedah ini adalah mudah dan popular digunakan. (Mohd Najib, 2003) Manakala kajian kuantitatif merupakan satu bentuk kajian yang melibatkan item-item soal selidik. Ini kerana hasil dapatan kajian ini adalah dalam bentuk angka-angka atau nombor yang boleh diukur dan dianalisis dengan menggunakan kaedah-kaedah tertentu. Yusof (2008) pula berpendapat, kaedah penyelidikan deskriptif merupakan kaedah penyelidikan kuantitatif yang paling asas. Pendapat ini disokong oleh Chua (2006), dengan mengatakan bahawa penyelidikan kuantitatif adalah tingkah laku yang diperhatikan dengan menggunakan angka-angka dan operasi Matematik.

Sampel Kajian

Dalam penyelidikan pendidikan, mengenal pasti populasi adalah penting kerana ia menentukan bidang masalah yang perlu dikaji termasuk data dan maklumat yang perlu dikumpulkan (Mohd Azamri dan Saifulnizam, 2017).

Populasi kajian terdiri daripada semua pelajar yang pernah menduduki *Engineering Mathematics 1* DBM 10013 di Semester 1 pengajian iaitu seramai 850 orang (Sesi Jun 2019). Bilangan sampel yang dipilih adalah mengikut jadual populasi Krejcie, R.V dan Morgan, D.W(1970). Pengkaji hanya fokus kepada pelajar kejuruteraan di tiga jabatan induk di POLISAS iaitu JKA, JKE dan JKM. Penyelidik menggunakan kaedah persampelan secara rawak mudah iaitu kaedah persampelan strata rawak berkadaran untuk mendapatkan data kajian. Borang soal selidik telah diedarkan kepada 310 pelajar sebagai samplel dan sebanyak 265 responden yang telah menjawab dengan memuaskan soal selidik yang diberikan. Bagi tujuan kajian, nama dan maklumat peribadi sampel kajian dirahsiakan. Sampel kajian juga telah diberikan taklimat serta prosedur ringkas tentang tujuan kajian dijalankan.

Jadual 2:Taburan Responden Mengikut Jabatan

Jabatan	Bilangan	Peratus
Jabatan Kejuruteraan Elektrik	109	35.1
Jabatan Kejuruteraan Awam	113	36.6
Jabatan Kejuruteraan Mekanikal	88	28.3

Instrumen Kajian

Penyelidik telah menggunakan instrumen soal selidik untuk mengumpul data. Uma Sekaran (2003) berpendapat bahawa soal selidik adalah cara yang paling berkesan dalam proses pengumpulan data yang berkaitan apabila pengkaji mengetahui dengan tepat apa yang diperlukan dalam kajian. Pendapat ini disokong oleh Yusof (2008), yang mengatakan bahawa soal selidik merupakan teknik untuk mendapatkan jawapan secara bertulis dengan menyediakan borang soal selidik dan soalan-soalan yang relevan mengikut objektif kajian. Kelebihan menggunakan borang soal selidik ialah boleh dihantar melalui pos, emel atau diselia sendiri oleh pengkaji. Manakala responden boleh menjawab tanpa kehadiran pengkaji.

Chua (2009) pula berpendapat bahawa soal selidik yang dibina hendaklah mempunyai unsur keaslian. Manakala Yusof (2008) pula menyatakan bahawa soal selidik yang baik adalah mempunyai ayat-ayat yang jelas, persembahan yang menarik dan tidak terlalu panjang sehingga membosankan responden.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Instrumen soal selidik kajian kami terdiri daripada 3 bahagian iaitu bahagian A, B dan C sebagaimana Jadual 3.2. Borang soal selidik ini telah diedarkan kepada semua sampel kajian untuk mengumpul data. Soal selidik yang telah dibina diadaptasi dari Abdul Razak Idris dan Hafiza Akmal Yusoff (2010).

Kajian rintis telah dilaksanakan untuk menguji kebolehpercayaan soal selidik. Hasil yang didapati pada analisis menunjukkan soal selidik ini mempunyai kebolehpercayaan yang tinggi di mana nilai *alpha cronbach* adalah 0.967. Berdasarkan Mohd Najib (2003), nilai koefisien melebihi 0.6 adalah nilai yang boleh diterimapakai dan berupaya mengukur pembolehubah dalam kajian ini dengan baik.

Berikut adalah huraian bagi kandungan soal selidik yang telah diedarkan kepada sample kajian.

Jadual 3: Kandungan Soal Selidik

Bahagian	Butiran
Bahagian A	Mengandungi item-item berkaitan dengan maklumat latarbelakang/demografi responden seperti jantina, bangsa, jabatan, kelulusan akademik sebelum pengajian di POLISAS, gred matapelajaran Matematik di peringkat SPM dan gred pencapaian Matematik Kejuruteraan Semester 1 di politeknik.
Bahagian B	Mengandungi item-item untuk menguji tahap kesedaran pelajar mengenai kepentingan Matematik dalam bidang kejuruteraan
Bahagian C	Mengandungi item-item untuk mengukur tahap kefahaman pelajar mengenai Matematik dalam kursus *Engineering Mathematics 1* (DBM1013) bidang kejuruteraan.

Setiap item dalam Bahagian B dan C mengandungi pilihan jawapan berdasarkan Skala Likert yang menyatakan darjah persetujuan berbentuk skala lima mata seperti Jadual 4.

Jadual 4: Skala Pemeringkatan Likert

Skala	Tafsiran
1	Sangat tidak setuju (STS)
2	Tidak setuju (TS)
3	Kurang setuju (KS)
4	Setuju (S)
5	Sangat setuju (SS)

(Sumber: Chua Y.P.,2006)

Dapatan Kajian Dan Perbincangan

Data yang telah dikumpul dianalisis menggunakan perisian SPSS versi 17.0 secara deskriptif dan inferensi seperti skor min dan peratus. Tahap kesediaan pelajar mengenai kepentingan matematik dalam bidang kejuruteraan dan tahap kefahaman matematik dalam kursus *Engineering Mathematics 1* (DBM10013) pelajar kejuruteraan diukur menggunakan skor min berdasarkan jadual yang ditentukan oleh Yahaya, (2007).

Jadual 5 Jadual Skor Dan Tahap Skor

Skor	Tahap
1.00-2.33	Rendah
2.34-3.66	Sederhana
3.67-5.00	Tinggi

(Sumber: Yahaya, 2007)

eISBN 978-967-2426-22-6
13th – 14th December 2020

Demografi Responden Kajian

Maklumat demografi responden telah dianalisa dan ditunjukkan dalam Jadual 6.

Jadual 6: Taburan Frekuensi Bagi Jantina, Bangsa Dan Jabatan Responden

Pembolehubah	Frequensi	Peratus (%)
Jantina:		
Lelaki	194	73.2
Perempuan	71	26.8
Bangsa:		
Melayu	254	95.8
Cina	0	0
India	8	3
Lain-lain	3	1.1
Jabatan :		
JKA	106	40
JKM	68	25.7
JKE	91	34.3

Merujuk kepada Jadual 6, responden terdiri daripada 265 orang pelajar iaitu, 194 orang (73.2%) adalah pelajar lelaki dan 71 orang (26.8%) pelajar perempuan. Manakala mengikut bangsa, 25 orang (95.8%) responden adalah Melayu, 8 orang (3%) responden adalah India dan selebihnya iaitu 3 orang (1.1%) dari lain-lain bangsa.

Mengikut jabatan pula, majoriti responden adalah dari JKA iaitu seramai 106 orang (40%). Responden dari JKM dan JKE masing-masing adalah 68 (25.7%) dan 91 orang (34.3%)

Jadual 7: Taburan Frekuensi Bagi Kelulusan Akademik, Gred Matematik SPM Dan Gred *Engineering Mathematics 1* Responden

Pembolehubah	Frequensi	Peratus (%)
Kelulusan Akademik		
SPM	258	97.4
STPM	0	0
Sijil Kolej Komuniti	4	1.5
Sijil Kemahiran IKM/ ILP/	2	0.8
Giat Mara		
Lain-lain	1	0.4
Gred Matematik Moden (SPM)		
A+, A, A- (1.00)	59	22.3
B+, B, B- (2.00)	97	36.6
C+, C , C- (3.00)	97	36.6
D+ , D, D- (4.00)	11	4.2
E (5.00)	1	0.4
F (6.00)	0	0
G (7.00)	0	0
Gred Matematik Tambahan (SPM)		
A+, A, A- (1.00)	4	1.5
B+, B, B- (2.00)	3	1.1
C+, C , C- (3.00)	11	4.2
D+ , D, D- (4.00)	16	6
E (5.00)	24	9.1
F (6.00)	10	3.8
G (7.00)	23	8.7
Tidak Berkenaan	174	65.7

eISBN 978-967-2426-22-6
13th – 14th December 2020

Gred *Engineering Mathematics 1* (DBM10013)		
A+, A, A- (1.00)	97	36.6
B+, B, B- (2.00)	106	40
C+, C , C- (3.00)	52	19.6
D+ , D, D- (4.00)	7	2.6
E (5.00)	3	1.1
F (6.00)	0	0
G (7.00)	0	0

Jadual 7 menunjukkan demografi dari segi kelulusan akademik, majoriti responden berlatarbelakang kelayakan Sijil Pelajaran Malaysia (SPM) iaitu sejumlah 258 orang pelajar (97.4%). Selebihnya berkelulusan dari Kolej Komuniti, Kolej Kemahiran (contohnya Institut Latihan Perindustrian, ILP) dan lain-lain kelulusan.

Pencapaian Matematik Moden pelajar di peringkat SPM pula menunjukkan bahawa seramai 59 orang pelajar (22.3%) mencapai gred A. Majoriti pelajar mendapat keputusan gred B dan C iaitu masing-masing 36.6% (97 orang). Manakala 4.6% atau 12 orang pelajar mencapai gred minima. seramai 59 orang mendapat gred A, 97 orang mendapat gred B, 97 orang mendapat gred C, 11 orang mencapai gred D dan seorang pelajar mendapat gred E. Dari jumlah 265 orang responden, hanya 91 orang responden menduduki peperiksaan untuk Matematik Tambahan di peringkat SPM dengan pencapaian gred A 4 orang, B-E 54 orang, F dan G 33 orang.

Bagi kursus *Engineering Mathematics 1* di politeknik, pencapaian pelajar dalam *Engineering Mathematics 1* DBM10013 pula, Jadual 7 menunjukkan 100% responden mencapai kelulusan gred A hingga E di mana 97 orang (36.6%) mencapai gred A dan 3 orang (1.1%) mencapai gred E.

Analisis Tahap Kesedaran Pelajar Mengenai Kepentingan Matematik

Jadual 8: Analisis Min terhadapTahap Kesedaran Pelajar Mengenai Kepentingan Matematik

Item	Min	Tafsiran
Saya sedar matapelajaran Matematik satu keperluan dalam bidang kejuruteraan	4.56	Tinggi
Saya sedar matapelajaran Matematik mempunyai nilai mata kredit yang tinggi	4.46	Tinggi
Saya sedar matapelajaran Matematik banyak kaitan dengan matapelajaran lain	4.45	Tinggi
Saya sedar keputusan Matematik membantu menentukan pointer setiap semester saya	4.45	Tinggi
Saya sedar saya wajib mahir matematik sepanjang saya belajar di Politeknik.	4.45	Tinggi
Saya membuat latihan matematik setiap hari	3.83	Tinggi
Kawan saya sentiasa ingatkan saya bahawa matematik penting dalam kehidupan	3.88	Tinggi
Saya sedar fungsi matapelajaran Matematik	4.29	Tinggi
Saya sedar matematik wajib lulus di Politeknik	4.46	Tinggi
Saya sedar matematik adalah asas kepada matapelajaran kejuruteraan.	4.54	Tinggi
Min keseluruhan	**4.34**	**Tinggi**

Berdasarkan Jadual 8, analisis Tahap Kesedaran Pelajar Mengenai Kepentingan Matematik menunjukkan skor min yang paling tinggi adalah 4.56 iaitu bagi item Saya sedar

eISBN 978-967-2426-22-6
13th – 14th December 2020

matapelajaran matematik satu keperluan dalam bidang kejuruteraan. Skor min yang paling rendah adalah 3.83 iaitu item Saya membuat latihan matematik setiap hari. Min keseluruhan bagi analisis Tahap Kesedaran Pelajar Mengenai Kepentingan Matematik adalah 4.34. Ini menunjukkan bahawa tahap kesedaran pelajar mengenai kepentingan matematik adalah tinggi.

Bagi item yang menghasilkan skor min paling tinggi, 60.8% (161) dari jumlah responden sangat setuju (skala 5) bahawa saya sedar matapelajaran matematik satu keperluan dalam bidang kejuruteraan. Manakala 36.2% (96) responden setuju (skala 4) bagi item tersebut. Selebihnya iaitu 3.1% (8) memilih kurang setuju, tidak setuju dan sangat tidak setuju (skala 3, 2 dan 1) kenyataan bagi item ini. Maklumat ini boleh dirujuk pada Jadual 9 berikut.

Jadual 9: Taburan Frequensi Bagi Item Skor Min Paling Tinggi

	Frekuensi	Peratus
Sangat Tidak Setuju	2	.8
Tidak Setuju	1	.4
Kurang Setuju	5	1.9
Setuju	96	36.2
Sangat Setuju	161	60.8
Total	265	100.0

Analisis Tahap Kefahaman Matematik Dalam Kursus Engineering Mathematics (DBM10013) pelajar kejuruteraan

Jadual 10: Analisis Min Terhadap Tahap Kefahaman Matematik Dalam Kursus *Engineering Mathematics 1* (Dbm10013) Pelajar Kejuruteraan.

Item	Min	Tafsiran
Saya faham isi pelajaran Matematik	4.09	Tinggi
Saya faham konsep Matematik dengan baik	4.08	Tinggi
Saya faham semua jalan kerja Matematik	4.03	Tinggi
Saya dapat memahami penerangan yang diberi semasa di dalam kelas	4.15	Tinggi
Saya merasa diri saya mesra dengan Matematik.	4.13	Tinggi
Min keseluruhan	**4.10**	**Tinggi**

Berdasarkan Jadual 10, analisis min menunjukkan skor min yang paling tinggi adalah bagi item saya dapat memahami penerangan yang diberi semasa dalam kelas dengan nilai min 4.15. Manakala skor min yang paling rendah adalah bagi item saya faham semua jalan kerja matematik iaitu 4.03. Min keseluruhan bagi Tahap Kefahaman Matematik dalam kursus *Engineering Mathematics 1* pelajar Kejuruteraan adalah 4.10.

Ini bermakna tahap kefahaman matematik pelajar kejuruteraan terhadap kursus *Engineering Mathematics 1* adalah tinggi bagi responden yang terlibat.

Bagi item yang mencapai skor paling tinggi, 31.7% (84 responden) memilih sangat setuju, (skala 5), 54% (143 responden) setuju (skala 4) dan selebihnya memilih kurang setuju, tidak setuju dan sangat tidah setuju. Maklumat ini boleh dirujuk pada Jadual 11.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 11: Taburan Frekuensi Bagi Item Skor Min Paling Tinggi

	Frekuensi	Peratus
Sangat Tidak Setuju	1	.4
Tidak Setuju	5	1.9
Kurang Setuju	32	12.1
Setuju	143	54.0
Sangat Setuju	84	31.7
Total	265	100.0

Kesimpulan

Secara keseluruhannya, tahap kesedaran pelajar mengenai kepentingan matematik dalam bidang kejuruteraan berada pada tahap yang tinggi. Keadaan yang sama didapati bagi tahap kefahaman matematik dalam kursus *Engineering Mathematics 1* pelajar di mana ia juga berada pada tahap yang tinggi. Ini bermakna pelajar kejuruteraan di POLISAS mempunyai kesedaran yang tinggi bahawa matematik penting dalam bidang kejuruteraan. Tahap kefahaman pelajar kejuruteraan dalam kursus *Engineering Mathematics 1* juga adalah tinggi di mana mereka bersetuju bahawa mereka dapat memahami penerangan yang diberi semasa dalam kelas. Walaupun tahap kesedaran dan kefahaman berada pada tahap yang tinggi, faktor-faktor lain perlu dikaji untuk penambaikan kedua-dua aspek tersebut agar situasi ini dapat dikekalkan dalam melahirkan graduan yang berketrampilan, efisien dan cemerlang matematik.

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13th – 14th December 2020

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13th – 14th December 2020

IMPAK STAFF LOCATION POINTER TERHADAP PENCAPAIAN PELAJAR PROGRAM GEOMATIK POLITEKNIK TUANKU SULTANAH BAHIYAH

Hazhar bin Hamid[1]

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Abstrak: *Kajian ini adalah merupakan kajian keberkesanan terhadap penghasilan alat bantu mengajar iaitu tapak khas bagi setaf aras yang bertujuan untuk membantu pensyarah dan pelajar Diploma Kejuruteraan Awam dan Diploma Geomatik dalam melaksanakan amali ukur aras. Produk yang dihasilkan dapat mengatasi masalah pelajar dalam melaksanakan amali ukur aras dengan mengurangkan masalah kedudukan setaf yang berubah-ubah. Majoriti pelajar menghadapi masalah untuk mendapatkan ketepatan dalam ukuran. Salah satu punca ukur aras tidak dapat dilaksanakan dengan tepat ialah kerana kedudukan setaf yang berubah. Hasil daripada pemantaun semasa amali berlansung, hampir semua pelajar menggunakan telefon bimbit semasa menjalankan amali terutama amali ukur aras. Dalam amali ukur aras, setaf perlu diletakkan pada titik yang sama bagi bacaan hadapan dan belakang. Kedudukan setaf yang berganjak boleh mengurangkan ketepatan ukuran. Fungsi produk yang dihasilkan adalah mengawal kadar selisih dalam setiap kerja ukur aras yang dilakukan. Dengan adanya produk ini, ia mampu mengurangkan selisih semasa mengalihkan setaf. Tapak khas ini diperbuat daripada besi dan getah ringan yang tahan lasak dan boleh digunakan pada pelbagai permukaan sama ada di atas tanah, bukit, rumput dan berbagai permukaan lain. Penggunaan tapak khas yang diberi nama Staff Location Pointer (SLP) ini membantu pelajar mengurangkan masalah kedudukan setaf yang berubah daripada titik asal serta mengurangkan masa yang diambil oleh pelajar semasa membuat kerja ukur aras. Hasil daripada penggunaan produk ini, Laporan CORR bagi Kursus Engineering Surveying 1 (DCG2043) bagi sesi Disember 2018 meningkat sebanyak 9%. Pencapaian sesi Disember 2018 juga merupakan pencapaian yang tertinggi iaitu 83% berbanding sesi –sesi yang lepas. Produk ini juga berjaya membantu pasukan Polyskills Geomatik PTSB memenangi Pertandingan Kemahiran Politeknik Malaysia (Polyskills 2018) peringkat kebangsaan sebagai johan. Polyskills 2018 menguji peserta dalam ukur aras.*

Kata Kunci: *+++666+663.Ukur Aras, Geomatik, Ukur Kejuruteraan*

Pendahuluan

Ukur Aras merupakan satu elemen ukur yang penting dalam bidang Geomatik dan Kejuruteraan Awam. Ukur aras dilaksanakan untuk mendapatkan nilai ketinggian suatu titik di atas permukaan bumi berdasarkan satu datum rujukan yang diketahui nilai aras iaitu Stesen Tanda Aras *Bench Mark* (BM). BM adalah tanda yang mempunyai nilai aras laras yang merujuk kepada Aras Purata Laut (MSL). Nilai ketinggian suatu titik di permukaan bumi amat penting dalam merancang suatu projek pembinaan. Data ukur aras diperlukan dalam perancangan kerja-kerja kejurteraan awam bagi mendapatkan profil tanah dan sebagai stesen kawalan pugak. Ketepatan data ukur aras ditentukan dengan menggunakan kaedah tinggi garis kolimatan dan kaedah naik turun. (Jamal, Levelling in Engineering)

eISBN 978-967-2426-22-6
13th – 14th December 2020

Prosedur kerja ukur aras adalah ringkas namun memerlukan tumpuan yang tinggi. Pensyarah dan pelajar perlu memahami konsep dan prinsip ukur aras bagi memastikan data yang diperoleh adalah tepat dan diterima. Namun, kemajuan teknologi pada masa kini menjadikan pelajar leka dengan gajet di tangan semasa melaksanakan ukur aras. Hasil daripada pemantaun semasa amali berlansung, hampir semua pelajar menggunakan telefon bimbit semasa menjalankan amali terutama amali ukur aras. Dalam amali ukur aras, setaf perlu diletakkan pada titik yang sama bagi bacaan hadapan dan belakang. Kedudukan setaf yang berganjak boleh mengurangkan ketepatan ukuran. Kesimpulan awal yang dapat dibuat melalui pemerhatian ini adalah pelajar leka dengan telefon bimbit semasa melaksanakan amali ukur aras sehingga menyebabkan kedudukan setaf berganjak daripada keududukan asalnya.

Berdasarkan laporan CORR daripada sesi Disember 2015 sehingga sesi Jun 2018, bagi kursus Ukur Kejuruteraan 1 yang diperoleh daripada i-exam pada Sistem Pengurusan Maklumat Politeknik (SPMP), mendapati peratusan markah pelajar bagi CLO 2 iaitu penilaian terhadap amali ukur aras dan ukur perimeter adalah di antara 62 ke 74 peratus sahaja. Antara penyumbang kepada peratusan ini adalah kerana pelajar tidak dapat melaksanakan amali ukur aras dengan betul. Hal ini menguatkan lagi andaian bahawa kegagalan pelajar melaksanakan amali ukur aras dengan betul adalah kerana kedudukan setaf yang tidak berada pada kedudukan yang sama semasa bacaan pandangan hadapan dan pandangan belakang diambil.

Bagi mengatasi masalah ini, satu alat bantu mengajar yang mampu mengurangkan pergerakan setaf daripada titik asalnya telah dihasilkan. Alat yang direka supaya dapat membantu pensyarah dan pelajar dalam memahami prinsip ukur aras. Alat yang dihasilkan dinamakan “Staff Location Pointer” atau secara ringkasnya “SLP”.

Kajian Literatur

Dalam bidang Geomatik, tiga kuantiti asas diukur, iaitu tinggi, bering dan jarak. Ukur Aras adalah nama salah satu kaedah untuk menentukan ketinggian.Ukur aras adalah proses pengukuran perbezaan ketinggian antara 2 atau lebih titik. Di dalam kerja-kerja kejuruteraan, terutamanya kerja pembinaan, ukur aras terlibat dalam setiap peringkat iaitu daripada peringkat kajian awal tapak dengan penyediaan pelan topografi, sehingga ke peringkat akhir pembinaan iaitu *setting out*. (J.Uren, Surveying for Engineers).

Ukur aras memerlukan 1 alat aras *optical level* bersama dengan kaki tiga dan sepasang setaf ukur. Setaf ialah salah satu peralatan yang digunakan dalam ukur aras untuk mengukur jarak menegak di atas atau di bawah garis kolimantan dan setaf digunakan adalah setaf metrik yang boleh dipanjangkan dan dipendekkan atau *Stopwith* iaitu dalam unit imperial. Setiap satu senggatan adalah bersamaan satu sentimeter. Dengan ini, bacaan boleh dibuat kepada 1mm yang hampir. Dalam penggunaan setaf juga digunakan bersama gelembung setaf *(Staff Bubble)* yang digunakan untuk memastikan setaf didirikan betul-betul tegak dan selalunya dilengkapkan pada gelembung setaf yang dapat membantu kepugakan setaf. (Fadzil, Subtopik Peralatan Ukur).

Pandangan belakang adalah pandangan pertama yang diambil setelah proses dirisiap alat aras ataupun ianya merupakan bacaan setaf yang diambil di atas satu titik yang diketahui ukuran tingginya. Pandangan hadapan ialah pandangan terakhir yang diambil sebelum dipindahkan alat aras kepada kedudukan titik yang lain. Pandangan antara adalah merupakan bacaan setaf yang diambil pada titik-titik antara yang terletak di antara pandangan belakang dan hadapan supaya dapat mengumpulkan data-data yang dikehendaki. Secara ringkasnya, pandangan antara adalah sebarang pandangan tambahan yang dibuat di antara pandangan hadapan dan belakang. Titik pindah ialah satu titik di mana padanya kedua-dua pandangan,

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13th – 14th December 2020

iaitu dengan mula diambil pandangan hadapan dan kemudiannya dibuat pula pandangan belakang. (Farah, Aras Levelling)

Ukur Aras sangat penting dalam menghasilkan pelan topografi bagi sesuatu kawasan pembinaan dan untuk kerja-kerja ukur kawalan pugak semasa memancang tanda *setting out* dan juga digunakan bagi menanda kecerunan tanah untuk tujuan tertentu seperti kerja penambakan dan pemotongan tebing serta pengaliran air. (Hazaldin,Ukur Aras dan Maksudnya)

Metodologi

Kajian ini dijalankan dengan menggunakan kaedah *Design Thinking. Ia merangkumi 5 peringkat utama iaitu* empati yang mengenalpasti masalah yang berlaku secara dekat. Kedua, ialah menjelaskan hipotesis awal yang boleh meningkatkan kemahiran pensyarah dan penguasaan pelajar dalam ukur aras. Proses yang ketiga ialah mendapatkan idea berdasarkan hipotesis yang telah dibuat. Setelah mendapat idea, proses mereka bentuk alat dan pemilihan bahan yang sesuai dilakukan. Seterusnya, apabila prototaip berjaya dihasilkan, 3 ujian dijalankan bagi membuktikan keberkesanan alat yang dihasilkan. Alat yang dihasilkan telah digunakan dalam amali ukur aras oleh pelajar Ukur Kejuruteraan 1 bagi sesi Disember 2018.

Melalui proses empati, dua kaedah pemerhatian telah dijalankan iaitu pemerhatian dekat ketika pelajar sedang melaksanakan amali dan melalui kajian terhadap Laporan CORR bagi kursus *Engineering Surveying 1*. Daripada proses empati tersebut, 2 hipotesis telah dikeluarkan iaitu pelajar perlu menguasai dan melaksanakan amali ukur aras dengan betul dan pensyarah berupaya menjelaskan kepentingan setaf alat ukur aras dalam ukur aras. Perbincangan serta kajian terhadap laporan kajian-kajian terdahulu dibuat, bagi mendapatkan kaedah yang sesuai dan idea yang bernas.

Bahan seperti besi keluli dan getah telah dipilih kerana ciri-ciri yang tahan lama dan murah. Proses mereka bentuk merangkumi spesifikasi produk kajian dalam lakaran berbentuk 2D. Setelah proses rekabentuk dan bahan produk dipilih, proses pengiraan kos bagi penghasilan produk dibuat.. Tinggi alat SLP adalah sebanyak 0.06cm yang perlu ditolak (-) dengan nilai bacaan pandangan hadapan dan belakang pada setiap titik pindah(TP).

Sebanyak 3 ujian telah dijalankan ke atas alat dengan membuat pengukuran aras. Ukur aras dengan menggunakan alat ini telah dijalankan di atas 3 permukaan yang berbeza iaitu kawasan berbukit, permukaan keras (jalan tar) dan permukaan lembut (kawasan berumput). Ujian telah dilakukan dengan menjalankan 2 sesi cerapan ukur aras bagi setiap ujian iaitu cerapan menggunakan alat SLP dan tanpa menggunakan alat SLP. Pengiraan ketepatan data dibuat menggunakan kaedah turun naik untuk mendapatkan nilai selisih setiap pengukuran. Selisih yang diperoleh, dibuat perbandingan antara menggunakan alat SLP dan tanpa menggunakan alat SLP.

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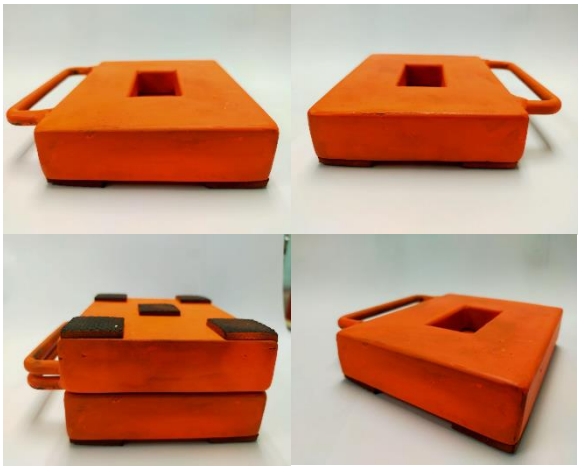
13th – 14th December 2020

Carta Alir

Rajah 1: Carta Alir Kajian

Spesifikasi SLP



Rajah 2: Rupa bentuk SLP.

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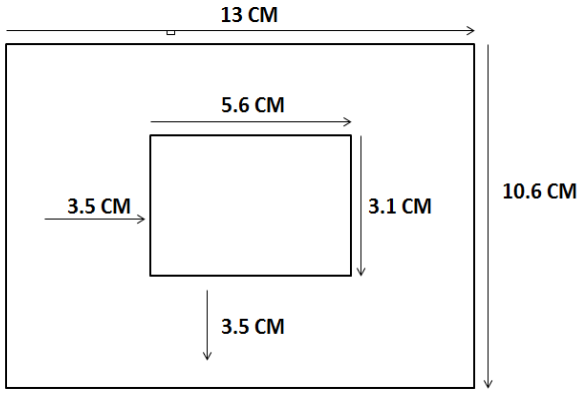
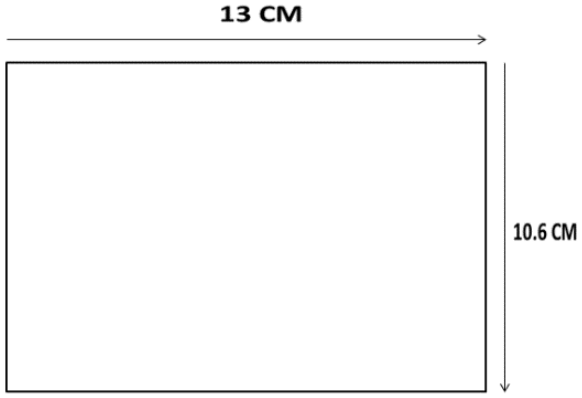
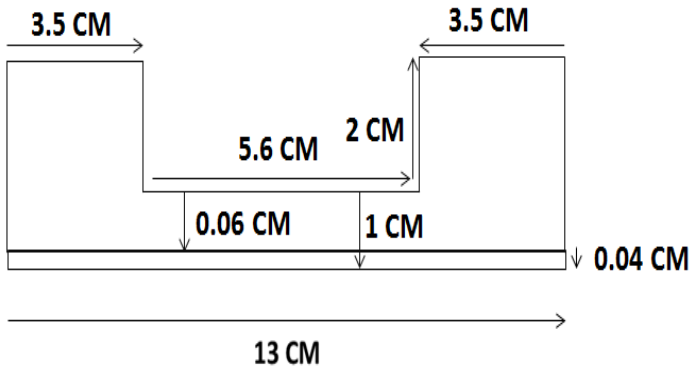
13th – 14th December 2020



Rajah 3: Pandangan Hadapan SLP



Rajah 4: Pandangan Bawah SLP



Rajah 5: Keretan Rentas Sisi SLP.

Ciri – Ciri SLP

SLP terdiri daripada dua bahan asas iaitu besi dan getah. Besi digunakan sebagai struktur utama SLP kerana ketahanan, kos yang murah dan mudah dibentuk. SLP menggunakan getah sebagai alas permukaan bawah atau tapak. Penggunaan getah bertujuan untuk kesesuaian penggunaan alat pada pelbagai jenis permukaan. Ketahanan getah dalam pelbagai permukaan telah terbukti kerana digunakan secara meluas sebagai tapak kasut, selipar dan tayar. Getah juga digunakan sebagai pelapik landasan keretapi bagi mengurangkan gegaran dan geseran. Penggunaan getah sebagai alas tapak kepada alat ini bukan sahaja dapat melindungi alat daripada rosak, malah

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13th – 14th December 2020

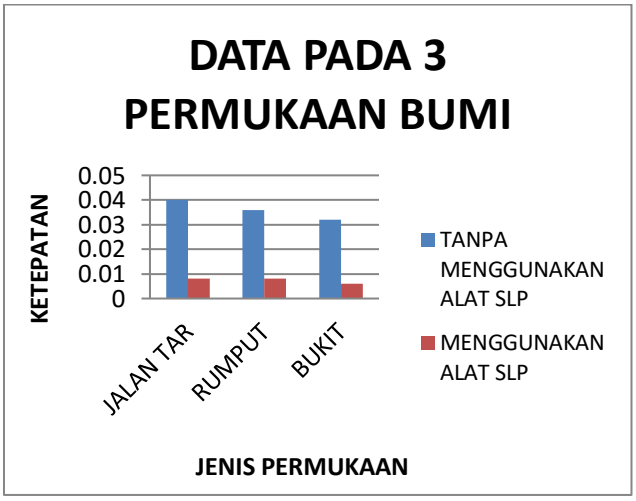
mampu meningkatkan keupayaan alat pada pelbagai permukaan seperti kawasan bertar, berbukit dan berumput.

Hasil Dan Analisis

SLP telah diuji dalam tiga medium permukaan bumi yang berbeza iaitu permukaan keras (tar) permukaan lembut (tanah rumput) dan permukaan bercerun. Hasil ujian mendapati, SLP mampu mengurangkan selisih pengukuran ukur aras. Pengurangan selisih yang ketara adalah pada permukaan jalan tar iaitu 32 milimeter. Manakala, di permukaan rumput 28 milimeter dan permukaan bercerun 26 milimeter. Hasil daripada data ujian mendapati, selisih yang tinggi dalam kerja ukur aras pelajar berlaku di permukaan yang keras. Keadaan ini disebabkan, permukaan lembut memudahkan pelajar mengenalpasti kedudukan lokasi setaf, berbanding permukaan jalan tar yang keras. Penggunaan SLP mampu mengurangkan selisih yang berlaku.

Jadual 1: Perbandingan Data Pada 3 Permukaan Bumi

Jenis Permukaan	Kaedah Biasa	Menggunakan SLP
Jalan Tar	0.040m	0.008m
Padang Rumput	0.036m	0.008m
Bukit	0.032m	0.006m



Rajah 6: Graf Ketepatan Data Ukur Aras Dengan Penggunaan SLP.

Pasukan Polyskills Geomatik PTSB telah menggunakan SLP ketika melaksanakan tugasan ukur aras di dalam Pertandingan Kemahiran Politeknik Malaysia (Polyskills 2018). Pasukan PTSB telah Berjaya menjadi johan dalam pertandingan tersebut. Pertandingan tersebut menjadikan ukur aras sebagai tugasan pertandingan. Keputusan ini, membuktikan keupayaan SLP dalam membantu pelajar dalam ukur aras.

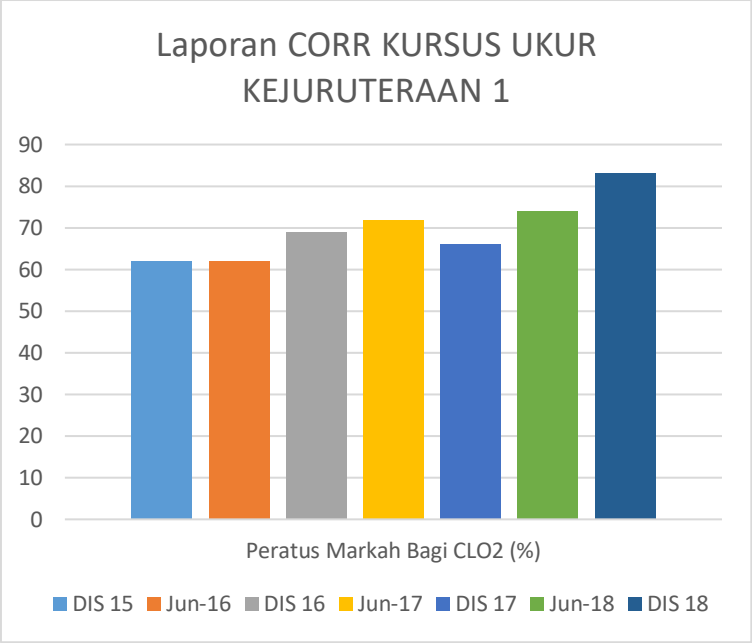
SLP telah digunakan dalam amali ukur aras bagi kursus Ukur Kejuruteraan 1 (DCG2043) pada sesi Disember 2018. Hasil daripada Laporan CORR pada semester tersebut mendapati peningkatan sebanyak 9% daripada semester sebelumnya. Perbandingan dengan laporan-laporan sebelum ini juga menunjukkan bahawa semester Disember 18 merupakan pencapaian yang tertinggi iaitu 83%. Laporan ini membuktikan keberkesanan SLP yang mampu meningkatkan proses Pengajaran dan Pembelajaran amali.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 2: Laporan CORR CLO2 Kursus Ukur Kejuruteraan 1

Sesi	Peratus Markah CLO2 (%)
Disember 15	62
Jun 16	62
Disember 16	69
Jun 17	72
Disember 17	66
Jun 18	74
Disember 18	83

CLO 2: Perform perimeter survey and leveling works using related survey equipment according to survey regulation.



Rajah 7: Laporan CORR CLO2 Kursus Ukur Kejuruteraan 1.

Kesimpulan

Berdasarkan analisis yang diperoleh, SLP telah berjaya mengurangkan selisih dalam kerja ukur aras. Secara tidak langsung SLP Berjaya membantu proses Pengajaran dan Pembelajaran (PdP) dan membantu pelajar melaksanakan Ukur Aras dengan cekap dengan mengurangkan masalah kedudukan setaf yang berubah serta mengurangkan selisih dengan meminimumkan pergerakan alat staff semasa kerja ukur aras dijalankan. Daripada laporan CORR bagi Kursus Engineering Surveying 1 (DCG2043) bagi sesi Disember 2018 membuktikan SLP membantu pensyarah dalam proses menerangkan kaedah amali ukur aras dengan berkesan. Proses PdP khususnya perlaksanaan amali ukur aras menjadi lebih lancar dan pelajar tidak perlu melakukan ukur aras berulang kali. Secara tidak langsung, alat SLP dapat membantu pelajar dalam mengurangkan tempoh masa pensyarah dan pelajar dalam melakukan amali ukur aras.

Hasil daripada penggunaan produk ini, Laporan CORR bagi Kursus Engineering Surveying 1 (DCG2043) bagi sesi Disember 2018 meningkat sebanyak 9%. Pencapaian sesi Disember 2018 juga merupakan pencapaian yang tertinggi iaitu 83% berbanding sesi –sesi yang lepas. Produk ini juga berjaya membantu pasukan Polyskills Geomatik PTSB memenangi Pertandingan Kemahiran Politeknik Malaysia (Polyskills 2018) peringkat kebangsaan sebagai johan. Polyskills 2018 menguji peserta dalam ukur aras.

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KEBERKESANAN PENGGUNAAN "F_R CALCULATOR" DALAM PENGAJARAN DAN PEMBELAJARAN ENGINEERING SCIENCE (DBS1012) DI POLISAS

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Abstrak: *Kursus Sains Kejuruteraan adalah salah satu daripada kursus teras yang diperlukan oleh pelajar program kejuruteraan di politeknik di Malaysia. Kursus Engineering Science (DBS 1012) mengandungi enam topik utama yang perlu dipelajari oleh pelajar. Salah satu topik adalah Daya. Pelajar perlu mencari magnitud dan arah daya paduan. F_R Calculator adalah satu inovasi yang dihasilkan untuk membantu pelajar untuk menyemak jawapan akhir daya paduan dan arahnya. F_R Calculator juga dihasilkan untuk membantu memudahkan pensyarah untuk menyemak jawapan akhir pelajar. Ianya dihasilkan dengan menggunakan software MIT App Invertor (Android Apps on Google Play). Untuk menjimatkan masa dan untuk mendapatkan hasil yang lebih tepat, penyelidik mencadangkan untuk mendedahkan pelajar dengan penggunaan FR Calculator. Dengan menggunakan aplikasi ini, pelajar akan dapat menyemak magnitud dan arah daya paduan yang diperolehi adalah tepat dalam masa yang singkat. Aplikasi yang dibangunkan sesuai bukan sahaja untuk pelajar yang melakukan tetapi juga kepada pensyarah membolehkan mereka menyemak jawapan akhir pelajar mereka. Ringkasnya, perisian ini membolehkan pelajar menyemak jawapan dengan mudah dan lebih tepat.*

Katakunci: *Resultant Force, daya, Jawapan Akhir, F_R Calculator*

Penyataan Masalah

Di POLISAS, kursus DBS1012 adalah satu kursus yang wajib diambil oleh pelajar semester satu di Jabatan Kejuruteraan Elektrik, Jabatan Kejuruteraan Awam dan Jabatan Kejuruteraan Mekanikal. Salah satu topik kursus ini adalah *Force* (daya). Antara subtopik penting dalam topik ini ialah mencari magnitud daya paduan dan arahnya dengan menggunakan kaedah leraian. Proses penyelesaian mencari magnitude *Resultant Force* (F_R) dan arahnya (θ) memerlukan langkah kerja yang panjang dan pelajar seringkali tersilap kira dimana-mana peringkat yang mengakibatkan kesilapan kepada jawapan akhir yang diperlukan. Justeru itu, inovasi ini dibangunkan untuk memudahkan pelajar dan pensyarah menyemak jawapan akhir soalan berkaitan.

Objektif

i. Menjadikan "*Fr calculator"* sebagai alat bantu kepada pelajar yang mengambil kursus *DBS1012* dalam menyemak jawapan akhir magnitud daya paduan dan arahnya.

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13th – 14th December 2020

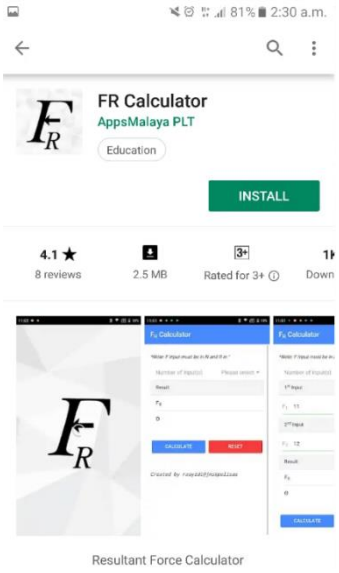
ii. Menjadikan *"Fr calculator"* sebagai alat bantu mengajar kepada pensyarah dalam menyampaikan proses PdP yang lebih berkesan.
iii. Membantu pelajar menguasai subtopik *Resultant force* dengan lebih berkesan.

Kepentingan Inovasi

i. Membantu pelajar meningkatkan penguasaan dalam subtopik *Resultant Force*.
ii. Membantu pensyarah dan pelajar untuk menyemak jawapan akhir soalan berkaitan magnitud daya paduan dan arahnya.

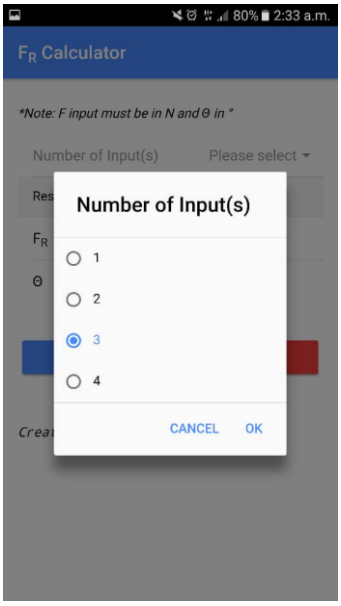
Perincian Inovasi

i. Buka applikasi *F_R Calculator.*



Resultant Force Calculator

ii. Pilih bilangan daya



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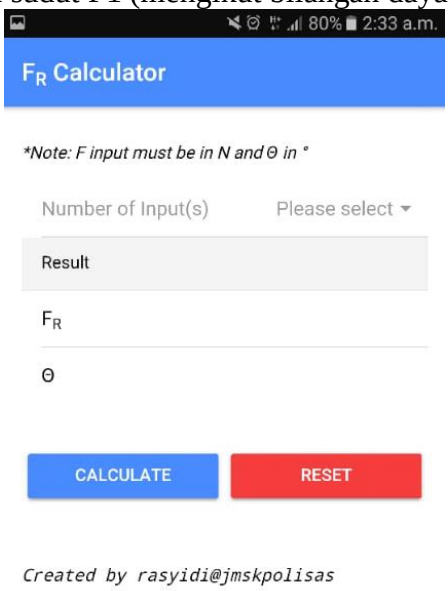
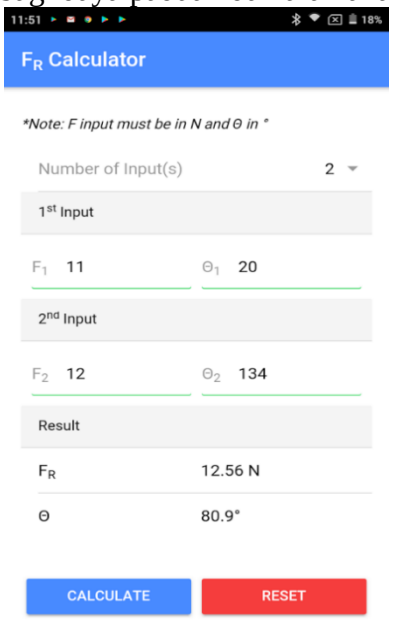
13th – 14th December 2020

iii. Masukan nilai daya dan sudut F1 (mengikut bilangan daya dalam soalan)



iv. Tekan *calculate* – jawapan bagi daya paduan dan arah akan dipaparkan



v. Tekan reset untuk ulang kembali untuk soalan seterusnya.

Potensi Pasaran dan keusahawanan

Berdasarkan *Apps on Google Play*, lebih 1000 penguna android telah memuat turun dan mengunakan aplikasi ini. Ini menunjukkan bahawa aplikasi *FR Calculator* ini mendapat sambutan yang memberangsangkan daripada pengguna.

