



UNIVERSITI
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2023

JII Cas

**JOHOR
INNOVATION
INVENTION
COMPETITION
AND
SYMPOSIUM
2023**



"Innovation Inspires a Society
to be Critical and Creative"

**INVENTION
COMPETITION
SYMPOSIUM**

JOHOR INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2023

"Innovation Inspires a Society to be
Critical and Creative"

Editors-in-Chief

**AHMAD KHUDZAIRI KHALID
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**Cawangan Johor
Kampus Pasir Gudang**

2023



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Preface

In the name of Allah, the Almighty who gives us the enlightenment, the truth, the knowledge and with regards to Prophet Muhammad (peace be upon him) for guiding us to the straight path. We thank to Allah for giving us guidance and strength to write this e-book.

This e-book compiles the extended abstracts that submitted to Johor Innovation Invention Competition and Symposium 2023 (JII CaS2023), where JII CaS2023 is a virtual platform for all creative minds to share and present their invention and innovation. The extended abstracts are divided into two categories, which are Category A (Higher Educational Student/ Any Recognized Institutional Students in Malaysia) and Category B (Primary/ Secondary School Students / Special Education School Students in Johor). Each abstract gives a brief background on the innovation or project.

We hope that this e-book will help the readers to get to know the innovation done by the students from both categories and get some ideas to develop future innovation products.





Foreword Rector



Assalamualaikum Warahmatullahi Wabarakatuh and greetings to all.

It brings me immense joy to extend a heartfelt welcome to all participants of the Johor Innovation Invention Competition and Symposium 2023, JII CaS 2023. This event serves as a platform to foster innovation across all tiers of institutions in Malaysia, with the potential to profoundly impact society in the times ahead.

With the theme, “Innovation Inspires a Society to be Critical and Creative”, JII CaS 2023 attract the interest of many academics, researchers and innovators to contribute their innovation findings and collaborate in diverse fields that might give positive impact on society in the future. Along with the government's goal in applying technology and innovation through the 12th Malaysia Plan (RMK-12), UiTM Johor is committed to realizing all the efforts in this direction to support the local innovation and invention products that can be commercialized in any potential markets.

It is gratifying and exciting to receive 190 abstracts submitted in this competition which indicates the outstanding responses and all these hard works have been published in this e-book. My deepest appreciation also goes to professional juries who reviewed the video to ensure its excellent quality.

Congratulations to the organizer, College of Computing, Informatics and Mathematics UiTM Pasir Gudang Campus for their continued commitment in planning and making this innovation competition a success. It is hoped that this type of competition will be able to provide an injection and enthusiasm for all researchers and innovators to continue to strive to create success with high quality discoveries. Let us together help Malaysia to continue to excel and be at the peak of glory in the field of innovation and expertise.

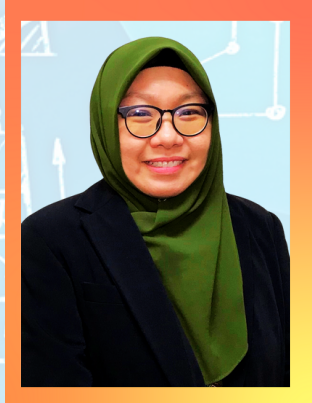
Thank you.

Prof. Madya Dr. Saunah Zainon
Rector
Universiti Teknologi MARA Cawangan Johor





Foreword Course Coordinator



In the name of Allah, the most Gracious and the most Merciful.

First and foremost, congratulations on the publication of the Johor Invention Innovation Competition and Symposium 2023, JII CaS 2023 abstract book. My special thanks go to all the participants and collaborators for their full support and cooperation to the College of Computing, Informatics and Mathematics UiTM Pasir

Gudang Campus as the organizer of JII CaS 2023, which was held virtually for the first time.

Along with the mission of UiTM to empower research and innovation that can raise the university up to the global academic standards, the JII CaS 2023's program aimed to support and highlight the innovation results of local expertise to a better level. This competition provides us with opportunities to collaborate and showcase the breadth and depth of our research domains that are practical and relevant for the industries.

On that note, I would like to thank all the participants who have supported this event and have been willing to share their research knowledge and experience to all of us. I would also like to congratulate the dedicated organizing committee that has diligently brought JII CaS 2023 to fruition. May the knowledge we gather here contribute to our individual growth, ultimately benefiting our nation's future.

Thank you.

Puan Nur Intan Syafinaz Ahmad
Course Coordinator
College of Computing, Informatics and Mathematics
Universiti Teknologi MARA (UiTM)
Cawangan Johor, Kampus Pasir Gudang





Preface Program Director



Alhamdulillah, all praise to Allah S.W.T, the Almighty for giving the blessing for JII CaS 2023.

First and foremost, I would like to take this opportunity to express my sincere appreciation to the committee members for your continual commitment in ensuring this program runs smoothly despite being busy with your respective duties. To JII CaS 2023's innovators, well done and congratulations for successfully contributing your innovation findings at JII CaS 2023. Next, biggest thanks to all the collaboration partners for the excellent cooperation and unwavering support that we have received on this competition.

This e-book contains a compilation of submitted abstracts which portrays a great effort of all participants of JII CaS 2023, each contributing their creative and innovative results to the broader tapestry of innovation areas. This competition also allows a valuable networking opportunity among participants where they can exchange their expertise and hopefully can boost the momentum of potential innovators to participate in meaningful research endeavors in dynamic ways.

The unlimited support and contributions from everyone involved have been phenomenal and made the organization of this competition a pleasurable enriching and successful one. Hope to see all of you again in the next JII CaS 2024!

Thank you.

Ahmad Khudzairi Khalid
Program Director
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CATEGORY A

**Higher Educational Student
/ Any Recognized
Institutions Student In
Malaysia**



MODEL KOMUNIKASI DAKWAH EFEKTIF BADIUZZAMAN SAID NURSI

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ABSTRAK

Kajian ini memfokuskan kepada pembentukan sebuah model berkenaan pendekatan komunikasi dakwah Badiuzzaman Said Nursi dalam menyebarkan dan menyampaikan risalah Islam menerusi teknik komunikasi dakwah yang berkesan, yang diadaptasi menerusi karya agungnya, Rasail an-Nur. Di dalam kitab ini, terdapat banyak intipati dan nilai-nilai yang bermanfaat dalam meningkatkan kemahiran dalam berdakwah terutama dari aspek komunikasi, sejajar pengiktirafan para sarjana muslim terhadap ketokohan dakwah Said Nursi. Dengan melakukan analisis terhadap beberapa risalah-risalah utama Rasail an-Nur, pengkaji ingin menjelaskan beberapa pendekatan komunikasi dakwah yang berkesan Said Nursi, lisan (verbal) dan bukan lisan (non-verbal), untuk diperkenal dan dicontohi oleh umat Islam hari ini khususnya dalam kalangan pendakwah di Malaysia. Kajian ini merupakan kajian perpustakaan dan analisisnya berdasarkan kerangka analisis teks, melalui penerokaan kitab Rasail an-Nur, rujukan daripada Tullab an-nur (pelajar Rasail an-Nur) serta kajian-kajian lepas oleh para penyelidik. Hasil dapatan mendapati pendekatan komunikasi dakwah Said Nursi dapat dibahagikan kepada 5 bentuk sebagaimana berikut, iaitu: i) komunikasi Dakwah Sesama Ilmuan/Ulama' (Scholar), Komunikasi Dakwah Pemerintah (Government), Komunikasi Dakwah Terhadap Bukan Islam (Non-Muslim), Komunikasi Dakwah Terhadap Musuh Islam (Enemy) dan Terhadap Orang Awam (Society). Ternyata model komunikasi dakwah Said Nursi ini menepati salah satu dari enam (6) teras Malaysia Madani yang menjadi tonggak pentadbiran hari ini.

Kata Kunci: Komunikasi Dakwah, Dakwah Efektif, Badiuzzaman Said Nursi, Rasail an-Nur.

1.0 PENGENALAN

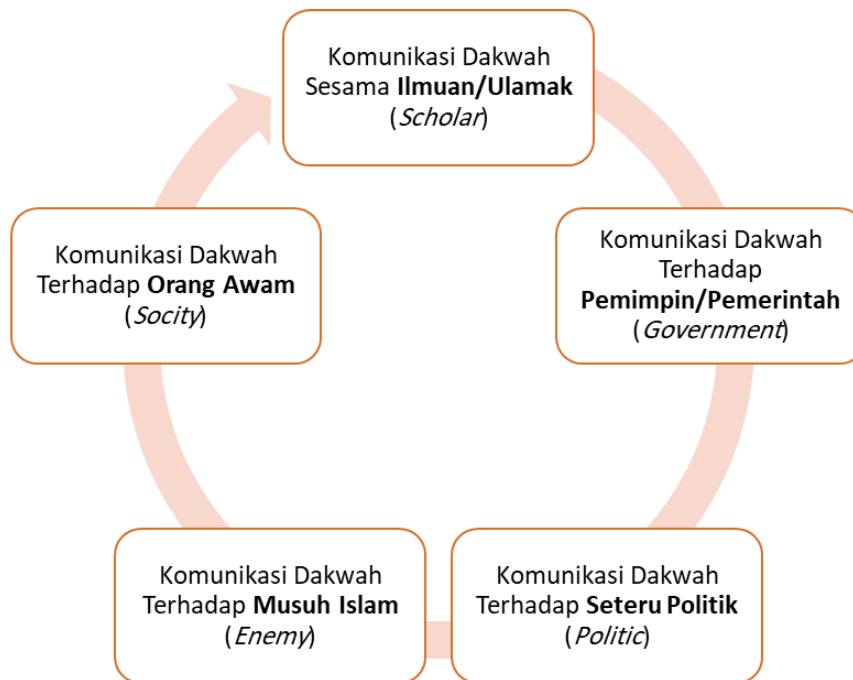
Sebagaimana dijelaskan pada bahagian abstrak, dalam kajian ini, pengkaji berpandangan bahawa tajuk ini amat penting dan perlu dibincangkan dengan terperinci bagi memberikan kefahaman dan kesedaran kepada seluruh masyarakat Islam, khususnya di Malaysia, tentang pentingnya pengetahuan yang mantap terhadap tokoh-tokoh penting Islam kontemporari seperti Badiuzzaman Said Nursi. Di samping itu juga, pengkaji beranggapan amatlah wajar generasi umat Islam ketika ini, khususnya bagi para da'i, mengenali dan memahami dengan jelas pendekatan komunikasi dakwah yang efektif (berkesan) yang dibawa oleh ulama kontemporari ini, selain dari ilmu yang dikongsi mereka.