Selain itu, satu kajian telah dijalankan bertujuan untuk mengkaji keberkesanan penggunaan *FR Calculator* dalam meningkatkan pencapaian pelajar untuk topik daya paduan bagi kursus DBS1012 di POLISAS. Selain itu, kajian ini juga bertujuan untuk mengenalpasti kesan positif ke atas persepsi dan sikap pelajar di dalam proses pengajaran dan pembelajaran

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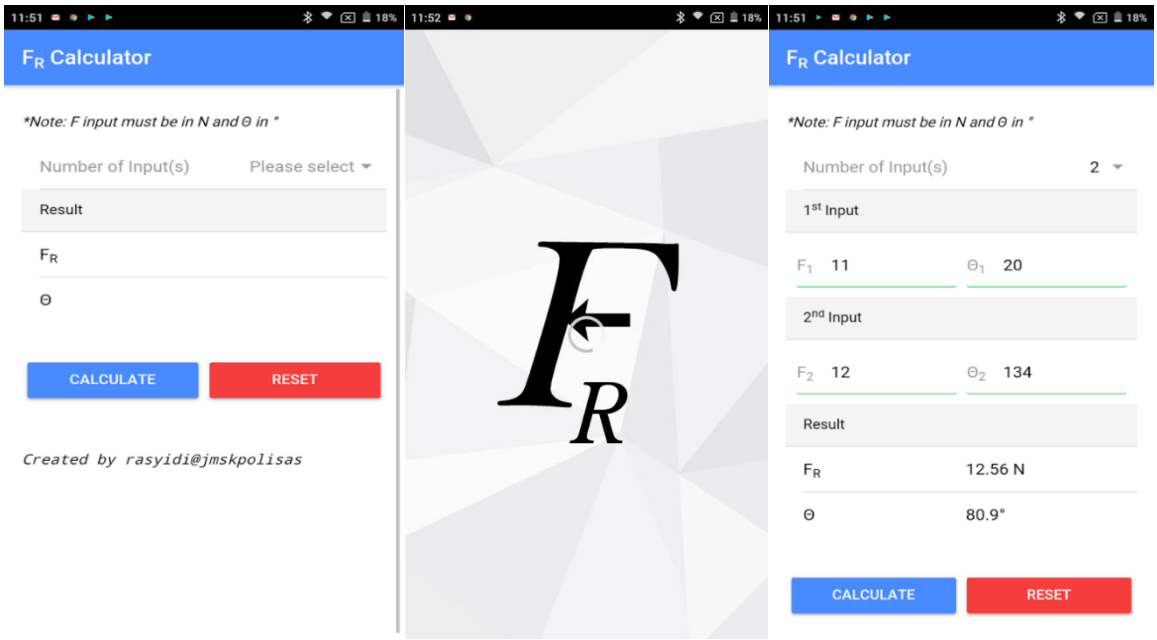
13th – 14th December 2020

kursus DBS1012. Borang soalselidik dan juga kaedah temuramah telah digunakan sebagai instrument kajian. Responden kajian terdiri daripada 34 orang pelajar semester satu sesi Dis 2018 program Diploma Kejuruteraan Awam yang mengambil kursus DBS 1012 di POLISAS. Data telah dianalisis menggunakan perisian IBM SPSS versi 22.

Analisa soalselidik mendapati majoriti responden bersetuju bahawa *FR Calculator* memberi kesan yang positif kepada mereka. Hasil kajian menunjukkan bahawa penggunaan *FR Calculator* ini banyak mempengaruhi minat dan motivasi pelajar di mana skor min yang diperolehi adalah pada tahap tinggi iaitu 4.01, 4.42 dan 4.43 masing masing. Dapatan menunjukkan bahawa responden memberi persepsi positif terhadap inovasi yang dibangunkan. Oleh yang demikian, inovasi yang dibangunkan ini dapat memberi impak yang positif dalam pengajaran & pembelajaran kursus DBS1012. Seramai 10 orang pensyarah yang mengajar kursus DBS1012 telah menggunakan *FR Calculator* dan mendapati ianya membantu memudahkan proses pengajaran dan pembelajaran mereka.

Gambar Inovasi



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PERSEPSI PELAJAR TERHADAP KAEDAH PDPDT SEWAKTU PKP COVID-19

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***Abstrak**: Pada pertengahan September 2020, Malaysia telah mengalami kenaikan mendadak bagi kes penularan jangkitan COVID-19. Sehubungan dengan itu, Perintah Kawalan Pergerakan (PKP) telah diumumkan dan Kolej Komuniti Selandar sebagai Institusi Pengajian Tinggi Awam diarahkan melaksanakan proses Pembelajaran dan Pengajaran Dalam Talian (PdPDT) bermula 2 Oktober 2020. Perubahan kaedah pelaksanaan ini, telah menerima pelbagai reaksi terutama dari kalangan pelajar. Justeru itu, terdapat keperluan menjalankan kajian terhadap persepsi pelajar bagi menambahbaik proses PdPDT pada masa akan datang. PKP yang dilaksanakan telah melibatkan pelajar-pelajar sesi ambilan Jun 2020 yang sedang mengikuti pengajian di Kolej Komuniti Selandar. Responden yang disasarkan merupakan pelajar Program Pengoperasian Perniagaan seramai 48 orang. Kajian yang dijalankan untuk mengukur tahap penerimaan dan persepsi pelajar terhadap pelaksanaan PdPDT serta mengenalpasti kekangan yang dihadapi oleh mereka sewaktu tempoh PKP. Penyelidikan deskriptif ini menggunakan kaedah kuantitatif dengan instrumen soal selidik. Data analisis diproses dan hasil dapatan kajian dilaporkan dalam bentuk frekuensi, peratusan dan skor min. Hasil kajian mendapati 97.9% pelajar menggunakan Google Meet sebagai platform teknologi maklumat dan komunikasi dalam pelaksanaan PdPDT, diikuti 85.4% menggunakan aplikasi Telegram. 81.3% pelajar bersetuju kaedah PdPDT yang dijalankan adalah sesuai bagi kursus-kursus Program Pengoperasian Perniagaan. Penemuan ini membuktikan pelajar dapat menyesuaikan diri dalam pelaksanaan kaedah PdPDT sewaktu PKP. Manakala capaian internet dan persekitaran pembelajaran merupakan kekangan pelajar dalam mengikuti PdPDT. Analisis data menunjukan para pelajar bersetuju dengan komitmen yang diberikan oleh pensyarah dalam perlaksanaan PdPDT iaitu dengan dapatan skor min 4.4583. Seramai 36 pelajar bersetuju pelaksanaan PdPDT adalah memuaskan sepanjang tempoh PKP dengan pencapaian skor min 3.8125. Kesimpulannya, penyesuaian kaedah pembelajaran dan pengajaran yang dilaksanakan sewaktu tempoh PKP adalah tindakan yang rasional oleh pihak institusi. Tindakan ini telah dapat memastikan proses PdP dan Pentaksiran Berterusan terus berjalan dengan lancar walaupun pelajar tidak berada di kampus institusi.*

***Kata kunci:** Pembelajaran dan Pengajaran Dalam Talian, Covid-19, Persepsi*

Pengenalan

Penularan beta coronavirus, *severe acute respiratory syndrome* (SARS-coV-2) mula dikesan di Wuhan, China sekitar Disember 2019. Penyakit ini yang telah diberi nama Covid-19 telah menular secara drastik dan menjadi pandemik global dalam masa yang sangat singkat (Broughton, Deng, Yu, Fasching, Servellita, Singh, Xin Miao, Streithorst, Granados, Sotomayor-Gonzalez, Zorn, Gopez, Hsu, Wei Gu, Miller, Chao-Yang, Guevara, Wadford, Chen & Chiu, 2020). Sejak 40 tahun yang lepas, penularan epidemik yang berskala besar telah berlaku secara berulangan seperti HIV, SARS, Middle East respiratory syndrome

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13th – 14th December 2020

coronaviruses, 2009 pandemic influenza H1N1 virus, Ebola virus, Zika virus dan yang terkini ialah SARS-coV-2 (Wang, Horby, Hayden & Gao, 2020). Menurut World Health Organization (2020), penyakit pneumonia yang disebabkan oleh virus Covid-19 telah menjangkiti 64.5 juta populasi manusia di bumi dan menyebabkan 1.49 juta kematian setakat 03 Disember 2020. Di samping itu, terdapat individu yang dijangkiti oleh mangsa virus Covid-19 telah dikenal pasti tidak menunjukkan sebarang gejala ataupun gejala yang tidak ketara. Keadaan asymptomatic ini menyebabkan usaha untuk membendung wabak ini daripada merebak di dalam komuniti telah menjadi sangat rumit.

Rentetan itu, Perdana Menteri Malaysia, Tan Sri Muhyiddin bin Haji Muhammad Yassin telah mengumumkan untuk melaksanakan Perintah Kawalan Pergerakan (PKP) bagi membendung penularan Covid-19. Malaysia telah melalui beberapa fasa PKP yang mana bermula daripada 18 Mac 2020 sehingga kini.

Jadual 1: Fasa Pelaksanaan Perintah Kawalan Pergerakan (PKP) Malaysia 2020

Perintah Kawalan Pergerakan Malaysia 2020 (PKP)	Tempoh
Fasa 1	18 Mac – 31 Mac 2020
Fasa 2	01 April – 14 April 2020
Fasa 3	15 April – 28 April 2020
Fasa 4	29 April – 12 Mei 2020
Fasa 5 (PKP Bersyarat)	13 Mei – 09 Jun 2020
Fasa 6 (PKP Permulihan)	10 Jun – 31 Ogos 2020
Fasa 7 (PKP Permulihan)	01 September – 31 Disember 2020

Sumber: https://ms.wikipedia.org/wiki/Perintah_Kawalan_Pergerakan_Malaysia_2020#Kronologi

Dalam tempoh pelaksanaan PKP ini, Kementerian Kesihatan Malaysia menyarankan agar pihak penganjur aktiviti rasmi di tempat awam digalakkan untuk menjalankan penilaian bagi penganjuran yang melibatkan ramai kehadiran (Kenyataan akhbar, KKM 06 Mac 2020).

Kementerian Pengajian Tinggi Malaysia turut mengeluarkan arahan mengenai Pengendalian Aktiviti Akademik di Kampus Institusi Pendidikan Tinggi Semasa dan Pasca Perintah Kawalan Pegerakan. Antara intipatinya ialah semua aktiviti Pengajaran dan Pembelajaran (PdP) hendaklah dilaksanakan secara dalam talian sehingga 31 Disember 2020. Semua aktiviti bersemuka adalah tidak dibenarkan. Pada 02 Oktober 2020, Kolej Komuniti Selandar telah diarahkan melaksanakan proses Pembelajaran dan Pengajaran secara Dalam Talian (PdPDT).

Pembelajaran secara dalam talian ini telah menjadi alternatif pilihan bagi sistem pendidikan di negara yang terjejas dengan wabak ini (Moawad, 2020). Demikian, medium pembelajaran secara dalam talian telah diketengahkan secara meluas bagi memastikan kesinambungan pembelajaran sedia ada. Walaupun medium ini bukanlah suatu yang asing bagi beberapa aliran pendidikan di negara maju, tetapi bagi segelintir aliran pendidikan yang tidak sinonim dengan medium sebegini sudah pasti akan membangkit beberapa permasalahan terhadap keupayaan berurusan dengan teknologi sedia (Norhana, 2020).

Terdapat peluang dan cabaran untuk melaksanakan pendekatan pembelajaran secara dalam talian ini. Kekurangan alat sokongan dan infrastruktur telekomunikasi tanpa wayar di kalangan pelajar serta rekabentuk kandungan pembelajaran yang kurang memberi pertimbangan kepada kaedah pembelajaran secara dalam talian merupakan antara cabaran-cabaran yang utama dalam melaksanakan pendekatan pembelajaran secara dalam talian.

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13th – 14th December 2020

Penyataan Masalah

Kolej Komuniti Selandar, Melaka merupakan Institut Pengajian Tinggi Awam (IPTA) yang sedang beroperasi di dalam kampus semasa pengumuman Perintah Kawalan Pergerakan (PKP) pandemik COVID-19 pada gelombang pertengahan bulan September 2020. Seperti yang telah diarahkan melalui surat rasmi Jabatan Pengajian Politeknik dan Kolej Komuniti, bermula 2 Oktober 2020 semua proses pembelajaran dan pengajaran perlu dilaksanakan secara dalam talian.

Semua pelajar telah diarahkan untuk kembali ke rumah masing-masing dan meneruskan pembelajaran menggunakan platform yang sesuai dengan kaedah pembelajaran dan pengajaran dalam talian (PdPDT). Pada peringkat awal, pelaksanaan PdPDT dilihat sebagai satu eksperimentasi pensyarah terhadap kaedah penyampaian dalam memenuhi kehendak kurikulum kursus yang berteraskan teori dan amali. Tidak dinafikan situasi ini turut memberi cabaran kepada para pensyarah dalam memastikan pencapaian pelajar.

Latarbelakang pelajar yang pelbagai dari segi pengetahuan penggunaan alat teknologi maklumat dan komunikasi (TMK), persekitaran rumah dan tahap kesediaan pembelajaran merupakan aspek-aspek yang tidak boleh dikawal oleh pensyarah mahupun insitusi. Aspek-aspek yang mempengaruhi pelajar ini dijangka menjadi cabaran utama dalam pelaksanaan PdPDT. Selain itu, para pelajar tidak diberi pendedahan berkenaan PdPDT semasa berada di kampus kerana keadaan luar jangka disebabkan oleh pandemik Covid-19.

Kajian ini dilaksanakan dengan tujuan mengukur tahap penerimaan dan persepsi pelajar terhadap pelaksanaan PdPDT sewaktu PKP. Selain itu, kajian ini dijalankan bagi mengenalpasti cabaran dan kekangan yang dihadapi oleh pelajar sepanjang pelaksanaan PdPDT.

Kepentingan Kajian

Terdapat beberapa kepentingan dalam pelaksanaan kajian ini. Kepentingan kajian ini terbahagi kepada tiga aspek utama seperti berikut :

Pelajar - Kajian ini akan dapat memberi informasi tentang platform teknologi maklumat dan komunikasi (TMK) yang pelajar cenderung gunakan sewaktu PdPDT. Melalui kajian ini pensyarah dan institusi dapat mengenalpasti keperluan pelajar dalam pelaksanaan PdPDT dan kekangan yang dihadapi oleh mereka supaya isu ini dapat diberi perhatian lanjut.

Pensyarah - Hasil kajian ini dapat memberi maklum balas kepada pensyarah berkenaan kursus-kursus yang boleh diaplikasikan secara dalam talian melalui platform yang bersesuaian. Maklum balas pelajar dalam kajian ini amat penting bagi persediaan alat dan bahan bantu mengajar yang perlu ditambahbaik bagi pelaksanaan PdPDT.

Institusi - Dapatan kajian ini dapat digunakan bagi penambahbaikan kurikulum yang lebih fleksibel sesuai dilaksanakan sewaktu pelajar di kampus atau secara dalam talian. Penambahbaikan kurikulum boleh meliputi kandungan pembelajaran dan juga aspek pentaksiran pembelajaran. Selain itu, kajian ini dapat membantu institusi untuk lebih bersedia dalam melengkapkan kemudahan alat TMK bagi memastikan PdPDT berjalan dengan lancar dan berkesan.

Persoalan Kajian

Kajian ini diharapkan dapat meninjau persepsi pelajar terhadap kaedah pembelajaran dan pengajaran dalam talian (PdPDT) sewaktu tempoh Perintah Kawalan Pergerakan (PKP). Perkara-perkara yang ingin diketahui adalah:

i. Apakah tahap penerimaan pelajar Program Pengoperasian Perniagaan terhadap proses pembelajaran dan pengajaran dalam talian?

eISBN 978-967-2426-22-6
13th – 14th December 2020

ii. Apakah platform yang sesuai bagi pelaksanaan proses pembelajaran dan pengajaran mengikut persepsi pelajar Program Pengoperasian Perniagaan?
iii. Apakah kekangan yang dihadapi oleh pelajar Program Pengoperasian Perniagaan bagi pelaksanaan proses pembelajaran dan pengajaran dalam talian?

Objektif Kajian

Berikut merupakan objektif kajian ini dijalankan:

i. Mengenalpasti tahap penerimaan pelajar terhadap pelaksanaan pembelajaran dan pengajaran secara dalam talian.
ii. Menilai aplikasi dalam talian yang sering digunakan bagi pelaksanaan proses pembelajaran dan pengajaran mengikut keutamaan.
iii. Mengenalpasti kekangan pelajar terhadap proses pembelajaran dan pengajaran dalam talian.

Kumpulan Sasaran

Responden yang dipilih merupakan populasi keseluruhan bagi pelajar Program Pengoperasian Perniagaan yang sedang mengikuti pengajian di Kolej Komuniti Selandar, Melaka pada tahun 2020. Pelajar-pelajar ini sedang mengikuti semester bagi sesi Jun 2020. Responden yang terlibat merupakan pelajar semester 1 seramai 27 orang dan semester 3 seramai 21 orang. Jumlah keseluruhan responden ialah 48 orang.

Program Pengoperasian Perniagaan dipilih sebagai populasi sasaran bagi kajian ini kerana penyelidik merupakan Penasihat Akademik dan pensyarah dalam bidang. Sampel yang terlibat di dalam kajian ini adalah 100% daripada bilangan populasi. Bilangan sampel yang dipilih juga memenuhi keperluan saiz sampel mengikut kaedah penentuan sampel berdasarkan Jadual 3.1 (Krejcie & Morgan 1970, m.s.607-610).

Batasan Kajian

Terdapat beberapa limitasi yang dihadapi dalam pelaksanaan kajian ini. Responden kajian ini terdiri dari pelajar-pelajar dalam bidang Program Pengoperasian Perniagaan sahaja, namun kajian ini tidak digeneralisasikan kepada seluruh pelajar institusi. Kajian ini bergantung kepada hasil dapatan berdasarkan kejujuran dan kefahaman responden ketika menjawab. Soal selidik yang dikemukakan secara dalam talian boleh mengakibatkan interpretasi soalan yang kurang tepat oleh responden.

Keputusan kajian in tidak boleh digeneralisasikan untuk mewakili konteks PdPDT yang dilaksanakan di Kolej Komuniti Selandar, Melaka. Walaubagaimanapun, kajian ini boleh dijadikan sebagai rujukan kepada institusi dalam mengenalpasti isu dan masalah pelaksanaan PdPDT sewaktu PKP bagi kursus-kursus Program Pengoperasian Perniagaan. Hasil kajian dapat memberi input bagi penambahbaikan pelaksanaan pembelajaran dan pengajaran terutama bagi alat, bahan, kurikulum dan persediaan pelajar.

Kajian Literatur

Persepsi bermaksud gambaran atau bayangan dalam hati atau fikiran (tentang sesuatu); pandangan; tanggapan (Kamus Dewan Edisi Empat). Persepsi pelajar di dalam kajian ini adalah untuk melihat pandangan atau tanggapan mereka terhadap pelaksanaan PdPDT setelah melalui sendiri proses tersebut. Pembelajaran dan pengajaran secara dalam talian atau pun e-pembelajaran telah diberikan definisi yang sama oleh para penyelidik, antarannya Supyan (2008) memberikan definisi yang menarik iaitu e-pembelajaran dirujuk kepada proses pembelajaran dalam persekitaran yang menggunakan teknologi elektronik sama ada *in-network*

eISBN 978-967-2426-22-6
13th – 14th December 2020

based (LAN, WAN) atau *non-networked*, iaitu menggunakan pemain CD, DVD, MP3 dan MP4. Pembelajaran secara dalam talian ini merupakan antara alternatif yang tidak dapat ditolak oleh institusi pendidikan tinggi kerana keadaan ini sesuai dengan gaya hidup hari ini yang bersifat *paperless*, wifi dan terlalu bergantung kepada *smartphone*.

Terdapat pelbagai platform teknologi maklumat dan komunikasi (TMK) yang digunakan dalam pembelajaran secara dalam talian antaranya *Whatsapp, Telegram, Google Meet, Google Classroom, Facebook Messenger, Edmodo*, email, *Zoom* dan lain. Menurut Syed Lamsah (2017) di dalam kajiannya mendapati aplikasi *Whatsapp* dan *Telegram* berpotensi untuk meningkatkan kemampuan pelajar menguasai hasil pembelajaran. Manakala kajian yang dilakukan oleh Tze et al. (2014) yang mendapati penggunaan media sosial seperti *Facebook* berjaya meningkatkan komunikasi berkesan antara pelajar dan pensyarah seterusnya menggalakkan penyertaan dan penglibatan pelajar di dalam kelas. Mereka juga berpendapat penggunaan *Facebook* kemungkinan tidak sesuai pada masa akan datang apabila aplikasi lain yang lebih menarik diperkenalkan. Menurut kajian yang dijalankan oleh Pusat Kecemerlangan Akademi, IPGM (2020) platform pembelajaran utama yang dikenal pasti ialah *Google Classroom* (63%) dan media sosial (*Whatsapp* dan *Telegram*) (33%) melainkan IPGK Batu Lintang, Sarawak yang menggunakan *Schoology* (4%). Aplikasi sokongan yang digunakan merangkumi *Google Meet, YouTube, Zoom, Facebook Live, Skype, Kahoot, Quizzit*, email dan *Blendspace*.

Kaedah PdPDT yang dilaksanakan haruslah bersesuaian dengan rekabentuk kurikulum kursus. Kandungan program, rekabentuk dan persembahan turut menjadi faktor yang perlu dipertimbangkan untuk menjayakan e-pembelajaran (Chai & Poh 2009). *Online learning* atau pembelajaran atas talian merupakan satu pendekatan yang diguna secara meluas sebagai sistem maklumat dan sistem pangkalan data untuk mengurus, menyampaikan isi kandungan, berinteraksi atau pemudahcaraan serta mengendalikan aktiviti pengajaran dan pembelajaran (Agatha F. Umbit & Muhamad Suhaimi Taat, 2016). Kaedah pembelajaran secara dalam talian memberikan tempoh yang mencukupi kerana pelajar berkeupayaan untuk mengawal pembelajaran mereka dengan lebih baik melalui peluang pembelajaran secara kolaboratif, interaktif dan persendirian kerana media elektronik menyediakan persekitaran pembelajaran berdasarkan prinsip *just-in-time* dengan kompetensi *anywhere, anytime, anyone*. (Talesra et al. 2003, Karoulis et al, 2004). Wong (2011) yang melakukan kajian secara kualitatif terhadap beberapa pelajar peringkat kedoktoran yang mengikuti pengajian secara terbuka dan jarak jauh (ODL) melibatkan universiti di Malaysia dan Australia mendapati para pelajar berkenaan bersetuju bahawa modul yang terdapat dalam e-pembelajaran membantu mereka mendapatkan bahan-bahan pembelajaran secara bebas tanpa kekangan masa dan tempat.

Norazila (2008) dalam kajiannya mendapati di antara faktor yang mempengaruhi guru dalam penggunaan teknologi dalam pengajaran adalah latarbelakang guru, sikap dan keprihatinan guru. Guru yang mempunyai lebih pengetahuan dalam komputer menunjukkan sikap lebih positif terhadap penggunaan komputer dalam pengajaran. Sebaliknya, guru yang kurang berpengetahuan harus menyedari bahawa mereka harus mendalami serta mengasah ilmu dan kemahiran mereka dalam menggunakan teknologi di dalam kelas. Wan Abdul Halim, Nor Laila dan Shafie (2006) menyatakan guru yang ideal adalah mereka yang berpengetahuan tinggi, mahir dalam bidang teknikal dan cekap menjalankan tugas sebagai seorang guru. Pengajaran yang berkesan memerlukan kemahiran dan pengetahuan yang luas terhadap mata pelajaran serta mempunyai kefahaman terhadap aspek pembelajaran pelajar. Ini jelas menunjukkan bahawa guru bukan sahaja perlu menguasai kandungan pembelajaran tetapi perlu juga merancang bahan pembelajaran yang ingin dimuat turun dan dikongsi bersama guru lain

eISBN 978-967-2426-22-6
13th – 14th December 2020

serta pelajar di dalam aplikasi *Frog Virtual Learning Environment* (VLE). Komitmen guru sebagai pendidik turut menjadi faktor kepada kelancaran proses PdPDT.

Tahap kepuasan terhadap persekitaraan pembelajaran dari rumah adalah memuaskan dapat dilihat pada kajian yang dijalankan oleh IPG Kampus Pendidikan Islam, Bangi dimana pelajar berpuas hati dengan persekitaran pembelajaran di rumah sewaktu menjalani pembelajaran secara tidak bersemuka (Kok, 2020). Menurut Hasliza, Siti Munira, Zarina (2016) aspek kekangan infrastruktur dilihat sebagai cabaran utama dalam melaksanakan PdP melalui Frog VLE ini. PdP melalui Frog VLE memerlukan peralatan dan perkakasan yang lengkap seperti komputer yang mencukupi mengikut jumlah pelajar bagi setiap kelas dan akses kepada internet yang berkelajuan tinggi. Masalah akan wujud apabila prasarana yang tidak mencukupi menyebabkan terdapat ramai pelajar yang tidak dapat turut serta dalam proses PdP melalui Frog VLE.

Menurut Sumarni, Zamri (2018) kesediaan pelajar terhadap persekitaran pembelajaran maya Frog VLE adalah sangat tinggi dan pelajar sangat positif menggunakan persekitaran pembelajaran Frog VLE kerana pembelajaran tersebut dapat meningkatkan kemahiran mereka menggunakan internet. Selain itu, penggunaan Frog VLE juga membantu pelajar menghantar tugasan yang diberikan kepada mereka. Pelajar perlu menjadi penggerak dan pencetus kepada perubahan masyarakat celik *Information Communication Technology* (ICT) dan pembentukan masyarakat digital menjelang tahun 2020.

Hasil kajian lepas menunjukkan pelajar di empat buah sekolah menengah kebangsaan di daerah Tawau yang dikaji mempunyai sikap yang positif terhadap penggunaan pembelajaran maya dalam kalangan pelajar. Hal ini merupakan permulaan yang baik untuk pelajar ini menempuh gelombang TMK yang semakin mencabar dalam bidang pendidikan. Zuraini, Fatimah, Hasmawati, dan Noresah (2006) menjelaskan penggunaan ICT memang diakui sebagai suatu alatan yang berupaya membantu menambahbaik dan meningkatkan prestasi pelajar terutama pelajar jarak jauh. Sebelum melaksanakan proses PdPDT, pelajar dan institusi perlu mempunyai persediaan yang baik seperti kelengkapan kemudahan dari segi peralatan komunikasi dan capaian internet bagi memastikan proses PdPDT dapat berjalan dengan lancar dan memberikan impak pembelajaran dan pengajaran yang sama seperti pelaksanaan PdP secara bersemuka.

Metodologi Kajian

Kajian deskriptif merupakan suatu jenis penyelidikan yang bertujuan untuk menggambarkan pengalaman. Connaway & Powell (2010) berpendapat kajian berbentuk penerokaan adalah pilihan yang tepat bagi menerangkan fenomena berdasarkan pengalaman. Kajian ini menggunakan kaedah deskriptif adalah berdasarkan pengalaman yang dihadapi oleh pelajar pada sesi pengajian sewaktu PKP.

Menurut Yusof (2003) data primer adalah data yang berasal daripada sumber asli yang dikumpulkan seperti soal selidik bagi menjawab persoalan kajian. Instrumen kajian yang digunakan di dalam kajian ini adalah Borang Soal Selidik. Ia dibina berdasarkan keperluan persoalan kajian dan objektif yang perlu dicapai oleh penyelidik. David Lim et al (2010) mendefinisikan soal selidik sebagai satu set soalan bercetak yang digunakan untuk mengutip atau memperoleh data kajian secara laporan kendiri daripada subjek atau responden kajian.

Kesahan format, struktur soalan dan pernyataan-pernyataan yang terkandung dalam borang soal selidik telah dinilai oleh pakar rujuk instrumen kajian. Borang soal selidik ini diajukan kepada pelajar melalui *Google forms*. Penggunaan *Google forms* dipilih oleh penyelidik sebagai platform edaran borang soal selidik kerana lebih mudah dan pantas serta

eISBN 978-967-2426-22-6
13th – 14th December 2020

dapat mengatasi batasan kajian iaitu pelajar tidak berada di dalam kampus semasa pelaksanan PdPDT sewaktu PKP.

Struktur borang soal selidik ini terbahagi kepada dua (2) bahagian, iaitu Bahagian A (Maklumat Resonden) dan Bahagian B (Persepsi Pelajar Terhadap Proses PdPDT). Terdapat lima (5) item di Bahagian A yang merangkumi jantina, kaum, semester, kursus yang terlibat di dalam PdPDT dan yang terakhir ialah platform teknologi maklumat dan komunikasi (TMK). Bahagian B terdiri daripada 10 soalan mengenai persepsi pelajar terhadap PdPDT, iaitu (1) kaedah PdPDT bersesuaian dengan kursus-kursus, (2) tempoh pelaksanaan PdPDT mencukupi, (3) pelajar komited terhadap pelaksanaan PdPDT, (4) komitmen pensyarah melaksanakan PdPDT, (5) persekitaran pembelajaran dari rumah, (6) kemudahan alat komunikasi, (7) capaian internet, (8) pelaksanaan pentaksiran berterusan, (9) persepsi terhadap PdPDT dan (10) keseluruhan pelaksanaan PdPDT.

Maklum balas responden terhadap soalan di Bahagian B adalah menggunakan skala Likert lima pilihan jawapan (*5-point*). Skala yang digunakan adalah sangat tidak setuju, tidak setuju, tidak pasti, setuju dan sangat setuju. Skala ini dipilih bagi memudahkan analisis data dan memastikan responden memberi jawapan secara objektif. Penyelidikan yang menggunakan kaedah kuantitatif dilakukan melalui kajian eksperimental dan data numerika yang diperoleh dan dianalisis dengan ujian statistik (Chua, 2011). Data yang diperolehi dianalisis menggunakan program *Special Package for the Social Statistic (SPSS)*. Hasil dapatan kajian dilaporkan dalam bentuk frekuensi, peratusan dan skor min.

Jadual 2: Tafsiran Nilai Julat Min

Skor min	Tahap
1.00 hingga 2.33	Rendah
2.34 hingga 3.67	Sederhana
3.68 hingga 5.00	Tinggi

Sumber: Diadaptasi Daripada Wiersma, 2000

Hasil Dapatan

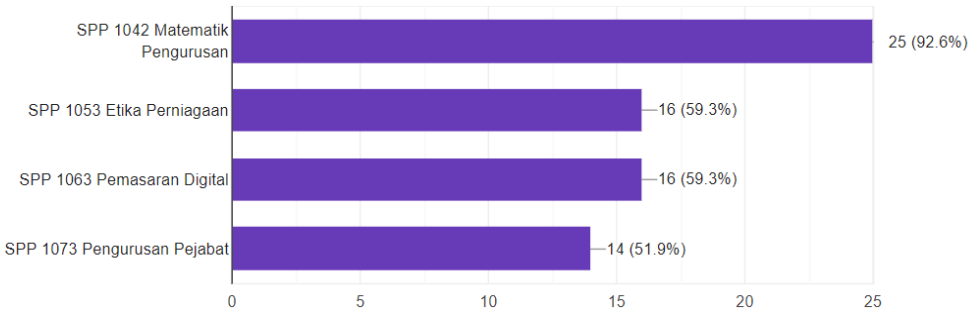
Pengumpulan data yang diperoleh melalui *Google Forms* telah dianalisis mengikut keperluan objektif kajian yang dikehendaki. Jenis data yang diperoleh dalam kajian ini adalah secara kuantitatif. Hasil dapatan dilaporkan secara jadual dan carta yang dirumuskan pada bahagian penerangan di bawah.

Jadual 3: Maklumat Demografi

Item		Frekuensi	Peratusan
Jantina	Lelaki	11	22.9
	Perempuan	37	77.1
Kaum	Melayu	34	70.8
	Cina	4	8.3
	India	10	20.8
Semester	Satu	27	56.3
	Tiga	21	43.8

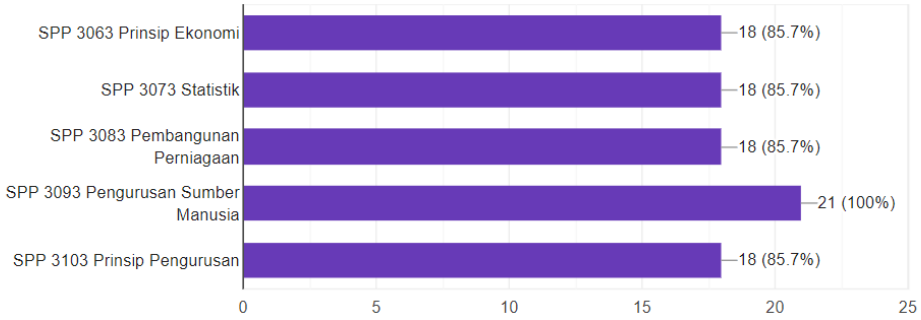
Jadual 3 menunjukkan maklumat demografi responden yang diperoleh bagi kajian ini. Keseluruhan responden bagi populasi yang disasarkan adalah seramai 48 orang pelajar Program Pengoperasian Perniagaan, Kolej Komuniti Selandar.

eISBN 978-967-2426-22-6
13th – 14th December 2020



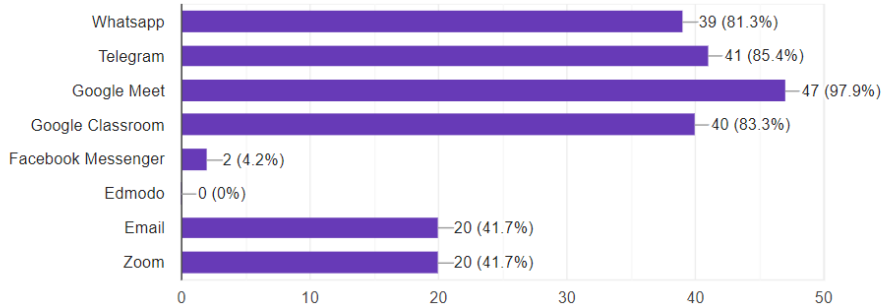
Carta 1: Kursus-kursus Semester 1

Carta 1 menunjukkan kursus-kursus Program Pengoperasian Perniagaan yang dipelajari oleh pelajar semester satu semasa pelaksanaan PdPDT sewaktu PKP. Didapati kursus Matematik Pengurusan adalah kursus yang paling ramai dipelajari melalui kaedah PdPDT iaitu sebanyak 92.6%. Manakala kursus yang paling sedikit dipelajari melalui kaedah PdPDT adalah kursus Pengurusan Pejabat dengan peratus sebanyak 51.9%.



Carta 2: Kursus-kursus Semester 3

Carta 2 menunjukkan kursus-kursus Program Pengoperasian Perniagaan yang dipelajari oleh pelajar semester tiga semasa pelaksanaan PdPDT sewaktu PKP. Kursus Pengurusan Sumber Manusia adalah kursus 100%. yang dipelajari oleh kesemua 21 orang pelajar melalui kaedah PdPDT. Kursus-kursus yang lain telah mendapat peratusan sebanyak 85.7%.



Carta 3: Platform Teknologi Maklumat Dan Komunikasi

Carta 3 merupakan hasil dapatan bagi tinjauan jenis platform yang digunakan oleh pelajar dalam PdPDT sewaktu PKP. Didapati aplikasi *Google Meet* merupakan platform TMK yang menjadi pilihan utama iaitu 97.9% dan diikuti oleh aplikasi *Telegram* dengan dapatan

eISBN 978-967-2426-22-6
13th – 14th December 2020

sebanyak 85.4%. Dapatan ini menunjukkan terdapat pelbagai platform TMK yang digunakan oleh pelajar dan pensyarah semasa pelaksanaan PdPDT.

Jadual 4: Persepsi Pelajar Terhadap Proses PdPDT

Item	Min Skor	Sisihan Piawai	Tahap
Kaedah PdPDT bersesuaian dengan kursus	3.9333	.90703	Tinggi
Tempoh pelaksanaan PdPDT mencukupi	4.0000	.71459	Tinggi
Pelajar komited terhadap pelaksanaan PdPDT	3.9167	.67896	Tinggi
Pensyarah memberi komitmen yang tinggi	4.4583	.54415	Tinggi
Persekitaran pembelajaran di rumah memuaskan	3.4583	1.05100	Sederhana
Kemudahan alat komunikasi pelajar mencukupi	4.0208	.86701	Tinggi
Capaian internet pelajar yang memuaskan	3.2292	1.05669	Sederhana
Pentaksiran Berterusan berjalan dengan lancar	3.9375	.75530	Tinggi
PdPDT tidak sukar dilaksanakan	3.5000	.82514	Sederhana
Pelaksanaan PdPDT adalah memuaskan	3.9125	.73397	Tinggi
Keseluruhan	3.817		Tinggi

Berdasarkan **Jadual 4** di atas, min skor bagi hampir keseluruhan item menunjukkan nilai yang tinggi dengan sisihan piawai yang agak kecil. Terdapat tiga (3) item yang berada pada julat min di tahap sederhana. Manakala tujuh (7) item berada pada julat min di tahap tinggi iaitu melebihi julat 3.67 berdasarkan Jadual Tafsiran Nilai Julat Min.

Item yang mendapat tafsiran nilai julat min pada tahap tertinggi adalah pelajar bersetuju terhadap pensyarah memberikan komitmen yang tinggi dalam pelaksanaan PdPDT dengan min skor sebanyak 4.4583. Hasil dapatan juga telah menunjukkan kemudahan alat komunikasi pelajar adalah mencukupi dengan kelengkapan sekurang-kurangnya satu alat seperti *smartphone* atau komputer.

Responden juga bersetuju dengan kaedah PdPDT yang dilaksanakan adalah sesuai bagi kursus-kursus Program Pengoperasian Perniagaan dengan nilai julat min tahap tinggi pada min skor 3.9333. Ini menunjukkan kursus-kursus Program Pengoperasian Perniagaan adalah sesuai dilaksanakan secara dalam talian dan hasil dapatan ini selaras dengan keputusan item Pentaksiran Berterusan yang berjalan dengan lancar. Pentaksiran Berterusan seperti kuiz, ujian, pembentangan, projek dan tugasan dapat dilaksanakan melalui kaedah PdPDT sepanjang tempoh PKP telah mendapat hasil min skor sebanyak 3.9375.

Hasil analisis mendapati tafsiran nilai julat min pada tahap tinggi adalah pada item tempoh pelaksanaan dan komitmen pelajar terhadap PdPDT. Ini menunjukkan responden bersetuju tempoh PdPDT yang dilaksanakan adalah mencukupi walaupun dilaksanakan pada

eISBN 978-967-2426-22-6
13th – 14th December 2020

platform atau medium yang berbeza berbanding sewaktu sesi pengajian di kampus. Responden juga komited terhadap pelaksanaan PdPDT sepanjang tempoh PKP dengan hasil min skor 3.9167.

Item yang perlu diberi perhatian berdasarkan hasil analisis data adalah item-item soalan yang mendapat tafsiran nilai julat min pada tahap sederhana. Item-item ini adalah berkaitan persekitaran pembelajaran, capaian internet dan pandangan terhadap pelaksanaan PdPDT. Persekitaran pembelajaran dan capaian internet pelajar di rumah merupakan kekangan yang telah dikenalpasti semasa pelaksanaan PdPDT sewaktu PKP. Hasil dapatan menunjukkan responden masih dalam proses menyesuaikan diri dengan pelaksanaan PdPDT di mana analisis menunjukkan nilai julat min pada tahap sederhana dengan min skor 3.5000.

Secara keseluruhannya, responden mempunyai persepsi yang baik terhadap pelaksanaan PdPDT bagi Program Pengoperasian Perniagaan. Ini dibuktikan melalui hasil analisis item 10 Bahagian B yang menunjukkan tafsiran nilai julat min pada tahap tinggi dengan min skor 3.9125. Hasil analisis soal selidik bagi kesemua item Bahagian B telah dapat menentukan tahap penerimaan pelajar Program Pengoperasian Perniagaan terhadap proses PdPDT adalah tinggi. Dapatan ini ditunjukkan di dalam Jadual 4 dengan nilai keseluruhan min skor 3.817 iaitu mencapai tafsiran nilai julat min pada tahap tinggi.

Perbincangan

Perbincangan ini adalah menjurus kepada persoalan kajian yang telah dinyatakan. Terdapat tiga persoalan kajian yang utama dan dibincangkan seperti penerangan di bawah.

Apakah Tahap Penerimaan Pelajar Program Pengoperasian Perniagaan Terhadap Proses Pembelajaran Dan Pengajaran Dalam Talian?

Berdasarkan hasil dapatan, tahap penerimaan pelajar Program Pengoperasian Perniagaan terhadap proses pembelajaran dan pengajaran dalam talian adalah pada tahap yang tinggi. Keputusan ini diperoleh dari nilai min skor pada item 1, 2, 3, 4, 6, 8 dan 10 di Bahagian B. Kesemua item ini telah mendapat tafsiran julat nilai min tahap tinggi. Keputusan ini menunjukkan responden mempunyai persepsi yang baik terhadap norma baharu pembelajaran dan pengajaran yang dilaksanakan sewaktu PKP. Walaupun tiada pendedahan sewaktu sesi pengajian di kampus, namun para pelajar masih boleh menyesuaikan diri dalam kaedah PdPDT di rumah dengan lancar.

Kajian ini disokong dengan kajian Ida Norini (2013) mengenai keberkesanan penggunaan konsep persekitaran pengajaran maya Frog VLE di kalangan pelajar. Beliau mendapati kesemua pelajar iaitu sebanyak 100% sangat suka terhadap suasana pembelajaran baru dan daripada pemerhatian guru juga mendapati pelajar sangat teruja apabila menggunakan komputer dan aplikasi ini. Kajian ini juga mendapati sikap pelajar terhadap pembelajaran maya ini memperoleh min skor keseluruhan sebanyak 4.27 berada pada tahap tinggi, di mana pelajar suka belajar menggunakan persekitaran pembelajaran Frog VLE dan mereka berasa mudah dan seronok mempelajari Bahasa Melayu menggunakan Frog VLE kerana aplikasi ini mudah diakses di mana sahaja.

Dapatan ini selari dengan dapatan kajian Ida Hazira et al. (2012) dalam kajian mereka tentang minat pelajar terhadap mata pelajaran TMK pelajar tingkatan 4 dan 5. Dapatan kajian beliau mendapati bahawa sikap pelajar yang positif akan lebih mendorong dan menggerakkan penggunaan TMK dalam pembelajaran dan pemudahcara (PdPc) di sekolah menengah berjalan secara lancar, pantas dan menyeluruh. Agatha F. Umbit & Muhamad Suhaimi Taat, (2016) turut bersetuju bahawa pelajar menggangap e-pembelajaran mudah digunakan dalam proses

eISBN 978-967-2426-22-6
13th – 14th December 2020

pembelajaran dan dapat meningkatkan tahap produktiviti mereka. Oleh sebab itu, e-pembelajaran mendapat penerimaan dan sambutan yang baik daripada pelajar.

Apakah Platform Yang Sesuai Bagi Pelaksanaan Proses Pembelajaran Dan Pengajaran Mengikut Persepsi Pelajar Program Pengoperasian Perniagaan?

Hasil dapatan pada item 6 di Bahagian A telah menunjukkan dengan jelas persepsi pelajar terhadap platform yang sesuai bagi pelaksanaan PdPDT. Platfrom teknologi maklumat dan komunikasi mengikut keutamaan pilihan pelajar adalah seperti berikut : (1) *Google Meet*, (2) *Telegram*, (3) *Google Classroom*, (4) *Whatsapp*, (5) email dan *Zoom* dan (6) *Facebook Messenger*. Pemilihan platform TMK ini adalah berkenaan aplikasi yang sesuai dan mudah digunakan berdasarkan kemudahan alat komunikasi yang dimiliki oleh pelajar di rumah semasa pelaksanaan PdPDT sewaktu PKP.

Pengkaji terdahulu melaporkan bahawa platform TMK mampu meningkatkan keyakinan pelajar untuk menguasai objektif pembelajaran (Tze 2014). Menurut Syed Lamsah (2017) di dalam kajiannya mendapati aplikasi *Whatsapp* dan *Telegeram* berpotensi untuk meningkatkan kemampuan pelajar menguasai hasil pembelajaran. Manakala kajian yang dilakukan oleh Tze et al. (2014) yang mendapati penggunaan media sosial seperti *Facebook* berjaya meningkatkan komunikasi berkesan antara pelajar dan pensyarah seterusnya menggalakkan penyertaan dan penglibatan pelajar di dalam kelas.

Berdasarkan dapatan kajian Kee-Man (2013), beberapa kekuatan media sosial dalam pembelajaran Bahasa Inggeris telah dikenal pasti. Media sosial didapati membantu perkongsian ilmu dan maklumat secara terbuka. Pelajar tidak berasa malu kerana interaksi berlangsung secara maya, dan bukannya bersemuka. Selain itu, media sosial juga memberikan konteks pembelajaran bahasa yang baik. Perbincangan melalui *Facebook*, sebagai contoh, membantu pelajar berhubung dengan pelajar dari luar negara yang memerlukan mereka untuk menggunakan Bahasa Inggeris dengan betul. Kajian ini telah mengenal pasti persepi pelajar prasiswazah terhadap penggunaan media sosial dalam pengajaran Bahasa Inggeris. *Facebook* didapati sangat popular dalam kalangan pelajar dan media sosial ini banyak digunakan untuk tujuan perbincangan. *Wiki* pula digunakan untuk menggalakkan perkongsian pandangan dalam penulisan. Pelajar-pelajar juga didapati dapat mempelajari struktur penulisan dengan lebih efektif melalui *Wiki*. Di samping itu, video-video *YouTube* didapati berupaya membantu pelajar meningkatkan kemahiran bertutur, manakala *Twitter* digunakan untuk mempelajari perkataan baru.