2.0 OBJEKTIF

- i. Mengkaji kepentingan pengetahuan ilmu asas berkaitan pendekatan komunikasi dakwah yang efektif pada era ini.
- ii. Mengenalpasti pendekatan komunikasi dakwah efektif Badiuzzaman Said Nursi.
- iii. Membina satu model komunikasi dakwah efektif Badiuzzaman Said Nursi terhadap lima kumpulan masyarakat.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Membina satu model Komunikasi Dakwah Efektif Badiuzzaman Said Nursi terhadap lima kumpulan masyarakat, iaitu komunikasi dakwah terhadap Ilmuan/Ulama' (Scholar), Komunikasi Dakwah Pemerintah (Government), Komunikasi Dakwah Terhadap Bukan Islam (Non-Muslim), Komunikasi Dakwah Terhadap Musuh Islam (Enemy) dan Terhadap Orang Awam (Society). Pendekatan dakwah Said Nursi terhadap lima kelompok masyarakat ini mempunyai pendekatan yang berbeza, meliputi aspek lisan dan bukan lisan, bagi memastikan sesuatu penyampaian dakwah itu berkesan. Justeru, garis panduan komunikasi dakwah efektif yang diadaptasi dari kitab Rasail an-Nur dan juga biografi Said Nursi ini merupakan panduan serta rujukan yang julung kali dihasilkan bagi rujukan dan panduan buat semua yang terlibat dalam lapangan dakwah khususnya di Malaysia.



Rajah 1: Model Komunikasi Dakwah Efektif Badiuzzaman Said Nursi Terhadap Lima Kelompok Masyarakat

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Kerangka model komunikasi dakwah Said Nursi yang dicadangkan ini dapat membantu agensi-agensi kerajaan dan swasta berasaskan agama, kumpulan masyarakat dan lain-lain dalam usaha melonjakkan aktiviti dakwah mengikut etika komunikasi Islam yang bersepadu. Berikut adalah kebaikan, kepentingan atau impak model kajian ini, yang pengkaji bahagikan kepada 3 kumpulan, iaitu:

- a) Pertama, untuk penuntut Tullab An-Nur (Pelajar-pelajar serta pengkaji Said Nursi dan Rasail an-Nur). Ini sebahagian usaha pengkaji untuk membantu rakan-rakan Tullab an-Nur, khususnya dalam negara, dalam mempelbagai bahan-bahan bacaan dan kajian-kajian ilmiah berkenaan tokoh Badiuzzaman Said Nursi, dan kitabnya Rasail an-Nur.
- b) Keduaanya terhadap masyarakat awam. Iaitu untuk memperkenalkan tokoh ahli sunnah waljamaah, komunikasi dakwah yang efektif dari dimensi ulamak kontemporari ini, sebagai panduan dan tauladan ketika berdakwah, selain menambah koleksi bahan bacaan berkaitan tokoh mujaddid Islam ini di dalam bahasa Malaysia.
- c) Ketiga terhadap kerajaan. Iaitu dapat membantu agensi-agensi kerajaan berkaitan Islam-Dakwah, termasuk daripada pihak kementerian agama sendiri, serta badan-badan

bukan kerajaan (NGO), persatuan-persatuan dalam usaha meningkatkan syiar Islam melalui jalan dakwah yang elektif dan efektif. Dalam masa yang sama pengkaji ini menyahut saranan kerajaan, agar para penyelidik terus mengkaji dan menghasilkan kaedah dakwah berkesan yang selari dengan dasar Malaysia Madani, agar masyarakat yang berbilang kaum hari ini dapat hidup secara aman dan sentosa.

5.0 KESIMPULAN

Secara umumnya model komunikasi dakwah efektif Badiuzzaman Said Nursi ini yang berbentuk 'serampang dua mata' ini diharapkan dapat membantu pihak-pihak berkaitan kelestarian dakwah di Malaysia, termasuk pihak kerajaan di dalam usaha menyampaikan Islam secara berhemah dan berhikmah, selain memberikan panduan kepada para pendakwah-pendakwah di Malaysia khususnya, untuk menerapkan budaya komunikasi islami yang tepat di dalam sebarang aktiviti dakwah di Malaysia.

PREFERENCES OF MSSM VS OTHER RESTAURANT AMONG UITM PASIR GUDANG STUDENTS

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ABSTRACT

The purpose of this study was to determine how three factors-price, food quality, and environment-relate to student happiness. One of the key motivations for our study has become the inconsistent service delivery across on-campus cafeteria operators. Because of this, it can be challenging to obtain and sustain student satisfaction when dining in restaurants if the service provided does not satisfy their demands. To solve this issue and maximize client happiness, the restaurant must be aware of both the advantages and disadvantages that can impact their operations. This study focuses on investigating the factor of Universiti Teknologi MARA (UiTM) Pasir Gudang students prefer to eat at Medan Selera Sri Mersing (MSSM) compared to other restaurants. Then, their most preferred food, average eating time daily and amount of money spent are determined. A total of 65 students participated in the study at UiTM Pasir Gudang, and it used a convenience sampling method to select the participants. The findings indicate that, after the ambiance and pricing, the food's quality has the greatest influence on students' pleasure. The findings suggest that all of the aforementioned factors actually have a major impact on customer satisfaction, and the stated goals were met. In order to remain viable over time, the university cafeteria needs to make significant improvements to the cost, calibre, and environment of the cafeteria.

Keywords: Satisfaction, Price, Food Quality, Environment.

1.0 INTRODUCTION

This study was to highlight it is simple random sampling, The purpose of this survey, whose topic was "Preferences of MSSM vs. other restaurants among UiTM Pasir Gudang students," was to find out what the students' opinions and preferences were and why they made those decisions.

The goal of the study was to examine the relationships between three variables price, food quality, and environment and student happiness. Our study's main reason for being was the uneven quality of service provided by on-campus cafeteria operators. As a result, if the service does not meet their expectations, it might be difficult to achieve and maintain student pleasure when dining in restaurants. The restaurant needs to be aware of both the benefits and drawbacks that could affect their business to resolve this issue and maximize customer satisfaction. The goal of this study is to determine why UiTM Pasir Gudang students prefer Medan Selera Sri Mersing (MSSM) over other restaurants. Then, the most popular food, daily average for eating, and amount spent are calculated. The study at UiTM Pasir Gudang included 67 students in total, and the participants were chosen using a convenience sample method. The results show that the food's quality has the biggest impact on students' satisfaction, followed by the environment and cost. The results show that all the factors mentioned above have a significant impact on students' satisfaction, and the objectives were

achieved. The university cafeteria must make considerable improvements to the price, quality, and atmosphere of the cafeteria if it is to continue operating in years to come. Since most students live in dormitories and non-residence students lived outside campus, this study aims to learn more about the preferences of students in picking restaurants in the university area and university cafeteria. Instead, of cooking it themselves in the dorm or bringing food from the residence, students are probably eating outside because it is easier and takes less time.

2.0 OBJECTIVES

1. To investigate the factor of UiTM students eat at restaurants compared to MSSM.
2. To determine UiTM students' most preferred food .
3. To determine the amount of money spent by UiTM students on food daily.

3.0 METHODOLOGY

Population: All students of UiTM Pasir Gudang.

Sample: 67 students of UiTM Pasir Gudang.

Sampling technique: Convenience sampling because this method allows for the selection of respondents to be done at the researcher's convenience, we are using convenience sampling. To begin with, we obtain a comprehensive sampling frame and choose 67 students from the population.

Data Collection Method: The questionnaire was administered using the Google Forms platform and was distributed through the online messaging platform WhatsApp.

4.0 RESULTS

Table 1 : Frequency Table of Gender

Gender	Number of students
Male	31
Female	36
Total	67

Based on the Table 1, it is shows to see how many students in UiTM Pasir Gudang have responded to the survey by gender. There are 67 total of students in Uitm Pasir Gudang have responded our survey. 31 (46.3%) male students and followed by 36 (53.7%) female students.

FACULTY IN UITM PASIR GUDANG

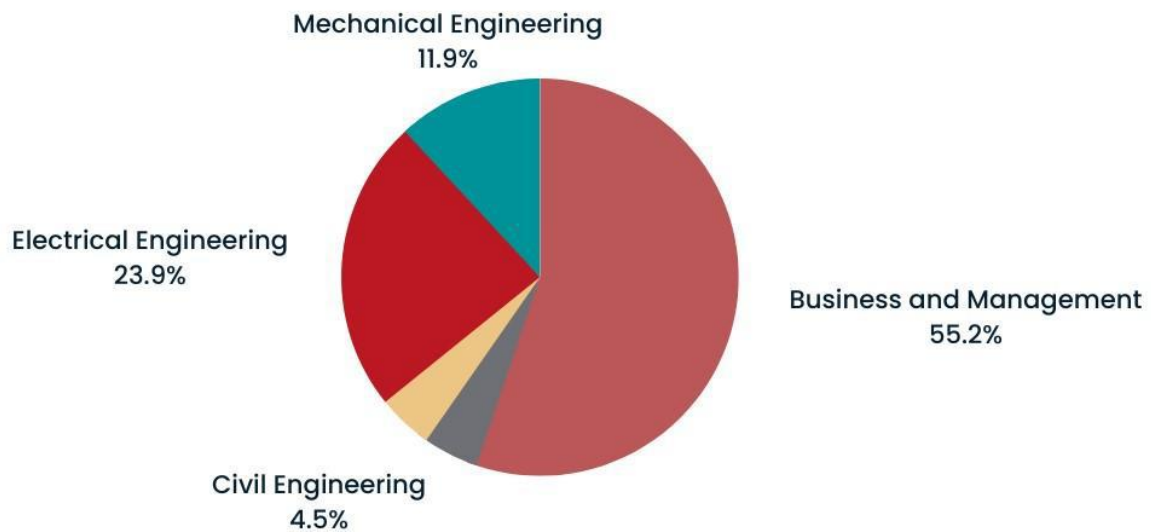


Figure 2 : Number of respondents based on faculty

Based on pie chart above, shows the number of students in UiTM Pasir Gudang who responded to our survey based on their own faculties. 37 respondents (55.2%) from the faculty of business management are the majority of respondents to the a survey. The faculty of civil engineering and chemical engineering has the lowest response rate, with both 3 (4.5%) respondent.

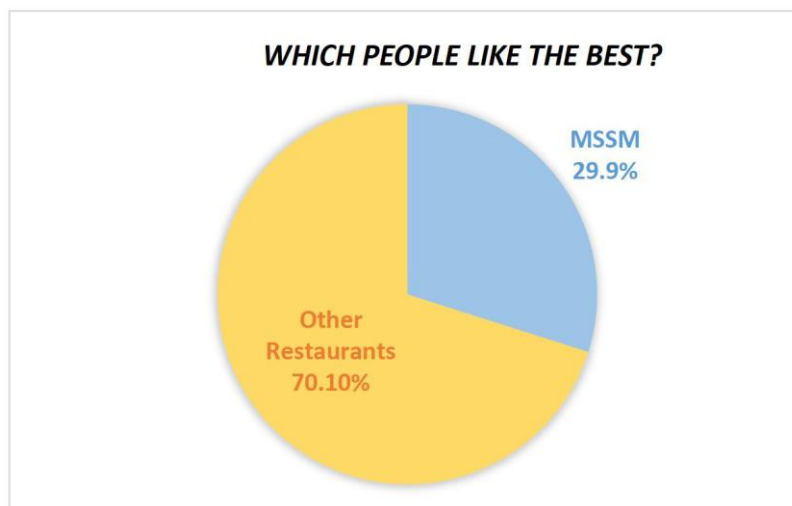


Figure 3 : Pie chart

Based on the pie chart above, it shows the number of students who choose between eating at MSSM or other restaurants. It looks like other restaurants is ranked higher than MSSM by 47 respondents (70.1%). While MSSM had 20 (29.9%) respondents.