Menurut sebahagian besar sampel kajian Kok (2020), bersetuju dengan penggunaan *Google Classroom*. Kelebihan *Google Classroom* merangkumi memudahkan tugasan, pemberian sistem markah dalam talian dan praktikal. Sebahagian kecil sampel kajian menyatakan bahawa *Whatsapp* sesuai digunakan untuk subjek ini kerana memudahkan perbincangan, memudahkan penghantaran tugasan dalam bentuk dokumen *Microsoft Powerpoint*, mesra pengguna walaupun capaian tidak bagus dan mudah berinteraksi. Sebahagian kecil sampel kajian turut menyatakan kesesuaian aplikasi *Zoom* dalam PdP subjek ini kerana aplikasi dapat bersemuka, audio digunakan, kongsi skrin semasa pembentangan, jimat masa dan interaksi dua hala.

Apakah Kekangan Yang Dihadapi Oleh Pelajar Bagi Pelaksanaan Proses Pembelajaran Dan Pengajaran Dalam Talian?

Berdasarkan nilai min skor pada item 5 dan 7 di Bahagian B, didapati kekangan yang dihadapi oleh pelajar bagi pelaksanaan PdPDT adalah berkaitan isu persekitaran pembelajaran di rumah dan kemudahan capaian internet. Walaupun kedua-dua item soalan ini mendapat tafsiran julat

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13th – 14th December 2020

nilai min tahap sederhana, namun penyelidik melihat isu ini sebagai peluang bagi penambahbaikan pelaksanaan PdPDT. Kekangan yang telah dikenalpasti merupakan isu luar kawalan pensyarah dan pihak institusi. Namun, berdasarkan soal selidik responden telah bersetuju bahawa pelajar komited dalam pelaksanaan PdPDT walaupun menghadapi kekangan ini.

Kekangan seperti isu persekitaran pembelajaran dan capaian internet yang tidak memuaskan adalah antara yang kerap didapati di dalam kajian lain. Ini disokong oleh Eliza, Ruzzakiah, Jamaiah (2020) dalam kajiannya bahawa kekangan capaian internet yang tidak memuaskan adalah antara sebab penggunaan e-pembelajaran di Kolej Vokasional berada pada tahap kurang memuaskan.

Kesimpulan

Kaedah pelaksanaan PdPDT merupakan solusi tunggal dalam memastikan kelangsungan proses PdP pelajar Program Pengoperasian Perniagaan mengikut takwim pengajian yang ditetapkan oleh Jabatan Pengajian Politeknik dan Kolej Komuniti (JPPKK) sewaktu PKP. Dapatan kajian mendapati bahawa tahap penerimaan PdPDT dalam kalangan pelajar adalah tinggi ini menunjukkan responden mempunyai persepsi yang baik terhadap norma baharu pembelajaran dan pengajaran yang dilaksanakan sewaktu PKP. Walaupun tiada pendedahan sewaktu sesi pengajian di kampus, namun para pelajar masih boleh menyesuaikan diri dalam kaedah PdPDT di rumah dengan lancar.

Hasil kajian ini memberi implikasi kepada pihak pengurusan, para pensyarah, penyelidik sendiri dan para pelajar. Kajian dapat menambah pengetahuan penyelidik dalam bidang PdPDT terutamanya berkaitan dengan amalan penggunaan dan penerimaan PdPDT.

Dari pihak pelajar dan pensyarah pula sistem PdPDT atau platform TMK boleh membantu dan memudahkan pembelajaran dan pengajaran kerana PdPDT boleh dilaksanakan di mana-mana dan pada bila-bila masa, asalkan tempat atau lokasi itu mempunyai capaian internet.

Kajian ini juga memberi gambaran jelas kepada pihak pentadbiran dan pengurusan serta pensyarah-pensyarah tentang isu-isu yang berkaitan PdPDT agar langkah atau tindakan boleh diambil dengan sewajarnya. Selain itu, kajian ini menggalakkan para pensyarah untuk menggunakan PdPDT dalam membantu melicinkan proses pengajaran mereka pada masa akan datang, walaupun ketika tempoh PKP telah berakhir. Selain itu, kajian ini juga menambahkan lagi jumlah kajian dalam bidang PdPDT dan menjadi sumber rujukan kepada para penyelidik untuk membuat kajian lanjutan.

Cadangan kepada kajian akan datang perlu memberi tumpuan kepada peningkatan dari aspek kaedah kajian, pembolehubah tambahan dan responden dalam skop yang lebih luas supaya dapat menghasilkan kesimpulan kajian yang lebih baik. Kajian ini hanya menggunakan pelajar sebagai responden sahaja, maka cadangan untuk kajian akan datang adalah melibatkan para pensyarah agar maklumat dan pandangan lebih menyeluruh dan mantap. Dari segi kaedah kajian, dicadangkan pada masa akan datang kajian dilakukan melalui dua pendekatan iaitu kuantitatif dan kualitatif (kaedah gabungan) supaya data kajian yang diterima adalah lebih mantap. Berdasarkan kajian yang dilakukan secara kuantitatif, responden tidak dapat memberikan maklumat yang begitu subjektif kerana responden dikawal oleh soal selidik yang berbentuk struktur (Aini Hassan, 2007).

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CIRI-CIRI KEPIMPINAN DAN KESANNYA DALAM *TUHFAT AL-NAFIS* KARYA RAJA ALI HAJI
THE QUALITIES OF LEADERSHIP AND THEIR EFFECT IN TUHFAT AL-NAFIS BY RAJA ALI HAJI

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Abstrak: *Tuhfat al-Nafis merupakan sebuah teks sastera sejarah atau historiografi Melayu. Sebagai sebuah teks historiografi Melayu, ruang lingkup zaman pada masa itu masih lagi bercorak sistem pemerintahan feudal dan beraja. Gambaran sistem kepimpinan beraja masih menjadi teras dan jatuh bangunnya sesebuah kerajaan adalah bergantung kepada ciri-ciri kepimpinan yang ada. Makalah ini bertujuan menjelaskan ciri-ciri kepimpinan kelompok pemimpin yang terdapat dalam teks Tuhfat al-Nafis. Ciri-ciri kepimpinan ini akan dijelaskan dengan menggunakan pendekatan kepimpinan Islam. Tuhfat Al-Nafis dikarang oleh seorang pengarang istana bernama Raja Ali Haji. Dalam penulisan Tuhfat Al-Nafis, Raja Ali Haji menyurat bagi memenuhi visi dan misi sebuah kerajaan iaitu Melayu-Bugis. Pemimpin yang memenuhi ciri-ciri kepimpinan yang berlandaskan Islam akan menjadikan sesebuah kerajaan makmur dan sekiranya aspek kepimpinan itu tidak dipenuhi maka sesebuah kerajaan itu akan jatuh. Justeru, ciri-ciri kepimpinan yang unggul dapat memberi kesan timbal balas sistem sosial masyarakat yang baik.*

Kata Kunci: *Ciri-ciri kepimpinan; prinsip kepimpinan Islam; Tuhfat al-Nafis; visi dan misi teks.*

Abstract: *Tuhfat al-Nafis is a literary text or history of the Malay historiography. As a Malay historiographical text, the scope of the times at that time are still patterned feudal and monarchical system of government. The description of the monarchical leadership system is still the core and the ups and downs of a government depends on the characteristics of the existing leadership.This paper aims explains the leadership characteristics of the group of leaders found in the text of Tuhfat al-Nafis. The characteristics of this leadership will be explained by using the Islamic leadership. Tuhfat Al-Nafis was composed by a palace author named Raja Ali Haji. In writing Tuhfat Al-Nafis, Raja Ali Haji correspondence to fulfill the mission and vision of a government that is Bugis Malay. Leaders who meet the characteristics of leadership based on Islam will make a government prosperous and if the aspect of leadership is not met then a government will fall.Thus, the characteristics of superior leadership can have a positive impact on the social system of society.*

Keywords: *The qualities of leadership; principles of Islamic leadership; Tuhfat al-Nafis; vision and mission of the text.*

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13th – 14th December 2020

Pengenalan

Kamus Pelajar Edisi Kedua (2004) mendefinisikan pemimpin sebagai orang yang memimpin, membimbing, menuntun, mengepalai dan melatih. Kepimpinan bermaksud gelaran yang diberikan kepada orang yang berada di tempat pemimpin seperti pemimpin parti politik atau organisasi yang berupaya memimpin atau mengarah sesebuah kumpulan atau organisasi. Secara umumnya, ciri-ciri kepimpinan adalah sikap atau pendekatan yang digunakan oleh seseorang pemerintah untuk menghegemoni pengikutnya. Terdapat pelbagai prinsip kepimpinan Islam yang telah digariskan sebagai panduan.

Menurut Nurshahira Ibrahim, *et.al* (2016) kepimpinan tranformasi Rasulullah SAW berjaya mengubah peradaban zaman *jahiliyyah* ketika itu. Melalui sorotan sirah, sebelum Nabi Muhammad SAW diangkat menjadi Rasul, keadaan moral ketika itu amat rendah dengan berleluasanya aktiviti perjudian, perzinaan, merampas harta, pembunuhan kejam dan penindasan. Asas ciri-ciri kepimpinan Islam ialah *al-Qawwiy* dan *al-Amin.* Pemimpin yang diangkat mestilah mempunyai kekuatan dan seorang yang amanah. Ciri-ciri ini merupakan teras kepemimpinan dalam Islam. Unsur-unsur *al-Quwwah* adalah kekuatan fikiran (‘*aqliyah*), kekuatan jiwa (*nafsiyyah*), pengetahuan dan kekuatan fizikal Nur (Sofia Nabila *et. al.* 2018). Secara ringkasnya, seorang pemimpin yang mempunyai *al-Quwwah* dilihat sebagai ketua yang mampu untuk melaksanakan kepimpinan bersandarkan elemen kekuatan pengetahuan dan kekuatan fizikal.

Idris Zakaria (1995) menjelaskan gagasan falsafah politik al-Farabi tertumpu kepada ketua negara itu sendiri. Kemajuan, kemunduran, kebahagiaan, sesebuah negara bergantung kepada kebolehan pemimpin sebagai tokoh utama negara. Jelaslah, Al-Farabi menggariskan prinsip kepimpinan sebagai satu konteks penting dengan meletakkan prinsip kekuataan dan keutamaan baik mental, spiritual, dan fizikal. Pemimpin dikatakan lambang kepimpinan yang berkualiti tinggi malah contoh teladan seorang manusia yang mencapai tahap ilmu dan akhlak yang tinggi.

Raja Ali Haji memainkan peranan besar dalam mencipta karya sastera sejarah dengan naratif yang keluar daripada konvensional kepengarangan manuskrip lain. *Hikayat Tuhfat al-Nafis* meliputi peristiwa dari awal abad ke-17 hingga pertengahan abad ke-19. Secara ringkas, *Tuhfat al-Nafis* merangkumi peristiwa dalam kalangan semua kerajaan Melayu di Semenanjung Melayu dan di Kepulauan Riau-Lingga (termasuk Singapura), di Siak (Sumatera Timur), di Kalimantan Barat, di Sulawesi Selatan dan peristiwa di Betawi (Jakarta). Karya ini merakamkan lebih daripada sepuluh episod peperangan Riau-Siak.

Dalam konteks kepimpinan, Raja Ali Haji mengangkat ciri-ciri kepimpinan raja yang perlu menyempurnakan tuntutan agama Islam dan menjunjung hukum Allah SWT. Peristiwa ini diangkat melalui Yang Dipertuan Muda Riau pada abad ke-19. Raja dikatakan sebagai pelindung kepada agama Islam. Namun begitu, terdapat juga rakaman peristiwa Sultan Mahmud yang mengabaikan pentadbirannya di Lingga dan penentangan pasukan Belanda di Melaka. Ciri-ciri kepimpinan jelas dikesan pada pertengahan abad kedelapan belas, Raja Ali Haji seorang pahlawan keturunan Bugis (bapanya) dan puteri Melayu (ibunya) mendamaikan politik dalam kerajaan dan mengalahkan musuh luar kerajaan. Raja Ali Haji turut memberi gambaran kuasa kepimpinan Belanda yang menguasai perdagangan Riau-Lingga.

Kajian Literatur

Sorotan dalam makalah ini menganalisis literatur terdahulu tentang prinsip-prinsip kepimpinan serta kesan kepimpinannya. Muhammad Khairi Mahyuddin (2019) menjelaskan kepimpinan perlu berpaksikan tauhid dan makrifah. Kepimpinan jenis ini ditonjolkan oleh Rasulullah SAW, para sahabat dan salaf soleh. Kesannya, umat berjaya dibangunkan dan

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13th – 14th December 2020

dikenang sebagai sebuah tamadun yang berakhlak mulia. Kajian ini menumpukan konteks kepimpinan pendidikan di Sekolah Tinggi Agama Islam di Sulawesi yang didapati berkembang dengan baik kesan daripada kepimpinan kecerdasan hati. Nur Sofia Nabila *et. al* (2018) dalam kajiannya *Al-Quwwah: The Core of Leadership in Islam* mengangkat konsep *al-Quwwah* yang merupakan teras kepemimpinan dalam Islam. Unsur-unsur *al-Quwwah* adalah kekuatan fikiran (‘*aqliyah*), kekuatan jiwa (*nafsiyyah*), pengetahuan dan kekuatan fizikal. *Al-Quwwah* ditakrifkan sebagai kemampuan untuk melaksanakan kepimpinan bersandarkan elemen kekuatan pengetahuan dan kekuatan fizikal.

Muhammad Harfin Zuhdi (2014) yang mengkaji *Konsep Kepemimpinan dalam Perspektif Islam* memperlihatkan kepimpinan berpandukan ayat-ayat al-Quran sekaligus melihat dalam kerangka diluar kapitalis. Kajian ini menemukan ciri-ciri kepimpinan yang terdapat hal cita-cita keadilan, kemaslahatan dan kebenaran yang akan ditegakkan. Panduan ayat-ayat al-Quran ini menjadi kayu ukur supaya pemimpin terhindar daripada nafsu perseorangan, kelompok mahupun fahaman-fahaman yang menjadikannya lemah dalam komitmen memperjuangkan kebenaran dan keadilan. Tafsiran ayat-ayat al-Quran ini akhirnya membawa kepada prinsip-prinsip kepimpinan yang terdiri daripada amanah, adil, syura (*musyawarah*) dan *amr bi al-ma’ruf wa nahy ‘an almunkar.*

Kajian teks *Tuhfat al-Nafis* pula dapat dilihat melalui kajian Norain Ismail (2012) menerusi *Peperangan dalam Historiografi Johor: Kajian Terhadap Tuhfat al-Nafis* meneliti sejarah peperangan yang disertai oleh orang Melayu dan Bugis khasya dalam *Tuhfat al-Nafis.* Kajian ini meninjau motif berlakunya peperangan,strategi, watak-watak yang terlibat dalam peperangan dan alat kelengkapan peperangan.

Salmah Jan Noor Muhammad (2017) meninjau *Kepemimpinan Pemerintah Kesultanan Melayu dalam Menjalinkan Hubungan Diplomatik* dalam naskhah historiografik *Tuhfat al-Nafis* bersama gabungan *Sulalat al-Salatin, Al-Tarikh Salasilah Negeri Kedah,* dan *Hikayat Merong Mahawangsa.* Tinjauan ini mendapati keberkesanan kepemimpinan terhadap hubungan diplomatik yang ditawar dan diterima kerajaan luar. Dapatan kajian menunjukkan pelbagai kaedah kepemimpinan yang digunakan pemerintah Kesultanan Melayu Melaka dalam menggerakkan aspek ekonomi, sosial dan fizikal negara. Melalui *Tuhfat al-Nafis* dapat dikesan watak raja Sambas bernama Sultan Adil mengutus surat kepada Yang Dipertua Muda bertujuan menjalinkan diplomatik melalui ikatan perkahwinan.

Bagi Amir Rullah Mohd Noor dan Salmah Jan Noor Muhammad (2016) dalam menganalisis teks *Tuhfat al-Nafis* dilihat cuba keluar daripada kerangka pemerintah yang dianggap ideal. Teks historiografik ini dinilai dalam konteks *Kemelut Politik Zaman Kesultanan Melayu dalam Tuhfat al-Nafis.* Punca kemelut berlaku disebabkan terdapat pihak yang tidak menurut undang-undang negeri dan masalah moral dalam diri yang menjadi pegangan penting dalam agama Islam. Artikel ini membincangkan kemelut politik dalam pemerintahan dan pentadbiran pada zaman kesultanan Melayu. Episod perebutan kuasa dan akhlak pemimpin yang keluar dari prinsip keadilan terpaksa disoroti sebagai iktibar kepada generasi demi generasi. Hal ini meninggalkan kesan yang besar dengan tercetusnya perbalahan dan berakhir dengan peperangan yang merugikan.

Kesimpulannya, kajian literatur menunjukkan bahawa setiap pemimpin perlu memiliki ciri-ciri kepimpinan yang baik kerana hal ini mempengaruhi orang bawahannya. Pemimpin yang diperlihatkan dalam kajian-kajian lampau ini menjelaskan ciri-ciri pemimpin perlu mempunyai sikap yang baik.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Permasalahan Kajian

Kajian ini dijalankan menumpukan teks tradisional sastera sejarah *Tuhfat al-Nafis*. Kajian-kajian berkaitan prinsip-prinsip kepimpinan Islam kurang ditumpukan dalam naskhkah sastera sejarah. Hakikatnya, teks sastera sejarah sesuai dikaji menggunakan prinsip-prinsip tersebut. Kajian ini menjadi titik tolak sebagai pendekatan model kepimpinan yang lebih terkini dalam menganalisis manuskrip sastera sejarah.

Keberkesanan kepimpinan banyak bergantung kepada keupayaan pemerintah menguasai hegemoni. Pemerintah menjadi kayu ukur dan penggerak utama kepada penguasaan kepada golongan yang diperintah. Justeru, pemimpin perlu arif akan konsep kepimpinan Islam supaya selamat di dunia dan di akhirat serta menguasai prinsip hegemoni yang untuk memberi pengaruh yang dominan tanpa paksaan atau kekerasan. Perkara ini bertepatan dengan pendapat bahawa kepimpinan adalah satu proses pertukaran sosial yang sangat penting antara pemimpin dengan pengikutnya. Pemimpin mestilah mengkomunikasikan segala visi dan objektif organisasi kepada kalangan pengikutnya. Hal ini memerlukan penerimaan yang baik kepada pengikutnya.

Objektif Kajian

Objektif kajian adalah untuk menjelaskan ciri-ciri kepimpinan kelompok pemimpin yang terdapat dalam teks *Tuhfat al-Nafis* serta menganalisis kesan hubungan timbal balas antara pemimpin dan rakyat dalam teks.

Metodologi Kajian

Analisis kajian ini menggunakan kaedah kualitatif, iaitu kaedah kepustakaan dan analisis teks. Kaedah kepustakaan melibatkan pemilihan bahan-bahan kajian lepas berkaitan ciri-ciri kepimpinan. Analisis teks ini melibatkan pemilihan teks yang sesuai iaitu *Tuhfat al-Nafis* dengan menggunakan prinsip-prinsip kepimpinan Islam. Penelitian analisis memberi fokus terhadap peristiwa yang melibatkan aspek kepimpinan yang mengatur strategi perang dan mengurus rakyat dari dalam teks *Tuhfat al-Nafis*.

Dapatan Kajian

Teks *Tuhfat al-Nafis* meliputi peristiwa dari awal abad ke-17 hingga pertengahan abad ke-19. Secara ringkas, *Tuhfat al-Nafis* merangkumi peristiwa dalam kalangan semua kerajaan Melayu di Semenanjung Melayu dan di Kepulauan Riau-Lingga (termasuk Singapura), di Siak (Sumatera Timur), di Kalimantan Barat, di Sulawesi Selatan dan peristiwa di Betawi (Jakarta). Karya ini merakamkan lebih daripada sepuluh episod peperangan Riau-Siak. Dalam naratifnya, pengarang dilihat amat mementingkan kronologi.

Dalam konteks kepimpinan, Raja Ali Haji mengangkat hegemoni raja yang perlu menyempurnakan tuntutan agama Islam dan menjunjung hukum Allah SWT. Peristiwa ini diangkat melalui Yang Dipertuan Muda Riau pada abad ke-19. Raja dikatakan sebagai pelindung kepada agama Islam. Namun begitu, terdapat juga rakaman peristiwa Sultan Mahmud yang mengabaikan pentadbirannya di Lingga dan penentangan pasukan Belanda di Melaka. Kuasa kepimpinan jelas dikesan pada pertengahan abad kedelapan belas, Raja Ali Haji seorang pahlawan keturunan Bugis (bapanya) dan puteri Melayu (ibunya) mendamaikan politik dalam kerajaan dan mengalahkan musuh luar kerajaan. Raja Ali Haji turut memberi gambaran kuasa kepimpinan Belanda yang menguasai perdagangan Riau-Lingga.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Prinsip-prinsip Kepimpinan Islam

Menurut Nurshahira Ibrahim *et.al* (2016), kepimpinan tranformasi Rasulullah SAW apabila berjaya mengubah peradaban zaman jahiliyyah ketika itu. Hal ini menjelaskan bahawa ciri-ciri kepimpinan Islam perlu berupaya mengangkat keadaan moral yang rendah kepada moral yang jauh lebih baik. Hal ini memerlukan pemimpin yang unggul dengan prinsip kepimpinan yang mempunyai niat, taqwa, kesyukuran, syura, amanah, tadbir urus yang cekap, peka dan prihatin, ketepatan tujuan dan wawasan yang jelas untuk ummah. Nor Anisah Abu Hanafiah & Razaleigh Muhamat@Kawangit dalam memetik Mohamad (2008), Rasulullah SAW dijelaskan sebagai pemimpin yang menekankan sikap toleransi, sabar, konsep kesamarataan, perbincangan individu dengan penuh adab dan tunjuk ajar yang berhemat, peka dan memberi tindak balas dalam setiap tingkat laku dan aktiviti pengikut serta mementingkan pencapaian pengikut.

Selain itu, kajian Muhammad Khairi Mahyuddin (2019) turut menjelaskan kepimpinan perlu berpaksikan tauhid dan makrifah. Hal ini memerlukan kepimpinan yang mempunyai kecerdasan hati. Seterusnya, Nur Sofia Nabila *et. al* (2018) menjelaskan kepimpinan perlu mempunai *al-Quwwah* iaitu kekuatan. Unsur-unsur *al-Quwwah* adalah kekuatan fikiran (‘*aqliyah*), kekuatan jiwa (*nafsiyyah*), pengetahuan dan kekuatan fizikal. Prinsip kepimpinan Islam juga digariskan Muhammad Harfin Zuhdi (2014) dengan merujuk tafsiran ayat-ayat al-Quran yang akhirnya membawa kepada prinsip-prinsip kepimpinan yang terdiri daripada amanah, adil, *syura* (*musyawarah*) dan *amr bi al-ma’ruf wa nahy ‘an almunkar.*

Ciri-ciri Kepimpinan dalam Tuhfat al-Nafis Karya Raja Ali Haji

Ciri-ciri kepimpinan melibatkan cara pemimpin menghegemoni pengikut. Hegemoni sebagai pengaruh atau dominasi sesebuah negara atas negara-negara lain atau pemimpin kepada pengikutnya. Gramci menyatakan hegemoni, sebagai satu bentuk supermasi satu kelompok atau beberapa kelompok atas yang lainnya, dengan bentuk supermasi lain yang ia namakan “dominasi” iaitu kekuasaan yang ditopang oleh kekuatan fizikal (Sugiono, 1999:31).

Hassan Al-Banna Mohamed (2018) dalam kajian *Islam dan Pembentukan Kepimpinan Berkualiti* mendapati penekanan akhlak dan moral dalam pembentukan model kepimpinan amat penting. Berdasarkan penelitian terhadap *Tuhfat al-Nafis,* terdapat raja yang memenuhi tuntutan akhlak dan moral yang baik seperti Sultan Muhammad Syah, Sultan Sambas, Sultan Abdul Rahman, Raja Jaafar dan Yang Dipertua Muda Raja Ali. Hal ini dapat dilihat dalam peristiwa yang menunjukkan pemimpin-pemimpin ini dikatakan sebagai seorang yang adil, baik perilaku, suka beribadah dan membetulkan sikap masyarakat ketika pemerintahannya.

Pemerintahan Raja Muhammad Syah dikatakan sebagai raja Melayu pertama yang memeluk agama Islam. Sultan Muhammad Syah mempengaruhi rakyat dengan mengangkat adat istiadat seperti kekuningan tertentu kepada Raja dan larangan membuat rumah beperanginan dan tiang alas beralas yang tiada terletak ke tanah. Pemerintahan Sultan Muhammad Syah di negeri Melaka sangat aman. Akhlak yang ditunjukkan adalah sebagai seorang pemerintah yang adil dan saksama. Contohnya:

> *“Syahadan apabila mangkatlah Raja ((Besar Muda itu maka menggantikan puteranya yang bernama Raja Tengah. Syahadan apabila mangkatlah Raja)) Raja Tengah itu maka menggantikan(lah) kerajaan puteranyanya yang bernama Raja Kecil Besar. Syahadan kata sahib al-hikayat (ini, maka) inilah raja yang adil lagi saksama pada zaman itu, dan dialah raja Melayu yang mula-mula masuk igama Islam”.*
>
> *(Tuhfat al-Nafis:7)*

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13th – 14th December 2020

> *"Syahadan pada kerajaan baginda Sultan Muhammad Syah inilah yang (ter)sangat adil serta ramailah negeri Melaka itu serta amannya.*
>
> *(Tuhfat al-Nafis:8)*

Selain itu, kepimpinan yang menunjukkan akhlak dan moral yang baik juga dapat dilihat pada Sultan Sambas. Raja Ali Haji menggarap watak Sultan Sambas secara ringkas pada bab pertama. Sultan Sambas dikatakan sebagai seorang pemerintah adil dan masyhur. Selain itu, ciri kepimpinan ini turut dimiliki Sultan Muzaffar Syah. Baginda mempunyai susur galur kerabat Sultan Muhammad Syah juga merupakan seorang pemerintah yang adil. Ciri-ciri kepimpinan yang berakhlak dan moral yang baik ini dipaparkan seperti;

> *"Fasal pada menyatakan salasilah Opu Dahing Kemasi yang bergelar di dalam negeri Sambas/bernama/ Pangeran Mangkubumi. Bermula adalah Opu Dahing Kemasi itu beristerikan adik Sultan Sambas yang bergelar Sultan Adil konon.*
>
> *(Tuhfat al-Nafis:8)*
>
> *"Adalah lamanya Sultan Abu Syahid menjadi raja itu setahun lima bulan maka berpindah ((lah)) kerajaannya kepada saudaranya Raja Kasim, maka bergelar Sultan Muzaffar Syah. Syahadan Sultan Muzaffar Syah inilah memulai undang-undang Melayu memerintahkan kerajaan dengan adil.*
>
> *(Tuhfat al-Nafis:8)*

Ciri kepimpinan yang menunjukkan akhlak dan moral yang baik turut dikesan melalui Sultan Abdul Rahman. Raja Ali Haji mengangkat perwatakan Sultan Abdul Rahman sebagai seorang yang kuat beribadat dan mengasihi adik beradik yang lain. Sultan Abdul Rahman merupakan seorang yang lembut hati dan banyak menangis kerana khusyuk hatinya kepada Allah. Setiap malam Jumaat dikatakan Sultan Abdul Rahman tidak tidur tetapi asyik berbuat ibadat. Manakala pada siang hari menunaikan sembahyang Jumaat dan membaca al-Quran. Contohnya:

> *"Sebermula adalah Baginda (Sultan Abdul Rahman) /Syah/ itu ialah raja yang kuat berbuat ibadat. Maka apabila malam Jumaat tiadalah ia beradu, asyik dengan berbuat ibadat sahaja. Dan apabila siang harinya pergilah ia sembahyang Jumaat dengan memakai cara Arab (berserban dan berjubah). Maka apabila selesai daripada sembahyang Jumaat, maka singgahlah baginda itu (ke) pada makam paduka ayahandanya (al)-Marhum (Sultan Mahmud) membaca Quran…"*
>
> *(Tuhfat al-Nafis:330)*
>
> *"Dan lagi baginda itu kebanyakan menangis, sebab khusyuk hatinya kepada Allah Ta'ala, kebanyakan tangis itu pada ketika khatib membaca khutbah, demikianlah adanya)."*
>
> *(Tuhfat al-Nafis:331)*

Sebagai tambahan, ciri kepimpinan berakhlak yang baik ini turut dikesan apabila Sultan Abd al-Rahman suka mendampingi orang alim. Hal ini bertepatan dengan pendapat Tuti Munfaridah (2012) dalam membahaskan kriteria pemimpin ideal menjelaskan setiap pemimpin perlu memelihara diri daripada empat keinginan atau nafsu untuk berkuasa. Tuti dalam memetik Imam al-Ghazali mengetengahkan kriteria-kriteria pemimpin yang perlu menerima pesanan ulama. Seseorang pemimpin dijelaskan mesti bergaul dengan ulama dan menerima nasihat mereka. Contoh petikan:

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13th – 14th December 2020

"Syahadan lagi adalah Baginda Sultan Abd Al-Rahman itu suka akan tuan-tuan sayid dan tuan syeikh suka bercampur makan minum dengan mereka itu, dan suka) berimamkan orang yang alim dan suka ia bang terkenallah dari jauh akan suara baginda itu. Dan (lagi baginda itu) suka ziarah ke (pada) rumah (-rumah) sanak saudaranya (dan kepada segala rumah-rumah orang tua-tuanya dan orang besar-besarnya, terkadang ia minta hendak santap kepada mereka segala mereka itu."

(Tuhfat al-Nafis:330)

Ciri kepimpinan ini juga dapat dilihat pada Yang Dipertuan Muda Raja Jaafar. Yang Dipertuan Muda menunjukkan yang baik perangai dan mengasihi sanak-saudara, sahabat, tuan sayid dan orang tua-tua. Hal ini diceritakan bahawa Yang Dipertuan Muda tidak sombong dan gemar menuntut ilmu. Tuti Munfaridah (2012) dalam membahaskan kepimpinan Islam memetik Imam al-Ghazali tentang kriteria-kriteria pemimpin seperti rendah hati dan penyantun iaitu pemimpin tidak boleh bersikap takabur atau sombong. Seterusnya, tidak mementingkan diri sendiri kerana pemimpin akan menjadi rujukan dalam segala hal. Justeru, pemimpin perlu beranggapan bahawa dia juga seperti rakyat biasa. Pemimpin juga perlu mempunyai kesabaran yang tinggi. Pemimpin tidak boleh mencemuh rakyat yang datang memohon pertolongan. Kehidupan pemimpin perlulah bersederhana dengan mengendalikan dorongan nafsu seperti mengenakan pakaian mewah dan makanan yang lazat. Sikap *qanaah* (menerima apa adanya) dalam segala hal. Peristiwa ini dirakam melalui watak Yang Dipertuan Muda Jaafar seperti berikut;

"(Syahadan) kata sahib al-hikayat adalah Yang Dipertuan Muda Raja Jaafar itu satu raja yang baik perangainya (jua) dan suka mengasihi sanak (-sanak) saudaranya dan sahabat handainya, apalagi tuan sayid dari Arab dan tuan sayid peranakan (dan suka mengasihi orang tua-tua) serta hormat kepada yang tua-tua dengan pergi ziarah ke rumahnya. Dan tiada (takbur) membesarkan dirinya terkadang (hingga) makan ia nasi sisa sahayanya… Dan suka ia akan akan orang (yang) baik-baik /baca dan/ bacaan pada mengaji Qur'an jikalau datang qari yang pandai mengaji al-Qu'ran (ke/dalam/negeri Riau), maka dipegang(kan)nyalah dua tiga bulan."

(Tuhfat al-Nafis:331)

Pemerintahan Yang Dipertuan Muda Raja Ali turut dinaratifkan sebagai pemerintah yang mempunyai akhlak dan moral yang baik. Yang Dipertuan Muda Raja Ali menekankan ilmu agama dalam kalangan pegawai negeri. Ilmu itu terdiri daripada ilmu agama dan tajwid. Watak ini dibumbui dengan sikap yang cinta akan ilmu dan mendampingi ulama-ulama. Menariknya, Yang Dipertuan Muda Raja Ali menegakkan syariat Islam dengan melarang aktiviti berjudi, menyabung dan memberi hukuman kepada keras kepada perompak. Yamtuan Muda turut bencikan orang orang bermain-main yang membawa kepada cabul antara lelaki dan perempuan dan bernyanyi-nyanyi dengan pantun dan sindir-menyindir kepada pekerjaan zina.

"Dan pada masa Yang Dipertuan Muda Raja Ali inilah banyak ulama yang datang dengan kemuafakatan saudaranya Raja Ali Haji maka dikurniakan masarif disuruhnya segala pegawai negeri menuntut ilmu perkara ugama dan mengaji kitab-kitab dan belajar membaiki bacaan Qur'an al-'azim. Dan ia sendiri pun suka/jua/ talab al-ilm"

(Tuhfat al-Nafis:432)

"Syahadan lagi Yang Dipertuan Muda Raja Ali) inilah membuang dan melarang(kan) segala orang yang jahat (-jahat) seperti berjudi dan menyabung I (tiadalah boleh lagi, dan segala orang-orang Islam berjudi dan menyabung, jika diketahuinya

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13th – 14th December 2020

dihukumnyalah dengan yang sepatutnya, sehingga ia bekerjakan puteranya nikah kahwin pun tiada diberinya orang-orang berjudi dan menyabung…"

(Tuhfat al-Nafis:433)

"Dan jika ada orang jahat perompak-perompak dihukum(kan)nya terkadang (dengan) dibuangnya [diserahkannya kepada residen Riau] terkadang dibunuhnya (dikerat kepala, dan berapa kali yang demikian itu supaya yang lain mengambil insaf dan gerun)"

(Tuhfat al-Nafis:433)

"[Dan demikian lagi Yang Dipertuan Muda Raja Ali inilah bencikan orang-orang bermain-main yang membawa kepada cabul laki-laki dengan perempuan serta orang bernyanyi-nyanyi beranyut dengan pantun sindir-menyindir pada pekerjaan zinah."

(Tuhfat al-Nafis:433)

Selain itu, ciri kepimpinan mengutamakan perbincangan (*musyawarah*) dalam membuat keputusan. Ciri-ciri kepimpinan ini dikesan amat dominan dalam *Tuhfat al-Nafis*. Setiap keputusan yang diputuskan melalui perbincangan secara *syura*. Muhammad Harfin Zuhdi (2014) dalam melihat kepimpinan Islam menemukan dapatan tafsiran ayat-ayat al-Quran akhirnya membawa kepada prinsip-prinsip kepimpinan yang terdiri daripada amanah, adil, syura (*musyawarah*) dan *amr bi al-ma'ruf wa nahy 'an almunkar.* Dalam konteks ini, pemimpin-pemimpin dalam *Tuhfat al-Nafis* meninggalkan budaya yang baik dalam mencapai sesuatu kata putus. *Musyawarah* dijalankan untuk mendapat persetujuan sesuatu tindakan yang ingin diambil

"[Maka Datuk Bendahara pun bermusyawarahlah] dengan saudaranya Temenggung, Indera Bongsu, I pada maksud ((Megat Seri Rama itu. Bersatulah sekalian mereka itu pada membenarkan Megat Seri Rama itu kerana segala orang besar-besar di dalam negeri itu pun banyak juga yang suka akan bendahara itu menjadi raja))."

(Tuhfat al-Nafis:47)

Berdasarkan contoh di atas, Datuk Bendahara bermusyawarah dengan saudaranya Temenggung dan Indera Bongsu akan tindakan Megat Seri Rama ingin membalas dendam terhadap Sultan Mahmud. Tindakan Megat Seri Rama ini merupakan tindakan berbahaya.

Ciri kepimpinan ini juga dinukilkan melalui peristiwa Yang Dipertuan Muda ingin mengadap Sultan Sulaiman dan hasrat Raja Kecik ingin mengadap ayahanda baginda untuk mengambil Yang Dipertuan Muda. Menariknya, peristiwa Datuk Bendahara yang ditertawakan kapitan kapal yang menuntut bendahara temenggung membayar membayar hutang, Datuk Bendahara dikesan berasa kecewa kerana tidak dapat bermusyawarah untuk menyelesaikan masalah tuntutan hutang tersebut. Akhirnya, setelah mendapat kata muafakat Yang Dipertuan Muda menyelesaikan bayaran hutang tersebut. Ciri kepimpinan yang mengutamakan musyawarah ini dikarang seperti berikut;

"Syahadan (apabila selesailah daripada musyawarahnya itu), maka Yang Dipertuan Muda pun (berangkat) mengadap (Baginda) Sultan Sulaiman."

(Tuhfat al-Nafis:143)

"Syahadan (adapun Raja di Baruh, apabila Raja Kecik itu sudah belayar, maka ia pun mengadap ayahanda bagindanya bermusyawwarah, hendak mengambil Yang Dipertuan Muda itu."

(Tuhfat al-Nafis:154)

eISBN 978-967-2426-22-6
13th – 14th December 2020

> *"Syahadan (kata sahib al-hikayat), apabila Datuk Bendahara mendengar kata kapitan kapal (demikian) itu, (maka) kesesakan-lah ia sebab tiada dapat tempat hendak musyawarah lagi, dan Raja Kecik Terengganu pun sudah balik...."*
>
> *(Tuhfat al-Nafis:169)*

Berdasarkan ciri kepimpinan ini juga digunakan untuk mencari pengganti marhum Sultan Ahmad. Walaupun musyawarah ini akhirnya mencetuskan konflik dalam mencari pengganti Marhum Sultan Ahmad, namun konflik lebih besar boleh berlaku sekiranya dari awal tidak dibawa ke meja perundingan. Peristiwa ini diceritakan seperti berikut;

> *"Maka apabila sudah selesai dan mustaiblah) daripada dikuburkan Sultan Ahmad itu, maka musyawarahlah Yang Dipertuan Muda serta Datuk Bendahara, (dan Datuk Temenggung), serta suku (-suku) sebelah Melayu, dan suku (-suku sebelah) Bugis, akan ganti Marhum Sultan Ahmad itu."*
>
> *(Tuhfat al-Nafis:171)*

Selain itu, ciri kepimpinan *al-quwwah* iaitu pemimpin yang kuat. Ciri-ciri kepimpinan ini mudah dikesan dalam *Tuhfat al-Nafis*. Pemimpin yang kuat perlu seiring dalam kekuatan fizikal dan mental. Pemimpin-pemimpin yang dikesan dalam *Tuhfat al-Nafis* memenuhi kriteria ini. Mereka sememangnya mempunyai kekuatan fizikal dan mental dalam berdepan dengan musuh atau ketika berdepan dalam peperangan. Peristiwa-peristiwa ini disurat oleh Raja Ali Haji seperti berikut;

> *"Syahadan tiada berapa lamanya ia belayar itu sampailah ia ke Riau, maka lalu masuk berhenti di Pulau Pengujan mengikat perang di situ, serta mengatur kelengkapan peperangannya. Maka apabila sudah musta'ib maka lalulah ia menyuruh memberitahu ke hulu Riau kepada Raja Kecik, menyuruh keluar berperang jika sungguh laki-laki, jangan berperang di dalam negeri, rosak isi negeri."*
>
> *(Tuhfat al-Nafis:68)*
>
> *"Maka Sultan pun menekan kakinya ((sebelah)) maka pelantaran jambatan pun hendak runtuh, berderek-derek daripada gagahnya Sultan Mahmud itu."*
>
> *(Tuhfat al-Nafis:133)*

Ciri pemimpin yang kuat ini juga dipamerkan melalui pemimpin-pemimpin Bugis. Kelompok Bugis ini amat digeruni sehingga ada yang lari apabila diserang oleh mereka. Sebenarnya, ini merupakan satu bentuk hegemoni Bugis yang dinaratifkan sebagai kelompok yang gagah dan digeruni. Terdapat persitiwa ketika perang apabila mereka menawan musuh sehingga ke Pangeran Dipati. Sebagai contoh;

> *"Maka didatangi (pula) oleh Bugis-Bugis kubu Raden Jaga, maka melawanlah (ia) sebentar (juga) serta mati orang ((nya)) dua tiga orang. Maka ia pun lari pula."*
>
> *(Tuhfat al-Nafis:105)*
>
> *"Maka diikut oleh Bugis-Bugis serta (segala) orang/ke/ Sebukit serta raja-rajanya. (Maka berperanglah sepanjang jalan itu sambil diperhambatnya) hingga sampai ke perdalaman Pangeran Dipati itu."*
>
> *(Tuhfat al-Nafis:105)*

Kesan Kepimpinan dalam Tuhfat al-Nafis karya Raja Ali Haji

Pemerintah yang mengamalkan ciri-ciri kepimpinan yang positif pasti membawa seluruh pengikutnya berada di landasan yang betul. Sosio-budaya masyarakat akan mengalami

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13th – 14th December 2020

pembaharuan dan perubahan. Berdasarkan ciri-ciri kepimpinan yang diamalkan, rakyat dilihat berada dalam keadaan aman makmur. Peristiwa ini dirakam seperti berikut;

> *"Syahadan kata Sahib al-hikayat adalah pada masaYang Dipertuan Muda Raja Haji (menjadi Yang Dipertuan Muda) itu, mangkin ramai dan (bertambah ramainya negeri) Riau, serta (dengan) makmurnya serta (dengan) orang-orang (yang di dalam) Riau (itu banyaklah yang) kaya-kaya, (seperti Sayid Husain Aidid adalah ia diam di Sungai Timun cukup dengan gedungnya serta dengan perahu-perahu tiang sambungnya pulang pergi ke Jawa berniaga…*
>
> *(Tuhfat al-Nafis:234)*
>
> *"((Syahadan)) demikianlah di dalam beberapa tahun bersuka-sukaan ((kerana)) negeri aman lagi makmur, makan-makanan pun murah dan segala orang-orang berniaga pun banyak untung (seperti gambir dibeli dua jekketun di dalam Riau dijual ((ditanah Jawa berganda-ganda untungnya sampai dijual))."*
>
> *(Tuhfat al-Nafis:235)*
>
> *"Maka amanlah negeri Lingga (itu serta mendapat makanan daripada tanah Singkeb. Dan) ada(lah) yang membaikkan (negeri daripada) kota parit(nya) dan perdalaman Baginda (Sultan Abd al-Rahman)..."*
>
> *(Tuhfat al-Nafis:329)*
>
> *"Syahadan pada kerajaan baginda Sultan Muhammad Syah inilah yang (ter)sangat adil serta ramailah negeri Melaka itu serta amannya.*
>
> *(Tuhfat al-Nafis:8)*

Selain itu, kesan ciri-ciri kepimpinan Islam yang diguna pakai pemerintah telah membantu dalam pengurusan pentadbirannya. Hal ini ditemukan apabila Raja Ali yang merupakan pemerintah yang baik perilaku berjaya menyusun atur bidang tugas jabatan dibawahnya. Baginda dapat menyusun pentadbiran dengan lebih berkesan dan adil mengikut kemampuan orang yang dipilih.

> *"Demikian lagi aturan memegang jabatan pekerjaan kerajaan daripada (segala) sanak saudaranya maka dimusyawarahkannya ramai-ramai. Kemudian baharu(lah) diberinya pekerjaan mana-mana yang layak pada tanggungannya (yang tiada sumbang dan cacat pada ujtihad orang tua-tua dan sumbang kepada mata orang yang berakal yang mempunyai mata hati).*
>
> *(Tuhfat al-Nafis:422)*

Peristiwa seterusnya memperlihatkan kesan kepimpinan yang sama apabila Yang Dipertuan Muda mengatur strategi peperangan. Komunikasi dan arahan dapat disampaikan dengan baik. Semua orang bawahan patuh kepada arahan yang diberikan. Raja Ali Haji menukilkan seperti berikut;

> *"Maka bersiaplah Yang Dipertuan (Muda) berbuat kubu dan mengatur meriam pada bukit-bukit serta menyaipkan penjajab serta mengumpulkan rakyat (-rakyat) dan menyediakan (makanan dan) ubat peluru dan mengaruklah segala anak raja-raja dan orang besar-besar dan orang baik-baik masing-masing-(lah) dengan cakapnya apalagi segala Bugis-Bugis.*
>
> *(Tuhfat al-Nafis:335)*

Penutup

Perbincangan berkenaan ciri-ciri dan kesan kepimpinan dalam *Tuhfat al-Nafis* memperlihatkan bahawa ciri-ciri kepimpinan yang baik mempunyai hubungan kesan keadaan negara dan

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13th – 14th December 2020

pentadbirannya. Daripada analisis kajian, didapati *Tuhfat al-Nafis* memperlihatkan ciri-ciri kepimpinan Islam yang mempunyai akhlak dan moral yang baik dalam kalangan beberapa orang pemerintah. Terdapat cerita-cerita pemimpin yang adil dan mempunyai perilaku yang baik, mempunyai kekuatan fizikal dan mental dan mengamalkan *musyawwarah*. Ciri-ciri kepimpinan yang dikemukakan melalui prinsip-prinsip kepimpinan Islam ini dapat disesuaikan dengan teks yang dikaji dan memperlihatkan kesan daripada kepimpinan yang baik. Tamsilnya, keadaan negara dibawah pemimpin yang menurut acuan kepimpinan Islam dijelaskan sebagai aman dan makmur. Susun atur pentadbiran juga menjadi mudah kerana pemimpin dapat mengkelompokkan bidang tugas dan keupayaan orang suruhannya dengan lebih tepat. Analisis ciri-ciri kepimpinan berdasarkan prinsip kepimpinan Islam iaitu adil, akhlak dan moral yang baik, al-*quwwah*, *musyawarah* membuktikan bahawa ciri-ciri kepimpinan ini memberi kesan positif yang dominan berbanding pemimpin lain yang sentiasa berada dalam kacau bilau pemerintahan mereka dalam *Tuhfat al-Nafis*. Hal ini demikian kerana, prinsip-prinsip kepimpinan Islam merupakan prinsip yang terbaik dalam menjalankan sesuatu hegemoni kepada pengikut dan negara oleh seseorang pemimpin.

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MASTER WHEEL

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Abstract: *Master Wheel merupakan satu inovasi yang dihasilkan bertujuan untuk memudahkan proses membuka, mengangkat dan memindahkan roda. Idea ini muncul setelah melihat sendiri proses membuka, mengangkat, memindahkan tayar secara konvensional. Masalah yang dikenal pasti adalah perlukan tenaga dan masa yang lama untuk mengeluar dan mengalihkan tayar tersebut jika berseorangan. Selain dari itu risiko untuk berlaku kecederaan juga boleh berlaku semasa kerja-kerja tersebut dijalankan. Di samping itu juga Master Wheel sangat penting untuk memenuhi semua permintaan mekanik atau individu yang menyedari tentang keselamatan semasa proses pemasangan roda. Inovasi yang dihasikan ini menggunakan motor elektrik DC 24V yang dipasang pada kerangka besi yang mana tapak bahagian bawahnya dilengkapkan dengan roda bagi memudahkan kerja mengalihkan roda kenderaan. Motor elektrik pula ditenagakan dengan bateri 24V untuk menggulungkan kabel bagi menaik dan menurunkan roda. Hasil ujikaji yang dijalankan didapati masa untuk menukar roda dengan menggunakan Master Wheel adalah 3 minit berbanding 10 minit menggunakan kaedah konvesional. Manakala untuk proses memasang pula 3 minit berbanding 10 minit bagi kaedah konvensional. Secara keseluruhanya bagi proses pemasangan 4 roda pula memerlukan 12 minit berbanding 40 minit bagi kaedah konvensional. Oleh yang demikian, inovasi ini sememangnya dapat memudahkan kerja-kerja membuka, memasang dan memindahkan roda.*

Keywords: *motor elektrik DC,kabel,mudah,cepat*

Pengenalan

Industri automotif telah berkembang dengan begitu pesat dengan penggunaan kenderaan-kenderaan di jalan raya telah menjadi salah satu keperluan pengangkutan yang penting dalam kehidupan manusia pada masa sekarang. Perkembangan industri ini adalah seiring dengan pembaharuan teknologi peralatan untuk membaik pulih, servis dan penyelenggaraan kenderaan bagi memastikan pelaksanaan urusan kerja lebih mudah di samping penjimatan masa yang singkat dapat diatasi.

Di dalam memastikan peningkatan prestasi kerja yang tinggi, pengguna peralatan yang sesuai dan mencukupi dalam penyempurnaan urusan kerja membaikpulih dan penyelenggaraan terutama di bengkel-bengkel adalah penting supaya keselamatan produk lebih terjamin. Tayar kenderaan juga memainkan peranan penting pada sebuah kenderaan yang mana ianya berfungsi untuk menyediakan kusyen di antara jalan dan roda kenderaan untuk menyerap hentakan di jalan yang kasar. Tayar juga digunakan untuk menyediakan tarikan yang baik untuk memindahkan kuasa melalui tayar ke roda untuk pecutan pantas, mengurangakan kecederungan untuk tergelincir semasa membelok dan membenarkan kereta cepat berhenti

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13th – 14th December 2020

semasa membrek (Mohd Bahaman bin Mohd Rajuli, 2002). Pengunaan tayar yang berterusan dalam tempoh yang lama menyebabkan tayar cepat haus atau rosak yang mana ianya perlu ditukar.

Namun begitu peralatan atau produk yang sedia ada pada masa sekarang boleh dikatakan belum sepenuhnya mampu menyelesaikan sesuatu masalah disebabkan masih lagi terdapat kekurangan dalam proses menukar tayar kenderaan. Ini kerana kaedah konvensioal memerlukan masa yang lama untuk menanggal, memasang dan mengalihkan roda jika kerja-kerja ini dilakukan secara bersendirian. Hal ini disokong oleh DMV, (2018) yang menyatakan tempoh masa terlalu lama untuk menukar tayar jika berlaku kebocoran dan masa diambil dalam lingkungan 20 minit untuk menyelesaikan masalah tersebut. Penggunaan tenaga yang tinggi juga diperlukan untuk menyiapkan proses pemasangan kesemua roda kenderaan.

Selain daripada itu juga dari juga risiko berlaku kemalangan juga tinggi kerana disebabkan berat roda itu sendiri. Ini kerana mekanik atau seseorang individu itu perlu mengangkat roda kenderaan yang berat semasa proses pemasangan dan juga semasa menanggalkanya dari kenderaan. Kenyataan ini disokong oleh National Institute of Health, (2016) yang mana menyatakan sebab utama berlakunya sakit kecederaan belakang adalah dari mengangkat benda yang berat. Roda kenderaan kebiasaanya mempunya berat boleh menghampiri 15 kg mengikut saiz tayar (OPONEO, 2015).

Bagi merealisasikan kajian ini satu objektif telah dibuat iaitu merekabentuk alat khas yang dapat memudahkan kerja-kerja menanggal, memasang dan mengalihkan roda serta menjalankan ujian keberkesanan terhadap alat yang dihasilkan. Alat yang dihasilkan ini juga menggunakan besi sederhana lembut yang sesuai digunakan untuk membuat alat tangan. Besi ini dipilih kerana ia mengandungi ciri-ciri kekuatan, ketahanan dan juga keselamatan (ASM Handbook, 2000).

Bagi memastikan objektif tercapai analisa perbandingan masa antara kaedah konvensional dan kaedah yang menggunakan *'Master Wheel'* dilakukan bagi mendapatkan data dan keberkesanan alat ini.

Kajian literaratur – Pengenalan

Kajian literatur merupakan satu proses kajian ilmiah dan kajian terdahulu yang dijalankan terhadap sesuatu produk yang sedia ada tetapi memerlukan pengubahsuaian cara kerja bagi mengatasi masalah produk tersebut dan menghasilkan produk yang lebih berkualiti dari yang sedia ada. Kajian yang dijalankan adalah seperti elemen bahan yang digunakan serta prosedur kerja. Tujuan utama kajian ini adalah untuk mengetahui kemampuan produk yang bakal dikeluarkan untuk memenuhi kehendak pengguna atau sebaliknya.

Teori dan Konsep

Kaedah mekanikal sudah sekian lama membantu dalam pelaksanan pekerjaan automotif sederhana. Bahkan sekarang ini ia memegang peranan penting dalam bidang automotif dalam kegiatan industry.

Kaedah konvensional merupakan kaedah yang menggunakan tenaga manual, motor dan tangan. Kaedah ini juga boleh dibina dengan binaan yang mudah kerana ia tidak begitu rumit serta sistem ini menggunakan komponen elektrik. Penggunaan motor yang merupakan alat elektronik dapat menggerakkan sesuatu putaran dengan mudah. Alat 'Master Wheel' ini menggunakan besi segi empat, angle, dan rail yang mana mampu menampung beban berat tayar kenderaan ringan.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Teori 1

'Master Wheel' ialah alat untuk menyokong ketika proses memasang/membuka tayar dan proses mengangkat dan memindahkan tayar dari kenderaan serta boleh dibawa kemana-mana sahaja kerana alat ini mempunyai roda. Alat ini dapat menampung tayar seberat 40kg dan keatas . Hal ini kerana kami memilih besi rail, besi hollow, besi angle, motor dc, bateri, cabel, roller, motor dan 4 roda sebagai bahan dan rangka untuk membina alat penyokong tayar yang merupakan besi yang kuat dan kukuh. Alat ini tidak mengambil banyak ruang kerana saiz dan bentuknya diminimumkan dan ringkas.

Kajian lepas mengenai alat sedia ada

Alat ini banyak digunakan untuk kenderaan berat yang digunakan untuk mengangkat roda dan tayar yang mempunyai saiz yang besar seperti **Rajah 1.** Produk yang sedia ada ini banyak membantu untuk memudahkan proses membuka atau memasang roda yang berskala besar. Kerja-kerja yang dilakukan juga tidak perlu menggunakan tenaga yang banyak.dan mengelakkan daripada berlakunya risiko kecederaan pada tulang belakang. Alat ini dapat mempercepat proses mengangkat roda dan tayar jika ingin menyimpan roda tersebut dari tempat yang jauh ke sesuatu tempat yang lain. Namun begitu alat ini hanya dikhususkan untuk penggunaan kenderaan berat seperti lori dan tidak sesuai untuk kenderaan ringan. Hasil daripada teknologi ini idea untuk menghasilkan 'Master Wheel' diperolehi dan beberapa ciri tambahan dan keselamatan ditambah supaya ianya lebih mesra pengguna dan sesuai untuk kenderaan ringan.

Rajah 1: Alat Yang Sedia Ada Di Pasaran

Metodologi

Bagi menjayakan kajian ini pekara utama yang perlu dibuat adalah berkaitan dengan pembinaan '*Master Wheel'*. Perkara-perkara tersebut termasuklah pemilihan bahan, kos, kualiti dan lain-lain keperluan. Selain itu, carta alir bagi perjalanan projek turut disediakan (**Rajah 2**). Carta alir ini merangkumi kesemua langkah kerja iaitu dari pemilihan idea sehinggalah ke keputusan akhir kajian. Kaedah ujikaji juga turut dibincangkan bagi mendapat data perbandingan masa diantara kaedah konvesional dan yang dikaji.

Pemilihan bahan

Besi yang dipilih, adalah besi sederhana lembut kerana ia memenuhi kesemua kehendak serta sesuai dijadikan 'tool'. Besi ini mempunyai ketahanan yang kuat, tahan lama serta ciri-ciri keselamatan yang tinggi (ASM Handbook, 2000). Besi ini untuk digunakan untuk membuat kerangka utama bagi kajian inovasi ini. Selain dari itu juga pemilihan besi ini dibuat kerana harganya lebih murah berbanding besi aluminium. Ianya juga mempunyai tahap keselamatan

eISBN 978-967-2426-22-6
13th – 14th December 2020

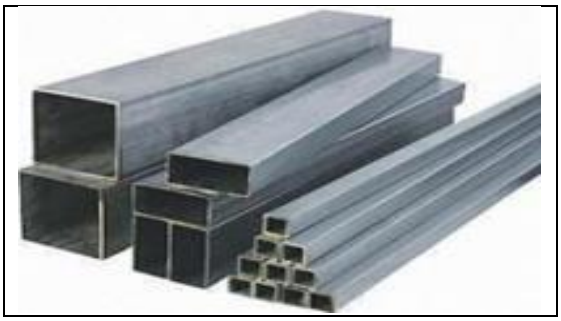
yang tinggi di mana ianya tidak mudah patah atau rosak semasa kerja-kerja mengangkat roda dilakukan. Jenis besi yang dipilih adalah berbentuk segi empat yang berlubang (*hollow square*) **Rajah 3**, ini kerana ciri-ciri ketahanannya yang kuat disamping ianya mudah untuk didapati kerana dijual di kebanyakan kedai menjual besi. Selain itu besi *hollow* petak juga lebih murah berbanding besi *hollow* bulat.

Untuk menampung beban roda yang tinggi ,pemilihan motor elektrik DC (**Rajah 4**) telah dipilih ini kerana motor ini kuat dan mampu untuk menampung beban tayar sehingga 50kg. Di samping itu, motor elektronik agak sedikit mahal kerana motor ini mampu menampung voltan sebanyak 24V. Jangka hayat motor elektronik ini tahan lama berbanding motor gear yang tidak tahan lama.

Oleh kerana motor elektrik berkuasa 24V (**Rajah 5**), maka alat ini memerlukan 2 unit bateri 12V. Jadi, pemilihan bateri dari sel kering telah dipilih. Di samping itu, bateri sel kering yang dipilih ini boleh dicas semula (Rechargeable) jika kehabisan kuasa. Selain itu, harga atau kos dari segi kedua-dua bateri ini murah dan keputusan untuk memilih bateri sel kering di buat kerana bateri ini mudah untuk diselenggara berbanding bateri sel basah.

Bagi pemilihan kabel pula kabel besi telah dipilih sebagai penarik kerana "kabel besi" kuat dan mampu untuk menampung beban roda yang dia angkat berbanding tali biasa yang separa kuat. Selain itu, jangka hayat kabel besi juga tahan lebih lama jika ianya digunakan secara betul mengikut kemampuannya.

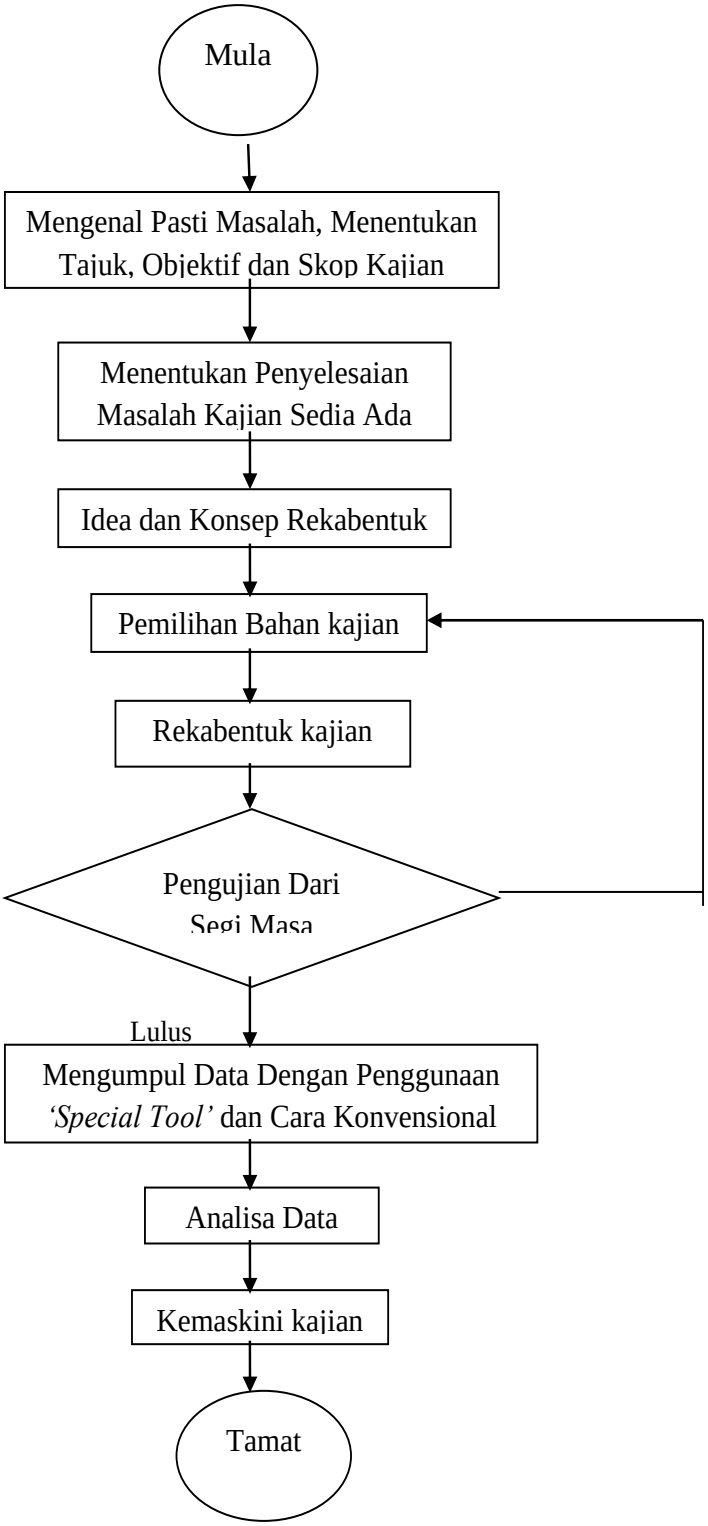
Akhir sekali pemilihan bagi roda pula adalah roda jenis nylon dipilih kerana roda ini mampu untuk menampung beban roda yang berat. Selain itu, roda ini boleh dikunci supaya '*Master Wheel*' tidak mudah bergerak semasa mencabut tayar dari kenderaan dan pergerakannya lancar. Akhir sekali, harganya berpatutan berbanding dengan roda getah.



Rajah 3: Besi Hollow Segi Empat

eISBN 978-967-2426-22-6
13th – 14th December 2020

Carta Alir



Rajah 2 : Carta Alir Metodologi Kajian

eISBN 978-967-2426-22-6
13th – 14th December 2020

Rajah 4: Motor Elektrik DC

Rajah 5: Bateri Sel Kering

Langkah Kerja Dalam Penghasilan 'Master Wheel'

Dalam menghasilkan kajian, terdapat beberapa prosedur kerja yang terlibat. Langkah pertama diambil ialah melakarkan dulu saiz sebenar '*Master Wheel'* kemudian memotong besi mengikut ukuran yang dibuat. Kemudian dengan menggunakan mesin kimpal sambungkan besi-besi menjadi sebuah kerangka yang kuat seperti **Rajah 6**. Motor elektrik dan bateri dipasangkan pada kerangka ini. Selepas itu pendawaian dibuat untuk mnyambungkan kuasa dari bateri ke motor elektrik serta pemasangan suis juga turut dibuat. Setelah selesai beberapa ujian dibuat untuk menentukan alat ini beroperasi dengan baik.

Rajah 6: Rekabentuk Inovasi Yang Dihasilkan

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kaedah Ujikaji Untuk Mengumpul Data

Dua jenis ujian akan dilakukan bagi mengumpul data bagi membuktikan keberkesanan penggunaan alat ini. Ujian konvensional dilakukan dengan menganggalkan roda serta menurunkanya semasa kenderaan diangkat, kemudian ujian semasa memasang roda kenderaan semula dimana untuk semua ujian ini masa dicatatkan. Proses ujian ini akan diulang untuk semua 4 roda kenderaan. Hasil daripada ujian konvensional ini akan dibandingkan dengan dapatan yang diperolehi dengan menggunakan alat '*Master Wheel'*.

Dapatan Data dan Perbincangan.

Maklumat mengenai ujikaji yang dijalankan terhadap kajian *'Master Wheel'* dibincangkan secara terperinci. Maklumat tersebut merangkumi ujikaji perbandingan masa antara bahan projek dengan cara konvensional, ini kerana menurut Roger P., (2013) cara yang terbaik untuk menganalisis data adalah dengan membuat perbandingan masa. Proses pengambilan data bermula dari proses menanggalkan roda, memasang semula serta langkah kerja ini diulang semula untuk dilakukan kepada semua roda. Ujikaji tersebut dijalankan bagi mencapai objektif yang telah dikemukakan, iaitu merekabentuk alat khas yang dapat memudahkan kerja menanggal, memasang dan mengalihkan roda.

Jadual 1: Perbandingan Masa Bagi Proses Menanggalkan Roda

	Master Wheel	Konvensional
Masa diambil untuk menanggalkan roda	3 minit	10minit

Dengan menggunakan kaedah konvensional masa yang diperlukan lebih lama dan memerlukan tenaga yang banyak semasa proses penukaran tayar tersebut seperti tertera pada **Jadual 1**. Oleh yang demikian dengan penggunaan *Master Wheel* ini dapat menyelesaikan masalah seperti, penggunaan tenaga yang banyak dan mengambil masa yang lama dapat diselesaikan.

Jadual 2: Perbandingan Masa Bagi Proses Pemasangan Roda.

	Master Wheel	Konvensional
Masa diambil untuk memasang roda	3 minit	10minit

Bagi kaedah konvensional untuk memasang tayar adalah, mekanik perlu mengangkat roda tersebut dan pusingkan roda untuk masukan nut yang ada pada *stereng knuckle* supaya masuk ke dalam lubang yang ada pada rim serta nut tadi akan dimasukkan. Dengan cara ini, ia memerlukan lebih banyak tenga dan masa yang diperlukan seperti yang tercatat pada **Jadual 2**. Manakala penggunaan *Master Wheel* pula ianya dibekalkan dengan motor untuk mengangkat tayar bagi memudahkan dan mengurangkan penggunaan tenaga yang banyak semasa proses pemasangan. Selepas itu, alat ini juga boleh dilaras dan boleh berputar 180 darjah bagi memudahkan proses pemasangan tayar tersebut.

Jadual 3: Perbandingan Masa Bagi Memasang Empat Roda.

	Master Wheel	Konvensional
Masa diambil untuk memasang 4 roda	12 minit	40 minit

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13th – 14th December 2020

Bagi kaedah konvensional untuk memasang tayar adalah, mekanik sekali lagi perlu mengangkat tayar dan memusingkan tayar supaya ia betul-betul selari diantara stereng knuckle dan lubang yang ada pada rim. Cara ini akan diulang untuk memasang keempat-empat roda yang sudah tentu akan mengambil masa yang lama seperti yang tertera dalam **Jadual 3**. Oleh hal demikian, dengan adanya *Master Wheel* proses pemasangan roda kenderaan lebih mudah kerana ianya dilengkapi dengan roda bagi memudahkannya ditolak dengan lancar supaya kerja-kerja ini dapat dilakukan dengan cepat.

Kesimpulan

Secara keselurahannya kajian yang dijalankan ke atas *'Master Wheel'* terbukti dapat menyelesaikan masalah dalam penukaran roda kenderaan. Sebelum ini, penukaran roda memerlukan masa yang lama. Seperti yang diketahui, proses penukaran tayar merupakan proses yang rumit dan memerlukan kemahiran yang tersendiri. Proses ini juga boleh menyebabkan kecederaan berlaku jika tidak dibuat dengan berhati-hati. Melalui kajian yang dijalankan juga alat ini boleh membantu para mekanik di seluruh negara dengan meminimumkan penggunaan tenaga ketika mereka bekerja. Walaupun sudah ada beberapa *'special tool'* direka untuk tujuan yang sama, tetapi alat ciptaan ini mempunyai keistimewaannya yang tersendiri, kerana ianya menggunakan motor elektrik yang dikawal oleh suis bagi menurun dan menaikkan roda. Kesimpulannya, objektif kajian telah berjaya dicapai di mana melalui kajian yang terperinci yang dijalankan menunjukkan alat ini amat efektif dalam membantu para mekanik dalam melaksanakan kerja-kerja menukar roda dengan mudah yang hanya mengambil masa yang singkat iaitu 12 minit berbanding kaedah konvesional 40 minit. Di samping itu juga alat ini dapat mengurangkan berlakunya kecederaan semasa proses penukaran tayar dilakukan.

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13th – 14th December 2020

MEREKABENTUK MEJA KIMPALAN PELBAGAI FUNGSI DENGAN LEKAPAN

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Abstrak: *Dalam kajian yang telah dijalankan projek ini direka dengan rekaan lekapan (fixture) yang boleh membuat putaran 360˚ terutamanya pada kerja mengimpal paip. Meja dan kerusi kimpal ini direka dengan ciri-ciri mudah alih, dan mempunyai sudut 45˚ dan 90˚ pada arm holder. Produk ini dapat memberikan keselesaan kepada para pengguna khas nya kepada para pelajar di Politeknik Sultan Mizan Zainal Abidin. Di bahagian kerusi tersebut terdapat penguci yang boleh dilarasksan mengikut keselesaan supaya dapat mengurangkan kesakitan pada bahagian pinggang semasa menjalankan kerja-kerja mengimpal. Kesimpulannya, meja kimpalan pelbagai fungsi ini mempunyai elemen keselesaan dan kemudahan buat pelajar semasa sesi pembelajaran dan pengajaran.*

Kata kunci : *Meja kimpalan, lekapan (fixture), ergonomik*

Pengenalan

Seiring dengan kemodenan pembangunan yang semakin membangun, teknologi kimpalan merupakan salah satu kemahiran pendidikan di IPTA/IPTS, Kolej Vokasional, Institusi Kemahiran dan Teknikal di Malaysia. Seperti yang diketahui sebelum memulakan kerja mengimpal, perlulah memastikan tempat yang selesa dan selamat. Bagi memberi keselesaan kepada pengimpal maka terhasillah projek yang diberi nama Meja Kimpalan Pelbagai Fungsi Dengan Lekapan. Namun produk ini memerlukan kawasan yang sesuai dalam penggunaan kerusi dan meja semasa mengimpal. Contohnya, pusat-pusat dan institusi kemahiran yang sedang menjalankan teori dan praktikal untuk kimpalan.

Terdapat dua bahagian kimpalan, yang pertama adalah kedudukan untuk mengimpal besi plat dengan teknik 1G dan 2G pada Meja Kimpal sambil duduk. Bahagian yang kedua pula, terdapat sebatang (*hollow bar)* yang bersaiz 2.5 inci untuk menyokong sebatang *hollow bar* yang bersaiz 1 inci untuk mengimpal bahan kerja yang berbentuk bulat atau silinder. Selain itu, produk ini mampu memudahkan pengguna mengimpal dari pelbagai posisi .

Akhir sekali, tambahan lekapan (*fixture)* bagi memudahkan pengimpal mengimpal kedudukan 6G Groove yang mampu menampung berat paip 2 kg dan panjang yang boleh dilaras sehingga 1 kaki panjang. Di samping itu, lekapan juga boleh digunakan sebagai ragum untuk proses pemotongan oksi asetilena. Terhasilnya produk ini dengan harapan ianya dapat digunakan oleh semua pihak untuk melakukan kerja mengimpal dengan meluas pada masa akan dengan mudah dan selamat.

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13th – 14th December 2020

Pernyataan Masalah

Produk yang sedia ada tidak dilengkapi dengan kerusi cuma terdapat beberapa pelaras pada bahagian-bahagian tertentu contohnya untuk kimpalan 1G, 2G, 5G dan 6G.

Selain itu, kerusi yang digunakan pada produk ini adalah kerusi biasa seperti yang ada di bengkel-begkel kimpalan di seluruh pusat pengajian di Malaysia. Oleh itu, kami telah mengambil langkah drastik untuk memperbaharui produk yang sedia ada kepada yang lebih baik dan berkualiti. Malahan ada sebahagian pusat pengajian tinggi yang tidak menggunakan kerusi semasa mengimpal. Konsep meja kimpalan yang dibangunkan adalah menggunakan plat besi yang berbentuk bulat dan mudah dilaras. Pada bahagian tapak pula, kajian ini menggunakan roda untuk memudahkan kerja-kerja pengalihan. Terdapat penambahan rekabentuk sebuah kerusi bagi memberi keselesaaan kepada para pengguna semasa menjalankan kerja-kerja mengimpal.

Kajian Literatur

Di dalam membangunkan projek ini pelbagai pembandingan yang perlu dilaksanakan bagi mengumpulkan sebanyak mungkin maklumat mengenai inovasi yang akan dilaksanakan. Semua maklumat hasil daripada perbezaan permerhatian akan digunakan sebagai garis panduan untuk menyokong kefahaman dalam projek ini.

Meja kimpalan di bengkel di IPTA

Kajian terhadap produk yang sedia ada ini menunjukkan tentang keadaan bengkel yang terdapat di pusat pengajian tinggi. Jika dilihat keadaan tempat kerja yang agak sempit dan boleh mendatangkan pelbagai kesan buruk kepada para pelajar dan jurubengkel yang bertugas. Hal ini kerana saiz sebuah kawasan kerja adalah sangat kompleks. Meja yang digunakan sangat besar dan hampir memenuhi ruang di kawasan kerja. Secara tidak langsung ia akan dapat mengundang bahaya kepada pengguna. Terdapat dua jenis meja kimpalan yang biasa digunakan di bengkel fabrikasi iaitu meja boleh laras dan meja tidak boleh laras. Jenis boleh laras mempunyai beberapa kelebihan seperti meja boleh laras / condong sehingga jurukimpal boleh meletakkan benda kerja di atas meja dalam pelbagai kedudukan. Sehingga kini, meja kimpalan telah dirancang dengan pelbagai fungsi seperti mengangkat (ketinggian meja yang dapat disesuaikan), meja bersudut, dan meja berputar untuk membantu jurukimpal bagi melakukan proses kimpalan dengan cara yang tepat. Fungsi ini membenarkan jurukimpal untuk menetapkan ketinggian, orientasi, dan kedudukan benda kerja mengikut pilihan mereka (I. Halim,2017).

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13th – 14th December 2020

Rajah 1: Meja kimpalan

Berdasarkan laporan kajian yang telah dijalankan di sebuah politeknik di Melaka, konsep utama penghasilan kajian ini adalah berdasarkan kepada produk yang sedia ada. Meja kimpalan sedia ada ini tidak dilengkapi dengan kerusi cuma terdapat beberapa pelaras pada bahagian-bahagian tertentu contohnya untuk kimpalan 1G, 2G, 5G dan 6G.

Selain itu, kerusi yang digunakan pada produk ini adalah kerusi biasa seperti yang ada di bengkel-begkel kimpalan di seluruh pusat pengajian di Malaysia. Oleh itu, kami telah mengambil langkah drastik untuk memperbaharui produk yang sedia ada kepada yang lebih baik dan berkualiti. Malahan ada sebahagian ipt yang tidak menggunakan kerusi semasa mengimpal.

Rajah 2: Pelbagai meja kimpalan.

Metodologi

Didalam proses penghasilan Meja Kimpalan Pelbagai Fungsi Dengan Lekapan pelbagai komponen atau bahagian perlu direka dengan teliti sebelum projek ini dijalankan agar dapat disiapkan dalam masa yang dirancang. Bahagian-bahagian ini akan hasilkan berpandukan lukisan kerja. Setiap bahagian akan mengikut ukuran yang telah ditetapkan bagi mengelakkan

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13th – 14th December 2020

masalah yang tidak dijangkakan daripada berlaku. Berikut adalah proses kerja dari bermulanya penghasilan lukisan hinggalah kepada proses pengujian.

Konsep Teori

Beberapa konsep yang telah dikenalpasti dan akan diberi penerangan secara ringkas. Konsep yang terbaik akan dipilih sebagai rekabentuk sebenar untuk projek Meja dan Kerusi serta lekapan pelbagai kedudukan ini.

Antara konsep yang dilakukan adalah seperti berikut:

i. melakukan tinjauan awal bagi memperolehi maklumat terperinci mengenai meja kimpalan yang sedia ada.
ii. mengumpulkan dan mengkaji maklumat berkaitan alat dan bahan yang diperlukan untuk membuat lekapan dan pemegang lengan “arm holder’ pelbagai kedudukan.
iii. membuat lakaran bagi rekabentuk projek yang dihasilkan.
iv. mencari bahan dan komponen yang diperlukan untuk menghasilkan projek.
v. membuat kajian sudut mengimpal
vi. membuat proses pemasangan komponen dilakukan dengan berpandukan lakaran ukuran yang ditetapkan.

Lekapan (Fixture)

Lekapan adalah alat untuk meletak dan memegang benda kerja dalam kedudukan yang dikehendaki semasa proses pembuatan. Lekapan mestilah dipasang dan diikat pada meja kerja semasa melakukan kerja. Lekapan merupakan alat khas untuk memegang bahan kerja pada kedudukan yang tepat semasa proses pembuatan (Shivaji Mengawade, 2016).

Dalam proses pembuatan tradisional melakukan operasi pada aci eksentrik sangat penting. Dalam memegang benda kerja pada kedudukan yang betul semasa pemasangan operasi pembuatan. Oleh kerana acinya tidak sepusat, pereka merancang lekapan yang tepat untuk aci eksentrik. Lekapan mengurangkan masa operasi dan meningkatkan produktiviti dan meningkatkan kualiti operasi. Lekapan adalah satu alat untuk memegang, meletak dan menyokong bahan kerja semasa proses pembuatan (Shinde, S.N.,2015).

Proses Merekabentuk Meja Kimpalan

Proses lakaran dan lukisan sesuatu produk dijadikan sebagai panduan dan rujukan dalam membuat sesuatu produk seperti yang terdapat di dalam lukisan yang telah dihasilkan. Ia juga bertujuan untuk memudahkan kerja-kerja pembuatan sesuatu projek.Lukisan biasanya dibuat secara manual dengan cetusan idea yang dilakar menggunakan tangan kemudian dilukis dengan lebih terperinci menggunakan perisian Autodesk Inventor supaya lukisan kejuruteraan dapat difahami dengan lebih tepat dan terperinci.Lukisan kejuruteraan dengan berbantukan kaedah pemodelan 3D memperincikan dengan jelas supaya kerja penyediaan lukisan kejuruteraan yang rumit boleh diselesaikan dengan cepat dan tepat (Khairul Anuar Hanafiah,1996).

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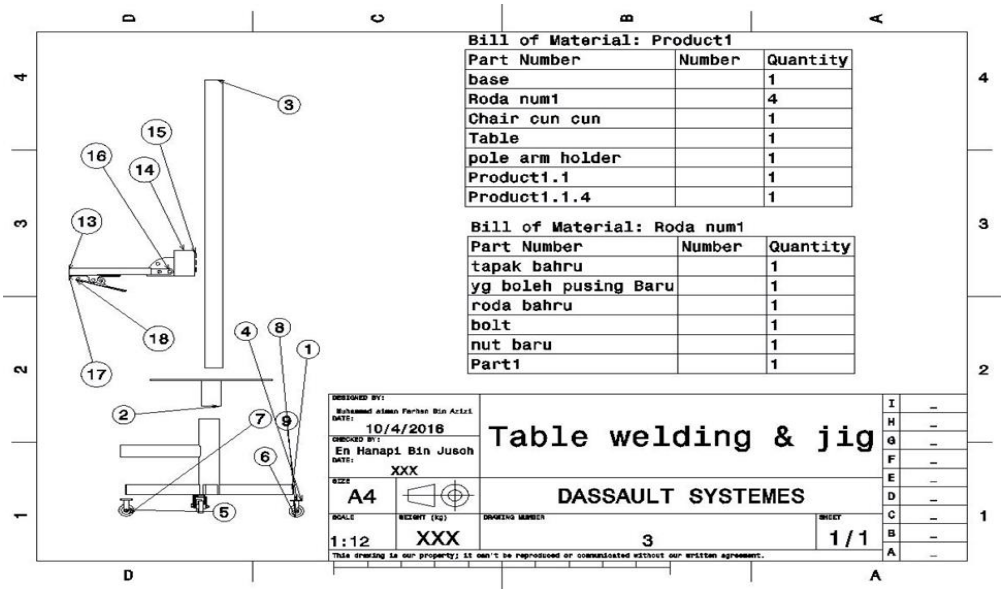
13th – 14th December 2020



Rajah 3: Proses merekabentuk

Proses Mengukur Dan Menanda

Proses mengukur dan menanda merupakan satu proses sebelum kerja-kerja pemotongan, ia dilakukan untuk mendapatkan ukuran yang tepat dan memudahkan proses pemotongan. Alat yang digunakan sebagai penanda ialah kapur penanda manakala alat-alat yang digunakan untuk membuat ukuran ialah pembaris, sesiku L, pita pengukur dan sebagainya. Kerja-kerja menanda dan mengukur haruslah dibuat dengan tepat dan teliti kerana sedikit ketidaksamaan boleh mempengaruhi sesuatu produk yang akan dihasilkan. Proses mengukur mnggunakan pita pengukur dan menanda menggunakan penggarit.

Rajah 4: Proses mengukur dan menanda

Proses memotong bahan

Proses pemotongan bahan biasanya dilakukan menggunakan peralatan tangan atau menggunakan mesin. Peralatan tangan dilakukan secara manual seperti gergaji tangan manakala pemotongan menggunakan mesin seperti *cutting machine, shearing machine dan oxy-asetelin cutting.*

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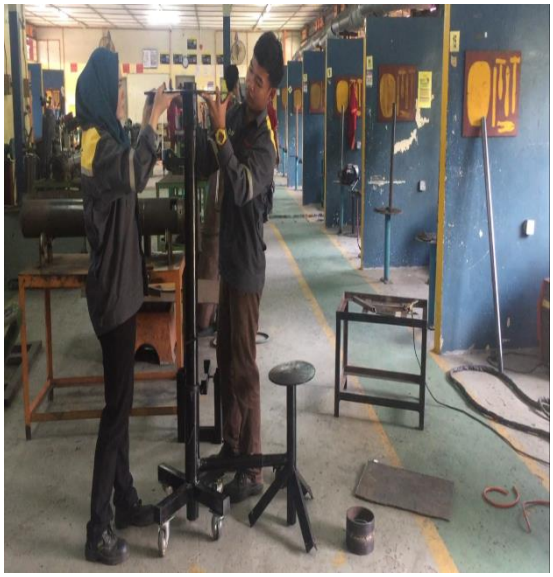
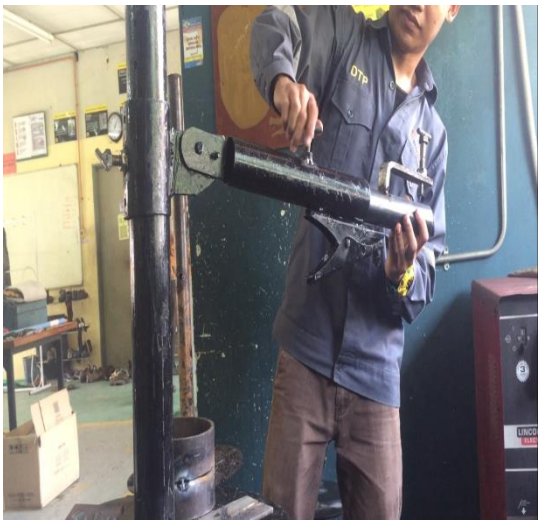
13th – 14th December 2020

Rajah 5: Proses pemotongan bahan

Proses Kimpalan Dan Pemasangan

Proses kerja kimpalan penuh adalah satu proses yang paling penting dan perlu dititik beratkan dalam membuat meja dan kerusi kimpal ini, terutamanya pada setiap sambungan kimpalan. Sambungan haruslah diuji kekuatanya bagi mengelak daripada berlakunya kerosakan dan kecacatan pada benda kerja selain menjamin kualiti produk. Proses kimpalan penuh yang digunakan dalam reka bentuk produk ialah proses kimpalan SMAW. Manakala sedikit proses MIG dibahagian-bahagian rangka lekapan (fixture) dan seterusnya proses pemasangan dijalankan.

Rajah 6: Proses pemasangan

Kedudukan Mengimpal

Jenis-jenis kedudukan asas mengimpal bagi benda kerja yang berbentuk plat atau kepingan logam. Terdapat 4 jenis kedudukan untuk sambungan jenis fillet (1F, 2F, 3F dan 4F) dan 4 jenis kedudukan untuk sambungan jenis groove (1G, 2G, 3G dan 4G). Selain itu, kedudukan kimpalan yang digunakan antaranya Mendatar/rata, tegak ,tegak mengufuk dan atas. Rajah 7 menunjukkan kedudukan mengimpal sambungan Alur (Groove) dan Fillet sementara Rajah 8 menunjukkan kedudukan kimpalan paip.

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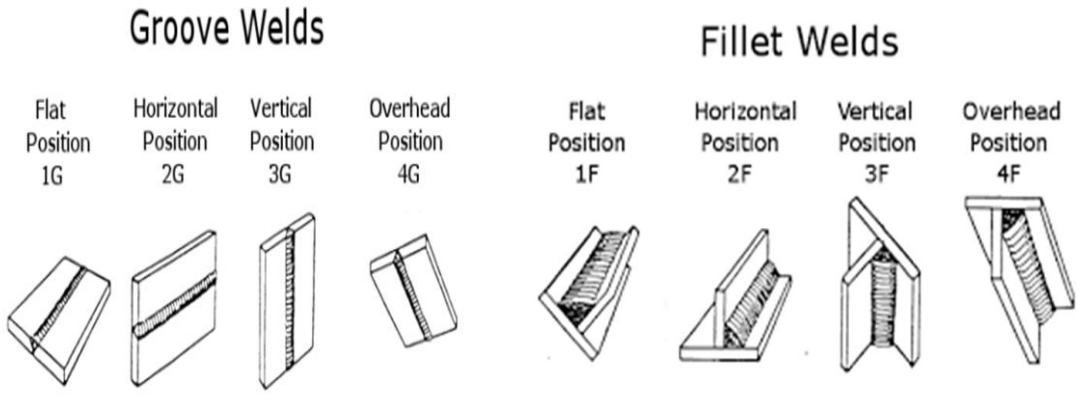
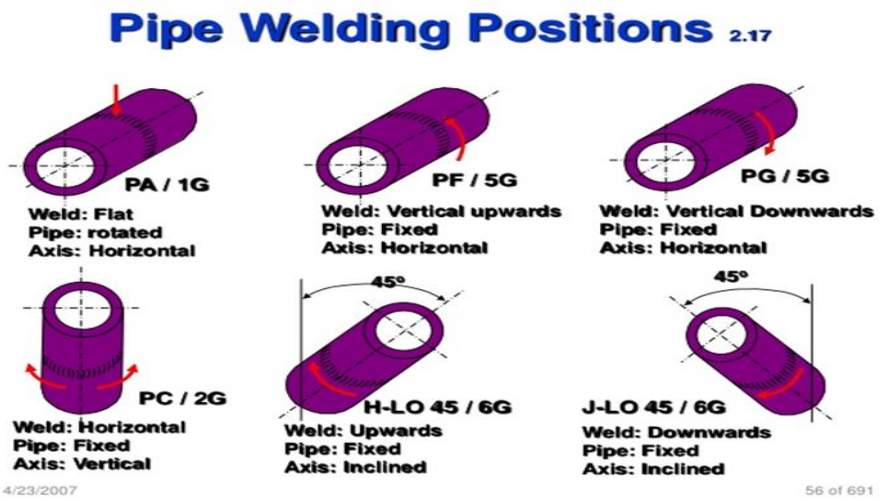
13th – 14th December 2020



Rajah 7: Kedudukan Mengimpal jenis Groove dan Fillet



Rajah 8: Kedudukan Mengimpal Paip

Keputusan dan Cadangan

Terdapat tiga komponen dalam menghasilkan Meja Kimpalan Pelbagai Fungsi Dengan Lekapan yang melibatkan kerusi, lekapan (fixture) dan meja. Rajah 9 menunjukkan rekabentuk kerusi yang dihasilkan.

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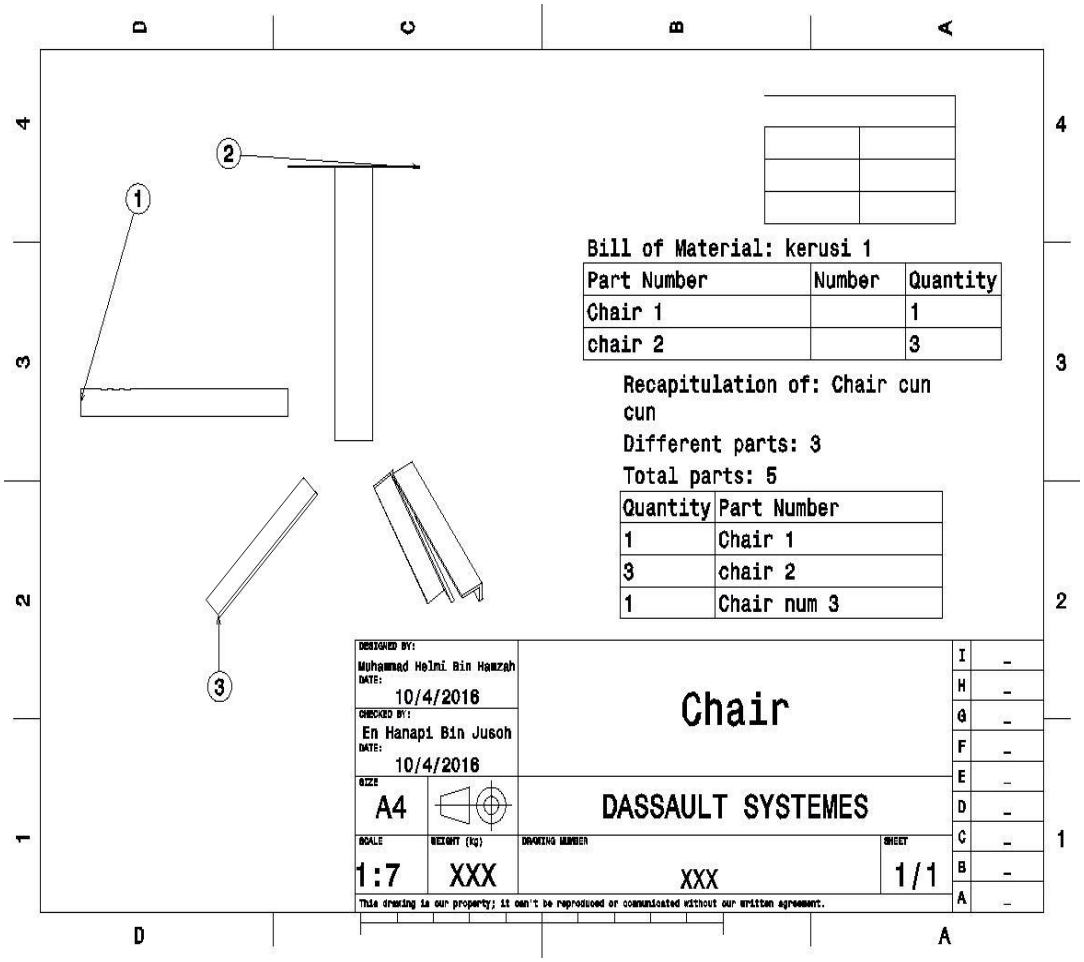
13th – 14th December 2020



Rajah 9: Rekabentuk kerusi

Rajah 10 (a) dan 10 (b) menunjukkan Lekapan (Fixture) yang digunakan untuk dipasang pada meja dan mengapit bahan kerja. Menurut Tofiq Dwiki Darmawan et. al (2018), semua lekapan terdiri daripada 'locator', 'clamp', tapak dan penyokong. 'Locator' biasanya merupakan komponen lekapan tetap. Ia digunakan untuk membina dan mengekalkan kedudukan dan membatasi pergerakan kepingan kerja. 'Clamp' yang menahan dan menjaga kedudukan benda kerja dari daya luaran. Tapak adalah struktur utama lekapan. Ini mengekalkan hubungan antara elemen lekapan seperti 'locator', 'clamp', penyokong dan benda kerja.

Penyokong adalah elemen lekapan yang diperbaiki atau boleh disesuaikan. Berfungsi untuk menyokong prestasi elemen lekapan lain.