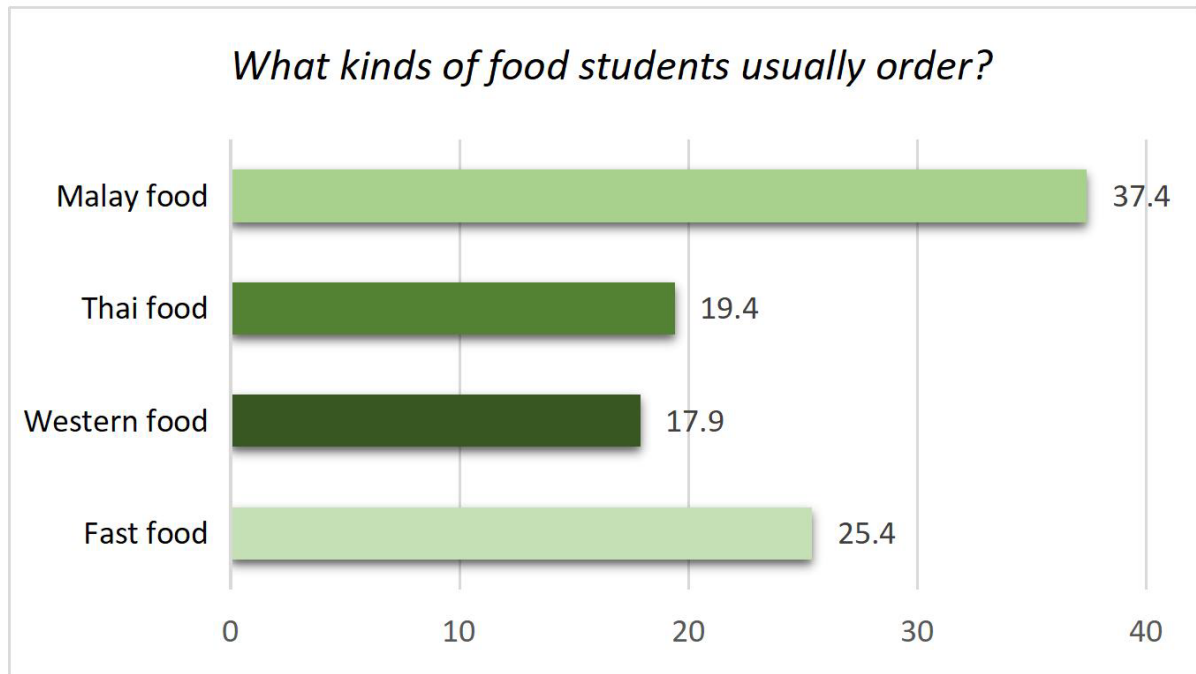


Figure 4 : Bar chart

The bar chart above, shows the types of foods that each student usually orders when eating out or using grab. Malay food had the highest responses, with 25 (37.3%) whereas fast food, which also obviously a favourite of most student usually order, had 17 (25.4%). Thai and western food has been chosen by 13 (19.4%) and 12 (17.9%) respondents, too.

Table 5 : Frequency table of time taken by students.

Reasons why choose other restaurants	Number of students
Near Uitm Pasir Gudang	15
Good environment	12
The area that makes it interesting	9
Affordable price	22
Other reasons	9
Total	67

The table above, shows the number of students why do they prefer other restaurants than at MSSM. Students could choose one of five options and then respond. The "affordable price" as the highest reason in the questionnaire by 22 (32.8%) respondents, followed by being "near to Uitm Pasir Gudang" by 15 (22.4%) respondents. Additional reasons given by us and students were "the area makes it interesting" (9 (13.4%)), "good environment" (12 (17.9%)), and "other reasons" 9 (13.4%) respondents.

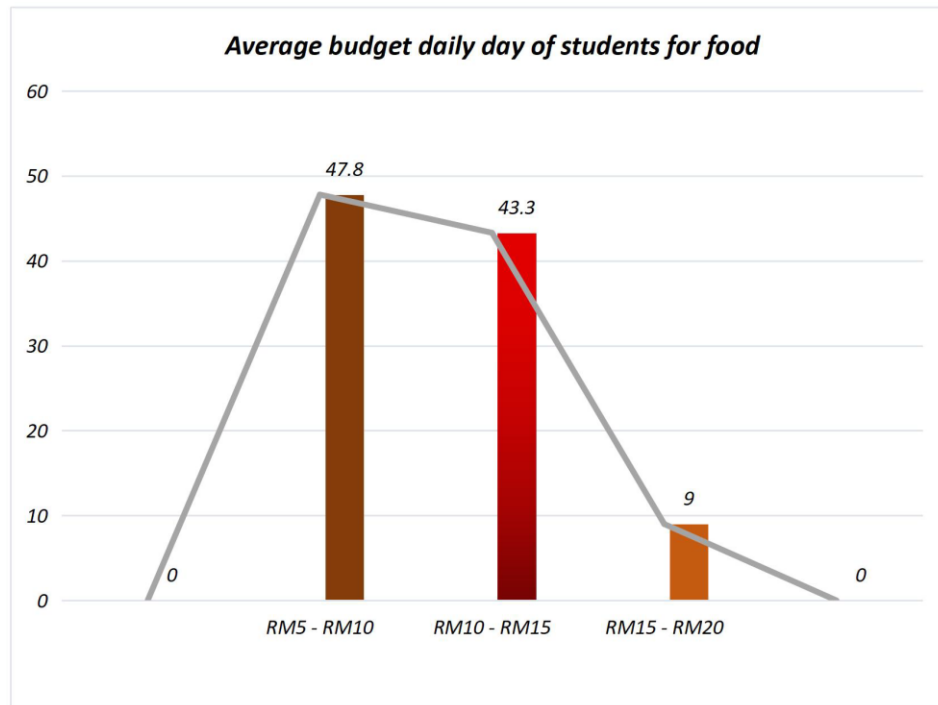


Figure 6 : Average budget

From the chart above, 32 (47.8%) of the students at UiTM Pasir Gudang stated that their average daily food budget ranged from RM 5 to RM 10. The price range of RM 10 to RM 15 is following that, with 29 (43.3%) respondents, followed by RM 15 to RM 20 with 6 (9%) respondents.

5.0 CONCLUSION

The study reveals that the majority of participants preferred to eat at other restaurants rather than MSSM. As a result, students don't purchase food at MSSM because of these three factors a lack of food options, a constant supply of the same items, and poor food quality. Purchasing food from other restaurants is the only way they appear to find satisfaction. Not only that but students also concurred that non-MSSM foods are more reasonably priced. In addition, because it is widely believed that you are what you eat, they also needed to consider the nutritional value of the food they consumed. To lead a healthy lifestyle, students need to take care of both their physical and mental health. They should begin by eating a healthy diet. Students can be more productive and more motivated to study when their bodies are healthy.

TYPE OF TRANSPORTATION USED BY NON-RESIDENT UiTM PASIR GUDANG STUDENTS TO CLASS

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ABSTRACT

Universities and transit agencies in the Universiti Teknologi MARA (UiTM) Pasir Gudang have been developing novel approaches to providing and financing mobility services on and near university campus. Many transportations provide significantly more service and transport significantly more passengers than their non university counterparts. In this study, the type of transportation used by the non-resident students is determined. The goal is to collect all data from different types of transportation and demographics that exist on university campus, as well as to investigate the relationship between different types of mode of transportation and reason, time taken, budget, distance. These aspects of university transport systems were investigated using demographic data and a questionnaire. The questionnaire was distributed to all UiTM Pasir Gudang students, with 82 responding with sufficient valid data and information to be included in the study. Key findings indicate that student characteristics such as age, gender, and income have a significant impact on their mode choice decision. Travel time from home to the university has been found to have a significant negative impact on the choice of walking as a mode of transportation to university. It has also been discovered that students who ride motorcycles to university are willing to switch to public transportation if an efficient and dependable public transportation system is available.

Keywords: Mobility, Data, Transportation.

1.0 INTRODUCTION

This study specifically highlights the independent variable, the Mode of Transportation among UiTM Pasir Gudang Non-Resident students, as it plays a crucial role in enhancing the convenience and efficiency of student life. Understanding the factors that contribute to the choice of transportation modes is essential in order to improve the transportation environment and address the unique needs of students.

Rather than solely relying on universities and schools to provide transportation services, it is important for parents and students themselves to stay updated and explore the effectiveness of different modes of transportation. By staying in touch with students and considering their preferences for transportation while studying, students can improve their overall experience and achieve greater motivation. Additionally, universities can support students by identifying their transportation needs and offering appropriate services and facilities.

This study aims to explore why students consider their mode of transportation. The choice of transportation can impact various aspects of student life, such as academic performance, mental well-being, and social engagement. By prioritizing factors such as convenience, safety, cost-effectiveness, and environmental impact, students can make informed decisions that contribute to their overall well-being.

It is evident that in order to fully devote their focus to demanding academic pursuits, students need to maintain their physical, mental, and psychological well-being. This study emphasizes the significance of considering the mode of transportation as a key factor in achieving an optimal university experience and facilitating student success.

2.0 OBJECTIVES

1. To determine the mode of transportation used among UiTM Pasir Gudang Non-Resident students.
2. To identify the factors affecting the selection of transportation modes.
3. To identify the time taken by the student to reach UiTM Pasir Gudang.
4. To identify the student travel distance to UiTM Pasir Gudang.
5. To evaluate the students' weekly spending on transport.

3.0 METHODOLOGY

Population: All Non-Resident students of UiTM Pasir Gudang.

Sample: 82 Non-Resident students of UiTM Pasir Gudang.

Sampling technique: We use Convenience Sampling because every student at UiTM does not have framing sampling and has a non-probability technique. Non-probability sampling techniques are used when the generalization of the population is not important, and at the same time the sampling frame from which the sample will be selected is not available or difficult to obtain. Convenience sampling, as the name suggests, is a procedure where the selection of respondents is at the convenience of the researcher. Often, respondents are chosen because they are in the right place at the right time where the researcher conducts the survey.

Data Collection Method: The questionnaire was administered using the Google Forms platform and was distributed through the online messaging platform WhatsApp.

4.0 RESULTS

Table 1 : Frequency Table of Faculty

Faculty	Number of Students
Business and Management (FPP)	49
Chemical Engineering (FKK)	14
Electrical Engineering (FKE)	9
Civil Engineering (FKA)	6
Mechanical Engineering (FKM)	4
Total	82

We can observe that the Faculty of Business and Management (FPP) has the highest number of students that answer the survey, comprising approximately 60% (49 students) of the 82 total student population. The Faculty of Chemical Engineering (FKK) follows with around 17% (14 students). The Faculty of Electrical Engineering (FKE) accounts for approximately 11% (9 students), while the Faculty of Civil Engineering (FKA) has around 7% (6 students). Lastly, the Faculty of Mechanical Engineering (FKM) has the smallest percentage, with approximately 5% (4 students).