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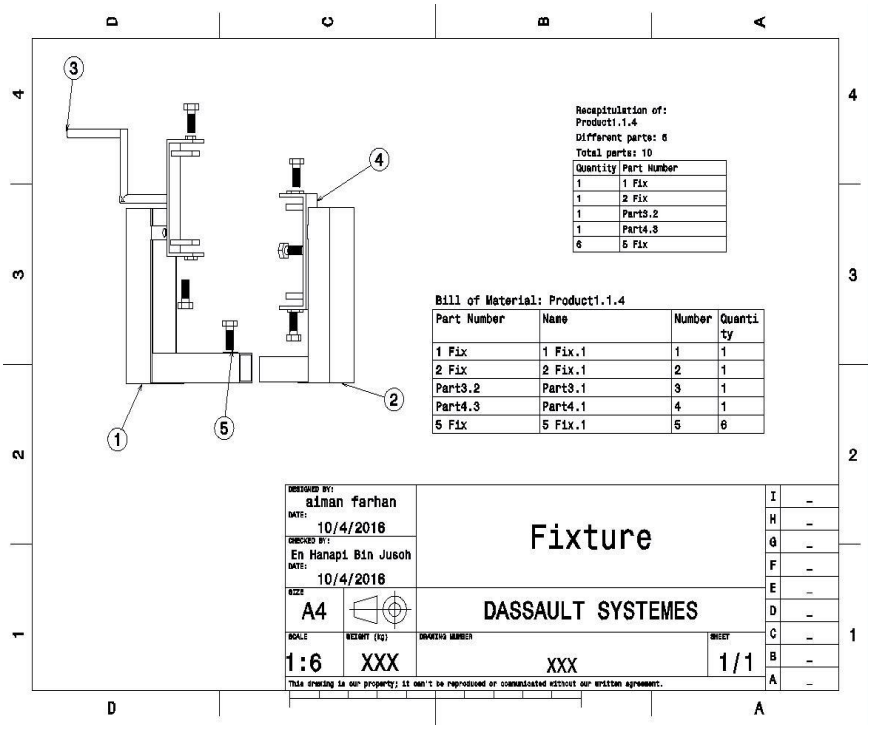
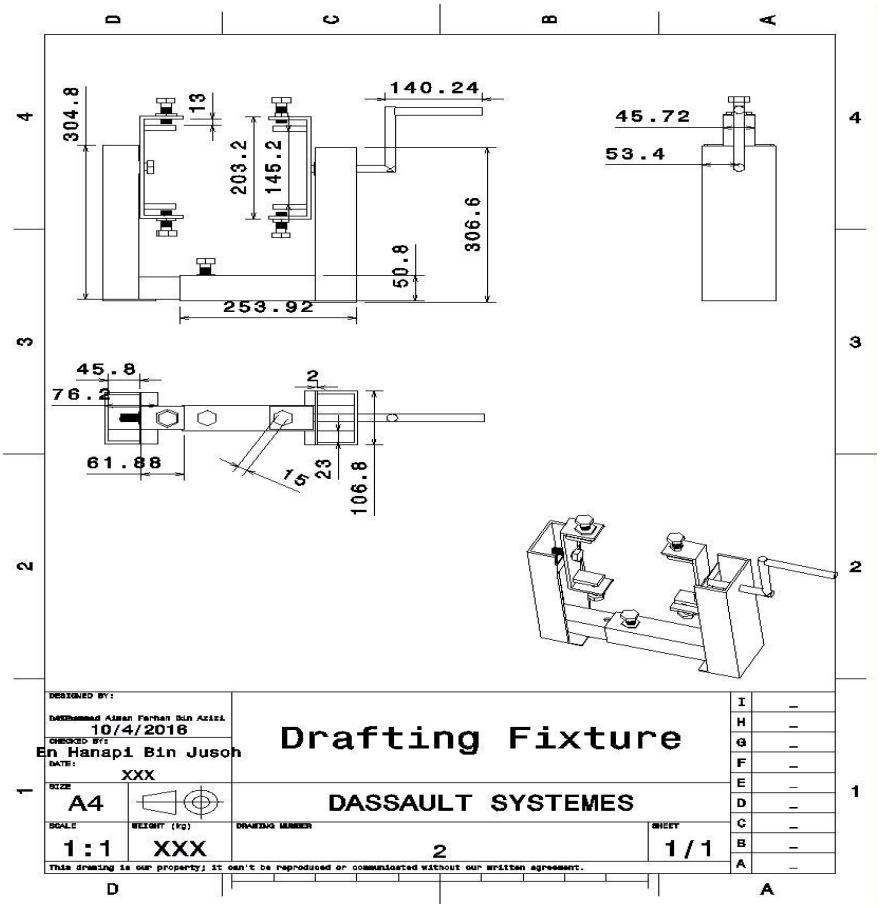
13th – 14th December 2020



Rajah 10 (a): Pandangan sisi Lekapan (Fixture)



Rajah 10(b): Lekapan (Fixture)

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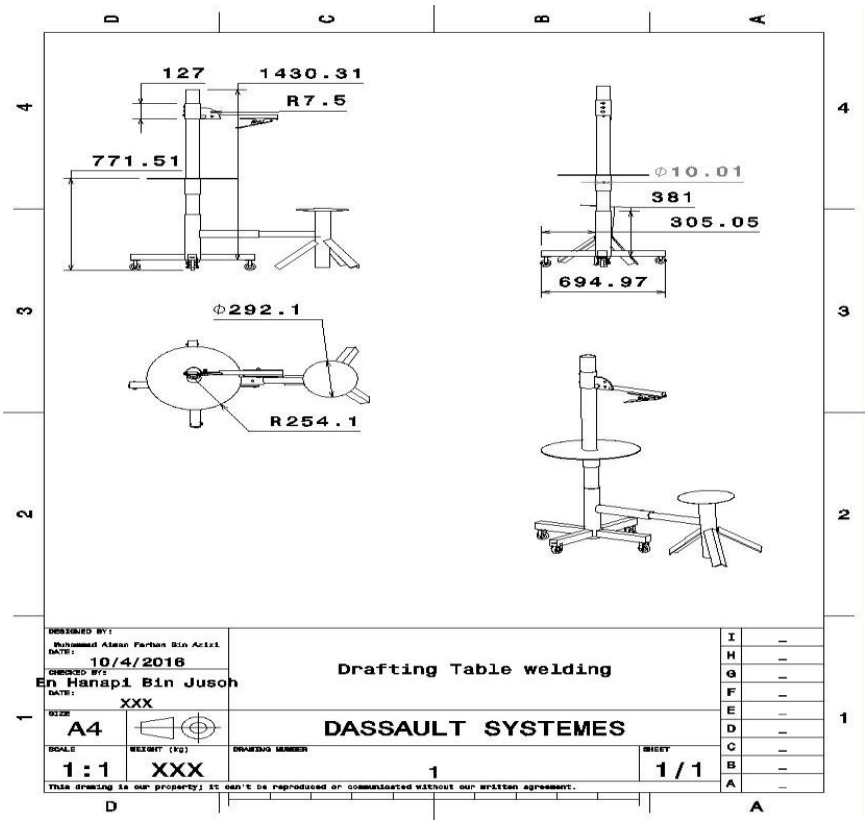
13th – 14th December 2020

Meja kimpalan dengan kerusi dicantumkan dengan satu aci boleh laras. Rajah 11 menunjukkan meja kimpalan beserta kerusi dengan lengan pemegang (arm holder).



Rajah 11: Meja Kimpalan Dengan Lengan Pemegang (Arm Holder).

Kesimpulan

Terdapat tiga komponen yang penting dalam menghasilkan Meja Kimpalan Pelbagai Fungsi Dengan Lekapan. Komponen-komponen itu adalah kerusi, lekapan dan meja. Produk ini terhasil daripada tinjauan yang dijalankan di pusat pengajian tinggi dan beberapa pusat kemahiran dimana meja kimpalan tidak lengkap dan mengakibatkan kesan kepada kesihatan sekiranya menjalankan kerja-kerja kimpalan dalam tempoh yang lama.Produk ini dapat mengatasi masalah dan memberi keselesaan kepada pengguna dan mempertimbangkan faktor-faktor ergonomik.

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Abstrak: *Alat Bahan Bantu Mengajar (ABBM) amat penting dalam proses pengajaran dan pembelajaran (PdP). Penggunaan ABBM dapat menyalurkan maklumat kepada pelajar berkaitan dengan kursus yang diajar dengan lebih jelas dan sistematik. Kursus Engineering Mathematics 2 (DBM2013) adalah salah satu daripada kursus teras yang diperlukan oleh pelajar program kejuruteraan di politeknik di Malaysia. Differentiation adalah di antara topik utama dalam sukatan Kursus DBM2013 yang diajar dalam tempoh 7 minggu (28 jam). Pelajar perlu menguasai konsep asas topik ini dengan baik supaya mereka dapat mengaplikasikannya dalam menyelesaikan masalah berkaitan. Cal_Diff adalah satu inovasi yang dihasilkan bagi membantu pelajar menguasai konsep asas topik Differentiation. Inovasi Cal_Diff ini telah dibangunkan dengan menggunakan kalender yang telah digunapakai (recycle) dan penggunaan pelbagai warna yang berbeza pada helaian-helaian untuk menarik minat pelajar. Cal_Diff memaparkan formula-formula asas dalam topik Differentiation menyelesaikan masalah mudah dalam topik ini. Peranan warna yang berbeza dalam menonjolkan setiap formula asas yang dipaparkan akan lebih menarik minat dan membantu pelajar memahami dengan lebih berkesan apa yang disampaikan. Satu kajian telah dijalankan bertujuan untuk mengkaji keberkesanan penggunaan Cal_Diff dalam proses PdP dan juga meningkatkan pencapaian pelajar dalam ujian yang dijalankan. Analisis menunjukkan terdapatnya peningkatan pencapaian ujian ini. Ini bermaksud tahap pemahaman dan penguasaan konsep asas topik Differentiation serta pencapaian pembelajaran dalam kursus ini dapat dipertingkatkan dengan menggunakan Cal_Diff ini. Dengan terhasilnya Cal_Diff ini, ianya dapat memberi impak yang positif dalam proses PdP serta dapat menarik minat pelajar untuk menyelami topik Differentiation, seterusnya menjadikan proses PdP khususnya dalam topik ini lebih efektif dan memberangsangkan.*

Katakunci: *Alat Bahan Bantu Mengajar, Cal_Diff, Differentiation, Persepsi*

Pernyataan Masalah

Alat Bahan Bantu Mengajar (ABBM) memainkan peranan penting dalam proses pengajaran dan pembelajaran (PdP). Kualiti pembelajaran yang berpusatkan pelajar amat bergantung kepada keberkesanan cara pensyarah memilih dan menggunakan ABBM yang sesuai. Kursus Matematik Kejuruteraan 2 (DBM2013) merupakan kursus yang wajib diambil oleh pelajar kejuruteraan Semester Dua di semua politeknik.

Kaedah yang biasa dilaksanakan oleh pensyarah adalah dengan cara mengajar sambil menulis di papan putih. Dari sudut pelajar, kegagalan menyampaikan isi pelajaran dengan jelas oleh pensyarah menyebabkan pelajar berasa bosan, kurang berminat, kurang bersemangat dan

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13th – 14th December 2020

menganggap kursus tersebut sukar**.** Pelajar kurang memberi fokus yang sepenuhnya sewaktu mempelajari topik Differentiation kerana pelajar sukar memahami dan menggunakan formula yang dipelajari selari dengan permasalahan topik yang diketengahkan. Dari sudut pensyarah pula, pensyarah perlu mengambil masa yang lama untuk menerangkan dan membantu pelajar untuk memahami sesuatu permasalahan topik Differentiation yang diajar kerana menghadapi kesukaran dalam menerangkan konsep asas dan formula-formula yang terlibat dalam penyelesaian masalah topik ini.

Justeru, pensyarah perlu menggunakan ABBM yang sesuai kepada pelajar untuk meningkatkan kefahaman mereka tentang sesuatu topik selain dapat menjimatkan masa. Salah satu cadangan penambahbaikan isu ini adalah dengan mempelbagaikan kaedah PdP agar ilmu berkaitan teori dan konsep asas topik Differentiation yang diperoleh oleh para pelajar dikekalkan dengan lebih lama dalam ingatan mereka disamping menjadi lebih mudah dan berkesan.

Oleh itu, Cal_Diff adalah satu inovasi berkonsepkan kalender yang dihasilkan untuk membantu pelajar untuk menguasai konsep asas topik Differentiation. Inovasi Cal_Diff ini telah dibangunkan dengan menggunakan kalender yang telah digunapakai (recycle) dan penggunaan pelbagai warna yang berbeza pada helaian-helaian untuk menarik minat pelajar. Cal_Diff memaparkan formula-formula asas untuk menyelesaikan masalah mudah dalam topik ini. Peranan warna yang berbeza dalam menonjolkan setiap formula asas yang dipaparkan akan lebih menarik minat dan membantu pelajar memahami dengan lebih berkesan apa yang disampaikan.

Objektif

i. Menjadikan Cal_Diff sebagai alat bahan bantu mengajar kepada pensyarah dalam menyampaikan proses PdP kursus DBM2013 lebih berkesan.
ii. Membantu pelajar meningkatkan penguasaan konsep asas topik Differentiation.

Kepentingan Inovasi

Kajian ini dilakukan adalah kerana kepentingan-kepentingan berikut:

i. Cal_Diff diharapkan dapat membantu menyelesaikan masalah pelajar gagal menguasai konsep asas topik Differentiation dan seterusnya meningkatkan tahap pencapaian mereka di dalam kursus DBM2013.
ii. Cal_Diff dapat menjadi panduan kepada para pensyarah yang mengajar kursus DBM2013 untuk memperbaiki mutu dan kualiti PdP di dalam bilik kuliah.

Perincian Inovasi

Inovasi Cal_Diff ini berkonsepkan kalender. Ianya dibangunkan dengan menggunakan kalender yang telah digunapakai (recycle). Ianya bersaiz sederhana dan senang dibawa. Cal_Diff memaparkan formula-formula asas untuk menyelesaikan masalah mudah dalam topik Differentiation. Penggunaan pelbagai warna pada helaian-helaian untuk menarik minat pelajar disamping dapat menyerlahkan setiap formula asas yang dipaparkan. Peranan warna yang berbeza dalam menonjolkan setiap formula asas yang dipaparkan membantu pelajar memahami dengan lebih berkesan apa yang disampaikan.

Potensi Pasaran dan Keusahawanan

Inovasi Cal_Diff ini baru dibangunkan pada sesi pengkuliahan Disember 2018 di Politeknik untuk didedahkan pada para pelajar yang mengambil kursus DBM2013. Hanya topik Differentiation sahaja diberi fokus dalam penghasilan inovasi ini. Inovasi ini mudah digunakan

eISBN 978-967-2426-22-6
13th – 14th December 2020

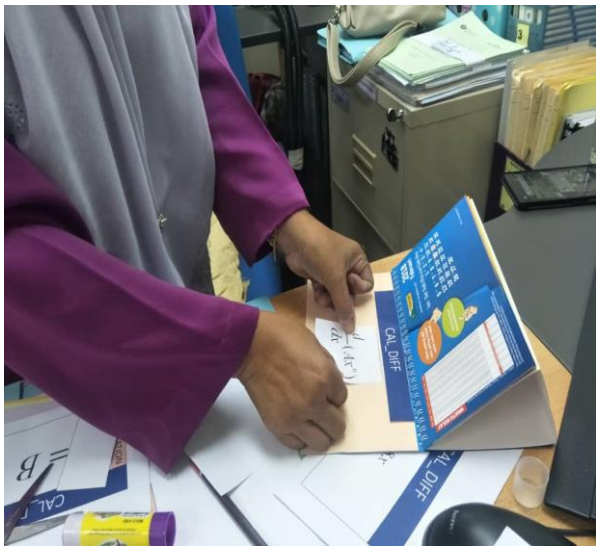
dan menjimatkan. Penggunaan inovasi ini boleh dikongsi dengan pensyarah kursus DBM2013 di politeknik lain.

Oleh itu, satu kajian telah dijalankan bertujuan untuk mengkaji keberkesanan penggunaan Cal_Diff dalam proses PnP dan juga meningkatkan pencapaian pelajar dalam ujian yang dijalankan di POLISAS sendiri. Seramai 114 orang pelajar semester 2 bagi sesi Disember 2018 dari kelas DEP 2A (38), DKM 2A (40) dan DGU 2B (36) telah terlibat dalam kajian ini. Soal selidik tentang persepsi pelajar terhadap penggunaan Cal_Diff di dalam bilik kuliah dan dua siri ujian, iaitu ujian sebelum (ujian pra) dan ujian selepas (ujian pasca) penggunaan Cal_Diff diberikan. Data telah dianalisis menggunakan perisian IBM SPSS versi 22.

Daripada soal selidik yang diedarkan mendapati pelajar menunjukkan persepsi yang positif terhadap penggunaan inovasi ini. Analisis ujian-ujian yang dijalankan juga menunjukkan terdapatnya peningkatan pencapaian ujian ini. Ini bermaksud tahap pemahaman dan penguasaan konsep asas topik Differentiation serta pencapaian pembelajaran dalam kursus ini dapat dipertingkatkan dengan menggunakan Cal_Diff ini.

Dengan terhasilnya Cal_Diff ini, ianya dapat memberi impak yang positif dalam proses PdP serta dapat menarik minat pelajar untuk menyelami topik Differentiation, seterusnya menjadikan proses PdP khususnya dalam topik ini lebih efektif dan memberangsangkan. Akhirnya, inovasi yang dibangunkan ini diharap menjadi panduan kepada para pensyarah untuk memperbaiki proses PdP lebih berkesan ke arah kecemerlangan pelajar di dalam kursus ini khususnya dan juga kursus-kursus yang lain.

Gambar Inovasi



Rajah 1 Menampal formula-formula pada helaian kalendar

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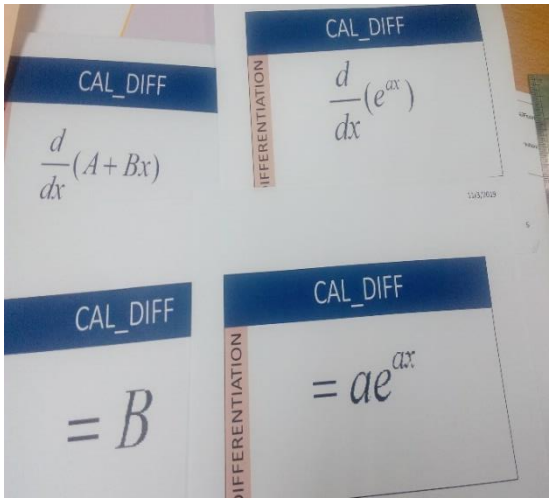
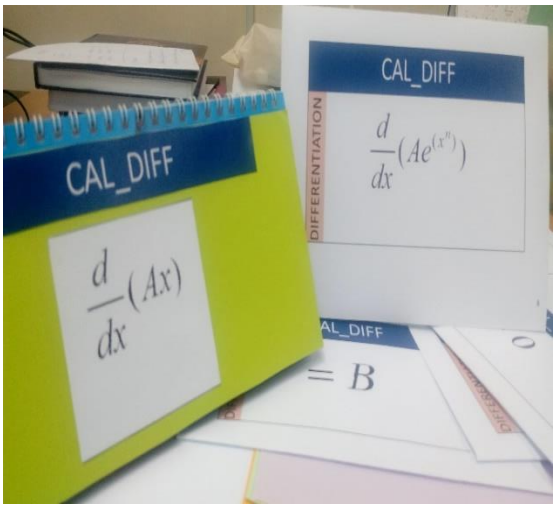
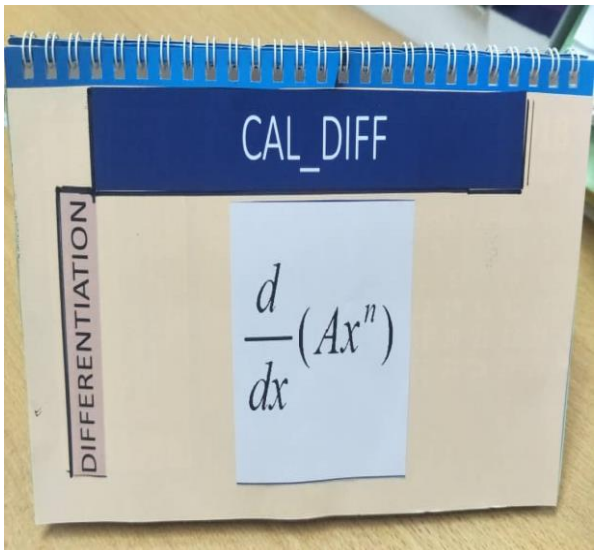
13th – 14th December 2020



Rajah 2 Antara formula-formula konsep asas Differentiation yang digunakan



Rajah 3 Helaian CAL_DIFF yang pelbagai warna



Rajah 4 CAL_DIFF yang sudah siap dan boleh digunakan

Rajah 6 CAL_DIFF

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KAJIAN KEBERKESANAN PEMBELAJARAN BERASASKAN PERMAINAN DALAM MENINGKATKAN PENCAPAIAN PELAJAR MEMPELAJARI MATEMATIK

Wan Norliza bte. Wan Nasaruddin[1]
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Abstract: *Kajian ini dilakukan bagi mengkaji keberkesanan pembelajaran berasaskan permainan dalam meningkatkan pencapaian pelajar mempelajari matematik. Permainan yang digunakan didalam kajian ini ialah Cross Number Puzzle atau nama singkatannya CNP. Tinjauan awal mendapati terdapat segelintir pelajar merasakan subjek matematik ini sukar, kurang bermotivasi dan kurang menunjukan minat terhadap sesi pengajaran dan pembelajaran matematik di dalam kelas. Seramai 25 orang pelajar Sijil Sistem Komputer Dan Rangkaian sesi Jun 2020, Kolej Komuniti Selandar telah dipilih sebagai responden bagi kajian ini. Data yang dikumpul dianalisa melalui kaedah SPSS versi 23. Rekabentuk kajian adalah berbentuk pra-eksperimental dengan melibatkan satu kumpulan untuk ujian pra dan ujian pasca. Hasil kajian menunjukkan terdapat perbezaan jumlah peratusan markah pelajar antara ujian pra dan ujian pasca iaitu 8% kepada 64% pelajar memperoleh keputusan cemerlang, 32% kepada 24% pelajar memperoleh keputusan sederhana dan 60% kepada 4% memperoleh keputusan lemah. Ini menunjukkan terdapat keberkesanan terhadap pencapaian pelajar setelah pembelajaran berasaskan permainan diaplikasikan di dalam sesi pembelajaran.*

Keywords: *Pembelajaran Berasaskan Permainan, Cross Number Puzzle, CNP*

Pengenalan

Matematik merupakan salah satu disiplin asas dan merupakan pengetahuan yang praktikal dalam menjalani kehidupan seharian contohnya dalam menangani urusan jual beli. Matematik juga merupakan asas pengetahuan kepada pelbagai disiplin ilmu yang lain yang mana ianya memainkan peranan yang penting dalam perkembangan kerjaya. Oleh yang demikian, memupuk kemahiran asas matematik pada usia muda adalah sangat penting (Stubblefield, 2006; Warwick, 2008). Matapelajaran matematik merupakan salah satu matapelajaran yang sukar dikuasai oleh pelajar sekolah rendah (Fatimah, 2009; Leong, 2007). Ini disebabkan norma pengajaran di sekolah masih lagi bergantung kepada kaedah tradisional iaitu *chalk and talk* sahaja tanpa bantuan sebarang medium pembelajaran lain yang dapat diolah oleh pelajar untuk lebih memahami pengajaran matematik. Kaedah pengajaran *chalk and talk* masih lagi penting dalam pendidikan arus perdana tetapi dengan perubahan generasi pelajar, perlunya sebuah medium yang dapat menghubungkan ilmu yang cuba disampaikan oleh guru menjadi pengetahuan yang dipelajari pelajar (Shanizan Herman, Mohd Zukuwwan, Asif Zamri, & Puteri Azwa, 2015). Salah satu medium pembelajaran yang popular adalah permainan.

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13th – 14th December 2020

Permainan secara umumnya dapat mewujudkan rasa seronok dan menyenangkan kepada para pelajar di usia muda. Sekiranya kaedah pengajaran dapat digabungkan dengan aktiviti permainan maka kecenderungan terhadap pembelajaran matematik dapat dipertingkatkan. Ini disebabkan sifat semulajadi permainan yang mengandungi komponen objektif, konflik, peraturan, pemenang, interaktif dan cabaran yang dapat menjana motivasi intrinsik seseorang pelajar (Schell, 2008). Motivasi intrinsik yang dibina melalui sesi permainan dapat membentuk konsep pengulangan aktiviti terhadap sesi permainan. Konsep dalam matematik sering dikatakan sukar oleh pelajar untuk menguasinya terutamanya dalam menyelesaikan soalan yang berbentuk penyelesaian masalah matematik. Ilmu kira- kira, ilmu Hisab atau Matematik ditakuti oleh kebanyakkan pelajar mulai dari sekolah rendah hinggalah ke sekolah menengah. Walaupun tidak semua, tetapi kebanyakkan pelajar mengangap Matematik merupakan pelajaran yang sukar, membosankan dan tidak menarik (Norhannah Husain, 1999). Para pengajar perlu mengenalpasti kelemahan pelajar agar masalah tersebut dapat diatasi sebelum meneruskan kepada pengajaran yang seterusnya. Pendidik yang baik sentiasa mencari punca kelemahan pelajar di dalam mata pelajaran dan memperbaiki kelemahannya. Pengajar hendaklah sentiasa membuat penilaian terhadap pengajaran supaya pelajar dapat diketahui dan diperbaiki sebelum kelemahan itu menular.

Oleh yang demikian, dengan menggunakan teknik pembelajaran berasaskan permainan dapat menyelesaikan permasalahan pelajar dan membantu dalam meningkatkan pencapaian pelajar di dalam subjek Matematik.

Penyataan Masalah

Kebanyakkan pelajar menghadapi masalah dalam memahami skill atau teknik penyelesaian masalah dalam matematik. Motivasi dan minat didalam diri mereka juga menjadi menurun kerana beranggapan subjek matematik sukar untuk dipelajari. Permasalahan ini jelas terbukti apabila melihat Gred keputusan SPM subjek Matematik pelajar Kolej Komuniti Selandar, Melaka.

Berikut merupakan data maklumat yang diperolehi. Data tersebut diambil daripada pelajar Sijil Sistem Komputer dan Rangkaian Sesi Jun 2020. Data pelajar program ini di ambil kerana di dalam kurikulum Kolej Komuniti hanya program teknikal sahaja yang mengambil subjek Matematik.

Rajah 1: Gred Keputusan SPM Matematik Pelajar

eISBN 978-967-2426-22-6
13th – 14th December 2020

Berdasarkan rajah 1 di atas, dapat dilihat tiada pelajar yang mendapat keputusan A dan C. Gred B seramai 3 orang pelajar, Gred D seramai 11 orang, Gred E seramai 10 orang, dan terdapat seorang pelajar yang gagal. Ini jelas membuktikan pelajar Kolej Komuniti menghadapi masalah dan lemah dalam mempelajari Matematik. Oleh itu, kajian ini dilakukan bagi melihat keberkesanan pembelajaran berasaskan permainan terhadap pencapaian pelajar dalam subjek Matematik.

Persoalan Kajian

Persoalan bagi kajian ini adalah:

i. Apakah teknik pembelajaran berasaskan permainan dapat meningkatkan tahap pencapaian pelajar dalam subjek matematik.

Objektif kajian

Objektif kajian adalah seperti berikut:

i. Mengenal pasti tahap pencapaian pelajar tehadap subjek matematik setelah menggunakan teknik pembelajaran berasaskan permainan.

Limitasi Kajian

Terdapat beberapa limitasi bagi kajian ini. Antaranya kajian ini hanya tertumpu kepada kesan penggunaan pembelajaran berasaskan permainan iaitu dengan menggunakan permainan Cross Number Puzzle terhadap subjek matematik dan responden adalah terdiri daripada pelajar dari Program Sistem Komputer dan Rangkaian, Komuniti Selandar sahaja. Seramai 25 orang responden telah dipilih untuk menjayakan kajian ini. Selain dari itu hanya satu kaedah sahaja digunakan untuk mengumpul data iaitu dengan menggunakan kaedah pre dan post hasil dapatan ujian mereka setelah prosedur rawatan dijalankan.

Kepentingan Kajian

Melalui kajian ini dapat mengetahui kesan penggunaan pembelajaran berasaskan permainan terhadap subjek matematik yang dipelajari serta tahap penguasaaan mereka. Hasil kajian ini diharap dapat memberi manfaat kepada kepada pihak-pihak seperti berikut:

Kolej

Menjadi panduan kepada pihak kolej untuk mengenalpasti tahap pencapaian dan penguasaan pelajar terhadap subjek pengiraan khususnya matematik yang dipelajari dalam proses pengajaran dan pembelajaran.

Pensyarah

Pensyarah boleh menggunakan hasil kajian sebagai bahan rujukan bagi merancang strategi yang terbaik dalam kaedah pembelajaran bagi meningkatkan pemahaman para pelajar.

Pelajar

Dapat meningkatkan minat dan pencapaian pelajar terhadap subjek matematik.

Sorotan Kajian

Walaupun kaedah P&P secara konvesional telah mendominasi sistem pendidikan sejak sekian lama, kaedah permainan kini semakin mendapat tempat di kalangan tenaga pengajar. Kaedah permainan merupakan perubahan dalam corak pengajaran, di mana pelajar berubah daripada

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13th – 14th December 2020

"pembelajaran dengan mendengar" kepada "belajar dengan melakukan" (Garris & Ahlers, 2002).

Banyak kajian lampau telah membincangkan kesan-kesan positif penggunaan kaedah permainan dalam P&P. Antara kesan positif yang dikenalpasti oleh pengkaji-pengkaji adalah potensi kaedah permainan untuk memotivasikan pelajar (Taspinar et al., 2016; Lu & Zakaria, 2015; Virvou et al., 2005; Salman, 2001; Cordova & Lepper, 1996) dan mewujudkan suasana pembelajaran yang menarik serta menghiburkan (Taspinar et al., 2016; Purnamasari & Advensia, 2014; Yumarlin, 2013; Jaijaram, 2012; Hassan & Poopak, 2012).

Selain daripada itu, Hassan dan Poopak (2012) dan Salman (2001) mendapati kaedah permainan mempercepatkan proses pembelajaran dan mewujudkan suasana interaksi yang positif di kalangan pemain. Oyen and Bebko (1996) pula mendapati permainan mempunyai kesan positif ke atas kebolehan menyelesaikan masalah dan penglibatan dalam menyiapkan tugas yang diberikan. Beberapa pengkaji, antaranya de-Marcos et al. (2016), Barclay et al. (2011) dan Virvou (2005) juga telah membuktikan bahawa kaedah permainan mampu memberikan kesan yang positif ke atas prestasi akademik pelajar.

Menurut Max.A.Sobel dan Evan M.Malestky (1988), permainan matematik boleh digunakan sebagai cara yang berkesan untuk memupuk kemahiran dan konsep mudah dikalangan pelajar. Arsmah, Hamidah dan Siti Aisyah(2005) pula berpendapat bahawa permainan matematik dapat menangani sikap dan persepsi negatif pelajar terhadap matematik. Permainan matematik menjadi bukti bahawa matematik bukanlah satu matapelajaran yang sukar untuk dipelajari dan memerlukan latihan yang berterusan semata-mata sebaliknya pelajar boleh meneroka dan memahami matematik melalui permainan-permainan yang menarik. Sehubungan dengan itu, permainan matematik memainkan peranan yang penting dalam melatih pelajar berfikir secara logik, kreatif dan sistematik. Seterusnya, ia dapat menimbulkan minat pelajar untuk belajar matematik, memperkukuhkan konsep dan kemahiran matematik serta meningkatkan daya pemikiran pelajar ke tahap yang lebih tinggi

Metodologi Kajian

3.1 Reka bentuk kajian

Kajian ini dijalankan dengan rekabentuk kuantitatif yang mengambilkira rekabentuk kajian pra-eksperimental yang mana melibatkan satu kumpulan untuk ujian pra, sesi permainan Cross Number Puzzle dan ujian pasca (Campbell & Stanley, 1999). Analisis statistik jumlah peratusan pencapaian pelajar bagi ujian pra dan pasca akan digunakan bagi menerangkan hasil kajian. Rekabentuk kajian adalah seperti Jadual 1.

Jadual 1: Rekabentuk Kajian Pra-eksperimental (Campbell & Stanley, 1999).

Kumpulan Rawatan		
O1	X	O2
Ujia mat	Rawatan : Sesi permainan di dalam kelas	Ujian pasca : Soalan operasi matematik (10 soalan)

Responden

Populasi yang dikaji adalah terdiri daripada pelajar teknikal Kolej Komuniti Selandar Melaka. Mereka merupakan pelajar dari Program Sistem Komputer dan Rangkaian Sesi Jun 2020.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Prosedur Persampelan

Seramai 25 orang pelajar Program Sistem Komputer dan Rangkaian telah dipilih sebagai sampel kajian (n= 18 lelaki dan n= 7 perempuan)

Prosedur Kajian

Prosedur rawatan yang diberikan kepada para pelajar adalah sebuah permainan yang diberi nama Cross Number Puzzle. Board game tersebut berbentuk kad yang mana ianya diadaptasikan gabungan daripada permainan Teka Silang kata dan Soduku. Senarai soalan dan ruangan kotak jawapan yang bersilang disediakan sekaligus pada kad yang sama. Terdapat 5 soalan bagi kotak jawapan melintang dan 5 soalan bagi kotak jawapan menegak. *Hint* jawapan diberikan pada setiap kotak jawapan bagi membantu pelajar mendapatkan jawapan yang betul disamping memberikan semangat kepada mereka bagi melengkapkan puzzle berkenaan.

Instrumen yang digunakan dalam melengkapkan kajian ini ialah soalan ujian pra dan soalan ujian pasca. Soalan ujian pra diedarkan sebelum sesi permainan dimulakan. Sesi permainan board game kemudiannya berlangsung selama seminggu secara berturutan. Di akhir sesi, sampel diberi soalan ujian pasca untuk menilai keberkesanan dari pencapaian skor matematik. Pencapaian pelajar dianalisis berdasarkan jadual tahap pencapaian di bawah :

Jadual 2: Skala Tahap Pencapaian

Tahap Pencapaian	**Markah**
Tinggi	4.00 – 5.00
Sederhana	2.01 – 3.99
Rendah	1.00 – 2.00

Hasil Dapatan Dan Analisis Kajian

Analisa kajian ini dibuat menggunakan perisian SPSS versi 23. Hasil dapatan kajian di analisis berdasarkan peratusan pencapaian markah pelajar bagi ujian pra dan ujian pasca setelah sesi rawatan dijalankan. Jadual 3 menunjukkan keputusan skor ujian matematik yang diperolehi oleh responden pada ujian pra dan ujian pasca. Hasil kajian mendapati pada ujian pra seramai 60% (n=15) daripada responden berada dalam tahap rendah, 32% (n=8) lagi hanya di tahap sederhana dan 8% (n=2) pada tahap tinggi. Walaubagaimanapun, hasil kajian pada ujian pasca menunjukkan peningkatan dalam skor ujian matematik yang dilaksanakan. Seramai 64% (n=18) responden berjaya menduduki tahap pencapaian tinggi, 24% (n=6) responden berada di tahap sederhana dan 4% (n=1) berada di tahap rendah.

Jadual 3: Tahap Pencapaian Responden Pada Ujian Pra Dan Ujian Pasca.

Tahap Pencapaian	Ujian Pra	Ujian Pasca
Tinggi	2 (8%)	18(64%)
Sederhana	8 (32%)	6 (24%)
Rendah	15 (60%)	1(4%)
Jumlah	25 (100%)	25 (100%)

Secara keseluruhannya, didapati berlaku peningkatan pencapaian pelajar setelah prosedur rawatan iaitu pembelajaran berasaskan permainan dijalankan keatas responden. Ini menunjukkan terdapat keberkesanan terhadap pencapaian pelajar setelah pembelajaran berasaskan permainan diaplikasikan didalam sesi pembelajaran.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kesimpulan Dan Cadangan

Kajian ini telah membuktikan keberkesanan penggunaan pembelajaran berasaskan permainan dalam meningkatkan pencapaian pelajar mempelajari matematik. Dengan aktiviti permainan Cross Number Puzzle ini pencapaian matapelajaran matematik pelajar terhadap telah meningkat. Oleh yang demikian, amalan pembelajaran berasaskan permainan perlulah diteruskan sebagai salah satu aktiviti pembelajaran tidak formal di kalangan para pelajar. Selain menggilap kemahiran sahsiah, para pelajar juga dapat mengasah kemahiran pembuatan keputusan dan pemikiran kritikal. Pembangunan permainan Cross Number Puzzle dalam kajian ini bolehlah dilihat sebagai platform yang ideal dalam menyediakan ruang pembelajaran fizikal di mana pendidik boleh memperkenalkan pengetahuan dan konteks yang berbeza dengan mengaplikasikan pembelajaran berasaskan permainan di dalam topik-topik dan hasil pembelajaran yang disasarkan.

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KAJIAN TINJAUAN TAHAP KESEDARAN, PENERIMAAN DAN KEBERKESANAN E-PEMBELAJARAN DALAM PELAKSANAAN PEMBELAJARAN DAN PENGAJARAN DI KALANGAN STAF AKADEMIK, JABATAN KEJURUTERAAN MEKANIKAL, POLISAS

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Abstrak: *Pembelajaran dan pengajaran dalam pendemik COVID-19 menjadikan e-pembelajaran adalah suatu inisiatif utama dalam memastikan perjalanan pembelajaran dan pengajaran terlaksana secara berterusan. Tujuan kajian yang dilaksanakan adalah untuk meninjau tahap kesedaran dan penerimaan staf akademik di Jabatan Kejuruteraan Mekanikal, di POLISAS serta untuk mengenalpasti tahap keberkesanan penggunaan e-pembelajaran dalam proses pembelajaran dan pengajaran. Instrumen kajian adalah terdiri daripada kaedah soal selidik menggunakan skala likert dan responden adalah terdiri daripada staf akademik di Jabatan Kejuruteraan Mekanikal, POLISAS. Data dianalisis menggunakan perisian Statistical Package for Social Science (SPSS) versi 25.0 untuk mendapatkan nilai peratus, frekuensi dan min. Hasil analisis mendapati skor min tahap kesedaran adalah 4.48 iaitu pada tahap tinggi, skor min tahap penerimaan adalah 3.56 iaitu pada tahap sederhana, manakala skor min tahap keberkesanan e-pembelajaran juga adalah 3.56 iaitu berada pada tahap sederhana. Kesimpulan daripada kajian mendapati bahawa staf akademik sedar dan menerima kaedah e-pembelajaran dalam proses pelaksanaan pembelajaran dan pengajaran. Kesan pelaksanaan e-pembelajaran ini bukan sahaja memberi impak yang positif dalam proses pelaksanaan, penilaian, pembelajaran dan pengajaran malah dapat membantu organisasi mengurangkan kos.*

Katakunci: *e-Pembelajaran, Kesedaran, Penerimaan, Keberkesanan*

Pengenalan

Di Malaysia, kehadiran e-pembelajaran masih lagi baru jika dibandingkan dengan negara-negara Barat dan Singapura. Namun begitu, sejak akhir ini, pembelajaran dan pengajaran menggunakan e-pembelajaran menjadi inisiatif utama kesan daripada kehadiran makhluk halus bernama COVID-19. Malah, COVID-19 dilihat sebagai agen transformasi dan pemangkin kepada pelaksanaan pembelajaran secara maya. Sejajar dengan Dasar e-Pembelajaran Negara (DePAN) 2.0 yang dilancarkan pada 16 April 2011 yang dibangunkan bertujuan menyokong Pelan Strategik Pengajian Tinggi Negara (PSPTN).

Merujuk DePAN 2.0, tahun 2020 adalah akhir Fasa 2 dalam perancangan DePAN 2.0, di mana 50% daripada kursus yang ditawarkan di IPT perlu dilaksanakan dalam bentuk

eISBN 978-967-2426-22-6
13th – 14th December 2020

pembelajaran teradun (Blended Learning). Namun begitu, penularan pendemik COVID-19 ini menyebabkan berlaku perubahan mendadak dalam sektor pendidikan dan dilihat e-pembelajaran menjadi satu kaedah dan inisiatif bagi memastikan kesinambungan pembelajaran dan pengajaran dapat dilaksanakan.

Sejauh mana tahap penularan COVID-19 ini akan berlaku masih belum diketahui, namun proses e-pembelajaran akan terus dilaksanakan walaupun pada suatu masa pendemik Covid-19 sudah dapat ditangani. Oleh yang demikian bukan menjadi alasan untuk mengelak dan menepis segala bentuk e-pembelajaran dilaksanakan dalam proses pengajaran dan pembelajaran.

Memandangkan keperluan dan kepentingan e-pembelajaran dalam sistem pendidikan, maka kajian ini dilaksanakan di Jabatan Kejuruteraan Mekanikal, Politeknik Sultan Haji Ahmad Shah (POLISAS) supaya tindakan penambahbaikan dapat dilaksanakan dan merealisasikan Dasar e-Pembelajaran Negara 2.0 seiring dengan perkembangan teknologi maklumat yang pesat berkembang.

Objektif Kajian

Objektif kajian ini adalah untuk:

i) meninjau tahap kesedaran dan penerimaan terhadap e-pembelajaran di kalangan staf akademik Jabatan Kejuruteraan Mekanikal, POLISAS
ii) mengenalpasti tahap keberkesanan penggunaan e-pembelajaran di kalangan staf akademik Jabatan Kejuruteraan Mekanikal, POLISAS di dalam pembelajaran dan pengajaran

Skop Kajian

Kajian ini disasarkan kepada staf akademik Jabatan Kejuruteraan Mekanikal (JKM) di Politeknik Sultan Haji Ahmad Shah (POLISAS). Sampel kajian diambil daripada populasi pensyarah JKM, POLISAS melalui maklum balas soal selidik yang diedarkan. Pengambilan sampel adalah merujuk kepada jadual penentuan saiz sampel Krejcie & Morgan (1970). Fokus utama kajian adalah pada tahap kesedaran, penerimaan dan keberkesanan e-pembelajaran dalam pelaksanaan pembelajaran dan pengajaran (PdP).

Kajian Literatur

Definisi dan istilah e-pembelajaran ini mula digunakan setelah ICT khususnya penggunaan internet diperkenalkan pada awal tahun 1990an (Yusuf, 2012). Sejak dari itu, pelbagai istilah dikemukakan berkaitan dengan e-pembelajaran, antaranya adalah: *on-line learning*, *internet-enabled learning*, *virtual learning*, atau *web-based learning* (Rahayu, 2010). Perubahan istilah itu berkembang mengikut arus perkembangan teknologi, media elektronik dan digital. Media elektronik yang dimaksudkan adalah seperti CD ROM, TV interaktif, tape audio/ video, internet dan intranet (Wahyu & Buntat, 2003).

Menurut Sutomo (2012), e-pembelajaran didefinasikan sebagai pembelajaran dengan menggunakan bantuan alat elektronik, khususnya komputer. E-Pembelajaran merupakan salah satu model pembelajaran yang dibuat dalam format digital melalui alat elektronik (Irjus, 2014). Kehadiran m-pembelajaran atau dikenali sebagai mobile pembelajaran merancakkan lagi pelaksanaan e-pembelajaran (Wirawan, 2011). Penggunaan e-pembelajaran lebih fleksibel kerana ia lebih mudah untuk diakses, mengandungi pelbagai sumber rujukan, dan penggunaan multimedia dan grafik menjadikannya lebih menarik, mempunyai daya tarikan yang menarik dari segi penggunaan multimedia dan grafik (Hazwani, Noor Raudhiah, & Norziah Othman, 2017).

eISBN 978-967-2426-22-6
13th – 14th December 2020

Rumusan yang boleh buat mengikut pemahaman pengkaji, e-pembelajaran merupakan satu kaedah pembelajaran dan pengajaran yang dilaksanakan menggunakan alat bantu seperti komputer dan alat komunikasi mudah alih, dengan bantuan rangkaian internet dan aplikasi-aplikasi yang boleh membantu guru dan pelajar berinteraksi antara satu sama lain tanpa perlu bersemuka.

Pelaksanaan e-pembelajaran mendatangkan banyak kebaikan kepada penggunanya. Jika dilihat dari sudut pendidikan, matlamat Malaysia adalah untuk meluaskan akses pendidikan, meningkatkan kualiti pengajaran dan pembelajaran mengikut keperluan semasa (DePAN 2.0, 2010).

Untuk mencapai matlamat tersebut, Kementerian Pendidikan Tinggi telah mensasarkan kepada semua IPT di Malaysia supaya melaksanakan pendekatan pedagogi menggunakan model pembelajaran teradung (blended learning) kepada pelajar (DePAN 2.0, 2010). Sasaran Kementerian ini disambut baik semua IPT di Malaysia termasuk Politeknik dan Kolej Komuniti. Penggunaan aplikasi CIDOS dalam pendekatan pembelajaran dan pengajaran di seluruh Politeknik membuktikan bahawa staf akademik di Politeknik telah didedahkan dengan e-pembelajaran.

Selain daripada itu, pelaksanaan e-pembelajaran secara ekonomi dalam skala besar akan menjimatkan kos dari segi penyediaan kemudahan fisikal, infrastruktur, peralatan dan pengurusan kakitangan (Asia e University, 2010). Keadaan ini terjadi kerana kakitangan akademik dan staf sokongan dapat dikurangkan kerana pembelajaran dan pengajaran boleh dilaksanakan secara online dan jarak jauh. Enrolmen pelajar boleh ditambah kerana mereka tidak perlu berada di kampus tetapi belajar secara online menggunakan teknologi komunikasi seperti telesidang video dan beberapa jenis teknologi komunikasi yang lain. Pelajar boleh berinteraksi dengan pensyarah, dengan bahan e-pembelajaran dan rakan pelajar. Interaksi antara pelajar dengan pelajar, pelajar dengan bahan, pelajar dengan pensyarah, dan pensyarah dengan pensyarah membolehkan mereka berkongsi maklumat serta membina dan menyumbang maklumat.