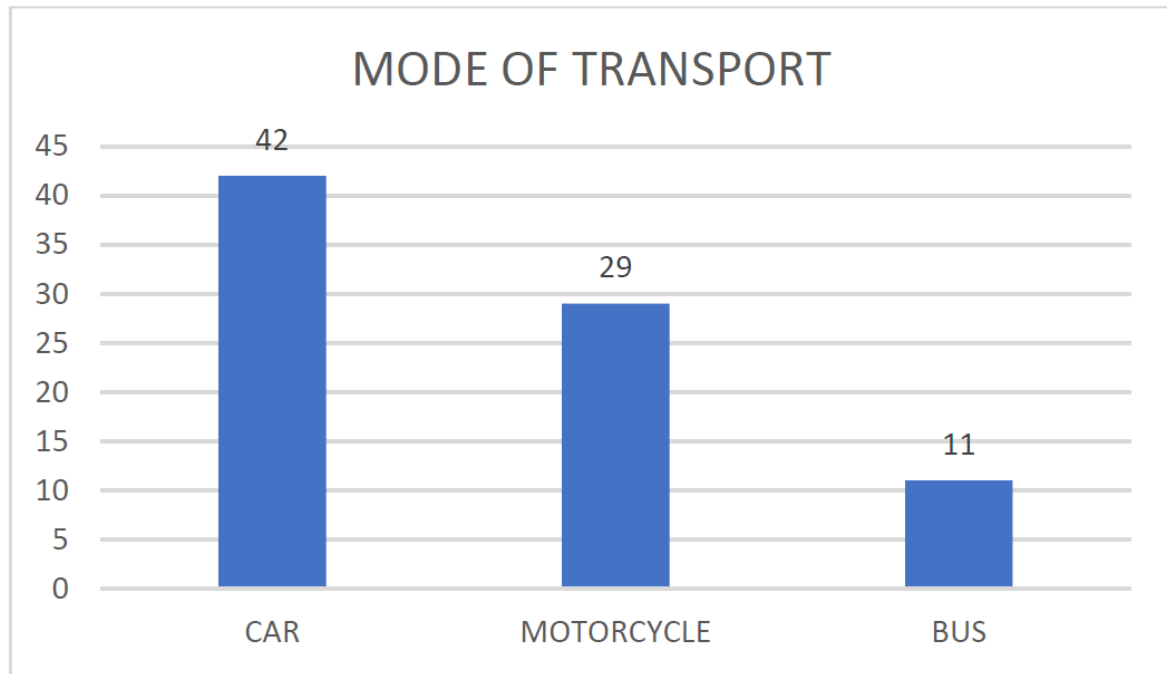


Figure 2 : Number of students who prefer to eat at MSSM and other restaurants

From the bar chart above, we can observe the majority of students, approximately 51.22% (42 student), use cars as their mode of transportation. Around 35.37% (29 students) use motorcycles as their preferred mode of transport. Approximately 13.41% (11 students) rely on buses for their transportation needs. These percentages provide insights into the distribution of transportation modes among students at UiTM Pasir Gudang. It indicates that cars are the most popular mode of transport among the students surveyed, followed by motorcycles and buses. This information can be helpful for transportation planning, infrastructure development, and understanding the commuting patterns of the students at the campus.

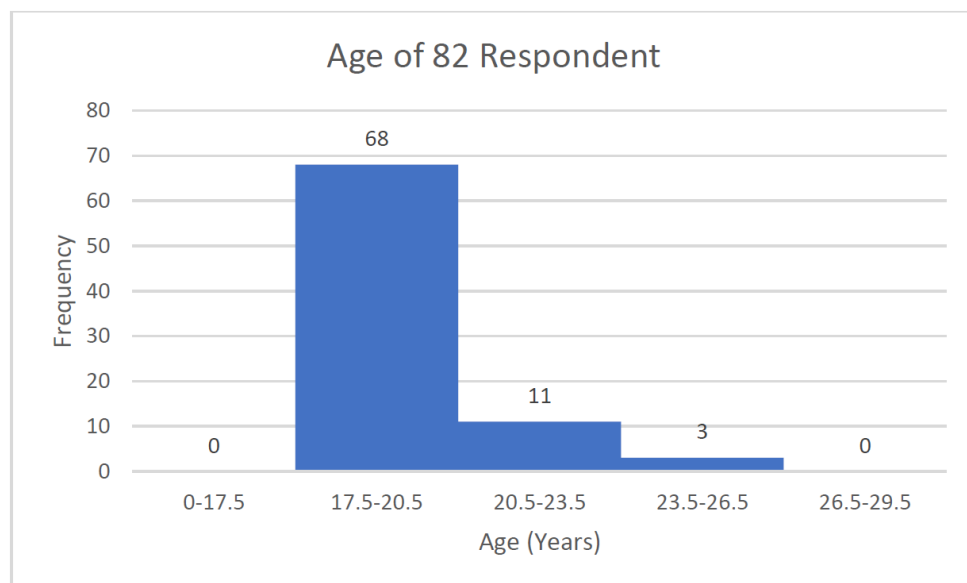


Figure 3 : Histogram of age of respondents

Based on the histogram chart above, we can observe the majority of students, approximately 82.93% of the total student population, fall within the age range of 18-20. This indicates a significant concentration of younger students at UiTM Pasir Gudang. A smaller percentage, approximately 13.41% of the students, are in the age range of 21-23. This suggests a smaller number of students who are slightly older than the majority. Only a few students, approximately 3.66%, are in the age range of 24-26. This indicates a relatively small number of students in the higher age bracket. Interestingly, there are no students reported in the age range of 27-29. This may be due to a specific demographic characteristic of the student population at UiTM Pasir Gudang or limitations in the data provided.

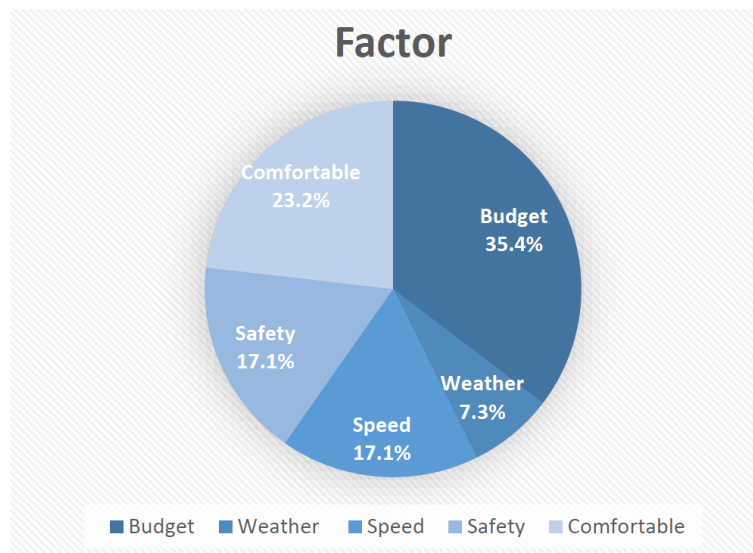


Figure 4 : Factor that effect the mode of transportation

Based on the pie chart above, the factor that effect the mode of transportation, which is divide to 5 factor based on student preference. There are total of 84 students who participated to survey the factors. Total 29 who use transportation base on budget, when 19 other like to feel comfortable when using transportation. Both speed and safety factor had 14 students each, while least factor that that only had 6 student voting is weather. Based on the chart above, we can see many students had the budget factor when using transportation.

Time Taken (minute)	Number of student (f)	Cumulative frequency	Class boundaries	Midpoint (x)	fx
1-10	45	45	0.5-10.5	5.5	247.5
11-20	24	69	10.5-20.5	15.5	327
21-30	11	80	20.5-30.5	25.5	280.5
31-40	2	82	30.5-40.5	35.5	71

Figure 5 : Frequency table of time taken by students.

We can see that the majority of students which is 45 who take times around 1 to 10 minutes to arrive at UiTM Pasir Gudang. This shown a significant amount of students who lives near the campus UiTM Pasir Gudang. But 24 students takes around 10-20 minutes to arrive while 11 student taking time 20-30 minutes. This shown a smaller number of students who are slightly far from UiTM Pasir Gudang than the majority. And only a few students, as only 2 students from the survey live far away which they take 30-40 minutes to arrive at UiTM Pasir

Gudang. This could be due to a how they find their rent house or their parent already live far but not far enough to rent a house.

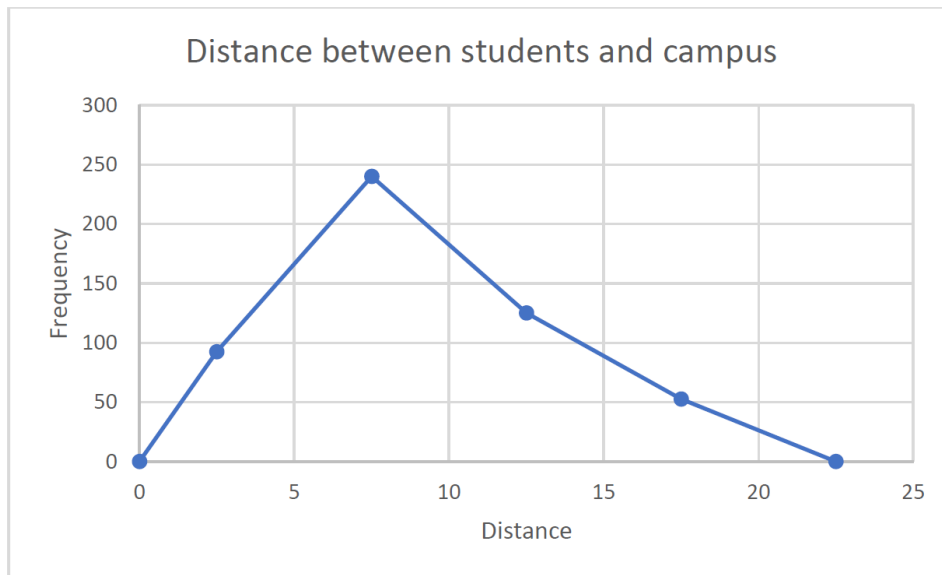


Figure 6 : Distance to campus

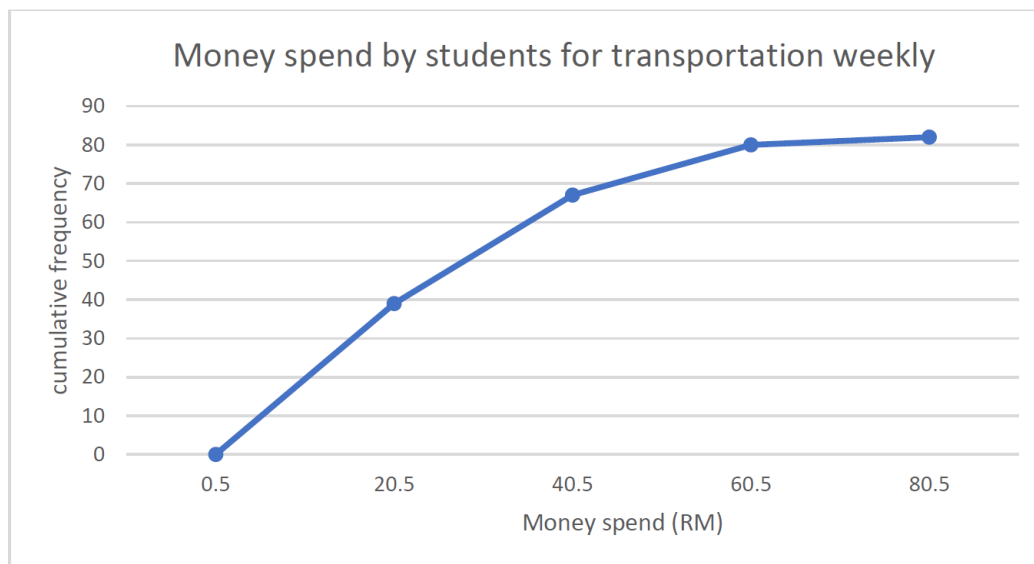


Figure 7 : Less than Ogive for money spend by students for transportation weekly.

The data set's lowest value is Rm 0.50. On the horizontal axis, this is where the ogive begins. The data's highest value is Rm 80.50 since here is where the horizontal axis's ogive terminates.

5.0 CONCLUSION

In conclusion, we can see that most UiTM Pasir Gudang Non-Resident students choose car as their main mode of transport and the main reason is budget. Most students take less than 10 minutes to arrive at the campus. Many of the students live in a radius of 5 Km from the campus. We also get that the students spend around RM20.00 on transportation weekly. The survey on modes of transport among UiTM Pasir Gudang Non-Resident students yields significant implications and offers valuable recommendations for universities and relevant stakeholders.

Implications and Significance: The survey findings provide insights into the demand for specific transportation infrastructure, such as parking facilities for cars, designated areas for motorcycles, or improved accessibility for bus passengers. This information can guide campus planning efforts and ensure the provision of adequate facilities to accommodate students' transportation needs. Understanding the prevalent modes of transport enables universities to identify safety concerns and take appropriate measures. Enhancing road safety measures, enforcing helmet usage, and improving infrastructure for vulnerable road users can contribute to creating a safer transportation environment for students.

SATISFACTION TOWARDS SPORTS FACILITIES IN UITM PASIR GUDANG

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ABSTRACT

The goal of facilities management at a sport centre is to assist with and maintain the facilities there where, in some instances, sport centre management did not have facilities. The sports facilities in Universiti Teknologi MARA (UiTM) Pasir Gudang were selected as the case subject for this study. This survey investigates the satisfaction of UiTM students towards the sports facilities at UiTM Pasir Gudang. Discovering how UiTM's facilities management is carried out is the objective of this study, to determine the favourite sport among UiTM Pasir Gudang students, to investigate how frequent the students do sports, to find the mean, median and mode of the sports based on age and gender, and to investigate the satisfaction on sport facilities in Pasir Gudang. The study found that the students usually express pleasure with the facilities, praising their skills, availability of equipment, and cleanliness. Better upkeep, more sports, later hours, and improved safety precautions are suggested as areas for development. In conclusion the findings of this study can assist management of facilities make decisions that will improve the pleasure and experience of students.

Keywords: Facilities, satisfaction, sport.

1.0 INTRODUCTION

The focus of the study is to better understand how students at UiTM Pasir Gudang feel about many distinct aspects of sports preferences, frequency of participation in sports, statistical variables (such as age and gender), and satisfaction with sport facilities. To understand students' choices for sports, decisions, and understands of sports facilities, the background of the study consists of discussing these aspects. The study aims to determine the favorite sport among UiTM Pasir Gudang students, which provides an understanding of the most popular sport in the student community. The students decisions and interests in sports activities can be seen by this objective. Investigating how frequently the students engage in sports provides insights into the level of physical activity and participation in sports among the student population. This objective helps understand the students' sports habits and patterns. A detailed investigation of how age and gender affect sports choices is possible by looking at the mean, median, and mode of various sports. The study can discover any variances or trends in sports preferences across various age groups and between genders by examining these data.

The objective of the investigation on Pasir Gudang's satisfaction with its sports facilities is on how students understand and utilise the facilities that are offered. To increase the students' use of the sports facilities, this objective is to determine their level of satisfaction and highlight areas that should be improved.

By focusing on these goals, this study aims to improve our knowledge of students at UiTM Pasir Gudang's preferences for sports, frequency of participation, demographics, and satisfaction with sport facilities. The study's the background focuses the importance of

investigating these topics in order to give helpful insights for enhancing the institution's sports-related offers and facilities.

2.0 OBJECTIVES

- 1.To determine the favourite sport among UiTM Pasir Gudang students.
- 2.To investigate the satisfaction on sport facilities in Pasir Gudang.

3.0 METHODOLOGY

Population: Students at UiTM Cawangan Johor Campus Pasir Gudang

Sample: 68 students of UiTM Cawangan Johor Campus Pasir Gudang

Sampling technique: Convenience Sampling

Data Collection Method: The questionnaire was administered using the Google Forms platform and was distributed through various platforms.

4.0 RESULTS

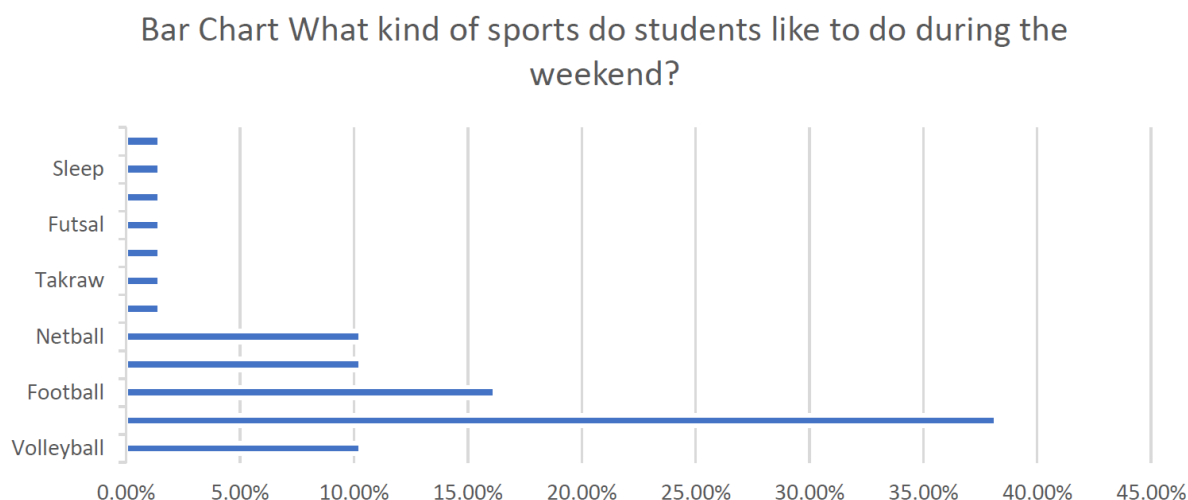


Figure 1 : Bar chart

Based on the bar chart above, the preferences of students for weekend sporting activities may be seen by looking at the bar chart. According to the data 26 students chose badminton as their preferred sport, making it the most popular among the pupils. Football comes in second with 11 students, followed by volleyball, frisbee, netball, and skateboarding, each of which has 7 participants. It's crucial to keep in mind that some sports have lower participation rates, such as Rugby, Takraw, E-sports, Futsal, Sleep, and Basketball, with just two or one student (or student(s)) preferring each activity.

Table 1 : Frequency table

Students Agree That Facilities In Uitm Pasir Gudang Is Satisfying	Number Of Students
Yes	21
No	10
Not Really	37
Total	68

According to the report, 21 out of 68 students believe that the facilities at UiTM Pasir Gudang are satisfying. However, some students, express dissatisfaction which has (10 students) or a lack of total satisfaction (37 students) with the facilities. It's important to keep in mind that the "Not Really" category shows a degree of neutrality or conflicting perspectives, implying that some students may find certain features of the facilities to be good while having concerns about others.

A less than ogive showing age of the respondent

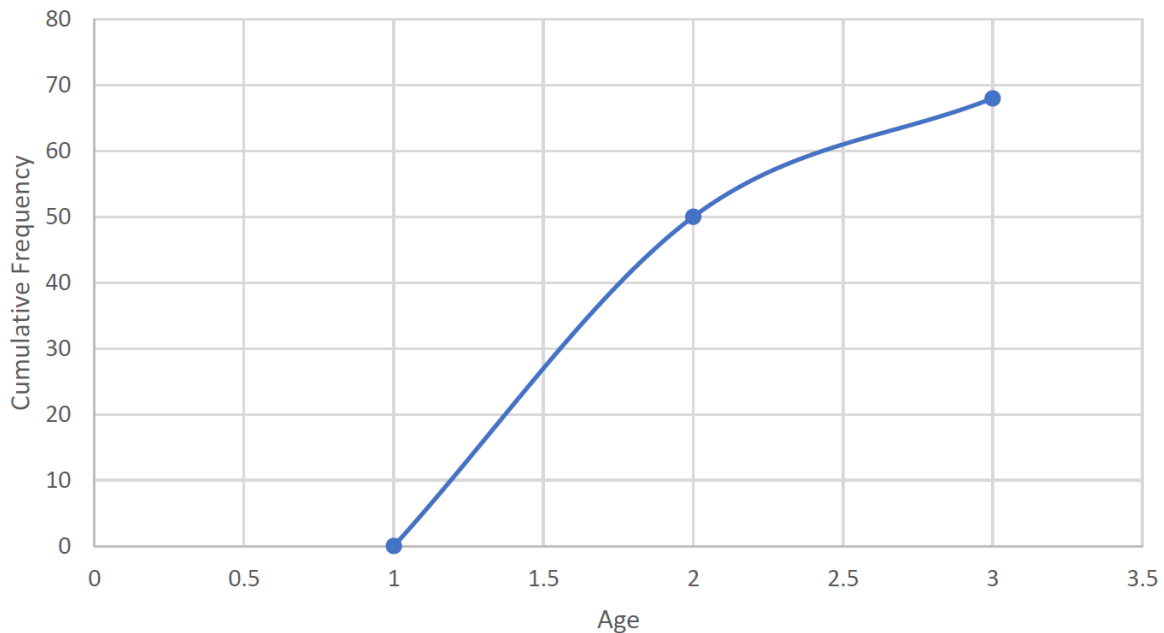


Figure 3 : Less than ogive

Since the ogive begins on the horizontal axis at this point, 1 is the minimum value in the data set. Given that this is the point on the horizontal axis where the ogive terminates, the data's maximum value is 3.

5.0 CONCLUSION

The study shows that most of the participants agree that the facilities in UiTM Pasir Gudang need to be upgraded focusing on increasing the types of equipment. The only way they see order to spend their weekend is by doing sports. Students need to make it balanced with hanging out with friends and doing sports during the weekend. They need to stay healthy and fit for their upcoming class. When they have a balanced life, students can be more productive and more spirit to class.

FAVOURITE FAST FOOD AMONG UITM PASIR GUDANG STUDENTS

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ABSTRACT

Fast food is quick to prepare, simple to access, reasonably affordable, and tastes well. They frequently come in huge servings and are high in salt, sugar, and energy but poor in fibre and minerals. Numerous studies have documented a number of adverse consequences linked to fast food eating, from childhood weight gain to an increased risk of diabetes. A diet that is high in calories, saturated fat, as well as body fatness, and many more has been related to increased fast food intake, which can have an adverse effect on one's health. The combination of these nutritional elements and a sedentary lifestyle may cause health issues. The objectives of this study is to determine and find the factor of choosing fast food among UiTM students. Then, the mean and median of the chosen fast food are calculated and the consumer's weekly/monthly spend is evaluated. The advantage of choosing fast food is people can reduce their time to prepare a food but too much of fast food consumption can lead to a rapid spike in blood sugar. In conclusion, it can be concluded that the modern style of life in our societies gave rise to fast food. Unfortunately, it has negative impacts on the body and health of people.