Metodologi Kajian

Kaedah yang digunakan dalam kajian ini ialah kaedah tinjauan berbentuk deskritif dengan menggunakan soal selidik sebagai instrumen kajian bagi memberi gambaran awal tentang persediaan, penerimaan dan keberkesanan e-pembelajaran dalam kalangan staf akademik di Jabatan Kejuruteraan Mekanikal, Politeknik Sultan Haji Ahmad Shah (POLISAS). Menurut Yahya Don (2006), kajian tinjauan deskriptif boleh mengumpulkan pelbagai maklumat dan mengukur pembolehubah-pembolehubah yang berkaitan dengan suatu fenomena. Kaedah soal selidik pula mudah untuk mendapat maklumat-maklumat yang tepat yang diperlukan berdasarkan item soalan kajian, (Jas Laile, 2008).

Set soal selidik diedarkan dikalangan staf akademik di Jabatan Kejuruteraan Mekanikal, sejumlah 54 soal selidik berjaya dikumpulkan daripada 60 orang staf di Jabatan. Data dianalisis menggunakan perisian *Statistical Package for Social Science* (SPSS) versi 25.0. Kaedah analisis deskriptif seperti kekerapan, peratusan dan skor min dikumpul. Penentuan tahap skor min adalah merujuk kepada pengukuran tahap min yang diadaptasikan daripada Landell (1970) dalam julat-julat tertentu . Menurut Landell(1970), julat skor min yang berada diantara 1.00 hingga 2.40 adalah berada pada tahap kompetensi yang lemah. Julat skor min berada di antara 2.41 hingga 3.80, tahap kompetensi berada pada tahap sederhana. Manakala, jika julat skor min berada di antara 3.81 hingga 5.00, tahap kompetensi berada pada tahap tinggi.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 1: Pengukuran Tahap Min

TAHAP	JULAT
LEMAH	1.00 – 2.40
SEDERHANA	2.4 - 3.80
TINGGI	3.81 – 5.00

Pengukuran Tahap Min Yang Diadaptasikan Daripada Landell (1970)

Dapatan Kajian

Dapatan yang diperolehi hasil analisis menggunakan perisian *Statistical Package for Social Science (SPSS) versi 25.0* ditunjukkan dalam topik ini.

Jantina

Berdasarkan jadual 2, daripada keseluruhan 54 respondan, 76% iaitu bersamaan 41 org responden adalah terdiri daripada staf lelaki, manakala 24% iaitu bersamaan 13 org adalah daripada staf perempuan. Ini menunjukkan majoriti staf di JKM, POLISAS adalah lelaki.

Jadual 2: Taburan Responden Berdasarkan Jantina

JANTINA	RESPONDEN	PERATUS (%)
LELAKI	41	76
PEREMPUAN	13	24
JUMLAH	54	100

Kelayakan Akademik

Berdasarkan jadual 3, menunjukkan bahawa 46.3% daripada staf di JKM, POLISAS adalah staf yang memiliki Sarjana Muda, diikuti dengan 31.5% yang memiliki Sarjana, seterusnya 20.4% memiliki Diploma dan yang paling rendah adalah memiliki PHD/Kedoktoran iaitu 1.85%. Ini menunjukkan majoriti staf di JKM, POLISAS adalah pemilik Sarjana Muda.

Jadual 3: Taburan Responden Berdasarkan Kelayakan Akademik

KELAYAKKAN AKADEMIK	RESPONDEN	PERATUS (%)
DIPLOMA	11	20.4
PHD/ KEDOKTORAN	1	1.85
SARJANA	17	31.5
SARJANA MUDA	25	46.3
JUMLAH	54	100

Analisis Dapatan Kajian

Analisis dijalankan terbahagi kepada tiga elemen utama iaitu elemen tahap kesedaran, elemen tahap penerimaan, dan elemen tahap keberkesanan e-pembelajaran dalam pelaksanaan pembelajaran dan pengajaran. Setiap elemen terdiri daripada 5 item soalan dan data dianalisis menggunakan SPSS Versi 25.0 seperti yang ditunjukkan di dalam jadual 4, jadual 5 dan jadual 6.

Tahap Kesedaran E-Pembelajaran Dalam Pembelajaran Dan Pengajaran

Jadual 4 menunjukkan nilai skor min yang diperolehi bagi kesemua 5 item yang dikaji berada pada tahap tinggi iaitu dengan skor min melebihi 3.8 merujuk kepada pengukuran tahap min yang diadaptasikan daripada Landell (1970). Nilai skor min paling tinggi adalah item 4 dengan skor min 4.67 iaitu berada pada tahap tinggi. Manakala, nilai skor min paling rendah adalah item

eISBN 978-967-2426-22-6
13th – 14th December 2020

1, dengan nilai skor min adalah 4.35 iaitu pada tahap tinggi. Selebihnya item 2, 3 dan 5 dengan nilai skor min iaitu 4.44, 4.37 dan 4.57 juga berada pada tahap tinggi.

Jadual 4: Analisis Kesedaran Terhadap e-Pembelajaran Dalam Pembelajaran Dan Pengajaran

	Kesedaran perlaksanaan e-Pembelajaran dalam Pembelajaran dan Pengajaran	KEKERAPAN PERATUS					SKOR MIN	TAFSIRAN
		STS %	TS %	TP %	S %	SS %		
1	e-Pembelajaran merupakan satu alat bantu mengajar	1 1.9	1 1.9	1 1.9	26 48.1	25 46.3	4.35	TINGGI
2	e-Pembelajaran menghubungkan pelajar dan pensyarah diluar bilik kuliah	1 1.9	0 0	1 1.9	24 44.4	28 51.9	4.44	TINGGI
3	e-Pembelajaran merupakan sokongan komunikasi pelajar dah pensyarah	1 1.9	0 0	1 1.9	28 51.9	24 44.4	4.37	TINGGI
4	e-Pembelajaran bergantung kepada fasiliti internet untuk pelaksanaannya	1 1.9	1 1.9	1 1.9	9 16.7	42 77.8	4.67	TINGGI
5	e-pembelajaran merupakan satu keperluan yang amat penting situasi sekarang	1 1.9	0 0	1 1.9	17 31.5	35 64.8	4.57	TINGGI
	Purata Skor Min						**4.48**	**TINGGI**

*STS : Sangat Tidak Setuju, TS : Tidak Setuju, TP : Tidak Pasti, S : Setuju, SS : Sangat Setuju

Tahap Penerimaan Terhadap E-Pembelajaran Dalam Pengajaran Dan Pembelajaran

Jadual 5, terdapat dua item berada pada tahap tinggi iaitu item 3 berkenaan penerimaan pelaksanaan e-pembelajaran melalui aplikasi yang diperkenalkan institusi dan item 5 berkenaan sokongan dalam pelaksanaan e-pembelajaran dalam kursus-kursus yang melibatkan teori dengan skor min 4.2 dan 4.04. Skor min paling rendah ialah item 2 iaitu jarang menggunakan e-pembelajaran disebabkan faktor pengetahuan dan fasiliti dengan skor min adalah 2.56 tetapi masih berada pada skor min sederhana. Selebihnya item 1 dan item 4 dengan skor min 3.59 dan 3.43 juga berada pada tahap sederhana. Dapatan keseluruhan daripada kajian tahap penerimaan staf terhadap e-pembelajaran dalam pengajaran dan pembelajaran menunjukkan berada pada tahap sederhana dengan purata skor min adalah 3.56.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 5: Analisis Penerimaan Terhadap E-Pembelajaran Dalam Pembelajaran Dan Pengajaran

	Penerimaan e-Pembelajaran dalam Pembelajaran dan Pengajaran	KEKERAPAN PERATUS					SKOR MIN	TAFSIRAN
		STS %	TS %	TP %	S %	SS %		
1	Saya berpuas hati dapat melaksanakan aktiviti pembelajaran dan pengajaran secara atas talian	2 3.7	6 11.1	8 14.8	34 63	4 7.4	3.59	SEDERHANA
2	Saya jarang menjalankan e-pembelajaran disebabkan faktor pengetahuan dan fasiliti yang ada	12 22.2	21 38.9	4 7.4	13 24.1	4 7.4	2.56	SEDERHANA
3	Saya melaksanakan e-Pembelajaran melalui Aplikasi yang diperkenalkan Institusi	0 0	1 1.9	2 3.7	34 63	17 31.5	4.2	TINGGI
4	Saya telah menghasilkan pelbagai inovasi interaktif untuk proses e-pembelajaran	2 3.7	5 9.3	18 33.3	26 48.1	3 5.6	3.43	SEDERHANA
5	Saya menyokong pelaksanaan e-pembelajaran dalam kursus-kursus yang melibatkan teori	2 3.7	3 5.6	4 7.4	27 50	18 33.3	4.04	TINGGI
	Purata Skor Min						**3.56**	**SEDERHANA**

*STS : Sangat Tidak Setuju, TS : Tidak Setuju, TP : Tidak Pasti, S : Setuju, SS : Sangat Setuju

Tahap Keberkesanan Terhadap E-Pembelajaran Dalam Pengajaran Dan Pembelajaran

Jadual 6, terdapat satu item yang berada pada tahap tinggi iaitu item 5 berkenaan keberkesanan proses e-pembelajaran dapat mengurangkan penggunaan kertas secara langsung menjimatkan kos dengan skor min 4.19. Manakala skor min paling rendah adalah item 2 iaitu proses pengajaran dan pembelajaran dapat dijalankan dengan lebih berkesan menerusi e-pembelajaran. Selebihnya, ketiga-tiga item iaitu item 1, 3 dan 4, masing-masing dengan skor min 3.5, 3.67 dan 3.26 berada pada tahap keberkesanan sederhana. Dapatan keseluruhan daripada kajian tahap keberkesanan e-pembelajaran dalam pengajaran dan pembelajaran menunjukkan berada pada tahap sederhana dengan purata skor min ialah 3.56.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Jadual 6: Analisis Keberkesanan Terhadap e-Pembelajaran Dalam Pengajaran Dan Pembelajaran

	Keberkesanan e-Pembelajaran dalam Pembelajaran dan Pengajaran	KEKERAPAN PERATUS					SKOR MIN	TAFSIRAN
		STS %	TS %	TP %	S %	SS %		
1	Proses e-Pembelajaran mampu meningkatkan keyakinan pensyarah melaksanakan proses pembelajaran dan pengajaran	3 5.6	9 16.7	9 16.7	24 44.4	9 16.7	3.5	SEDERHANA
2	Proses pengajaran dan pembelajaran dapat dijalankan dengan lebih berkesan menerusi e-pembelajaran	2 3.7	16 29.6	8 14.8	25 46.3	3 5.6	3.2	SEDERHANA
3	Pelbagai inovasi pendidikan dapat dihasilkan menerusi e-pembelajaran ini	2 3.7	7 13	9 16.7	25 46.3	11 20.4	3.67	SEDERHANA
4	Aktiviti penilaian dilaksanakan dengan lebih pantas	6 11.1	8 14.8	8 14.8	30 55.6	2 3.7	3.26	SEDERHANA
5	Proses e-pembelajaran dapat mengurangkan penggunaan kertas secara langsung menjimatkan kos	3 5.6	2 3.7	2 40.7	22 46.3	25 44.3	4.19	TINGGI
	Purata Skor Min						**3.56**	**SEDERHANA**

*STS : Sangat Tidak Setuju, TS : Tidak Setuju, TP : Tidak Pasti, S : Setuju, SS : Sangat Setuju

Rumusan dan Kesimpulan

Tahap Kesedaran e-Pembelajaran Dalam Pembelajaran dan Pengajaran

Menurut Ubaidillah & Yaakub (2019), staf boleh membangunkan atau mempelbagaikan kaedah pengajaran dan pembelajaran menggunakan e-pembelajaran supaya pembelajaran lebih interaktif serta komunikasi dua hala yang lebih berkesan berlaku dalam pelaksanaan pengajaran dan pembelajaran. Keadaan ini boleh berlaku apabila staf telah sedar dan bersedia dengan kehadiran e-pembelajaran. Oleh yang demikian, melalui dapatan kajian yang dijalankan, mendapati kesedaran dalam diri staf akademik Jabatan Kejuruteraan Mekanikal memang telah wujud. Ini dapat dilihat melalui nilai purata skor min yang diperolehi iaitu 4.48, berada pada tahap tinggi (Jadual 4).

Malahan, staf akademik di Jabatan Kejuruteraan Mekanikal juga sedar bahawa tanpa kehadiran fasiliti internet, proses pelaksanaan e-pembelajaran tidak dapat dijalankan dan direalisasikan. Penyataan ini di sokong oleh Azzamurni dan Aini (2020) dalam kajiannya di mana pengajar pada zaman ini haruslah mempetingkatkan kemahiran dalam bidang ICT supaya pengajar dapat mengaplikasikan dengan sebaik mungkin tahap teknologi yang ada pada masa kini. Pengajar juga boleh menerapkan elemen ICT dalam pengajaran dan pembelajaran bagi menarik minat pelajar supaya mereka mudah memahami ilmu yang disampaikan oleh pengajar tersebut.

Walaupun nilai skor min item 1 iaitu e-pembelajaran merupakan alat bantu mengajar adalah paling rendah tetapi skor min item tersebut tetap berada pada tahap tinggi. Staf akademik di Jabatan Kejuruteraan Mekanikal, Polisas sedar bahawa e-pembelajaran tidak dapat dilaksana tanpa kehadiran alat bantu mengajar lebih-lebih lagi dalam pasca Covid-19

eISBN 978-967-2426-22-6
13th – 14th December 2020

yang sedang melanda. Menurut Rubiah dan Jamilah (2009), penggunaan teknologi baru sebagai alat dalam pelaksanaan e-pembelajaran adalah untuk menyediakan keupayaan kepada ahli akademik menjadi fasilitator pembelajaran yang efektif. Ia juga mewujudkan suasana yang menggalakkan pelajar lebih inovatif dan kreatif dalam pembelajaran. Ini memerlukan seseorang ahli akademik itu mempunyai kesediaan pembelajaran arahan kendiri yang tinggi.

Tahap Penerimaan Terhadap E-Pembelajaran Dalam Pengajaran Dan Pembelajaran

Dapatan keseluruhan daripada kajian tahap penerimaan staf terhadap e-pembelajaran dalam pengajaran dan pembelajaran menunjukkan berada pada tahap sederhana, dengan purata skor min adalah 3.56 (Jadual 5). Penyumbang utama nilai skor min ini diperolehi adalah disebabkan dua perkara, iaitu sokongan staf akademik di JKM, POLISAS berkenaan aplikasi yang diperkenalkan di Institusi dan staf menyokong perlaksanaan kursus-kursus yang melibatkan teori menggunakan e-pembelajaran dengan nilai skor min yang tinggi iaitu 4.2 dan 4.04. Ini menunjukkan bahawa, peranan institusi penting dalam meningkatkan tahap penerimaan staf di Jabatan dengan memperkenalkan aplikasi-aplikasi terkini yang boleh membantu tenaga pengajar meningkatkan kemahiran dan melaksanakan proses pembelajaran dan pengajaran. Penerimaan staf dalam e-pembelajaran dapat dilihat apabila 83.3% staf akademik bersetuju pelaksanaan kursus-kursus yg melibatkan teori menggunakan e-pembelajaran dilaksanakan.

Merujuk jadual 5, skor min paling rendah ialah item 2 iaitu jarang menggunakan e-pembelajaran disebabkan faktor pengetahuan dan fasiliti dengan skor min adalah 2.56. Dapatan kajian Mohd Fahmi (2016) mendapati bahawa penggunaan e-pembelajaran secara optimum perlu diberi perhatian yang khusus terutamanya melibatkan fasiliti, capaian internet, keadaan *server* yang digunakan contohnya CIDOS dan masalah teknikal ada kalanya merumitkan penggunaan seterusnya membuatkan penerimaan pelajar terhadap e-pembelajaran menurun. Melalui kajian ini, mendapati bukan sahaja penerimaan oleh pelajar malah penerimaan oleh tenaga pengajar juga boleh dipengaruhi oleh faktor pengetahuan dan fasiliti.

Walaupun begitu, dapatan keseluruhan kajian tahap penerimaan staf terhadap e-pembelajaran dalam pembelajaran dan pengajaran menunjukkan berada pada tahap sederhana dengan purata skor min adalah 3.56.

Tahap Keberkesanan Terhadap e-Pembelajaran Dalam Pembelajaran Dan Pengajaran

Dapatan keseluruhan daripada kajian tahap keberkesanan e-pembelajaran dalam pembelajaran dan pengajaran menunjukkan berada pada tahap sederhana dengan purata skor min ialah 3.56 (Jadual 6). Daripada nilai skor min tersebut, terdapat satu item yang menyumbang nilai tertinggi iaitu item 5, di mana 90.6% daripada keseluruhan staf bersetuju pelaksanaan e-pembelajaran dapat mengurangkan penggunaan kertas, secara langsung menjimatkan kos bahan.

Dapatan ini disokong oleh Plimmer & Apperley (2014) dalam penyelidikan yang dilaksanakan mendapati penggunaan kertas dapat dikurangkan dengan menggunakan e-pembelajaran, di mana semua tugasan pelajar di hantar melalui elektronik dan boleh terus ditanda menggunakan *penmarker* tanpa perlu dicetak pada kertas.

Menurut DePAN 2.0, pelaksanaan pembelajaran dalam talian tahap global atau Globalised Online Learning (GOL), Pelan Pembangunan Pendidikan Tinggi Malaysia 2015-2025 (Pendidikan Tinggi) atau PPPTM(PT) adalah salah satu inisiatif untuk mengurangkan kos penyampaian. Ini menunjukkan bahawa bukan sahaja kos penyampaian dapat dikurangkan malah kos peralatan seperti kertas, dakwat, pen dan alatan lain yang digunakan dalam pembelajaran konvensional boleh dikurangkan.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Kesimpulan

Pendekatan e-pembelajaran amat penting sebagai satu kaedah pelaksanaan pengajaran dan pembelajaran. Wujudnya kesedaran dan penerimaan e-pembelajaran dikalangan tenaga pengajar akan merancakkan dan memperkembangkan lagi pelaksanaan e-pendidikan negara. Malah, penggunaan dan pelaksanaan e-pembelajaran akan meningkatkan keyakinan dan kemampuan penggunanya sama ada guru atau pelajar.

Hasil kajian mendapati bahawa staf akademik Jabatan Kejuruteraan Mekanikal, POLISAS sedar dan menerima kehadiran e-pembelajaran dalam proses pembelajaran dan pengajaran mereka. Kesedaran yang ada ini perlu digilap, supaya tidak pudar. Peluang ini membolehkan pihak pentadbiran mengambil inisiatif merancang dan melaksana e-pembelajaran supaya lebih efisien. Pada masa yang sama, mengenalpasti dan menyediakan infrastruktur dan infostruktur yang sesuai bagi mengoptimunkan pelaksanaan e-pembelajaran.

Di Jabatan, galakkan dan sokongan daripada pihak pentadbiran dengan memperkenalkan aplikasi-aplikasi e-pembelajaran adalah satu langkah yang bijak. Staf diberi bimbingan dan latihan melalui kursus-kursus yang dilaksanakan. Percambahan ilmu berlaku dan kemahiran dapat diasah, amalan e-pembelajaran dapat diterap dan pembudayaan e-pembelajaran dapat disemai.

Pendekatan e-pembelajaran dalam pelaksanaan pengajaran dan pembelajaran bukan sahaja membantu pelaksanaan proses pengajaran dan pembelajaran malah memberi keuntungan kepada pengurusan dari segi pengurangan kos bahan seperti kertas, kesan daripada pelaksanaan e-pembelajaran. Perubahan wujud kerana berlakunya anjakan daripada penggunaan kertas kepada tidak menggunakan kertas. Proses seperti penghantaran dan penandaan tugasan tidak lagi menggunakan kertas sebagai medium penyampaian maklumat.

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FUNGSI TUMBUHAN DALAM PANTANG LARANG MELAYU
FUNCTIONS OF PLANT IN MALAY TABOOS

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Abstrak: *Salah satu warisan dan khazanah budaya Melayu tradisional yang amat tinggi nilainya ialah pantang larang. Pantang larang terbina daripada pengalaman hidup yang lalu yang boleh dijadikan contoh teladan dalam kehidupan seharian. Dalam pantang larang, terpantul nilai-nilai luhur masyarakat dan merangkumi pelbagai aspek kehidupan. Maksud tersirat di dalam pantang larang disampaikan oleh orang Melayu dengan menggunakan kreativiti dan kebijaksanaan mereka. Makalah ini meneliti fungsi tumbuhan di dalam pantang larang Melayu. Tumbuhan dipilih kerana ia amat akrab dengan masyarakat Melayu. Unsur tersirat di sebalik fungsi tumbuhan ini dihurai dengan membuat penilaian dan pentafsiran supaya lebih mudah difahami dan dihayati oleh masyarakat. Pemahaman dan penghayatan ini boleh dijadikan sebagai panduan dalam kehidupan seharian khususnya dalam interaksi sesama ahli masyarakat. Penulisan ini menggunakan buku Pantang Larang Orang Melayu Tradisional (1999) yang diselenggarakan oleh Wan Ramli Wan Muhammad dan Hanapi Dollah terbitan Utusan Publications & Distributors Sdn. Bhd. sebagai teks kajian. Berpandukan Teori Pengkaedahan Melayu di bawah Pengkaedahan Alamiah, Pendekatan Firasat diaplikasikan sebagai kerangka teori untuk melihat maksud yang dikemukakan menerusi fungsi tumbuhan dalam pantang larang Melayu. Proses ini akhirnya memenuhi matlamat paksi Teori Pengkaedahan Melayu iaitu untuk mencapai kebajikan, ketaqwaan dan kesusilaan. Analisis ditumpukan terhadap makna dan fungsi tumbuhan dalam kehidupan orang Melayu. Berdasarkan pantang larang yang dipilih, dapatan kajian merumuskan bahawa tumbuhan berperanan sebagai tanda keakraban masyarakat Melayu dengan alam seterusnya membawa maksud yang tersirat sebagai panduan dalam kehidupan masyarakat.*

Kata Kunci*: Fungsi,Tumbuhan,Pantang Larang,Pengkaedahan Melayu,Pendekatan Firasat.*

Abstract: *One of the heritage and cultural treasure of traditional Malay invaluable is taboo. Taboos are built from past life experiences that can serve as role models in daily life. In abstinence, the noble values of society are reflected and encompass various aspects of life. The sense of the taboos presented by the Malays to use their creativity and ingenuity. This paper examines the function of the plant in Malay taboos. Plants were chosen because they are very familiar with the community. The implicit element behind the function of this plant is elaborated by making assessments and interpretations so that it is easier to understand and appreciate by society. This understanding and appreciation can be used as a guide in daily life, especially in the interaction among members of society. This study using the book The Malay Traditional Taboos (1999) organized by Wan Ramli Wan Muhammad and Hanapi Dollah published by Utusan Publications & Distributors Sdn. Bhd. as the study text. Guided by the theory of Malay*

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13th – 14th December 2020

Studies under the Naturally Methodology, Premonition Approach applied as a theoretical framework for the purpose submitted by the plants in Malay taboos. This process ultimately meet the goal of Theory Methodology Malay axis which is to achieve virtue, piety and decency. Analysis focused on the meaning and function of plants in the life of the Malay community. Based on the selected taboos, this research found that the plant serves as a sign of familiarity with the nature of the Malay community in turn leads to the spirit as a guide in life.

Keywords: *Function, Plant, Taboos, Malay Methodology, Approach Premonition.*

Pengenalan

Pantang larang merupakan satu 'disiplin lisan' yang terkandung dan diamalkan oleh sebahagian besar masyarakat Melayu (Wan Ramli Wan Muhammad dan Hanapi Dollah, 1999: 1). Pantang larang diturunkan secara lisan dan turun temurun. Pantang larang adalah meliputi dari segi dari segi sosial dan ekonomi. Umumnya segala perlakuan dan tindak-tanduk diliputi oleh undang-undang adat. Tujuan diadakan undang-undang adat ini adalah untuk kesejahteraan masyarakat. Pantang larang bukan untuk dipercayai tetapi untuk dihayati maksud yang terkandung di dalamnya. Pantang larang seboleh-bolehnya harus dipatuhi oleh masyarakat. Menurut Taslim F dan Junaidi Syam (2007: 664), pantang larang merupakan pekerjaan atau perbuatan yang dilarang melakukannya dan apabila dilanggar, dipercayai akan membuatkan pelakunya mendapat petaka atau buruk tingkah laku. Hal ini bertepatan dengan pendapat Tenas Effendy (2003: 65) yang mentafsirkan istilah pantang larang sebagai segala perbuatan yang ditabukan berdasarkan "kepercayaan tradisional" yang mereka warisi turun temurun. Pelanggaran terhadap pantang larang dapat menimbulkan pelbagai kesan buruk baik terhadap diri pelaku mahu pun masyarakatnya. U. U. Hamidy (1982) menyatakan bahawa pantang larang cukup erat hubungannya dengan adat dan tradisi. Adat istiadat merupakan perkara yang sangat kental dengan masyarakat. Atar Semi (1984) berpendapat bahawa hubungan antara kebudayaan dengan masyarakat itu amatlah erat kerana kebudayaan itu sendiri menurut pandangan ahli antropologi adalah cara suatu kumpulan manusia atau masyarakat mengadakan sistem nilainya, lebih dikehendaki dari yang lain.

U.U. Hamidy (1982) sekali lagi menegaskan pada asasnya, pantang larang sebenarnya adalah norma-norma yang memandu warga masyarakat dalam berbuat dan bertindak. Namun demikian, pantang larang tersebut akan dinilai mengikut citarasa seseorang individu. Sebahagian masyarakat lainnya pula beranggapan bahaa pantang larang tidak relevan dengan kehidupan yang serba moden ini sebaliknya hanyalah sesuatu nilai yang ketinggalan zaman. Menurut Safian Mohamad (1987: 134), walaupun pantang larang itu lahir daripada pengalaman hidup dan adat, tetapi Islam tetap menerimanya selagi tidak bertentangan dengan akidah umat Islam. Hal ini disebabkan nilai murni amalan budi yang ditetapkan oleh Islam itu bersifat kebaikan mutlak, kebaikan sejagat, mudah, mantap, mudah dipatuhi dan pengawasan yang menyeluruh. Islam tidak menolak semua nilai murni dan amalan pantang larang dan tidak juga menerima semuanya. Penerimaan atau penolakan sesuatu adat atau amalan pantang larang ditentukan oleh aqidah, syarat dan ikhlas. Sifat yang baik akan diterima, manakala amalan yang bertentangan akan dihapuskan.

Di samping adat dan kebudayaan, masyarakat Melayu tradisional juga begitu akrab dengan alam termasuk alam tumbuhan. Menurut Muhammad Haji Salleh (2008: 148), manusia hidup dalam ruangnya – di tepi sungai, di tepi laut, paya, hutan atau bukit yang menjadi ruang hidupnya dan ruang dia mencari rezeki. Untuk mencari rezeki, dia harus mengenali ruang ini dengan amat dalamnya. Dia harus belajar tentang bagaimana musim beralih, bagaimana rentak

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13th – 14th December 2020

pasang dan surut mempengaruhi hidup matinya, bagaimana tabiat binatang, unggas dan ikan terjalain dlaam kewujudannya. Dia juga harus memerhatikan cara bagaimana sungai dan paya berlubuk atau berumput, bagaimana lubuk menyimpan jenis ikan yang khusus dan jenis pohon yang mungkin menjadi sumber rezeki ikan itu. Dia harus mengetahui bukan sahaja nama pokok tetapi sifat dan rasa buahnya. Hal ini menjelaskan bahawa alam memainkan peranan yang sangat penting kerana masyarakat Melayu zaman dahulu berada dalam proses interaksi, interpretasi dan integrasi dengan alam sekeliling.

Penggunaan tumbuhan sebagai lapisan tersurat dapat dilihat dengan jelas dalam ayat tumbuh-tumbuhan dalam gaya bahasa dalam Al-Qur'an. Allah SWT menggunakan gaya bahasa pertanyaan kepada manusia agar manusia berfikir dengan akal yang dikurniakan oleh Allah SWT dan memahami dengan hati berkaitan dengan tanda-tanda kewujudan Allah SWT melalui medium perantara penciptaan alam sekeliling. Contoh perbincangan ayat ini ialah seperti dalam firman Allah SWT dalam surah al-Syua'ra', ayat 7 yang bermaksud: "Masihkah mereka tidak memperhatikan bumi, berapa banyak Kami tumbuhkan padanya dari pelbagai jenis tanaman yang memberi banyak manfaat?". Menurut Ibn 'Asyur (1984), ayat ini merupakan ayat keimanan. Allah SWT mengajak manusia supaya melihat dan berfikir tentang kekuasaan Allah SWT yang telah mencipta pelbagai jenis makhluk di langit dan bumi. Terdapat dua konsep keimanan dalam ayat ini. Konsep pertama ialah konsep beriman kepada keesaan Allah SWT dan konsep yang kedua beriman kepada hari akhirat. Kepelbagaian jenis tumbuh-tumbuhan dalam ayat ini adalah dalil tauhid yang menunjukkan tentang kekuasaan Allah SWT untuk mencipta sesuatu. Ayat ini juga menunjukkan gambaran tentang keimanan terhadap hari akhirat. Allah SWT yang menghidupkan semula tumbuh-tumbuhan dari biji benih yang telah kering dan mati.

Permasalahan Kajian

Pantang larang merupakan peraturan larangan bagi sebuah kehidupan masyarakat atau bangsa tertentu. Sebagai salah satu unsur budaya masyarakat Melayu tradisional, pantang larang amat berguna dan bergandingan bersama adat untuk ketenteraman hidup. Pantang larang juga dianggap memberi jaminan keselamatan bagi individu sebagai penjaga diri sama ada untuk diri sendiri mahu pun orang lain. Segala apa yang dilakukan di dalam pantang larang mempunyai kesan serta merta dan juga untuk jangka panjang. Oleh itu, bagi memastikan dan mengekalkan warisan budaya pantang larang ini tidak lenyap ditelan zaman, maka kajian ini wajar dilaksanakan. Penghayatan dan pengamalan pantang larang dalam kalangan generasi muda pada hari ini juga kian terhakis dan makin dipandang sepi. Generasi muda harus disuntik dengan pengetahuan bahawa budaya pantang larang amat berkait rapat dengan alam dan masyarakat Melayu tradisional hidup dikelilingi oleh alam supaya warisan budaya ini tidak hilang daripada radar generasi muda.

Unsur alam tumbuhan dipilih dan dianalisis sebagai salah satu unsur perlambangan alam yang banyak ditemui dalam pantang larang Melayu. Hal ini demikian kerana alam tumbuhan yang digunakan dalam pantang larang bukanlah kosong semata-mata sebaliknya mempunyai maksud tersendiri yang hendak disampaikan kepada masyarakat. Dalam Surah Ar Ra'ad, ayat 4, Allah SWT telah berfirman yang mafhumnya: "Dan di muka bumi ada bahagian-bahagian yang berdampingan, kebun-kebun anggur, tanam-tanaman dan pohon kurma yang bercabang dan yang tanpa cabang. Semua disirami dengan air yang sama. Kami melebihkan rasa tanam-tanaman itu sebahagian dari yang lain. Demikianlah bukti-bukti kekuasaan Allah bagi kaum yang memikirkan." Ayat ini membuktikan bahawa alam tumbuhan memainkan peranan penting dalam masyarakat Melayu.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Tujuan Kajian

Makalah ini mempunyai dua tujuan iaitu:

1. Mengenal pasti unsur tumbuhan dalam pantang larang Melayu berdasarkan buku *Pantang Larang Orang Melayu Tradisional*.
2. Menganalisis fungsi tumbuhan menggunakan Pendekatan Firasat dalam teori Pengkaedahan Melayu.

Tinjauan Literatur

Berdasarkan tinjauan yang telah dilakukan, didapati sudah terdapat kajian yang menggunakan Pendekatan Firasat dalam teori Pengkaedahan Melayu. Antaranya kajian oleh Syaidul Azam Kamarudin dan Arbai'e Sujud (2017) turut memanfaatkan Teori Pengkaedahan Melayu dalam kajian mereka. Kajian mereka yang bertajuk "Jati Diri Melayu dalam Kumpulan Puisi Terpilih A. Aziz Deraman: Analisis Teori Pengkaedahan Melayu" dihasilkan di Fakulti Bahasa Moden dan Komunikasi, Universiti Putra Malaysia. Kajian tersebut menganalisis jati diri Melayu dalam kumpulan puisi A. Aziz Deraman iaitu *Suara Gunung Kehidupan* dan *Gelora Nurani.* Jati diri Melayu merupakan elemen yang terpenting kerana di dalamnya terkandung khazanah bangsa yang harus dipertahankan dalam kehidupan masyarakat Melayu.

Dalam konteks pembangunan dan pemantapan jati diri Melayu, kajian tersebut adalah penting kerana melalui pemahaman jati diri yang mantap akan terpancar ketatasusilaan, kebijaksanaan dan pekerti bangsa Melayu yang telah diwarisi sejak zaman berzaman. Hal ini wajar diberi perhatian terutama dalam menghadapi polemik semasa serta cabaran globalisasi yang dikatakan mampu mengubah jati diri sesuatu bangsa.

Kajian mereka ini dijalankan secara analisis kandungan dan analisis kajian menggunakan prinsip yang dikemukakan oleh Hashim Awang dalam Teori Pengkaedahan Melayu. Sementara itu, aspek jati diri Melayu dalam puisi tersebut akan dianalisis melalui tiga aspek utama iaitu jati diri dalam aspek bahasa Melayu, jati diri dalam aspek agama dan jati diri dalam aspek budaya. Hasil kajian mendapati bahawa ketulenan jati diri kemelayuan yang ditunjukkan oleh A. Aziz Deraman melalui puisinya berperanan sebagai iktibar, pengajaran dan nasihat yang dapat membawa manfaat dan menemukan kemuafakatan kepada masyarakat. Hal ini kerana ianya berlandaskan kepada ajaran dan etika Islam yang menjadi jalinan prinsip penting dalam Teori Pengkaedahan Melayu. Perkara ini sekaligus mencirikan kepenyairannya yang mempunyai jati diri kemelayuan yang mantap. Dapatlah disimpulkan bahawa kajian ini sebenarnya mempunyai kekuatannya yang tersendiri iaitu berupaya menampilkan jati diri Melayu yang mantap. Walau bagaimanapun, kajian tersebut tidak meliputi semua genre dan aspek kerana fokus kajian hanyalah terhadap puisi terpilih A. Aziz Deraman dan jati diri Melayu sahaja. Berbeza dengan kajian ini yang akan menggunakan Pendekatan Firasat dalam teori Pengkaedahan Melayu bagi mengkaji aspek berbeza iaitu fungsi tumbuhan dalam pantang larang Melayu.

Kajian berkaitan pantang larang pula telah dijalankan oleh Nur Diyana Zamani dan Hasmidar Hassan (2018) turut menjalankan kajian berkaitan pantang larang yang bertajuk "Bahasa Pantang Larang Masyarakat Melayu dan Hubungannya dengan Prinsip Relevans Kognitif dan Prinsip Relevans Komunikatif". Kajian tersebut dijalankan di Akademi Pengajian Melayu, Universiti Malaya dan disiarkan dalam Jurnal Pengajian Melayu, Jilid 29, 2018. Mereka mengkaji pantang larang yang merupakan satu bentuk bahasa yang sering digunakan oleh masyarakat terdahulu sebagai suatu bentuk peraturan lisan yang harus diterima oleh masyarakat sebagai satu dogma dalam kehidupan seharian. Bahasa pantang larang ini terhasil daripada kepercayaan masyarakat dahulu kala berdasarkan pengamatannya terhadap alam sekitar dan kejadian alam yang bersifat 'sebab dan akibat'. Jika bahasa pantang larang tersebut

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13th – 14th December 2020

dilanggar, seseorang individu itu dikhuatiri akan menerima kecelakaan atau ditimpa perkara yang buruk. Bagi menjawab persoalan ini, maka kertas kerja tersebut mengetengahkan satu perbincangan bagi menjelaskan bahawa penghasilan bahasa pantang larang ini bukanlah sewenang-wenangnya sebaliknya didasari oleh dua idea utama teori Relevans, iaitu prinsip relevans Kognitif dan prinsip relevans Komunikatif.

Bahasa pantang larang yang dihasilkan oleh masyarakat Melayu dahulu ternyata merupakan bentuk bahasa yang bersifat menonjol ataupun nyata (*salient*) dan dijangkakan dapat menarik perhatian pendengar. Apabila bahasa pantang larang ini dapat menarik perhatian pendengar atas sebab cirinya yang menonjol (*salient*) ini, maka fungsinya untuk menasihati dan membentuk peribadi masyarakat yang mendukung nilai-nilai murni, beradab dan bertatasusila akan dapat dilaksanakan dengan mudah. Sebagai kesimpulannya, kajian ini berupaya membuktikan bahawa bahasa pantang larang amat besar fungsinya dalam menarik perhatian pendengar seterusnya dapat membantu dalam menasihati dan membentuk akhlak masyarakat yang penuh adab dan tatasusila. Namun begitu, kajian ini hanya menjurus kepada satu aspek sahaja iaitu aspek bahasa dalam pantang larang. Hal tersebut amat ketara perbezaannya dengan kajian ini yang mengkaji unsur perlambangan alam iaitu fungsi tumbuhan dalam pantang larang Melayu dengan menggunakan Pendekatan Firasat dalam teori Pengkaedahan Melayu.

Kajian unsur tumbuhan sebagai salah satu unsur perlambangan alam dijalankan oleh Muhammad Zaid Daud dalam kertas kerjanya yang bertajuk “Imej Tumbuhan Dalam Slanga: Analisis Semantik Inkuisitif ” (2018), di Fakulti Bahasa Dan Komunikasi, Universiti Malaysia Sarawak. Kajian ini menganalisis slanga yang mempunyai imej tumbuh-tumbuhan dalam rakaman perbualan secara tidak formal. Kajian ini adalah berbentuk kualitatif dalam menganalisis slanga menggunakan pendekatan semantik inkuisitif. Dapatan kajian diperoleh daripada perbualan secara tidak formal di sekitar Kuala Lumpur dan Kota Samarahan, Sarawak dan kemudiannya ditranskripsikan ke dalam bentuk transkripsi perbualan. Kajian menunjukkan terdapat sejumlah empat slanga yang mempunyai imej tumbuhan telah dikesan dalam transkripsi perbualan tersebut seperti *getah*, *tebu*, *jambu* dan *langsat* yang telah dipilih secara pensampelan bertujuan. Seterusnya, analisis Rangka Rujuk Silang (RRS) diaplikasikan bagi mendapatkan maklumat tambahan kepada pengkaji dalam menghuraikan makna slanga tersebut. Gabungan RRS dengan maklumat budaya mendalam mampu menghasilkan penghuraian makna sebenar sesuatu slanga sehingga ke akal budi penuturnya. Namun demikian, kajian tersebut hanya menjurus kepada imej tumbuhan dalam slanga dan berbeza dengan kajian ini yang mengkaji unsur perlambangan alam iaitu fungsi tumbuhan dalam pantang larang Melayu dengan menggunakan Pendekatan Firasat berdasarkan teori Pengkaedahan Melayu.

Metodologi Kajian

Kajian ini menggunakan kaedah kualitatif dengan membuat kajian kepustakaan. Kaedah ini merangkumi pemerolehan data dan pemprosesan data. Kaedah ini digunakan untuk mengenal pasti pantang larang Melayu yang mengandungi unsur alam tumbuhan dan memilih pantang larang yang berkaitan untuk dianalisis.

Teori Pengkaedahan Melayu

Teori Pengkaedahan Melayu termasuk dalam golongan teori yang dikenali sebagai *grounded theory* atau “teori beralas/teori berlandas” yang terbentuk dari hasil penyelidikan bersifat kualitatif; dalamnya terbangun rumusan atau formula yang berupa prinsip-prinsip umum tentang karya atau teks sastera dan amalan-amalan yang berkaitan dengan Kesusasteraan

eISBN 978-967-2426-22-6
13th – 14th December 2020

Melayu (Hashim Awang, 2003, hlm: 1). Teori Pengkaedahan Melayu tidak terbentuk daripada kekosongan tetapi berlandaskan kepada kenyataan hidup dan agama serta bangsa Melayu seterusnya sifat penciptaan kesusasteraan bangsa Melayu. Menurut Mana Sikana (1991), teori ini merupakan satu pendekatan sastera Melayu yang bertunjangkan daya kreatif, penghasilan karya sastera yang kaya, keakraban dengan gejala alam dan kehalusan budi orang Melayu. Kaedah ini jelas berasaskan sikap hidup, kepercayaan dan berteraskan pegangan hidup Islam. Unsur moral yang terdapat di dalam teori ini begitu kuat dan hal ini merupakan satu percubaan ikhlas Hashim Awang untuk mengkonkritkan *world-view* Islam dalam kritikan sastera.

Teori ini juga berlandaskan bahawa semua aspek kehidupan manusia merangkumi cara dan sikap hidup, kepercayaan dan kebudayaan setempat masyarakat Melayu yang melahirkan karyanya sendiri. Teori ini menjadikan alam sebagai sebahagian daripada kehidupannya yang mempunyai kaitan rapat dengan manusia. Alam dijadikan faktor utama untuk memenuhi keperluan kehidupan manusia yang memberikan mata pencarian atau pekerjaan, pengalaman, pengajaran dan kebajikan (Hashim Awang, 2002). Semua unsur ini dilihat memiliki fungsi dan kemanfaatan yang khusus dalam kehidupan. Teori ini dianggap amat bermakna, bersesuaian dan mampu menganalisis karya sastera Melayu yang dihasilkan oleh para penulis terutama pengkarya tempatan. Muhammad Haji Salleh (2008) menegaskan bahawa konsep keindahan bahasa pasti dipinjam dan dipupuk oleh bangsa yang menciptakannya melalui waktu dan berubah mengikut perjalanan waktu.

Teori Pengkaedahan Melayu dilahirkan dengan bertunjangkan dua dasar pengkaedahan yang utama iaitu Pengkaedahan Alamiah dan Pengkaedahan Keagamaan. Kedua-dua pengkaedahan ini adalah berpadu, saling berkaitan antara satu sama lainnya dan saling kukuh memperkukuhkan. Pengkaedahan pertama dibentuk dengan berlandaskan kepada dua dasar utama yang berkaitan langsung dengan kehidupan. Menurut Hashim Awang (2002), kaedah yang berteraskan cara atau sikap hidup masyarakat Melayu yang menjadikan alam sebagai sebahagian daripada dirinya. Alam itu dijadikan faktor utama untuk memberikan mereka pekerjaan atau mata pencarian, pengalaman, pengajaran dan kebajikan. Pengkedahan Alamiah diwujudkan menerusi tiga rangkaian pendekatan iaitu Pendekatan Gunaan, Pendekatan Moral dan Pendekatan Firasat.

Pendekatan Gunaan melihat karya sastera sebagai suatu objek atau benda ciptaan dalam alam iaitu sama seperti objek-objek lain ciptaan Allah dan karya sastera juga merupakan suatu kejadian yang mempunyai sebab, hikmat, fungsi, tujuan, ukuran serta imbangan. Selain itu, karya sastera yang dicipta oleh pengarang dengan izin Allah khususnya karya-karya sastera Melayu, paling utama diteliti dari sudut kegunaan atau kemanfaatan penghasilannya yang dapat diberikan kepada pembaca atau masyarakat, baik dilihat pada tahap luaran (ekstrinsik) mahu pun dalaman (intrinsik). Dengan kata lain, karya sastera ditanggapi sebagai alat yang boleh memberi guna kepada manusia dan kehidupannya pada kedua-dua peringkat zahir dan batin. Justeru, dalam keadaan yang sama juga dapat kita lakukan terhadap penelitian dan penilaian pada karya-karya sastera. Berdasarkan pegangan begini, maka sastera dapat dilihat sebagai suatu objek alam yang kejadiannya mempunyai sebab, hikmat dan fungsinya yang tertentu. Di samping itu, kejadiannya itu paling utama boleh dimanfaatkan oleh manusia sama seperti kejadian objek-objek alam yang lain (Hashim Awang, 2002).

Pendekatan Moral bermaksud pengiktibaran dan pengajaran iaitu kesedaran untuk berfikir dan bertindak dengan mengambil contoh tauladan atau pengajaran di sebalik sesuatu kejadian atau pengalaman. Dengan demikian, ia adalah bertepatan untuk menanggapi sastera dalam pendekatan ini sebagai suatu penciptaan seni yang menyingkapkan dan menyumbangkan pengalaman serta pengetahuan. Pengalaman yang tersingkap adalah pengalaman pengarang yang dirakamkan atau dipaparkan dalam karya sastera yang terdiri

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13th – 14th December 2020

daripada pemerian mengenai pelbagai ragam atau jenis dan perlakuan serta perbuatan manusia yang dapat pula memperkayakan pengalaman dan juga menjadi cermin perbandingan atau pengibaratan kepada pembaca. Tegasnya, dari karya sastera pembaca bukan sahaja dapat menimba dan memperkayakan pengalaman serta pengetahuan tetapi juga mengambil contoh tauladan atau kias ibarat untuk memperbaiki serta mempertingkatkan kehidupan. Karya sastera dalam pendekatan ini harus mampu mencontohi kitab suci Al Quran yang memiliki pelbagai nilai ketinggian iaitu di dalamnya terkandung pelbagai ilmu pengetahuan, pengisahan berbagai-bagai jenis dan perlakuan manusia untuk dipelajari dan dicontohi, penyampaian nasihat dan ajaran serta kepentingan kepada bentuk dan keindahan. Bersesuaian dengan sifatnya yang sedemikian itu, sastera dalam konteks ini dapat memberikan kemanfaatannya yang lebih jauh dan lebih besar daripada fungsinya sebagai suatu benda, maksudnya sastera kini menyingkapkan dan memberikan pengalaman (Hashim Awang, 2002).