Keywords: Fast food, Calories, Lifestyle, UiTM Students.

1.0 INTRODUCTION

Our study particularly highlighted the independent variable of the preference for the 'Favorite Fast Food Among UiTM Students' in finding out what kind of fast food they mostly choose and how much it costs them during their student life to get it. Therefore, it is essential to understand the factors that leads to it so that we could find a way to control and limit ourselves in spending money. For universities, they should seek the constant update of why students always bought fast food even there are cafes that is available inside their campus. By doing this, it could help to improve old existing facilities to a new one. It will also help to meet the needs of students in university during their study journey and save their money from spending on unnecessary things.

As everyone known, fast food is a type of mass-produces food designed for commercial resale, with a strong priority placed on speed of service. It is sold in restaurant or store with frozen, preheated or precooked ingredients and served in packaging for dine in and takeaway. KFC and McDonald could be examples of fast food restaurant that can get food prepared less than 10 minutes with a full set meal for dine-in and less than 30 minutes for delivery. Due to the taste that is more delicious and easy to get, fast food always be the first choice for people to eat. As we go to the restaurant, we could even see kids and the older enjoying eating fast food too. We can also order it in online by opening the official app and pay with online payment for delivery and this is what happen to our university students. They have a clear access on both mobile phone and internet to order fast food everyday.

Eating delicious food could also leads to happiness. Some studies suggest that under certain conditions, fast food may increase happiness, though other studies demonstrate that fast food can indirectly undermine happiness. The positive impact of food consumption on well-being is not limited to what people consume but extends to how they consume it and social factors related to eating. But, we as Muslims itself must restrain our-self from eating for too much. Even our Prophet Muhammad S.A.W prohibits us from consuming any type of food and drink in an excessive amount. We are even encourage to be simple in everything, including eating. Eat according to our need, not our lust and appetite.

2.0 OBJECTIVES

1. To determine the most favouritism fast food among UiTM students.
2. To find the factors of choosing fast food compared to other restaurants.
3. To calculate the mean of the most selected fast food.
4. To evaluate the consumer's average weekly/monthly spend on junk food.
5. To calculate the median of student age who like to eat fast food.

3.0 METHODOLOGY

Population : All students of UITM Cawangan Johor Campus Pasir Gudang

Sample : 62 students of UITM Cawangan Johor Campus Pasir Gudang

Sampling technique : Convenience Sampling

Data Collection Method: We use questionnaires which are Google Forms and distribute it through online platforms including social media.

4.0 RESULTS

Do you like to eat fast food?
62 responses

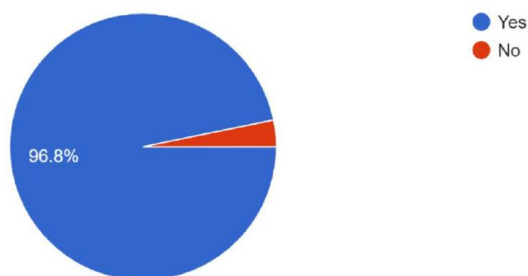


Figure 1: Pie chart based on student like to eat fast food

Based on the Pie Chart above, most student like to eat fast food which has 96.8% which equal to 60 students. Next, theirs is only 3.2% which equal to 2 people don't like to eat fast food.

Number of students have ever been diagnosed with a mental health disorder before

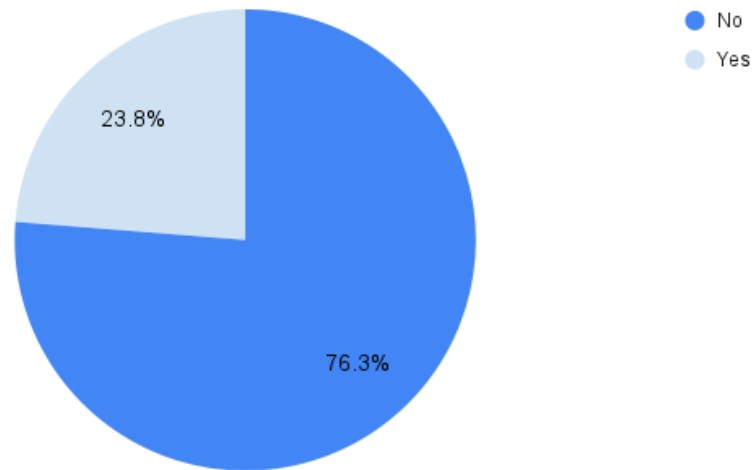


Figure 2 : Pie Chart

Based on the pie chart above, we can conclude that most of the students who have been diagnosed with mental disorders before are 76.3% (61 students). For students who have never been diagnosed with a mental health disorder before, that is 23.8% (19 students).

Table 1 : Frequency table

Category	Number of student
KFC	19
McDonald's	30
Texas	3
Pizza Hut	1
Domino's	4
Subway	0
Burger King	2
Bask bear	1
All above	2
Total	62

McDonald's has the most respondents which has 48.4% which equal to 30 students. The second highest percentage respondents are KFC which has 30.6% which equal to 19 students. Next, the most student like is Domino's which has 6.5% which equal to 4 students. The third least that student choose is Texas which has 4.8 which equal to 3 students. The second least that student choose is Burger King which has 3.2% which equal to 2 students. Lastly, the least that student choose is Pizza Hut and bask bear which has 1.6% which equal to 1 student only. Next is student that choose all above has 3.2% which equal to 2 students.

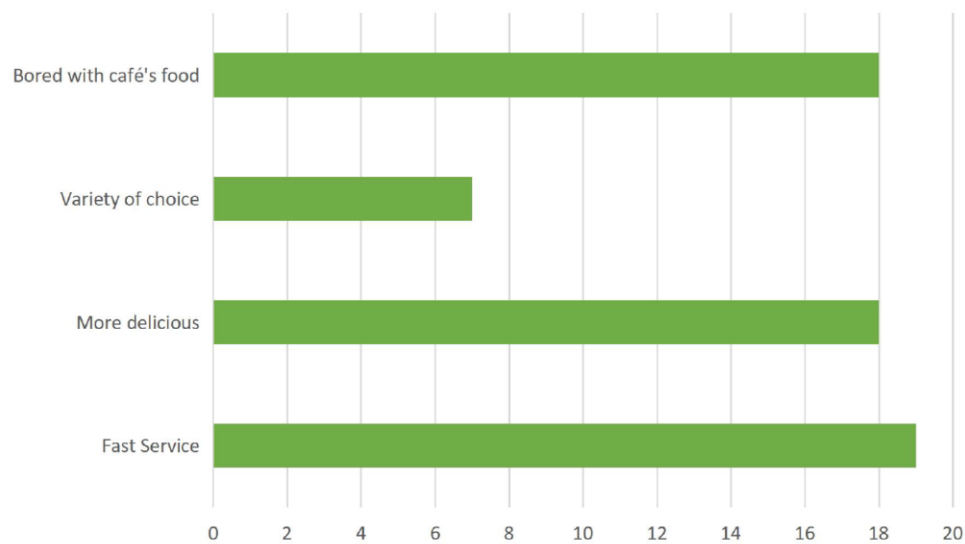


Figure 2 : Bar chart of why student choose fast food

According to the Bar Chart, the most student choose fast food is because of fast service which has 30.6% which equal to 19 students. The second most student respondents are more delicious and bored with cafe food which has 29% which equal to 18 students. Lastly, the least of student respondents is variety of choice 11.3% which equal to 7 students only.

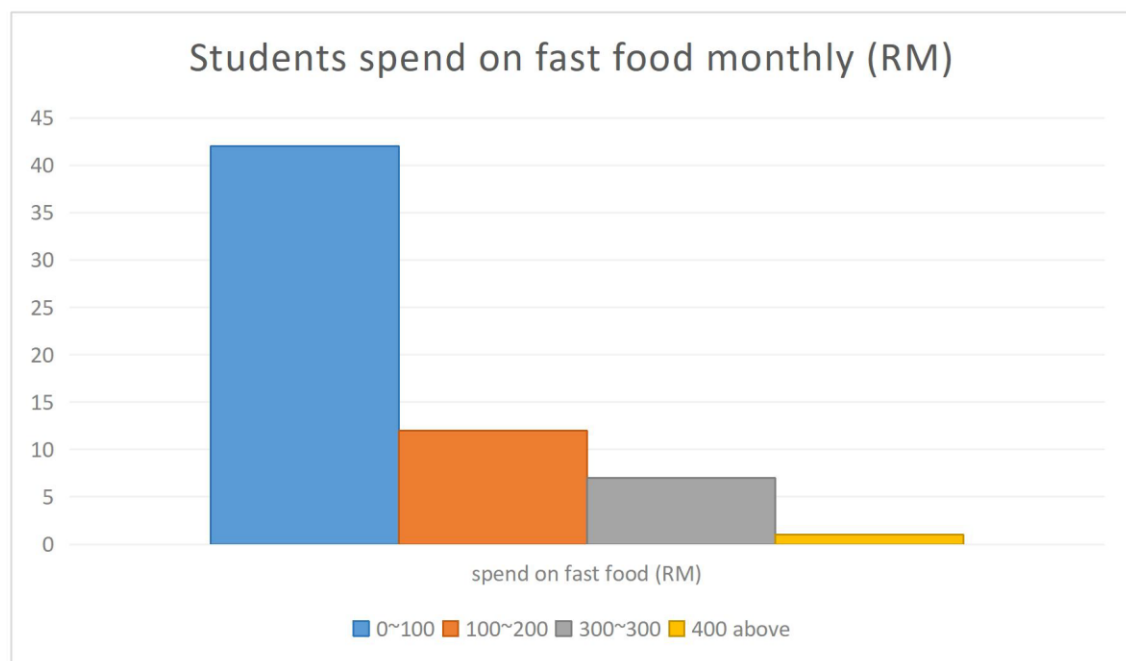


Figure 3 : Histogram

According to the histogram chart above, the majority of students (42) spend between RM0 and RM100 per month on fast food. Next, spend approximately RM100 to RM200 for a total of 12 students. Spend between RM300 and RM400 for a total of seven students. Finally, students who spend RM400 or more have the fewest (1).