Pendekatan Firasat pula ditunjangi dengan tanggapan bahawa sastera adalah suatu kejadian alam yang merakamkan dan memanifestasikan pengalaman hidup dan di sini kejadian tersebut dikaitkan dengan mimpi iaitu suatu pengalaman hidup yang oleh masyarakat Melayu sering dianggap sebagai bermakna kepada kehidupan (Hashim Awang, 2002). Namun, pengalaman hidup yang dimaksudkan dalam konteks ini adalah lebih mengarah kepada pengalaman penciptaan karya yang penuh dengan daya kemisterian dan keimaginatifan iaitu ia menyamai seperti suatu kejadian "mimpi" yang ternyata juga amat misteri sifatnya. Pendekatan psikoanalisis dalam tradisi teori dan kritikan kesusasteraan di barat, memang menyamakan penciptaan sebuah karya sastera dengan kemunculan sebuah mimpi yang mengandungi lapisan-lapisan "*latent content*" dan "*manifest content*" dengan berasaskan kepada dorongan keinginan jiwa bawah sedar manusia. Dalam tanggapan atau kepercayaan masyarakat Melayu, mimpi bukan terjadi kerana dorongan sedemikian tetapi kerana kehendak Allah yang diberikan dalam berbagai-bagai keadaan mengikut jenis manusia pemimpi. Misalnya, mimpi yang benar dan baik termasuk wahyu selalu terjadi pada para rasul dan nabi manakala mimpi jahat yang dipengaruhi syaitan dan mimpi akibat refleksi mental kerap berlaku di kalangan manusia biasa.

Pendekatan Firasat tertumpu kepada hakikat bahawa sastera itu mengandungi dua lapis makna, iaitu lapis makna yang tersurat dan lapis makna yang tersirat. Melalui Pendekatan Firasat, maksud pantang larang yang yang tersurat akan dapat dikaji bagi mendapatkan lapis yang tersirat iaitu makna yang lebih besar. Untuk memahami makna yang tersirat memerlukan pentafsiran. Kerja mentafsir atau mentakbir ini dapat dilakukan melalui pemahaman pada penanda-penanda yang terdapat pada lapis yang tersurat serta pada proses berfikir secara kritis dan terbuka yang berpandukan kepada akal (gerak hati) dan ilmu pengetahuan.

Pengkaedahan Keagamaan ditakrifkan sebagai pendekatan yang berteraskan kepada nilai keimanan dan ketakwaan yang bersendikan akidah agama Islam. Sumber yang paling besar dan utama yang menjadi rujukannya ialah al-Quran dan Hadis manakala pembentukannya bertujuan untuk menonjolkan sifat-sifat keagungan Allah dan mempertingkatkan ketakwaan terhadapNya (Hashim Awang, 2002). Pengkaedahan ini bersendikan nilai-nilai estetika dan moral yang bersandarkan kepada pegangan yang benar dan kudus iaitu kepercayaan kepada kewujudan Allah dan keyakinan kepada sifat-sifat kebesaran, kekuasaan, kekayaan dan kesempurnaanNya. Dengan ciri-ciri itulah maka daripada kaedah suci ini, ditimbulkan juga tiga pendekatan yang masing-masing disebut sebagai pendekatan dakwah, pendekatan kemasyarakatan dan pendekatan seni dan ketiga-tiganya adalah saling berhubungan antara satu sama lain (Hashim Awang, 2002).

Pendekatan Dakwah melihat sastera sebagai suatu hasil karya yang menekankan beberapa aspek yang menyentuh segala persoalan yang berkaitan dengan pengutaraan kebesaran dan sifat-sifat keagungan Allah SWT dalam hasil kesusasteraan Islam. Sastera juga

eISBN 978-967-2426-22-6
13th – 14th December 2020

dilihat sebagai suatu wadah untuk mempertingkatkan nilai ketakwaan seseorang insan terhadap Allah SWT. Menurut Hashim Awang (2002), sastera dalam maksud tanggapan kudus sebegini sewajarnya mengandungi persoalan-persoalan yang memaparkan tentang sifat-sifat kemuliaan dan ketinggian Allah SWT dan sastera di sini dapat dijadikan sebagai "kitab" untuk manusia mengenali dengan lebih dekat tentang diri dan sifat Allah SWT yang bertujuan untuk menambahkan rasa kecintaan, ketaqwaaan dan keesaan yang lebih besar dan suci kepada Allah SWT. Perasaan cinta dan taat terhadapNya diperjelaskan di dalam Al-Quran untuk hamba-hambaNya iaitu Allah bersifat Ar-Rab, Ar-Rahman, Ar-Rahim dan Al-Malik. Oleh itu, manusia akan mulai bertambah yakin dan bahagia sekiranya mereka mengetahui mengenai kesempurnaan, kekuasaan, kemuliaan, kehebatan dan keagunganNya.

Pendekatan kemasyarakatan dianggap sebagai alat pendedahan segala macam persoalan yang bertujuan untuk melihat unsur kebaikan dan keadilan dalam masyarakat seperti yang dituntut oleh agama Islam. Hashim Awang (2002) menyatakan sastera sebagai satu hasil seni yang mengutamakan keintelektualan dan keindahan. Karya sastera juga dilihat sebagai alat untuk mencari konsep kebaikan dan keadilan mengikut kaca mata Islam iaitu seni yang mengutamakan keintelektualan dan keindahan. Karya sastera juga dilihat sebagai alat untuk mencari konsep kebaikan dan keadilan mengikut kaca mata Islam iaitu di samping mengamalkan falsafah amar makruf nahi mungkar dengan mengajak melakukan kebaikan dan meninggalkan kejahatan mengikut landasan-landasan Islam yang benar dan betul. Konsep amar makruf dan nahi mungkar bukan merujuk kepada konteks ibadat yang khusus atau fardu ain semata-mata tetapi meliputi seluruh sistem kehidupan manusia di muka bumi. Keupayaan karya sastera merupakan cara yang efektif untuk amar makruf nahi mungkar tidak dapat dinafikan dalam kehidupan. Dalam konteks ini, Hashim Awang (2002), menganggap sebagai penciptaan yang berfungsi khusus dengan membawakan perutusan atau *mission* besar untuk mensejahterakan dan membahagiakan umat manusia. Di sini, unsur amanat diletakkan pada tempat teratas di samping unsur-unsur lain seperti bentuk, teknik penceritaan dan gaya bahasa tanpa sama sekali mengabaikan kehadiran keindahan. Dengan tanggapan sedemikian, sastera dikatakan sebagai wadah untuk mendedahkan rupa bentuk kehidupan manusia yang baik dan sempurna yang diredai Allah.

Pendekatan seni digunakan untuk meneliti nilai estetika yang ada pada karya tersebut. Menurut Hashim Awang (2002), pendekatan ini menilai aspek unsur keindahan dalam karya sastera dan menjadikan unsur keindahan tersebut sebagai persoalan pokok. Keindahan yang dimaksudkan ialah keindahan yang berlandaskan nilai-nilai estetika Islam dan tidak bertentangan dengan akidah, ajaran dan fahaman Islam. Selain itu, pendekatan seni hendaklah dilihat bersama-sama logiknya dengan merujuk kepda penggunaan nilai-nilai keindahan dalam Islam dan bukan untuk diberi penghormatan yang tinggi terhadap penggunaan imaginasi yang tidak terbatas atau lebih mementingkan keseronokan indera tetapi hendaklah mempertingkatkan daya keintelektualan serta sifat kemanusiaan. Contohnya ketika hendak menggambarkan watak yang sedang mengalami perkembangan iman dan kesedaran ilmiah hendaklah diolah dengan cara yang meyakinkan supaya tidak timbul kepura-puraan dan tidak realistik (Hashim Awang, 2002). Dalam bentuknya yang lebih tegas, dapat disebutkan bahawa keindahan itu berteraskan tauhid. Keindahan itu dapat dikenalpasti menerusi pelbagai aspek atau unsur pembinaannya yang berbentuk harafiah dan dalaman, gaya penceritaan, kaedah pendedahan tema dan watak atau pemakaian sudut pandangan dan gaya bahasanya. Tambahan daripada pemahaman ini, penting untuk difahami bahawa pendekatan seni merujuk kepada kepada keindahan luaran dan keindahan dalaman.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Analisis Teks

Keakraban masyarakat Melayu tradisional terhadap alam menzahirkan tanggungjawab manusia dan sebagai khalifah Allah yang diamanahkan untuk memelihara dan memakmurkan bumi ini. "Sesungguhnya bumi ini diwarisi kepada hamba-hambaKu yang soleh" (Surah Al-Anbiyaa, ayat 105). Manusia telah menerima tanggungjawab untuk menjadi khalifah Allah seperti yang disebut di dalam al-Quran : "Kami telah menawarkan amanah kepada langit, bumi dan bukit tetapi mereka semuanya enggan menanggung dan takut darinya dan manusia menerimanya" (Al-Ahzab, ayat 72). Hal ini selaras dengan pendapat Isma'il Raji Al Faruqi (2000: 63) yang menyatakan bahawa: Dalam Islam, alam itu ciptaan dan kurniaan. Sebagai ciptaan, ia sempurna dan tersusun dari segi teologi; sebagai kurniaan, ia merupakan kebaikan yang suci yang diletakkan pada bahu manusia. Tujuannya ialah untuk memudahkan manusia melakukan kebaikan dan mencapai kebahagiaan. Kehidupan masyarakat Melayu tradisional juga amat terpengaruh oleh pelbagai jenis tumbuhan yang terdapat di sekelilingnya.

Dalam Al-Quran, banyak disebut tentang alam tumbuhan dan fungsinya kepada manusia. Tumbuhan sebagai makanan disebut di dalam Al-Quran menerusi ayat 95, Surah Al-An'aam yang bermaksud: "Sesungguhnya Allah yang membelah dan menumbuhkan butir dan biji. Dia mengeluarkan yang hidup dari yang mati dan mengeluarkan yang mati dari yang hidup. Demikian itulah kekuasaan Allah. Maka mengapa kamu tidak mengindahkannya dan tidak mahu menyembahNya?". Ayat 99, surah Al-An'aam turut membicarakan tentang alam tumbuhan yang bermaksud: "Dialah yang menurunkan air (hujan) dari langit (awan), kemudian Kami (Allah) menumbuhkan beraneka ragam tumbuh-tumbuhan. Kemudian Kami keluarkan daun dan ranting yang menghijau. Lantas Kami keluarkan daripadanya biji dan buah yang lebat. Dan dari pohon kurma mengurai tangkai-tangkai yang menjulai dan kebun-kebun anggur, zaitun dan delima yang serupa dan berlainan bentuknya. Perhatikanlah waktu tumbuh-tumbuhan itu berbuah dan di waktu matang buah itu. Sesungguhnya semua itu adalah bukti-bukti kekuasaan Allah bagi kaum yang beriman." Berpandukan kalam Allah ini, jelas terbukti bahawa alam tumbuhan memberi pelbagai manfaat kepada kehidupan manusia.

Tumbuhan sebagai Panduan Menjaga Akhlak dan Peribadi Mulia

Secara umumnya akhlak difahami sebagai suatu tingkah laku atau kelakuan yang terbit daripada motivasi atau rangsangan yang mendorong seseorang bertindak dan lama-kelamaan menjadi adat kebiasaan dalam kehidupan (Hasan Mohd. Ali, 1996). Gabungan budi pekerti luhur dan akhlak mulia mampu mewujudkan masyarakat yang harmonis, jiwa yang tenang, keyakinan yang kukuh dan tidak mudah terpengaruh dengan sebarang ancaman (Nik Azis Nik Pa, 1990: 162). Seterusnya Zakaria (1991: 164) mendefinisikan akhlak adalah nilai yang berpengaruh dalam Islam. Akhlak murni amat dituntut oleh Islam seperti yang diamalkan oleh Nabi Muhammad SAW. Hal ini dijelaskan menerusi pantang larang **orang perempuan dilarang memanjat pokok, nanti kalau mati mayat susah dikapan** (Wan Ramli Wan Muhammad dan Hanapi Dollah, 1999: 29).

Pokok merupakan tumbuhan berkayu dalam alam tumbuhan. Sejenis tumbuhan ditakrifkan sebagai pokok sekiranya tumbuhan tersebut mempunyai akar, batang, dahan, dan daun. Pokok juga mempunyai tempoh hayat yang lebih lama berbanding tanaman yang lain. Beberapa spesies pokok tumbuh sehingga ketinggian 100 meter atau 300 kaki dan terdapat pokok yang mampu untuk hidup sehingga beberapa abad dan ada yang sehingga mencecah seribu tahun. Pokok yang biasanya tumbuh tinggi tidak wajar dipanjat oleh orang perempuan kerana kebiasaannya memanjat pokok yang tinggi adalah pekerjaan orang lelaki. Perbuatan memanjat pokok oleh orang perempuan pastinya tidak manis dipandang oleh masyarakat kerana orang perempuan lazimnya terkenal dengan sifat lemah lembut dan bersopan santun.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Pantang larang ini melarang orang perempuan daripada memanjat pokok, nanti jika meninggal mayat susah dikapan. Larangan ini seboleh-bolehnya akan dipatuhi kerana jika mayat sukar dikapan, pasti akan menimbulkan keaiban pada mayat dan keluarganya dan hal ini perlu dielakkan. Justeru, pantang larang ini sebenarnya mahu melihat anak gadis supaya bersopan santun dan berkelakuan baik. Hal ini selaras dengan pendapat (Ghazali Darusalam, 1997: 1) yang menyatakan bahawa bagi membentuk peribadi dan budi pekerti mulia seseorang itu harus menumpukan usaha ke arah kesempurnaan akhlak dan moral seperti yang dituntut oleh Islam Jelaslah di sini, pokok sebagai unsur alam tumbuhan di dalam pantang larang ini berfungsi sebagai panduan menjaga akhlak dan peribadi mulia khususnya bagi anak gadis.

Tumbuhan sebagai Panduan Menjaga Kesihatan

Pantang larang **budak-budak tidak boleh makan sirih, nanti mengigau malam** (Wan Ramli Wan Muhammad Dan Hanapi Dollah, 1999: 40) menggunakan unsur tumbuhan sirih. Sirih atau nama saintifiknya *piper bettle* merupakan tumbuhan tradisional yang banyak digunakan oleh masyarakat Melayu. Amalan memakan sirih merupakan satu tradisi yang telah diamalkan sejak lama dahulu. Sirih juga dikunyah sebagai pencuci mulut dan makanan sampingan pada waktu lapang (Arif Akmal, 2006: 26). Amalan bersirih juga mempunyai falsafah yang tersendiri, malah sirih pinang telah meresap ke dalam budaya orang Melayu samada secara simbolik, aspek perubatan, magis dan makanan. Tradisi makan sirih atau bersirih ini merupakan warisan budaya silam yang telah wujud lebih daripada 3,000 tahun yang lampau (M. Sheppard, 1972).

Amalan memakan sirih ini adalah sinonim dengan masyarakat di Asia Tenggara termasuklah Malaysia. Sirih biasanya dimakan oleh golongan tua. Sirih dimakan bersama pinang, kapur dan gambir yang menyebabkan rasa sirih sedikit pedas dan kurang sesuai untuk dimakan oleh kanak-kanak. Tambahan pula, buah pinang yang keras menyebabkan kanak-kanak susah untuk mengunyah dan menghadamnya. Oleh itu, jika sirih dimakan oleh kanak-kanak, rasa sirih yang pedas itu akan tetap terkesan hingga ke waktu tidur sehingga membawa kepada mengigau malam. Pantang larang ini bermaksud bahawa budak-budak dilarang memakan sirih dan jika dimakan, semasa tidur malam mereka akan mengigau. Oleh itu, kanak-kanak pasti tidak mahu mengigau malam dan mematuhi larangan ini. Secara tersiratnya, jika kanak-kanak mengigau sewaktu tidur, maka sudah pasti tidur mereka tidak nyenyak dan terganggu. Perkara ini seterusnya akan mengganggu kesihatan mereka.

Tumbuhan sebagai Panduan Keperluan Hidup

Tumbuhan sebagai panduan keperluan hidup dapat dilihat menerusi pantang larang **kanak-kanak jangan makan buah kekabu muda, nanti sakit kepala** (Wan Ramli Wan Muhammad dan Hanapi Dollah, 1999: 25). Pokok kekabu merupakan sejenis pokok yang amat dihargai pada suatu masa dahulu. Hal ini kerana buahnya berbentuk kekapas, merupakan satu gentian pelbagai guna yang penting. Antara lain kekabu masih digunakan sebagai isian bantal dan tilam cara tradisional. Bantal atau tilam yang disi dengan kekabu mampu bertahan sehingga 20 tahun, tetapi ia perlu dijauhkan dari air, dan dijemur dan dipukul dengan pemukul rotan bagi menyingkir debu kekabu yang telah hancur. Pokok kekabu sering terdapat di kampung berdekatan rumah kerana tumbuhan ini amat berguna. Pokok kekabu memang dikenali oleh penduduk Malaysia, terutamanya bagi penduduk luar bandar. Nama botani pokok kekabu ialah *ceiba pentandra* dan mempunyai ketinggian 30 m di Malaysia. Buah kekabu muda boleh dimakan sama ada dibuat sayur, gulai dan sebagainya.

Pantang larang ini melarang kanak-kanak agar tidak memakan buah kekabu muda kerana dikhuatiri akan mendapat sakit kepala. Sakit kepala merupakan satu penyakit yang

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13th – 14th December 2020

sering dialami oleh manusia tanpa mengira peringkat umur temasuk kanak-kanak. Apabila seseorang mengalami sakit kepala, seluruh rutin hariannya akan terjejas dan seboleh mungkin setiap manusia mahu mengelak daripada sakit kepala. Pasti kanak-kanak mematuhi larangan ini untuk mengelakkan daripada sakit kepala. Namun secara tersiratnya, kanak-kanak dilarang memakan buah kekabu muda kerana akan menyebabkan berlaku kekurangan buah kekabu yang matang untuk diproses menjadi kekabu untuk isian bantal dan tilam yang memang menjadi keperluan setiap keluarga pada zaman dahulu. Tambahan pula lazimnya apabila kanak-kanak memakan buah seperti buah kekabu muda, mereka sering membazir dan tidak memakannya sehingga habis dan dibuang begitu sahaja kerana rasanya yang kurang enak. Justeru, pantang larang ini mengajar masyarakat supaya menjaga keperluan hidup dengan sebaiknya dan tidak dibazirkan.

Pantang larang **pantang ditanam pokok celagi pada hari Selasa, nanti menjadi tempat persinggahan hantu** (Wan Ramli Wan Muhammad, 1999: 46) turut berkait dengan panduan keperluan hidup. Pokok celagi atau asam jawa sebenarnya merupakan tumbuhan anugerah Tuhan yang mempunyai pelbagai guna. Celagi atau asam jawa merupakan komponen utama dalam masakan seharian dan turut berkhasiat dalam perubatan. Maksud pantang larang ini ialah melarang pokok celagi ditanam pada hari Selasa kerana dikhuatiri akan menjadi tempat hantu singgah. Apabila disebut tentang hantu, sudah pasti pantang larang ini akan dipatuhi seboleh mungkin kerana memikirkan akan kesan buruk yang akan berlaku sekiranya pantang larang ini dilanggar. Hal ini bertepatan dengan pendapat Ismail Hamid (1995) yang menyatakan bahawa umumnya kepercayaan terhadap pantang larang selalunya dikaitkan dengan kuasa-kuasa atau kekuatan ghaib seperti semangat, penunggu, hantu atau jin, tempat keramat dan sebagainya. Menurutnya pantang larang ini terbentuk daripada kepercayaan terhadap kuasa ghaib.

Manusia sebagai khalifah di muka bumi ini amat digalakkan untuk bercucuk tanam atau berbudi kepada tanah. Anas Ibn Malik r.a. pernah meriwayatkan bahawa Nabi SAW pernah bersabda yang maksudnya: “Tiadalah seseorang Islam yang menanam suatu pokok atau menanam suatu pokok tanaman (kecil), sesudah besar dan berbuah lalu dimakan oleh burung atau oleh seseorang manusia atau binatang melainkan akan menjadi sedekah (berpahala) kepadanya” (Sahih Al-Bukhari). Jika diteliti makna tersirat sebalik larangan ini ialah supaya menanam pokok celagi pada hari lain iaitu seelok-eloknya pada hari Jumaat iaitu penghulu segala hari yang dipercayai akan membawa berkat. Hal ini memandangkan pokok celagi dan buahnya amat berguna untuk keperluan manusia seharian. Oleh itu, pokok ini harus ditanam pada hari yang baik agar tumbuh subur dan bermanfaat kepada manusia.

Allah SWT menjadikan Jumaat hari yang sangat istimewa sehingga digelar penghulu segala hari. Kelebihan hari Jumaat dapat kita fahami melalui hadis Rasulullah SAWyang bermaksud: “Sesungguhnya hari Jumaat adalah penghulu segala hari yang paling agung di sisi Allah, ia lebih besar di sisi Allah dari hari raya Aidiladha dan Aidilfitri. Padanya ada lima perkara, iaitu hari Allah menjadikan Adam, hari Allah menurunkan Adam ke bumi, padanya Allah mematikan Adam dan padanya juga ada satu saat apabila seseorang itu tidak memohon sesuatu melainkan Allah memberikannya selagi dia tidak memohon sesuatu yang haram dan padanya (hari Jumaat) berlakulah hari kiamat” (Riwayat Ibnu Majah). Jumaat adalah hari yang Allah hadiahkan kepada umat Islam. Pada hari Jumaat juga, Allah mewajibkan setiap Muslim berkumpul tanpa mengira kaya, miskin, berpangkat atau tidak untuk menghidupkan syiar Jumaat dengan mendengar khutbah serta solat bersama-sama. Dapat disimpulkan di sini bahawa pantang larang ini berfungsi sebagai panduan untuk keperluan hidup dengan menanam pokok celagi pada hari yang baik untuk mendapat keberkatan.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Tumbuhan sebagai Panduan Hubungan Baik

Fungsi tumbuhan sebagai panduan hubungan baik dapat dilihat menerusi pantang larang **jangan membawa kapur semasa memetik sirih, nanti pokok sirih cepat mati** (Wan Ramli Wan Muhammad, 1999: 4). Sirih dapat dibahagikan kepada empat fungsi yang utama iaitu sebagai gambaran simbolik selain daripada kegunaan dalam aspek perubatan, magis dan makanan (D. F. Rooney, 1993). Sirih juga berfungsi sebagai gambaran simbolik dan status masyarakat selain daripada melambangkan kesantunan masyarakat, nilai estetika serta kesusasteraan (Abdul Hamid, 2001). Amalan memakan sirih menjadi budaya masyarakat Melayu sejak zaman dahulu lagi. Pantang larang ini menjelaskan larangan membawa kapur semasa memetik sirih kerana dikhuatiri pokok sirih itu akan mati kelak. Pasti larangan ini akan dipatuhi kerana jika pokok sirih mati, maka sukar bagi mereka untuk mendapatkan daun sirih kerana daun sirih amat berguna dalam masyarakat Melayu lama.

Sirih melambangkan rendah diri dan kehormatan sepertimana dapat diperhatikan daripada pepohon sirih yang menjalar dan memanjat tanpa merosakkan tumbuhan perumah. Sirih lazimnya dimakan bersama kapur, pinang dan gambir sebagai pasangannya. Kapur melambangkan hati yang putih, bersih dan tulus. Walau bagaimanapun, sekiranya berlaku provokasi, ia akan berubah menjadi lebih agresif. Sifat ini dapat dilihat daripada asal kapur hasil pemprosesan cangkerang kerang atau batu kapur yang berwarna putih bersih tetapi boleh memberi tindak balas yang melecurkan dalam keadaan tertentu. Begitu juga halnya dengan sirih dan kapur dalam pantang larang ini. Maksud tersiratnya ialah kapur yang sifatnya agresif harus menjaga hubungan baiknya dengan sirih yang melambangkan rendah diri dan kehormatan agar tidak tercalar. Pentingnya menjaga hubungan persaudaraan dalam Islam ditegaskan oleh Allah SWT dalam surah Al-Hujurat, ayat 10 yang bermaksud: “Sesungguhnya orang yang beriman itu adalah bersaudara, maka damaikanlah antara dua saudara kamu yang bertelingkah itu; dan bertakwalah kepada Allah SWT supaya kamu beroleh rahmat.” Hubungan kekeluargaan dan persaudaraan ini sangat penting bagi masyarakat Melayu bagi menjamin keutuhan mereka dalam masyarakat dan menimbulkan suasana kemesraan dalam masyarakat. Hal ini selaras dengan pendapat Zainudin Hashim (2008: 26) yang menyatakan bahawa persaudaraan itu menjadikan orang mukmin bertambah teguh dan kuat, persaudaraan itu menimbulkan suasana kemesraan dalam kalangan masyarakat. Begitu juga dengan manusia yang harus sentiasa memelihara ikatan persaudaraan atau persahabatan demi menjamin keharmonian kehidupan dalam masyarakat.

Tumbuhan sebagai Panduan Menjaga Keselamatan

Pantang larang berkaitan menjaga keselamatan ialah **jangan tidur di atas pokok, nanti dimakan langsuir** (Wan Ramli Wan Muhammad dan Hanapi Dollah, 1999: 38). Pokok adalah salah satu daripada benda hidup yang terbesar di bumi dan hidup paling lama sehingga beberapa abad dan ada yang mencecah seribu tahun dengan ketinggian 100 meter atau 300 kaki. Pokok membekalkan makanan dan tempat untuk berlindung bagi banyak makhluk yang lain. Misalnya ada tumbuhan yang hidup pada dahan pokok atau memanjat batangnya. Kulat pula tumbuh di kulit pokok. Haiwan yang memanjat dan terbang pula tinggal di dahan-dahan pokok manakala bunga, buah dan biji benih pokok menjadi makanannya. Ada juga haiwan yang memakan daunnya atau mengunggis kayu atau kulitnya dan ada pula yang makan serangga yang hidup di atas pokok (Zubaidah Abdul Rahman, 1995: 78). Begitulah manfaat pokok yang cipta oleh Allah SWT kepada semua makhluk di muka bumi ini termasuk manusia.

Pantang larang ini bermaksud supaya jangan tidur di atas pokok, kelak dimakan oleh langsuir iaitu sejenis hantu yang amat menakutkan. Pasti anak-anak tidak berani tidur di atas pokok kerana takut dimakan hantu langsuir yang cukup menggerunkan. Menurut Hassan Baseri

eISBN 978-967-2426-22-6
13th – 14th December 2020

(1991: 39), ternyata kepercayaan yang bercorak animisme yang mempercayai kewujudan makhluk halus ini terus dipegang oleh orang Melayu walaupun telah menganuti agama Islam. Hal ini adalah kerana kepercayaan kepada animisme itulah yang menjadi asas kepada kebudayaan semua bangsa di dunia ini pada zaman lampau. Di sebalik pantang larang ini sebenarnya bertujuan untuk mengelakkan bahaya terjatuh kerana tidur di tempat yang tidak sepatutnya. Hal ini adalah kerana kedudukan pokok yang tinggi dan dahannya yang kecil adalah tidak sesuai untuk dijadikan tempat tidur oleh manusia. Tambahan pula pokok adalah tempat tinggal atau habitat semula jadi bagi binatang. Justeru, larangan ini secara tersirat adalah untuk menjamin keselamatan daripada sebarang mara bahaya seperti terjatuh dari pokok, diserang binatang liar seperti ular dan sebagainya yang mendatangkan kecederaan mahupun maut.

Pantang larang **ibu hamil tidak dibenarkan duduk di atas rumput tanpa melapik tikar atau kertas terlebih dahulu, ditakuti bayi yang akan lahir nanti mungkin melekat di dalam rahim seperti akar yang susah ditarik keluar** (Wan Ramli Wan Muhammad, 1999: 13) turut berkaitan dengan panduan menjaga keselamatan. Pantang larang ini menggunakan unsur alam tumbuhan iaitu rumput. Rumput adalah sejenis tumbuhan yang paling lazim terdapat di dunia. Rumput merupakan tumbuhan renek atau herba. Rumput boleh hidup di darat, sungai atau laut. Tumbuhan ini sungguh lasak dan dapat tumbuh hampir di mana-mana sahaja (Zubaidah Abdul Rahman, 1995: 44). Tumbuhan jenis ini merupakan sumber makanan yang penting bagi kebanyakan haiwan. Di dalam bidang pertanian, rumput biasanya dikaitkan sebagai ‘tumbuhan perosak’ dan selalunya dihapuskan dengan beberapa kaedah kawalan rumpai. Dalam bidang penternakan, rumpai boleh dijadikan makanan haiwan ternakan terutama lembu, kambing dan biri-biri. Rumput juga mempunyai banyak kegunaan di dalam bidang perubatan moden atau perubatan tradisional.

Pantang larang ini membawa maksud larangan terhadap ibu hamil duduk di atas rumput tanpa menggunakan alas kerana dibimbangi bayinya nanti akan susah untuk ditarik keluar kerana melekat seperti akar rumput di dalam rahim. Ibu hamil pasti akan mematuhi larangan ini kerana kesannya yang amat buruk. Namun jika diteliti maksud tersirat di sebalik pantang larang ini ialah untuk memastikan keselamatan ibu hamil semasa duduk di atas rumput. Hal ini kerana rumput turut menjadi habitat bagi sesetengah haiwan atau serangga berbisa seperti lipan, ular, kala jengking dan sebagainya. Oleh itu, pantang larang ini memberi peringatan kepada ibu hamil supaya menjaga keselamatan diri agar tidak digigit oleh haiwan berbisa tersebut di samping turut menjaga keselamatan bayi dalam kandungannya.

Tumbuhan sebagai Panduan Mendidik

Alam tumbuhan sebagai panduan mendidik dapat dilihat menerusi pantang larang **anak gadis tidak boleh dipukul dengan buluh dan bemban, nanti tidak dipinang orang** (Wan Ramli Wan Muhamamd, 1999: 42). Pantang larang ini bermaksud anak gadis tidak boleh dipukul dengan buluh atau bemban, nanti tidak akan ada orang masuk meminang. Ibu bapa sewajarnya menjauhi perlu menjauhi larangan ini untuk mengelakkan anak gadis mereka menjadi bahan bualan masyarakat kerana tidak dipinanorang. Buluh dan bemban merupakan tumbuhan yang fizikalnya berbentuk keras. Maksud tersirat di sebalik larangan ini ialah apabila buluh dan bemban digunakan untuk memukul anak gadis, pastinya akan meninggalkan kesan luka dan berdarah seterusnya turut meninggalkan parut yang mencacatkan kerana tubuh anak gadis adalah lembut dan tidak selasak anak lelaki.

Islam telah memberi panduan lengkap dalam mendidik anak-anak. Islam adalah agama yang menitikberatkan nilai kasih sayang. Oleh sebab itu, Nabi SAW telah dididik oleh Allah SWT seperti dijelaskanNya dalam firman yang bermaksud: "Dan jika kamu jenis yang keras

eISBN 978-967-2426-22-6
13th – 14th December 2020

hati nescaya ramai golongan yang berada di sekeliling kamu akan lari dan tidak berminat untuk menerima dakwah yang disampaikan" (Surah Ali-Imran, ayat 159). Ayat ini menjelaskan bahawa didikan harus diberi secara bijaksana dan berhemah bukan paksaan atau kekerasan. Oleh itu, konsep pendidikan anak juga mestilah berasaskan kepada ayat tersebut. Sejarah Nabi SAW juga membuktikan Baginda tidak pernah menggunakan kekasaran dalam mendidik walaupun kesalahan yang dilakukan sebahagian sahabat bercanggah dengan syariat Islam. Nabi SAW akan menjelaskan terlebih dahulu kesalahan yang dilakukan mereka di samping memberi jalan keluar dan penyelesaian kepada kesalahan itu. Jika ada yang masih ingkar, barulah kaedah rotan digunakan seperti disarankan oleh Al-Quran dalam isu solat, zina dan sebagainya. Hal ini dapat dilihat menerusi hadis Nabi SAW: "Didiklah anak kamu solat pada usia tujuh tahun dan rotanlah mereka apabila usia mereka menjangkau 10 tahun jika masih meninggalkan solat" (Hadis Riwayat Abu Dawud). Hadis ini menunjukkan bahawa kaedah mendidik dimulakan dengan galakan pada umur tujuh tahun. Selepas tiga tahun memberi tunjuk ajar secara berhemah, maka barulah Nabi SAW membenarkan ibu bapa untuk merotan anak yang masih ingkar terhadap arahan dan masih melakukan kesalahan serupa.

Merotan anak sememangnya dibenarkan dalam Islam selagi ia tidak memudaratkan dan tidak mencederakan anak. Bagi menjaga kebajikan anak, maka Islam meletakkan beberapa garis panduan rotan supaya ibu bapa dapat mematuhi panduan itu. Selain itu, ia juga mampu mendorong ibu bapa supaya tidak melampaui batas dalam mendidik sehingga akhirnya mendatangkan kemudaratan kepada anak. Antara garis panduan rotan dalam Islam ialah memastikan anak telah dididik menerusi kaedah pembelajaran terlebih dahulu sebelum rotan diguna pakai. Pastikan juga anak telah diberi peluang untuk berubah supaya mereka faham jika ibu bapa mengambil keputusan untuk merotan adalah disebabkan tindakan anak sendiri yang terus mengulangi kesalahan yang sama walaupun sudah dinasihatkan. Umur anak telah sampai 10 tahun ke atas atau umur yang layak untuk dirotan. Maknanya, ibu bapa tidak boleh merotan anak kecil. Sementara pemilihan rotan perlu sesuai dengan umur, tubuh dan kesalahan anak. Pastikan kadar rotan yang dikenakan sesuai dengan kesalahan, cara pukulan pula tidak akan mendatangkan kecederaan kekal kepada anak serta elakkan daripada sikap penderaan terhadap kanakkanak sama ada dari sudut mental dan fizikal. Jika ingin menegur dan menghukum sekalipun, maka gunakanlah rotan dan bukannya buluh atau bemban agar tidak mencederakan atau memudaratkan anak. Jelaslah pantang larang ini memberi panduan kepada ibu bapa dalam mendidik anak-anak secara berhemah.

Kesimpulan

Berdasarkan perbincangan ini, dapatlah disimpulkan bahawa tumbuhan berperanan penting dalam menyampaikan maksud tersirat dalam pantang larang Melayu. Antara ketersiratan makna yang dibincangkan ialah tumbuhan sering digunakan sebagai panduan untuk menjaga akhlak dan peribadi mulia, panduan menjaga kesihatan, panduan menjaga keperluan hidup, panduan menjaga hubungan baik, panduan menjaga keselamatan dan sebagai panduan mendidik. Jelas terbukti di sini bahawa masyarakat Melayu menterjemahkan tumbuhan dalam pantang larang yang mengandungi pengajaran atau peringatan serta nasihat yang baik bagi membina sifat peribadi yang mulia seperti bertatatertib, beradab sopan dan berhemah tinggi. Atas faktor inilah yang akan menyebabkan tercapainya matlamat kebajikan, ketaqwaan dan kesusilaan. Justeru, maka fungsi tumbuhan dalam pantang larang Melayu ini perlu ditafsirkan maknanya secara tersirat agar selari dengan budaya masyarakat Melayu dan ajaran Islam seterusnya membentuk amalan hidup yang bertatasusila atau tingkah laku yang syumul, baik dan harmoni.

eISBN 978-967-2426-22-6
13th – 14th December 2020

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13th – 14th December 2020

PENILAIAN SUMATIF DALAM KURSUS PEMAKANAN HALAL: PERBANDINGAN SKOR PENCAPAIAN AKADEMIK

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Abstrak: *Penilaian sumatif ialah jenis penilaian yang lazim digunakan dalam proses pengajaran dan pembelajaran sesebuah kursus akademik. Namun begitu, kepelbagaian kaedah penilaian sumatif lazim memperlihatkan tahap pencapaian yang berbeza. Objektif kajian ini adalah untuk membandingkan skor pencapaian akademik yang melibatkan penilaian sumatif dalam kursus pemakanan halal. Kajian melibatkan pelajar tahun akhir kursus pemakanan halal di peringkat diploma (n=65) di Universiti Teknologi MARA. Penilaian sumatif dibuat menggunakan kaedah: (a) Laporan Bertulis; dan (b) Ujian Bertulis. Perbandingan statistik dibuat menggunakan analisis Ujian-t menerusi perisian IBM SPSS Statistics. Keputusan analisis memperlihatkan perbezaan signifikan dicatatkan pada skor Laporan Bertulis (M=24.02, SD=2.32) berbanding Ujian Bertulis (M=23.22, SD=2.53) dengan; t(64)=1.999, p=0.05. Kelebihan kaedah Laporan Bertulis berbanding Ujian Bertulis diperbincangkan. Beberapa cadangan bagi kajian akan datang dikemukakan.*

Kata Kunci: *Pencapaian Akademik; Pemakanan Halal; Penilaian Sumatif*

Pengenalan

Penilaian sumatif ialah jenis penilaian yang lazim digunakan dalam proses pengajaran dan pembelajaran sesebuah kursus akademik. Namun begitu, kepelbagaian kaedah penilaian sumatif lazim memperlihatkan tahap pencapaian yang berbeza. Penggunaan suatu kaedah penilaian sangat penting dalam meningkatkan prestasi akademik. Secara umum, terdapat dua kaedah penilaian akademik utama digunakan, iaitu penilaian sumatif dan penilaian formatif (Lambert & Lines, 2013; Dixson & Worrell, 2016). Kedua-dua kaedah ini saling berkorelasi dalam menilai sesebuah pencapaian akademik (Dolin et al., 2018). Penilaian sumatif lazimnya menggunakan beberapa parameter keberkesanan kepada draf akhir untuk mengukur hasil pembelajaran (Oermann et al., 2016; Kibble, 2017). Manakala penilaian formatif dijalankan semasa proses pengembangan bahan untuk memberi maklumat penambahbaikan dengan cara mengulas draf awal (Fisher & Frey, 2014; Dolin et al., 2018). Penilaian sumatif bertujuan untuk memberikan maklumat pencapaian hasil pembelajaran dalam tempoh waktu tertentu. Manakala tujuan utama penilaian formatif pula dilihat sebagai membantu proses pembelajaran (Black, 2016). Antara jenis penilaian sumatif yang lazim digunakan ialah: (a) laporan bertulis; dan (b) ujian bertulis.

Penulisan laporan adalah kaedah penilaian yang penting di peringkat universiti dalam pelbagai kursus akademik (Banta & Palomba, 2014; McCarthy, 2015). Maklum balas itu adalah

eISBN 978-967-2426-22-6
13th – 14th December 2020

aspek utama dalam proses penilaian dari segi peningkatan prestasi dan pencapaian pelajar (Nicol, 2010; Harris et al., 2014). Penilaian penulisan laporan lazim menggunakan parameter tertentu, iaitu (Hering, 2019): (a) kejelasan penyataan analitikal dan teknikal (fakta, statistik, hipotesis); (b) kejelasan tentang teori baru dan teori lampau; dan (c) kejelasan tentang ulasan kepada topik yang diperbincangkan. Berdasarkan parameter-parameter tersebut, perbandingan skor pencapaian akademik yang melibatkan penilaian sumatif dalam kursus pemakanan halal difokuskan dalam kajian ini.

Komponen dan Struktur Penilaian Sumatif

Penilaian sumatif seperti laporan bertulis dan ujian bertulis mempunyai komponen dan struktur yang berbeza. Laporan bertulis menghendaki pelajar membina sebuah penulisan pengkajian berdasarkan topik kajian yang tertentu. Penentuan topik pengkajian lazimnya dikemukakan sendiri oleh pelajar setelah melakukan pra-pengkajian. Namun, terdapat juga kelaziman topik pengkajian ditentukan oleh pensyarah atau guru kepada pelajar. Komponen laporan bertulis lazimnya mengadaptasi komponen berikut (Brennan, 2008):

(a) Objektif kajian dan kepentingannya. Komponen ini melibatkan keupayaan pelajar dalam mengenal pasti objektif kajian yang mempunyai ciri-ciri khusus. Objektif kajian tersebut perlulah bersifat spesifik, datanya boleh diurus, dapat dicapai, kajian yang realistik dan relevan.

(b) Kajian literatur. Komponen ini menghendaki pelajar membuat ringkasan kajian-kajian lampau yang telah dipilih. Kemudian, pelajar dikehendaki untuk mengkaji dan mengulas kajian-kajian lampau dalam topik yang dibincangkan.

(c) Analisis data dan perbincangan. Bahagian analisis data menghendaki pelajar untuk menggunakan pendekatan sama ada kuantitatif atau kualitatif. Keputusan analisis seterusnya menghendaki pelajar untuk membincangkan dengan membandingkannya dengan hasil kajian-kajian lampau.

(d) Kesimpulan. Komponen ini menghendaki pelajar untuk membuat rumusan kepada analisis dan perbincangan yang telah dijalankan. Selain itu, ia juga perlu dimuatkan dengan cadangan-cadangan untuk kajian-kajian yang akan datang dalam topik yang sama.

Ujian bertulis pula memerlukan persediaan rapi di pihak pembuat soalan sebelum diserahkan kepada pelajar untuk menjawabnya dalam peruntukan masa tertentu. Persediaan dalam pembinaan soalan ini lazimnya bergantung kepada kesediaan kos, masa dan tenaga kerja sedia ada. Selain itu, sesi semakan soalan yang telah siap dibina juga lazim dijalankan bersama rakan bersepakaran untuk mengesahkan kebolehpercayaan soalan. Schuwirth dan van der Vleuten (2003) mengulas beberapa kaedah soalan dalam ujian bertulis:

(a) Soalan pilihan “betul atau salah”. Kelebihan utama soalan jenis ini adalah sifatnya yang ringkas dan padat. Soalan juga dapat dijawab dalam masa yang singkat dan pembinaannya dapat mencakupi hampir seluruh silibus. Walau bagaimanapun, soalan seperti ini mempunyai kelemahan tertentu. Pertama, soalannya agak sukar untuk dibina dengan sempurna. Penyataan yang dikemukakan dalam soalan tersebut perlulah sama ada benar atau palsu secara mutlak. Kedua, jika pelajar menjawab “salah” pada soalan dengan betul, dapat disimpulkan bahawa pelajar hanya mengetahui yang penyataan itu salah. Jawapan pelajar tersebut tidak bermaksud telah mereka ketahui penyataan yang betul.

(b) Soalan aneka pilihan. Soalan aneka pilihan adalah antara soalan paling lazim dalam ujian bertulis. Kelebihan utama jenis soalan ini adalah mempunyai kebolehpercayaan yang tinggi untuk setiap kali ujian, apabila pelajar hanya diperuntukkan masa yang singkat

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13th – 14th December 2020

untuk menjawab. Selain itu, soalan jenis ini lazimnya lebih mudah dibina berbanding soalan "betul atau salah". Soalan aneka pilihan ini juga dapat menguji lebih banyak fakta dengan mudah. Namun, soalan jenis ini sering digunakan untuk menguji tahap pengetahuan sesuatu fakta sahaja.

(c) Soalan aneka pilihan berganda "betul atau salah". Soalan-soalan ini membolehkan pilihan jawapan yang dikemukakan mempunyai lebih daripada satu pilihan jawapan yang betul. Soalan jenis ini memerlukan masa lebih lama untuk menjawab berbanding soalan aneka pilihan dan soalan pilihan betul salah. Namun begitu, kebolehpercayaan soalan masih tinggi. Pembinaan soalan ini tidak mudah apabila bilangan pilihan yang betul dan salah perlu seimbang. Di samping itu, pilihan yang betul dan salah pula perlu dilihat sebanding dan setara. Kelemahan lain adalah prosedur pemarkahan yang agak rumit untuk soalan jenis ini.

(d) Soalan terbuka untuk jawapan ringkas. Soalan jenis ini lebih terbuka dan fleksibel. Soalan jenis ini dapat menguji masalah yang ditentukan, misalnya, kreativiti dan spontaniti. Namun, soalan jenis ini mempunyai kebolehpercayaan yang lebih rendah. Menjawab soalan yang terbuka walaupun ringkas lazimnya memakan masa yang lama kerana soalan jenis ini lebih sukar untuk dijawab dan mendapat markah. Soalan terbuka yang baik harus mengandungi kunci jawapan terperinci bagi untuk proses pemarkahan. Soalan terbuka ini tidak sesuai untuk menilai pengetahuan fakta, berbanding soalan yang mempunyai pilihan jawapan.

(e) Soalan terbuka untuk jawapan esei. Soalan jenis ini menghendaki jawapan dalam bentuk esei. Lazimnya ia digunakan untuk menilai tahap kemampuan menulis dan kemampuan memproses maklumat. Aspek yang terlibat ialah keupayaan dalam membuat kesimpulan, hipotesis, mencari hubungan, dan mengaplikasi sesuatu kaedah atau teori. Namun begitu, tahap kebolehpercayaannya agak terhad disebabkan peruntukan masa yang panjang diperlukan untuk menjawab soalan jenis ini. Pembinaan soalan, skema jawapan dan proses pemarkahan bagi kaedah ini lazimnya melibatkan kos yang tinggi. Jadi, soalan jenis ini lazimnya hanya digunakan apabila jenis soalan yang lain dianggap tidak sesuai.

Metodologi

Kajian melibatkan pelajar tahun akhir kursus pemakanan halal di peringkat diploma (n=65) di Universiti Teknologi MARA. Penilaian sumatif dibuat menggunakan kaedah: (a) laporan bertulis; dan (b) ujian bertulis. Perbandingan statistik dibuat menggunakan perisian IBM SPSS Statistics. Laporan bertulis mengadaptasi komponen Brennan (2008) penilaian melibatkan: (a) Objektif penyelidikan dan kepentingannya; (b) Kajian literatur; (c) Analisis data dan perbincangan; dan (d) Kesimpulan. Manakala ujian bertulis mengadaptasi kaedah soalan Schuwirth & van der Vleuten (2003): (a) Soalan Pilihan "Betul atau Salah"; (b) Soalan Aneka Pilihan; (c) Jawapan Ringkas untuk Soalan Terbuka; dan (d) Esei ringkas. Kedua-dua kaedah penilaian ini diberi akses kepada pelajar secara dalam talian. Kedua-dua kaedah penilaian sumatif ini disampaikan untuk diakses pelajar menggunakan borang dalam talian menerusi platform Google Form.

eISBN 978-967-2426-22-6
13th – 14th December 2020

Keputusan

Keputusan analisis (Jadual 1) mencatatkan perbezaan signifikan pada skor bagi laporan bertulis (*M*=24.02, *SD*=2.32) berbanding skor bagi ujian bertulis (*M*=23.22, *SD*=2.53) dengan; *t*(64)=1.999, *p*=0.05.

Jadual 1: Keputusan Analisis Perbandingan Laporan Bertulis dan Ujian Bertulis (n=65): (a) Statistik Deskriptif; dan (b) Ujian-t Sampel Bersandar

		Mean	*SD*	*SEM*
(a)	LB	24.02	2.317	.287
	UB	23.22	2.525	.313

(b)	*Paired Differences*					*t*	*df*	*Sig. (2-tailed)*
				95% CI of the Difference				
	Mean	*SD*	*SEM*	*Lower*	*Upper*			
LB-UB	.808	3.257	.404	.001	1.615	1.999	64	.050

*CI: *Confidence Interval* (aras keyakinan), SEM: *Std. Error Mean* (ralat piawai), SD: *Std. Deviation* (sisihan piawai), LB: Laporan Bertulis, WT: Ujian Bertulis.

Perbincangan dan Kesimpulan

Analisis statistik menunjukkan bahawa laporan bertulis mencatatkan skor lebih tinggi berbanding ujian bertulis. Keputusan ini mungkin disebabkan peruntukan masa yang lebih panjang menyempurnakan laporan bertulis berbanding ujian bertulis. Keadaan ini memberi ruang dan peluang yang lebih luas kepada pelajar untuk mendapatkan data yang diperlukan secara terperinci, menjalankan analisis data dan perbincangan dengan lebih teliti. Berbeza dengan laporan bertulis, ujian bertulis lazimnya memperuntukkan masa yang lebih singkat. Peruntukan masa yang singkat ini mungkin tidak memberi ruang yang luas kepada pelajar untuk menjawab dengan teliti. Namun begitu, peruntukan masa tersebut dianggap wajar kerana pelajar sepatutnya telah dapat mengulang kaji silibus pembelajaran sebelum menjawab soalan ujian bertulis walaupun ia dijalankan secara "ujian buka buku" (*open-book test*).

Sokongan kemudahan pembelajaran dalam talian juga mungkin menjadi faktor kepada pencapaian laporan bertulis yang lebih baik berbanding ujian bertulis. Peruntukan masa yang lebih panjang memberikan pelajar lebih masa untuk mendapatkan sokongan teknologi maklumat dan komunikasi (ICT) yang lebih baik berbanding ujian bertulis (Schneider et al., 2018). Ujian bertulis, walaupun dijalankan secara ujian buka buku, namun bergantung kepada keupayaan dan kelancaran akses internet yang digunakan. Lazimnya akses internet tidak memuaskan jika cuaca hujan atau lokasi pedalaman. Keadaan ini mungkin menyumbang kepada pencapaian yang lebih rendah dalam ujian bertulis.

Berdasarkan perbincangan ini, aspek sokongan kemudahan pembelajaran dalam talian dianggap menjadi faktor kepada pencapaian pelajar berbanding aspek peruntukan masa dalam menyempurnakan tugasan. Masa yang diperuntukkan, walaupun berbeza, namun ia berwajaran dengan tahap kognitif, tahap kerumitan dan kadar panjang teks jawapan yang dikehendaki. Aspek kebolehcapaian ICT ini dianggap selaras dengan kaedah pembelajaran secara dalam talian. Teknologi berasaskan internet secara langsung telah menyokong proses penyebaran maklumat secara maya (Ahmed, 2013; Katabalwa, 2016). Keadaan ini memberi kelebihan apabila kaedah pembelajaran dalam talian digunakan. Keupayaan terkini peranti juga merupakan komponen penting dalam proses perkembangan intelektual selaras perkembangan ICT (Guzmán-Simón, et al. 2017). Selain masyarakat awam (Snyder, 2001; Ala-Mutka et al., 2009; Gillen, 2014), golongan pelajar juga menerima impak perkembangan ICT dalam meningkatkan kesedaran maklumat (Barton, 2001; Crook, 2005). Selaras dengan itu,

kemahiran literasi pelajar dapat ditingkatkan kepada bentuk hubungan sosial moden (Satchwell & Ivanic, 2007).

Berdasarkan perbincangan, aspek yang dikenal pasti dalam mempengaruhi pencapaian laporan bertulis dan ujian bertulis secara dalam talian ini ialah: (a) peruntukan masa menyempurnakan tugasan; dan (b) sokongan kemudahan pembelajaran dalam talian. Sebagai kesimpulan, sokongan kemudahan pembelajaran dalam talian merupakan aspek penting mempengaruhi pencapaian laporan bertulis yang lebih tinggi berbanding ujian bertulis. Kaedah pembelajaran dan penilaian pembelajaran dalam talian didapati mengutamakan kebolehcapaian kepada kemudahan ICT dalam meningkatkan prestasi akademik. Untuk penyelidikan masa depan, dicadangkan agar kajian diperluaskan dengan menyentuh penilaian formatif. Populasi merentas bidang juga dicadangkan supaya tahap pencapaian dan keberkesanan metode yang digunakan dapat dipelbagaikan.

Konflik Kepentingan

Penulis tidak mempunyai sebarang kepentingan terhadap mana-mana produk yang dinyatakan dalam makalah ini.

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PUSAT PENERANGAN PELANCONGAN KOLEJ KOMUNITI SANDAKAN

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Abstrak: *Pusat Penerangan Pelancongan Kolej Komuniti Sandakan berperanan sebagai pusat bagi komuniti setempat dan pelancong mendapatkan maklumat aktiviti pelancongan yang diperlukan khususnya di kawasan Sandakan. Info-Centre ini ditubuhkan oleh Kolej Komuniti Sandakan sendiri di bawah kelolaan Unit Pelancongan dan Pengembaraan (SPL). Pusat Penerangan ini telah dirasmikan oleh Y.B datuk Juslie Hj. Ajirol, Ahli Parlimen P.184 Libaran merangkap Pengerusi Jawatankuasa Penasihat Kolej Komuniti Sandakan pada 4 Februari 2017 bersamaan hari Sabtu. Pusat Penerangan KKSK ini juga menjalinkan hubungan kolaborasi dengan beberapa syarikat agensi pelancongan di kawasan Sandakan bagi menambahkan lagi input kepelbagaian maklumat destinasi pelancongan dengan memaparkan beberapa brosur daripada agensi pelancongan tersebut yang membantu pelancong untuk mendapatkan maklumat pakej pelancongan yang ditawarkan. Pusat Penerangan Pelancongan ini juga dilengkapi dengan bahan maklumat melalui kemudahan interpretasi menarik dimana membantu pelancong yang datang dengan pelbagai maklumat mengenai destinasi pelancongan seperti brosur, flyers, peta pelancong, majalah, paparan interaktif destinasi pelancongan dan gambarajah yang memaparkan setiap destinasi menarik dan kebudayaan. Interpretasi tersebut salah satu cara membantu pelancong untuk mengetahui destinasi pelancongan selain khidmat nasihat yang disediakan. Kewujudan info-centre ini adalah salah satu inovasi dalam program Sijil Pelancongan & Pengembaraan (SPL) untuk menggalakkan aktiviti pelancongan di kawasan Sandakan khususnya dengan menjadikannya sebagai sebuah info-centre yang menarik untuk dikunjungi oleh komuniti setempat dan pelancong samada dari dalam dan luar Negari. Operasi Pusat Penerangan Pelancongan KKSK ini juga diuruskan oleh pelajar-pelajar SPL sendiri terutamanya pelajar di semester DUA (2) yang mengambil subjek Operasi Agensi Pelancongan dengan dibantu pensyarah-pensyarah SPL.*

Kata kunci: *Pusat Penerangan Pelancongan, Kolaborasi, Interpretasi*

Pengenalan

Pusat Penerangan Pelancongan Kolej Komuniti Sandakan merupakan produk/perkhidmatan inovasi yang telah dibangunkan di mana ia berperanan menyediakan maklumat mengenai destinasi pelancongan khususnya di Sandakan kepada komuniti setempat mahupun pelancong dari luar Negara. Pusat Penerangan ini telah dirasmikan oleh Y.B datuk Juslie Hj. Ajirol, Ahli Parlimen P.184 Libaran merangkap Pengerusi Jawatankuasa Penasihat Kolej Komuniti Sandakan pada 4 Februari 2017 bersamaan hari Sabtu. Dengan lokasinya yang strategik yang berada di tingkat bawah bangunan Kolej Komuniti Sandakan, ianya menjadi salah satu tarikan

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13th – 14th December 2020

kepada pelancong untuk mendapatkan khidmat nasihat mengenai destinasi pelancongan dan pakej-pakej pelancongan yang di tawarkan di kawasan Sandakan khususnya, Pusat Penerangan Pelancongan Kolej Komuniti Sandakan ini mengambil masa selama ENAM (6) bulan untuk beroperasi secara sepenuhnya.

Objektif

1.0 Sebagai pusat penerangan pelancongan (*info-centre*) dengan penyebaran maklumat destinasi pelancongan kawasan Sandakan khususnya.
2.0 Sebagai Khidmat nasihat dalam membantu pelancong memilih destinasi pelancongan terbaik berdasarkan kehendak dan bajet pelancong.
3.0 Membantu mempromosikan pakej-pakej pelancongan daripada beberapa agensi pelancongan di Sandakan.
4.0 Membantu merekod dan mendapatkan statistik jumlah bilangan pelancong yang datang ke daerah Sandakan.
5.0 Dijadikan sebagai bilik simulasi kepada pelajar-pelajar Sijil Pelancongan & Pengembaraan (SPL) melaksanakan amali bagi subjek-subjek tertentu seperti SPL1073 Interpretasi Pelancongan, SPL2053 Perkhidmatan Pelanggan dalam Pelancongan dan SPL2084 Operasi Agensi Pelancongan.

Penyataan Masalah

Ketiadaan Pusat Penerangan Pelancongan di daerah Sandakan juga menjadi salah satu masalah kepada pelancong bagi mendapatkan maklumat mengenai destinasi tarikan yang ada khususnya di Sandakan. Di kebanyakan destinasi pelancongan, aduan yang sering dikemukakan oleh para pelancong ialah tidak terdapat penerangan yang mencukupi tentang sesuatu destinasi. Menurut Inskeep (1996), satu daripada fungsi pemasaran pelancongan yang penting ialah penyediaan pusat penerangan pelancong sebelum dan selepas mereka tiba di destinasi mereka. Kebanyakan pelancong ingin mengetahui tentang kemudahan, perkhidmatan, dan tempat tarikan yang ada. Ramai pelancong yang berminat mengetahui sedikit sebanyak maklumat tentang latarbelakang tempat tersebut secara umum dari segi sejarahnya, geografi, kebudayaan, dan ciri-ciri kawasan tersebut. Bahan maklumat pelancongan memang berguna untuk makluman pelancong contohnya budaya dan masyarakat setempat, sebarang masalah yang dihadapi dan sebagainya. Oleh itu, pusat penerangan pelancongan Kolej Komuniti Sandakan sangat berperanan untuk memberi kemudahan dan maklumat kepada komuniti setempat dan pelancong untuk mengetahui lebih lanjut mengenai tarikan yang ada di setiap destinasi mengikut keperluan pengembaraan mereka.

Lokasi agensi-agensi Pelancongan yang kebanyakannya terletak di pusat Bandar Sandakan dan berada jauh dari Lapangan Terbang juga menjadi salah satu kekangan kepada pelancong untuk mendapatkan saluran maklumat pelancongan dengan lebih cepat. Dengan lokasi Pusat penerangan Pelancongan Kolej Komuniti Sandakan yang strategik dan mudah di cari iaitu berada di Kolej Komuniti Sandakan sendiri di batu 7, Jalan Labuk yang berdekatan dengan Lapangan Terbang Sandakan menjadi tumpuan kepada pelancong untuk mendapatkan maklumat dan khidmat nasihat mengenai destinasi-destinasi pelancongan yang ada khususnya di Sandakan.

Pusat Penerangan Pelancongan Kolej Komuniti Sandakan ditubuhkan atas beberapa masalah yang dilihat dari segi kaedah penyampaian pembelajaran dan pengajaran pelajar. Pusat Penerangan Pelancongan yang juga menjadi fungsi sebagai bilik latihan ataupun simulasi kepada pelajar dapat dilihat sebagai salah satu inovasi kepada kaedah pembelajaran dan pengajaran yang lebih kondusif dan memberi pendedahan dan gambaran yang lebih jelas

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13th – 14th December 2020

kepada pelajar. Kaedah pembelajaran di dalam kelas yang melibatkan amali telah dilihat kurang kondusif terutamanya kursus SPL2053 Perkhidmatan Pelanggan dalam Pelancongan dan SPL2084 Operasi Agensi Pelancongan. Amali bagi DUA (2) kursus ini memerlukan ruang dan kaunter yang sesuai bagi membolehkan pelajar mengaplikasikan kemahiran dengan penggunaan peralatan dan persekitaran yang sesuai seperti ruang kaunter dan ruang operasi bagi memudahkan pelajar lebih memahami cara operasi sesebuah agensi berfungsi mengikut apa yang telah dipelajari secara teori di dalam kelas.

Kaedah Perlaksanaan

Sebelum tertubuhnya Pusat Penerangan Pelancongan Kolej Komuniti Sandakan, ianya hanyalah sebuah bilk kosong dan dilihat bilik yang berpotensi untuk dijadikan sebagai Pusat Penerangan Pelancongan Kolej Komuniti Sandakan kerana lokasinya yang strategik berada di tingkat bawah dengan berhadapan dengan laluan kenderaan yang mudah di lihat oleh komuniti dan pelancong yang lalu di kawasan tersebut. Segala peralatan dan kelengkapan perabot termasuk hiasan di susun mengikut lakaran yang telah di persetujui dengan menerapkan ruang dan susun atur sebuah agensi pelancongan. Bilik ini di inovasikan menjadi Pusat Penerangan Pelancongan Kolej Komuniti Sandakan dan masa yang sama sangat kondusif dijadikan sebagai bilik simulasi kepada pelajar Sijil Pelancongan & Pengembaraan untuk melaksanakan amali bagi subjek yang berkaitan iaitu SPL1053 Interpretasi Pelancongan, SPL2053 Perkhidmatan Pelanggan dalam Pelancongan dan SPL2084 Operasi Agensi Pelancongan. Setelah susun atur ruang Pusat Penerangan Pelancongan siap dengan kelengkapan dan bahan maklumat dan interpretasi yang mencukupi, bilik ini telah dirasmikan oleh Y.B datuk Juslie Hj. Ajirol, Ahli Parlimen P.184 Libaran merangkap Pengerusi Jawatankuasa Penasihat Kolej Komuniti Sandakan pada 4 Februari 2017 bersamaan hari Sabtu. Dengan ini, pelajar dapat mengaplikasikan secara praktikal dengan lebih baik melalui ruang bilik simulasi yang di sediakan. Operasi Pusat Penerangan Pelancongan KKSK ini juga diuruskan oleh pelajar-pelajar SPL sendiri terutamanya pelajar di semester DUA (2) yang mengambil subjek SPL2084 Operasi Agensi Pelancongan dengan dibantu pensyarah-pensyarah SPL. Dengan penubuhan Pusat Penerangan Pelancongan Kolej Komuniti Sandakan ini, ianya mampu menarik komuniti dan pelancong untuk datang dan merasai sendiri perkhidmatan yang disediakan di pusat Penerangan Pelancongan ini.

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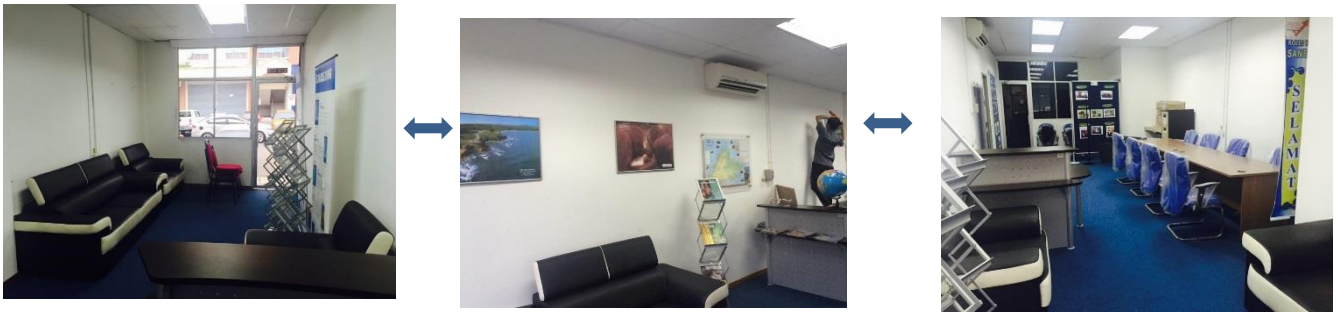
13th – 14th December 2020



Peralatan dan kelengkapan di susun di dalam bilik Pusat Penerangan

Susun atur ruang pejabat dan sudut kaunter pertanyaan

Perasmian Pusat Penerangan & Pelancongan Kolej Komuniti Sandakan

Pengurusan Pusat Penerangan Pelancongan KKSK sebagai bilik simulasi

Rajah 1: Kaedah Perlaksanaan Pusat Penerangan Pelancongan Kolej Komuniti Sandakan

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13th – 14th December 2020

Kelebihan/Impak Pusat Penerangan Pelancongan Kolej Komuniti Sandakan

Pusat Rujukan dan Khidmat Nasihat Kepada Pelancong

Impak dari penubuhan pusat penerangan pelancongan, pengunjung yang datang ke daerah Sandakan sama ada pelancong luar negara mahupun dalam negeri akan memperoleh informasi dan khidmat nasiihat berkenaan tempat-tempat menarik yang boleh dilawati di Sandakan menerusi pakej-pakej pelancongan yang di tawarkan. Selain itu, pelawat yang datang ke pusat penerangan pelancongan Kolej Komuniti Sandakan boleh mendapatkan informasi berkenaan tempat-tempat penginapan dan perkhidmatan teksi yang terdapat di Sandakan. Sebagai contoh Hotel yang bersebelahan Pusat Penerangan Pelancongan Kolej Komuniti Sandakan ialah Pavilion Hotel yang juga mempunyai perkhidmatan teksi.

Mempromosikan produk-produk Pelancongan di Sandakan

Pusat Penerangan Pelancongan Kolej Komuniti Sandakan akan menjadi pusat promosi secara tidak langsung kepada Kementerian Pelancongan Malaysia dan Lembaga Pelancongan Sabah di bawah kerajaan negeri kerana Pusat Penerangan ini akan mempromosikan produk-produk pelancongan yang terdapat di Sabah secara amnya dan Sandakan secara khusus. Selain itu, Pusat Penerangan ini akan mempromosikan agensi-agensi pelancongan yang beroperasi di Sandakan mahupun Sabah dalam memberi perkhidmatan kepada pelawat yang memerlukan perkhidmatan penginapan, makanan & minuman, pengangkutan dan tarikan mahu pun informasi yang melibatkan pemandu pelancong.

Meningkatkan Ekonomi Pihak Berkepentingan

Pusat Penerangan Pelancongan Kolej Komuniti Sandakan secara tidak langsung akan meningkatkan kedatangan pelawat seterusnya menjana pendapatan agensi-agensi pelancongan yang memberikan perkhidmatan pelancongan. Dengan itu, pertambahan keperluan tenaga kerja bagi mengisi peluang-peluang pekerjaan akan memberi impak positif kepada penduduk sekitar Sandakan disamping dapat meningkatkan taraf hidup mereka.

Simulasi Pelajar Sijil Pelancongan dan Pegembaraan

Pusat Penerangan Pelancongan Kolej Komuniti Sandakan ini juga dijadikan sebagai bilik simulasi bagi pelajar menjalankan amali bagi subjek-subjek tertentu iaitu SPL 2053 Perkhidmatan Pelanggan dalam Pelancongan, SPL2084 Operasi Agensi Pelancongan. Kini dengan penubuhan Pusat Penerangan Pelancongan, kaedah pengajaran dan pembelajaran yang lebih berkesan dapat dilakukan dengan melaksanakan amali secara praktikal bagaimana berhadapan dengan pelawat dalam dan luar negara yang akan menjadi nilai tambah kepada pelajar sebelum melangkah ke alam pekerjaan yang sebenar.

Pusat Pendidikan Alam Semula Jadi Dan Konservasi

Dalam merealisasikan Sandakan sebagai pusat pelancongan Alam Semula Jadi, Sabah. Pusat ini mempamerkan paparan interaktif dalam bentuk Video kepada pengunjung yang datang tentang keindahan alam semula jadi yang terdapat di Sandakan dan informasi kepentingan konservasi serta ekosistem alam semula jadi untuk dipelihara bersama. Ia juga meliputi video beberapa aktiviti amali pelajar dengan perlaksanaan lawatan ke beberapa destianasi pelancognan di Sabah yang menjadi maklumat tambahan kepada pelancong yang datang.

Kemudahan jalur lebar bagi kegunaan pelawat

Pusat Penerangan Pelancongan ini juga memberi kemudahan jalur lebar internet kepada pengunjung untuk mencari informasi yang mereka perlukan dalam merancang perjalanan

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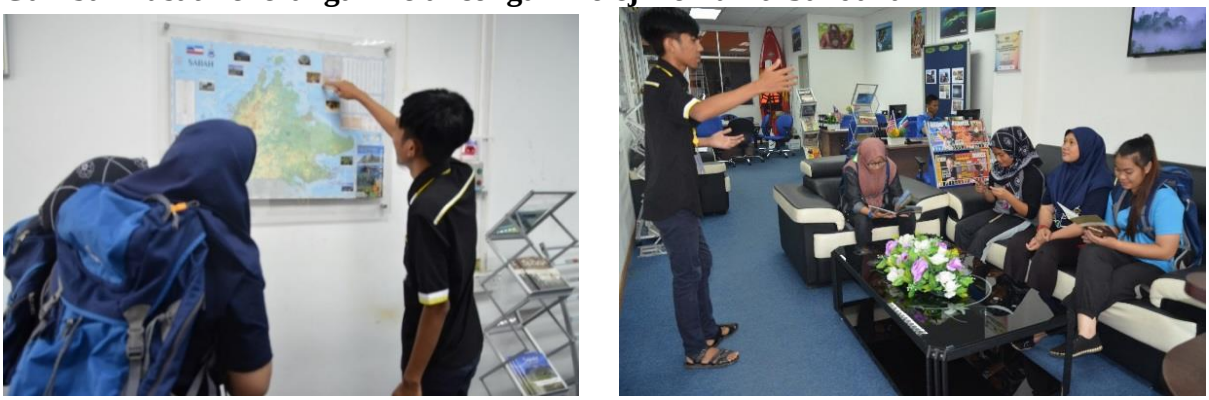
13th – 14th December 2020

mereka ketika berada di Sandakan. Selain itu, pelawat boleh melayari perkhidmatan penempahan penerbangan atau hotel melalui online. Kemudahan lain tandas dan bahan bacaan seperti majalah-majalah, brosur dan pamphlet pelancongan juga di sediakan bagi memberi informasi kepada pelawat.

Rumusan

Secara rumusannya, Pusat Penerangan Pelancongan Kolej Komuniti Sandakan yang terletak di Batu 7, Jalan Labuk Sandakan merupakan lokasi yang amat strategik kerana berhampiran dengan Lapangan Terbang Sandakan yang sememangnya menjadi destinasi terdekat kepada pelancong tempatan mahupun luar negara untuk mendapatkan maklumat mengenai destinasi pelancongan yang ada di Sandakan. Seperti yang dinyatakan oleh DTTDC (February, 2001), lokasi strategik berperanan untuk menarik lebih ramai pelancong. Ini telah dibuktikan dengan peningkatan setiap bulan jumlah pelancong/pengunjung ke Pusat Penerangan Pelancongan KKSK ini bermula dengan perasmian pada 4 Februari 2017 sehingga sekarang. Pusat ini dilengkapi dengan bahan maklumat seperti brosur pakej pelancongan, *flyers*, panduan, peta pelancongan, gambarajah destinasi pelancongan dan sebagainya yang dapat menarik perhatian pelancong untuk mengetahui lebih banyak maklumat pelancongan Sandakan selain daripada khidmat nasihat yang disediakan. Dengan ciri-ciri fasiliti dan perkhidmatan yang disediakan sepertimana yang dinyatakan sebelum ini, maka Pusat Penerangan Pelancongan KKSK ini dilihat sebagai salah satu langkah inovasi yang bukan sahaja memberi impak di dalam kaedah pembelajaran dan pengajaran tetapi berpotensi untuk memberikan sumbangan kepada agensi pelancongan di Sabah seterusnya memberi manfaat kepada komuniti setempat.

Gambar Pusat Penerangan Pelancongan Kolej Komuniti Sandakan



Gambarajah 1: Pelajar Melaksanakan Simulasi di Pusat Penerangan Pelancongan KKSK Bagi Subjek SPL2084 Operasi Agensi Pelancongan

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Gambarajah 2: Kunjungan Pelawat Bersama Y.B. Datuk Juslie Bin Hj. Ajirol, Ahli Parlimen P.184 Libaran Merangkap Pengerusi Jawatankuasa Penasihat Kolej Komuniti Sandakan Semasa Perasmian

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13th – 14th December 2020

MEREKABENTUK 'MOTORISED TYRE LIFTER'

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Abstrak: *Merekabentuk 'Motorized Tyre Lifter' adalah kajian bagi menghasilkan inovasi peralatan untuk mengangkat tayar semasa proses penukaran roda dilakukan pada sesebuah kenderaan ringan. Kebiasaan proses penukaran roda kenderaan dilakukan secara manual yang mana roda ditanggalkan daripada hub roda dengan menggunakan tangan yang mana proses ini adalah dilakukan dengan keadaan posture badan yang tidak betul. Untuk jengka masa panjang akan memberikan kesan terhadap kesihatan terutamanya kesan terhadap tulang belakang. Kajian ini bertujuan alatan pengangkat roda yang boleh menyelesaikan masalah kedudukan posture badan yang tidak betul semasa melakukan proses penukaran roda kenderaan. Alat ini dapat mengangkat roda semasa proses menanggalkan roda dan juga untuk proses pemasangan roda ke kenderaan tanpa memerlukan pekerja berada di dalam kedudukan posture badan yang tidak betul. Ketinggian roda dapat dikawal menggunakan motor bergantung kepada ketinggian kereta di angkat. Kesimpulannya, kajian ini dilaksanakan untuk menyelesaikan masalah kesan posture badan yang tidak betul semasa proses menanggalkan dan memasang roda kenderaan selain daripada memudahkan kerja-kerja dilakukan.*

Kata kunci : *(Pengangkat Roda, Posture Badan Selamat, Ergonomik, Servis Roda)*

Pengenalan

Pada masa kini, sistem pengangkat menjadi kemudahan terpenting bagi manusia. Selain itu, terdapat banyak jenis sistem pengangkat di pasaran seperti troli dan sebagainya. Ciptaan sistem pengangkat adalah untuk menggantikan tenaga manusia manusia untuk melakukan kerja.

Seterusnya, sistem pengangkat juga boleh mengangkat pelbagai jenis beban dan mudah digunakan di mana-mana tempat atau kawasan. Di industri juga, penggunaan sistem pengangkat amat penting.

Sistem pengangkat ini juga sering digunakan oleh para perkerja untuk mengangkat tayar di mana memudahkan lagi kerja-kerja pemasangan tayar.Projek ini mengunakan hollow bar yang jadi bahan yang sangat penting kerana ingin mencapai matlamat projek '*Portable Tyre Lifter'.* Bagi pennyataan masalah tidak ada lagi *'Portable Tyre Lifter'* dalam bengkel automotive.

Pernyataan Masalah

Alat yang direkabentuk ini adalah berdasarkan permasalahan utama yang dikenalpasti iaitu kecederaan belakang terhadap pekerja yang melakukan proses menanggalkan roda dari kenderaan. Proses penanggalan roda memerlukan pekerja berada dalam keadaan separa mencangkung terutama bagi proses penanggalan roda tanpa menggunakan mesin pengangkat.

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13th – 14th December 2020

Dengan erti kata lain, '*posture*' badan kebanyakkan mekanik yang bekerja dalam proses menanggalkan tayar adalah tidak dalam keadaan betul.

Bekerja dalam keadaan kedudukan badan yang tidak betul secara berterusan ini akan menyebabkan kesan kesakitan pada bahagian belakang pada peringkat awal dan boleh mendatangkan kesan yang lebih teruk seperti '*slip disc'* jika tidak dirawat.

Selain daripada intu, faktor lain yang menjurus kepada terhasilnya idea penghasilan alat ini adalah disebabkan faktor tenaga yang mana dibuat khusus untuk penggunaan individu yang bersaiz kecil atau pun penggunaan oleh kaum wanita. Saiz tayar yang mempunyai berat antara 10kg hingga 20kg sebijik sangt sukar dikendalikan oleh individu yang bersaiz kecil dan juga kaum wanita. Jadi dengan tidak langsung alat ini dapat membantu golongan tersebut melakukan kerja dengan lebih mudah lagi.

Proses pemasangan roda kembali ke tempat asal juga mengambil sedikit masa yang lama bagi pekerja yang kurang mahir, terutamanya untuk menjajarkan bebenang 'wheel stud' ke lubang stud pada rim. Situasi akan bertambah sukar dan perlu masa yang panjang jika Sesutu rim tersebut mempunyai diameter pitch yang berbeza. Ianya juga berisiko boleh mendatangkan kecederaan kepada pekerja yang tidak mahir yang mana risiko terkepit diantara 'knuckle' dan juga rim boleh berlaku..

Kajian Literatur

Pembangunan kajian ini melalui pelbagai perbandingan yang perlu dilaksanakan bagi mengumpulkan sebanyak mungkin maklumat mengenai kajian yang dilaksanakan. Kajian juga merangkumi kaedah pengangkatan, kesan terhadap kesihatan, motor dan juga alat seumpama yang sedia ada.

Cara Kerja Penanggalan Tayar

Kerja penyelenggaraan roda kebiasaan memerlukan penanggalan roda dari kenderaan. Bagi bangkel kenderran yang tidak mempunyai mesin pengangkat, biasanya mereka akan mengankat kenderaan menggunakan jek lantai. Dengan penggunaan *floor jack*, roda hanya diangkat sedikit sahaja. Proses penanggalan roda dalam keadaan ini, memerlukan pekerja duduk dalam keadaan separa bercangkung. Pekerja perlu mengangkat roda yang beratnya diantara 6.5 kg hingga 15 kg setiap satu. (Oponeo,2020)

Rajah 1: Cara Biasa Menggalkan Roda

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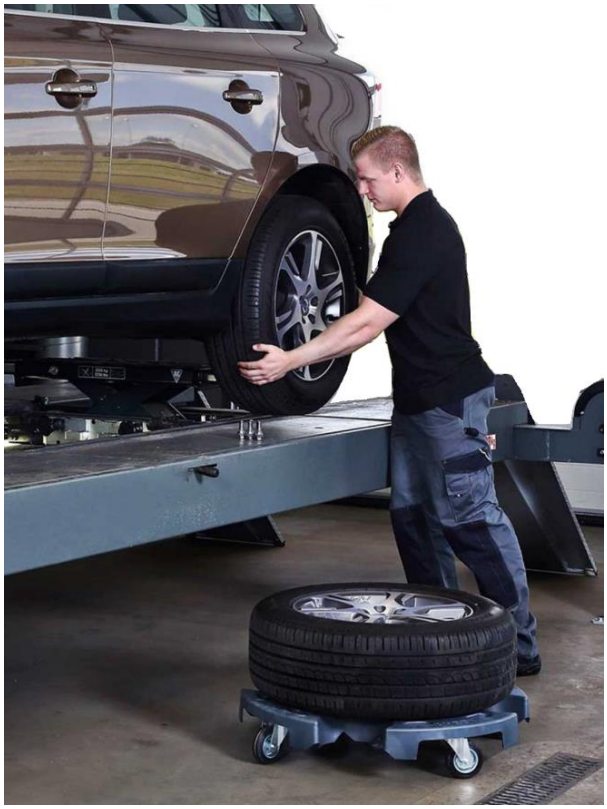
Bagi bengkel kenderaan yang mempunyai mesin pengangkat sama ada *two post lifter*, atau pun *scissor jack*, kerja-kerja menanggalkan roda dari kendeeran adalah mudah kerana pekerja hanya perlu mengangkat roda dalam keadaan berdiri. Ketinggian kenderaan juga dapat dilaraskan dengan kesesuaian ketinggian pekerja.

Untuk kaedah sediaada ini, pekerja memerlukan masa di antara 0.4 – 1.5 minit untuk menanggalkan sebiji tayar bergantung kepada kecekapan seseorang mekanik tersebut. Hoffman Megaplan menceritakan bahawa kaedah biasa yang dilakukan oleh pekerja menggalkan roda dari kenderaan adalah tidak efisyen dan cekap melainkan menggunkan alatan bantuan yang lain dalam menanggalkan roda (Megaplan, 2019)



Rajah 2: Penanggalan Roda di Atas Mesin Pengangkat

Kesan Posture Badan

Aktiviti penukaran roda dari kenderaan dengan kenderaan hanya diangkat menggunakan jek lantai akan menyebabkan pekerja bekerja dalam kedudukan mencangkung. Apabila pekerja mengangkat roda dalam keadaan sebegitu, ianya akan memberikan kesan terhadap tulang belakang yang mana akan memberikan tegangan terhadap bahagian belakang. (Brenner, 2017)

Teknik mengangkat yang salah juga sama kesannya seperti kesalahan posture badan yang mana, dengan bebanan yang berat, boleh menyebabkan bahagian belakang berada dalam keadaan tegang dan hal ini boleh menyebabkan bahagian spinal terkesan (Nasrull, 2009) Menurut Nasrull, posture badan yang tidak betul semasa melakukan kerja akan menyebabkan kesan kepada tulang belakang yang dinamakan Musculosketal Disorder (MSDs) (Nasrull, 2009)

Selain itu, dalam satu artikel lain menyatakan bahawa kerja-kerja mengangkat tayar juga memberikan kesan yang amat besar terhadap kecederaan fizikal dan 83.3% kecederaan ditempat kerja adalah disebabkan kerja-kerja pengangkatan bahan yang berat (Bahardin, 2018)

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Menurut satu artikal daripada Cal,OSHA (California Department of Industrial and relation, 1999), posture badan yang tidak betul disumbangkan oleh beberapa perkara ketika membuat kerja di antaranya adalah seperti susunan tempat kerja, peralatan, amalan kerja yang tidak baik, peralatan dan juga mesin (Sacramento, 1999).

Menurut buku *Improving Ergonomic Guidelines for Manual Material Handling*, mengubah cara membuat sesuatu kerja dengan menambahbaik kaedah melibatkan aktiviti mengangkat dapat mengurangkat faktor kecederaan *Musculoskeletal Disorders* (MSDs), terutama melibatkan posture badan yang tidak betul dalam melakukan kerja (Sacramento, 2007)

Jenis Pengangkat Roda

Rajah 3: Jenis-jenis pengangkat roda

Di dalam pasaran sediaada, terdapat beberapa jenis pengangkat tayar. Kebanyakkan pengankat yang sedia ada menggunakan mekanisme hidraulik, konsep tuas dan juga menggunakan mekanisme gear untuk mengangkat tayar. Setiap jenis pengangkat in ada kelebihan dan kelemahan masing-masing.

Jadual 1: Perbandingan Rekabentuk

Jenis	Hidraulik	Gear	Tuas
Kelebihan	Boleh mengangkat beban yang berat	Ketinggian angkatan yang tinggi	Rekabentuk mudah
Kekurangan	Sistem hidraulik mudah bocor	Memerlukan tenaga dan masa	Tidak boleh angkat beban yang berat

Metodologi

Di dalam bab ini menerangkan prosedur dan kaedah dalam penghasilan projek. Penghasilan projek termasuklah daripada pemulaan projek, iaitu merangkumi mengenalpasti masalah, penentuan objektif projek, serta skop projek. Kemudian disusuli kajian literature yang berkaitan dengan projek, dan paling penting sekali adalah penghasilan produk iaitu dari segi rekabentuk, fabrikasi dan akhir sekali pengujian.

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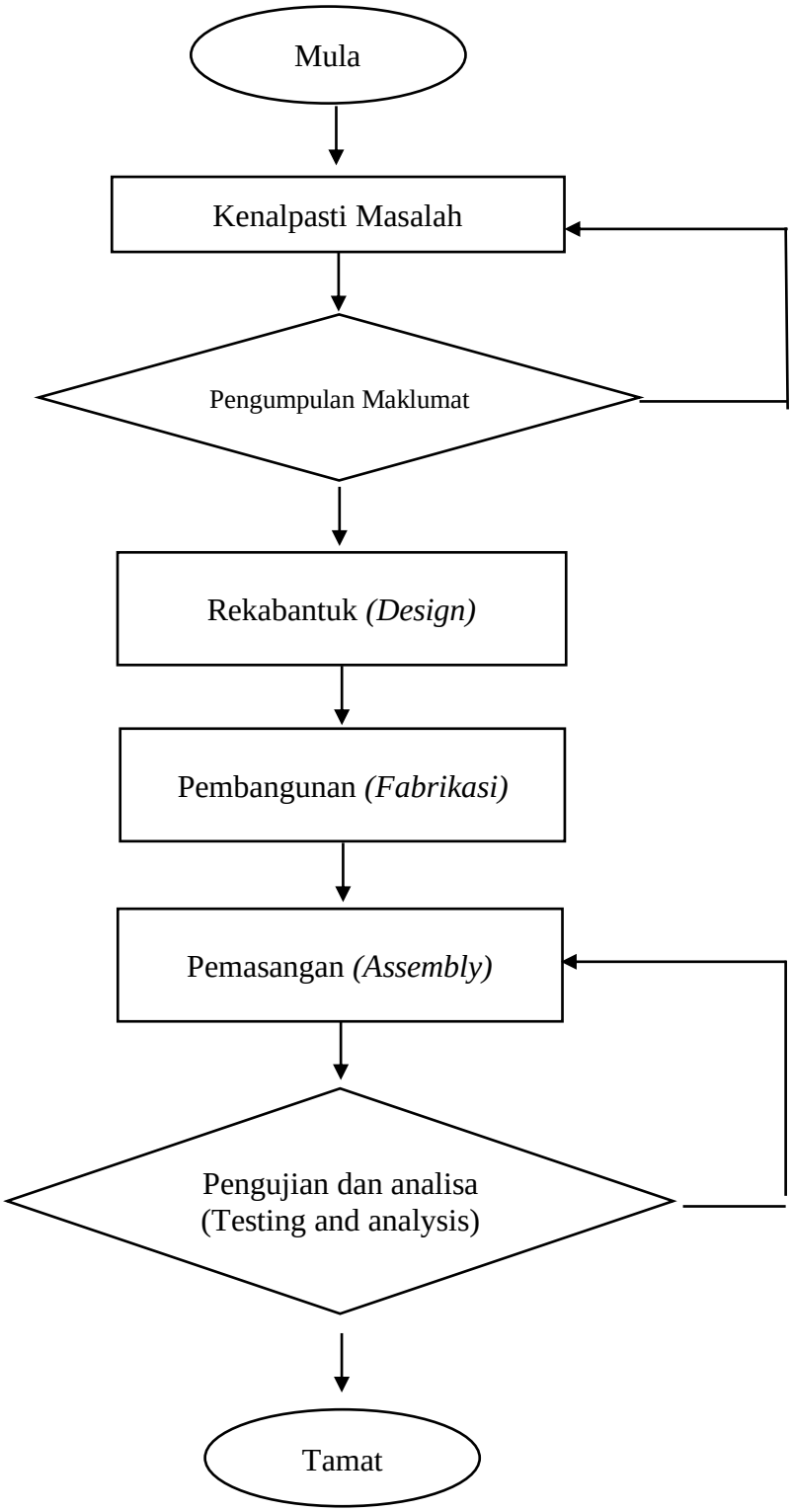
Carta Alir Pelaksanaan Kajian



Rajah 4: Carta Alir Pelaksanaan Projek

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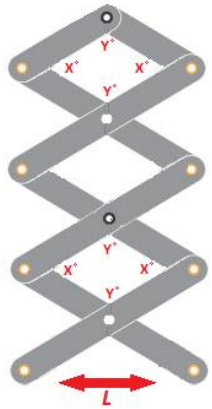
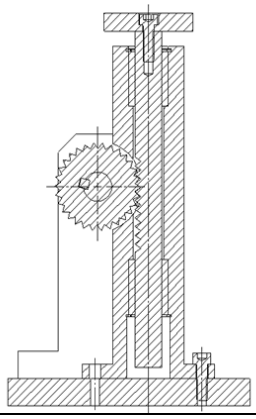
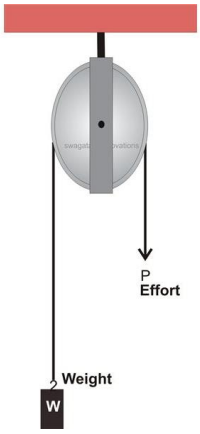
Pemilihan Mekanisma Pengangkat

Tiga jenis konsep mekanisme pengangkat utama telah disenarai pendek. Penilaian dibuat berdasarkan kriteria seperti dalam jadual di bawah iaitu berdasarkan ketahan, fabrikasi, rekanbentuk, kebolehfungsian, serta juga melibatkan kos.

Linkage	Linear actuator	Pulley Mechanisme
		

Rajah 5: Pilihan Mekanisme

Jadual 2: Penentuan Mekanisma

Criteria	Linkage (Scissor)	Linear actuator (Vertical Movement)	Pulley Mechanisme	Keterangan
Ketahanan	4	5	4	Ketahanan untuk jangka masa lama
Fabrikasi	2	5	3	Arduino uses less component and able to fit in limited space
Design	3	4	5	Design dari segi ergonomic, keselamatan
Fungsi	3	5	4	Kebolehfungsian alat
Cost	5	2	3	Jumlah kos
Rating Keseluruhan	**17**	**21**	**20**	
SKALA: 1 = Sangat Rendah 2 = Rendah 3 = Sederhana 4 = Baik 5 = Sangat Baik				

Daripada analisa ini, mekanisma yang menggunakan penggerak linear telah dikenalpasti sebagai mekanisma yang terbaik dalam mereka bentuk alat pengangkat roda.

Pemilihan Komponen

Pemilihan komponen utama yang digunakan untuk membangunkan alatan ini telah dilakukan untuk memastikan proses penghasilan projek dapat dihasilkan yang terbaik. Komponen yang telah dianalisa dan dipilih adalah seperti jadual berikut berdasrkan beberapa faktor yang telah di ambil kira seperti kos, kualiti, dan beberapa kriteria lain seperti berikut:

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Jadual 3: Pemilihan komponen

No	Komponen	Faktor pemilihan
1.	Motor penggerak linear (*Linier motor*)	• Tahan lama • Mudah Dipasang • Dapat menampung beban dengan optima
2.	*'Hollow bar'*	• Ringan • Mudah difabrikasi • Murah
3.	5-pin *Switch* ON/OFF *Single-Tole, Single-Throw (SPST) Rocker*	• Tekan untuk naik atau turun • Ketahanan • Tidak memerlukan '*Limit Switch'*

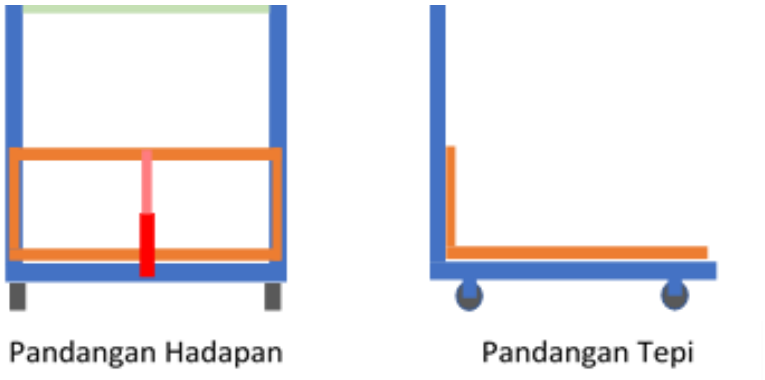
Anggaran Perbelanjaan

Perbelanjaan untuk menghasilkan projek ini dianggarkan tidak lebih daripada tiga ratus ringgit dan untuk lebih tepat lagi anggaran kos adalah seperti butiran di dalam jadual di bawah.

Jadual 4: Cost Estimation

No	Component	Price
1.	Motor Linear	RM 130.00++
2.	Wiring	RM 10.00 ++
3.	Suiz	RM 20.00 ++
4.	Besi	RM 50.00++
5.	Roda	RM 20.00++
	Total	**RM 230.00++**

Lakaran Projek



Rajah 5: Lakaran Projek

Kesimpulan

Projek penghasilkan 'Motorized Tyre Lifter' diharapkan dapat direalisasikan agar meningkatkan kecekapan didalam aktiviti penyelenggaraan roda. Selain itu, projek ini juga diharap dalam menyelesaikan masalah kesihatan dan juga kecederaan yang berpunca daripada ketidakselesaan cara kerja.

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Venue: Kuala Lumpur, Malaysia
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Venue: Sabah, Malaysia
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Email: icshtofficial@gmail.com; conference2@egax.org

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Venue: Langkawi, Malaysia
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