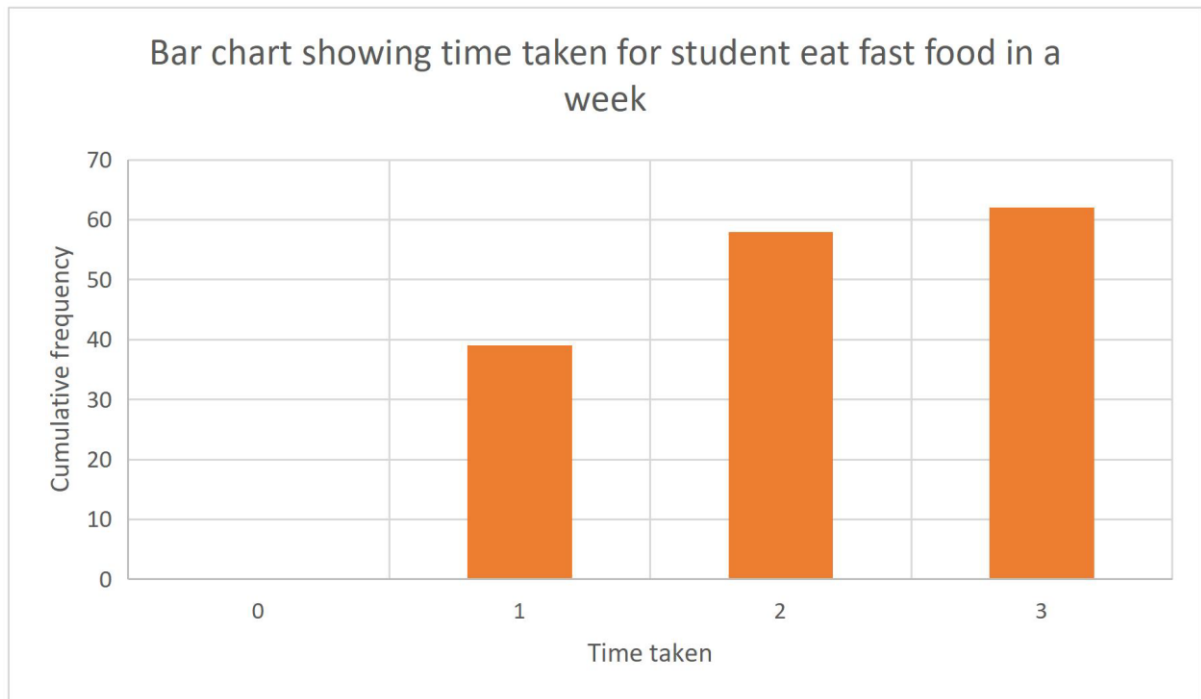


Figure 4 : Bar Chart showing time taken for student eat fast food in a week

Based on the Bar Chart above, most students like to eat fast food once a week which has 62.9% which has equal to 39. Second, most students like to eat fast food twice a week which has 30.6% which equal to 19 students. Lastly, most student like to eat fast food more than 3 time a week which has 6.5% which equal to 4 students.

5.0 CONCLUSION

Favourite fast food survey was conducted among UiTM Pasir Gudang students. The questionnaire was distributed via Instagram and WhatsApp and received 62 responses from students selected using stratified sampling. A stratified sample is used when the population is a large variation in the population occurs.

The data collected from the survey shows that, more than half of the respondents are female. Regarding their status, most of them are still single. Following that, a large number of participants were from the Faculty of Business Management. The majority of respondents defined that students are very fond of fast food.

DAILY USAGE OF MOBILE PHONE AMONG UiTM PASIR GUDANG STUDENTS

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ABSTRACT

The use of smartphone among university students in the 21st century is seen as an important part of their life because of its advanced features. Students use their smartphones to accomplish their various daily tasks. Reviews from various studies revealed that students utilize smartphones for various purposes. This study focuses on determining the activity prioritize, average time spent per day, amount of bills that they pay and addiction behaviour towards mobile phones. The sample of the study is 64 UiTM Pasir Gudang students. This study also review the relevant literature on smartphone usage pattern among students and identify the positive and negative effect of smartphone on students by focusing on education, psychology and social aspect. This study found that most of the students utilize smartphones for entertainment, social and education purposes. Therefore, the review of this study is important in providing the outcome of smartphone use time spent, bills usage, and the factor addicting towards mobile phones.

Keywords: Mobile phone, Price, Experience, Addicting.

1.0 INTRODUCTION

A mobile phone is a portable telephone that can make and receive calls through a radio frequency connection while the user is traveling within a telephone service area. Mobile phones have become a requirement for all students at UiTM Pasir Gudang, regardless of programme or age. This is because they require a mobile phone to complete their assignments and to utilise during class. Today's world is so technologically advanced that students must utilise technology, particularly mobile phones, to conduct research, stay up to speed on new information, and so on.

2.0 OBJECTIVES

1. To determine activity prioritize on the phone.
2. To find the average time spent on mobile phones per day.
3. To calculate the amount of phone bills that students are willing to pay per month (RM).
4. To determine the addiction behavior towards mobile phones among UiTM Pasir Gudang students.
- 5.

3.0 METHODOLOGY

Population : All students in UiTM Pasir Gudang

Sample : 64 students selected at random from UiTM Pasir Gudang

Sampling technique : Convenience Sampling

Data Collection Method: We use questionnaires which are Google Forms.

4.0 RESULTS

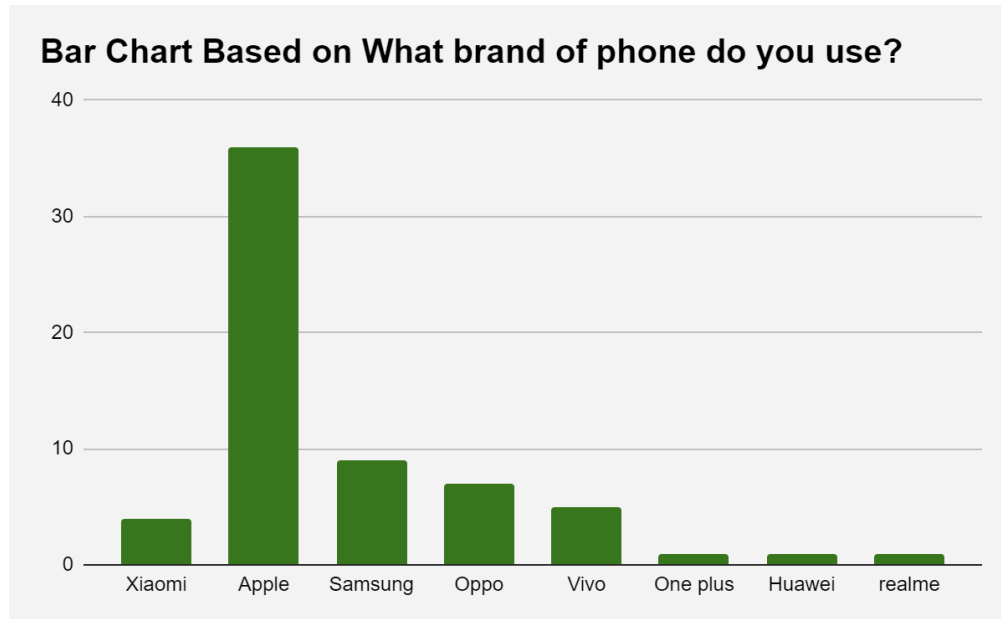


Figure 1: The Number Of Students Based on What Brand of Phone Students use

According to the above bar graph, Apple, with 36 users, has the most respondents. Samsung, which has a total of 9 users, comes in second with the most respondents. Users of Xiaomi, who make up the second-fewest respondents with 4 users. The least value shared by company One Plus, Huawei and Realme which is 1 each. Lastly, Oppo has 7 respondents and Vivo has 5 respondents.

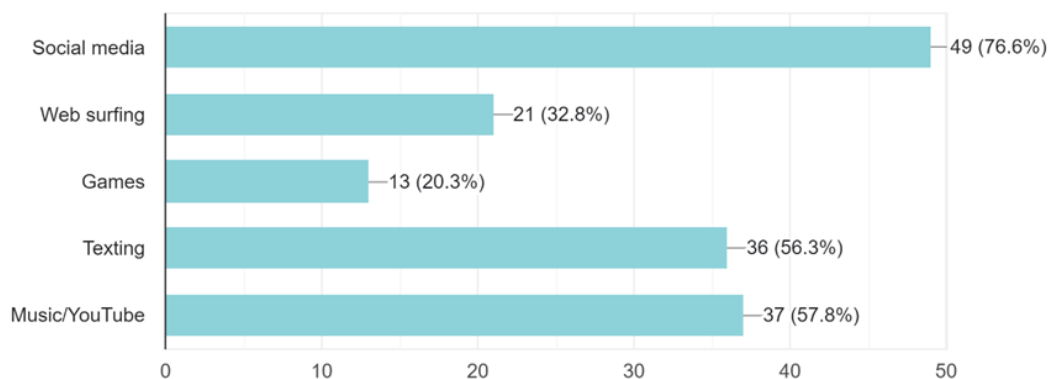


Figure 2 : The Number Of Students Based on Activity Students Prioritize on the Phone.

According to the bar graph above, social media has the most number of respondents (49 students). Music and YouTube received the second-most responses, with a total of 37 students. Web surfing, which includes 21 students, is the second-lowest category of respondents. Games, with 13 students, received the fewest responses. Last but not least, texting with 36 respondents.

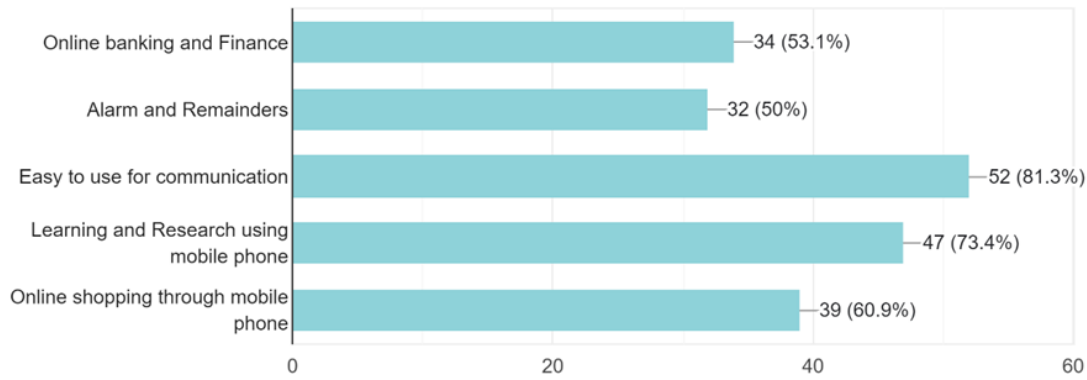


Figure 3 : Bar Chart Based on What Factor of Addiction Towards Mobile Phones

Based on bar chart above, easy to use for communication has the most respondents which has 52 students. Learning and research, which had 47 responses overall, came in second place with the most responders. Online banking and finance, which includes 34 students, come in second with the fewest respondents. Alarms and reminders, which include 32 students, received the fewest responses. The final point is on online buying, which had 39 responds.

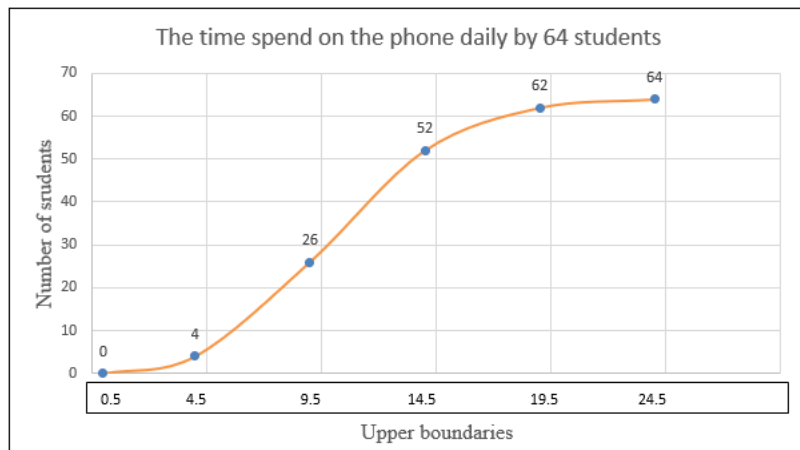


Figure 4 : Ogive based on Time Spend on the Phone Daily by 64 Students

According to the ogive above, the time period 10–14 hours has the highest respondents, with 26 students. Five to nine hours, with a total of 22 pupils, received the second-highest number of responses. Consequently, 1-4(hours), which includes the equivalent of 4 pupils, received the second-fewest responses. 20-24(hours) has the fewest respondents, with only 2 pupils. Finally, 15 to 19 hours with 10 students.

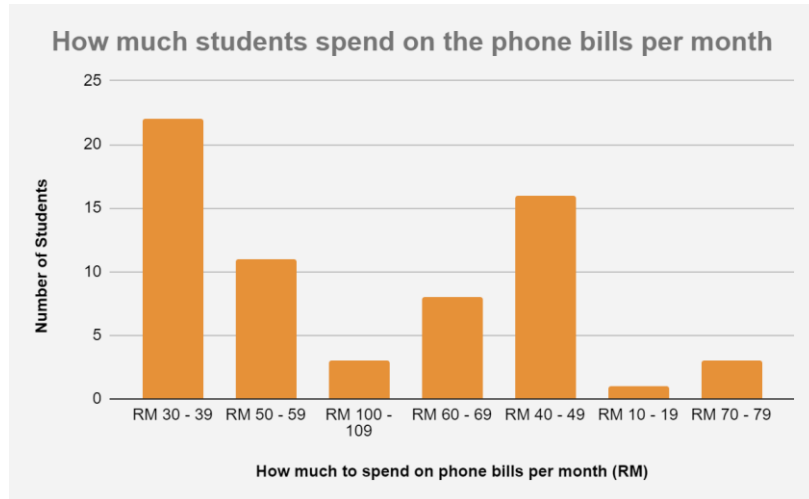


Figure 5 : Bar Chart of How Much Students Spend on Phone Bills per month.

According to the bar graph above, 30-90(RM) has 22 students and the most respondents. 40-49(RM), which has a total of 16 pupils, comes in second with the most respondents. 10-19(RM), which has 1 student, gets the fewest respondents. The smallest value shared by the ranges 20-29(RM), 80-89(RM), and 90-99(RM) is 0 for each. Furthermore, 50-59(RM) have 11 respondents, 60-69(RM) have 8 respondents. Lastly, values are shared by 70-79(RM) and 100-109(RM) which is 3 each.

5.0 CONCLUSION

As a conclusion, our group had successfully done our direct questionnaires and researches for the daily usage of mobile phones among 64 students from UiTM Pasir Gudang that were selected randomly. From the results that we have obtained, we can conclude that most of these students spend their time on the phone up to 5 to 9 hours daily based on the responses that we received from them through the questionnaires.

Based on the results obtained, most students prefer to use the phone to browse social media over other activities such as playing games, watching YouTube and music, and texting. This is as explicitly true as we can see nowadays people of any generation usually spend their time on their phones by browsing social media to know current developments, see latest entertainment and waste their free time.

CAUSES OF DELAY IN COMPLETING ASSIGNMENT AT UITM PASIR GUDANG

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ABSTRACT

Students at University Teknologi Mara (UiTM) appear to be particularly skilled at putting things off. The objectives of this study are to identify the symptoms and indications of procrastination and to understand why a person procrastinate. We suggest that procrastination may be described as a logical behaviour within a rational choice framework, even though it can occasionally be inefficient. To support our claim, we use survey data acquired from a broad cross-section of students and faculty members. We can forecast who procrastinates, under what conditions they procrastinate. The sample size of this study is 75. Based on our survey, 76% of our respondent admit procrastinating while another 24% not procrastinate the assignment. Large percentages of those surveyed stated that as a result, the quality of their written work, including as papers and projects, as well as their exam results, and, to a lesser extent, whether they were late with their assignments.

Keywords: Procrastination, Assignment, UiTM Students.

1.0 INTRODUCTION

The definition of procrastination is "allowing low-priority tasks to get in the way of high-priority tasks." It can also be described as refusing to do a necessary task. Procrastination, for instance, is the act of putting off work on a crucial project that is due soon in favor of socializing with friends or family. There is a lot of potential for terrible outcomes when procrastinating. It hinders students' ability to succeed both academically and personally. College students have been the primary target of the majority of procrastination study. These research' findings indicate that academic procrastination among college students is quite widespread. Procrastination rates among college students have been estimated to range from 46% to 95%.

Procrastination can occur for a number of reasons. Students who put off tasks are unable to use their time efficiently. It suggests that they are unsure about their priorities, aims, and goals. In addition, pupils feel overburdened by a large number of assignments. As a result, instead of finishing their academic assignments, they put them off till a later date and squander their time on unnecessary hobbies or worrying about them. Due to distractions, some pupils also struggle to focus on their job. There may be a lot of individuals in the room vying for their attention, or the surroundings may be noisy. Even something as unassuming as a messy, disorganized desk could prove to be a significant distraction. These factors all encourage squandering time and irritation. Students may hold unfavorable views that frequently prevent them from completing their work. For instance, they may feel that they are incapable of succeeding in anything they attempt or that they lack the skills required to complete the activity. When students have such lofty expectations of their talents, it only serves as an excuse for them to put things off. Students also put off completing their assignments while they are

experiencing relationship or financial difficulties. They could be unable to finish their work because of these personal issues.

2.0 OBJECTIVES

6. To identify the symptoms and indications of procrastinations.
7. To determine age of student who procrastinate the most.
8. To understand why a person procrastinate.
9. To identify how student manage procrastination.

3.0 METHODOLOGY

Population : All students in UiTM Pasir Gudang

Sample : 76 students of UiTM Cawangan Johor Kampus Pasir Gudang

Sampling technique : Convenience Sampling

Data Collection Method: We are using questionnaire which is Google Form and distribute it through online platform including social media.

4.0 RESULTS

NUMBER OF STUDENT

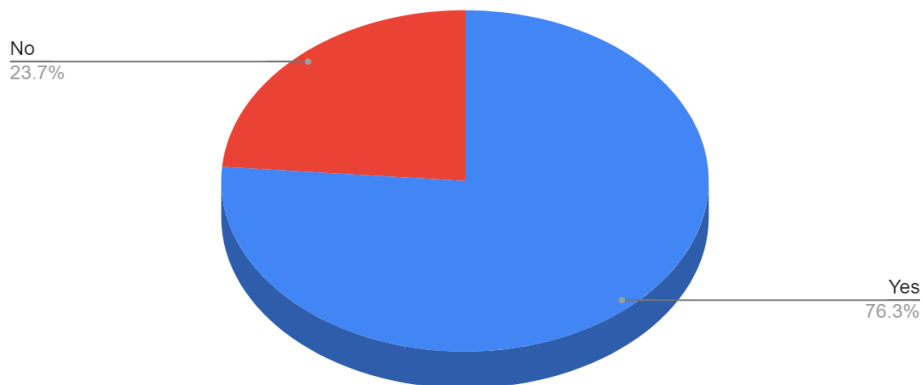


Figure 1: Pie chart of percentage of student delayed completing an assignment

Based on the pie chart, most of the students have delayed completing an assignment given by a lecturer 76.3%(58 students) than students who did not delay completing an assignment given by a lecturer 23.7%(18 students).

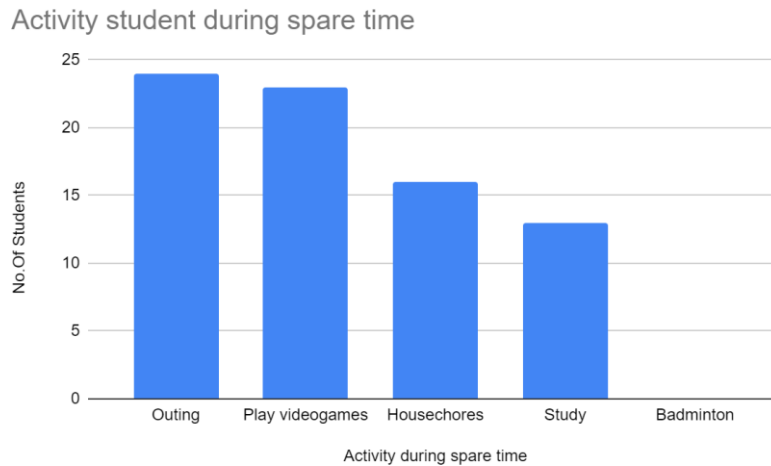


Figure 2 : Activity among student during spare time

Based on the bar chart, the highest activity goes to Outing with estimated 31.6% (24 students). Next, 30.3% (23 students) prefer playing video games in their spare time. However, 21.1% (16) people do house chores during their free time. Furthermore, 13 people prefer to study during their leisure time and 0 people play badminton during their free time.

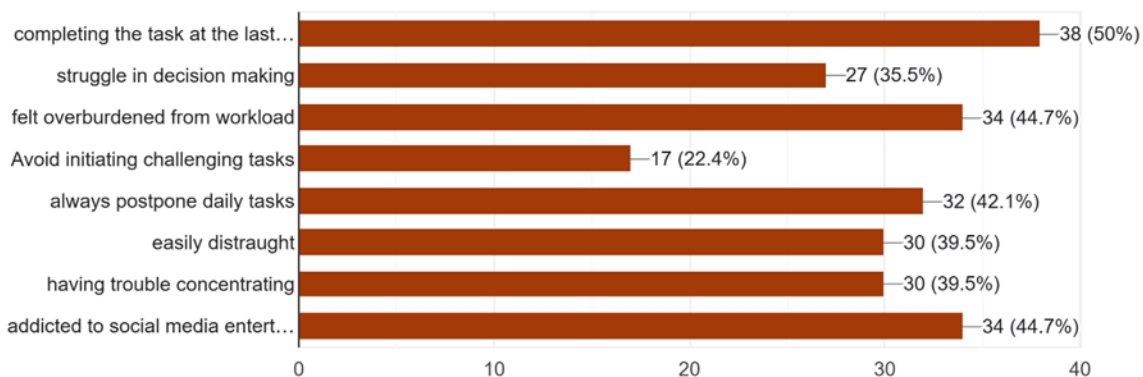


Figure 3 : Factors of Procrastination

The biggest factors of procrastination start from (38 students) agree completing the task at the last minute is the reason for procrastination. Moving on, (32 students) choose to always postpone daily tasks. Next, Felt overburdened from workload (34 student). Moving on, (34 student) choose addicted to social media entertainment. Furthermore, 30 students both choose easily distraught and having trouble concentrating. Next, (27 students) choose that the struggle in decision making is also a reason they procrastinate. Lastly, the lowest factor which avoids initiating challenging tasks (17 students).

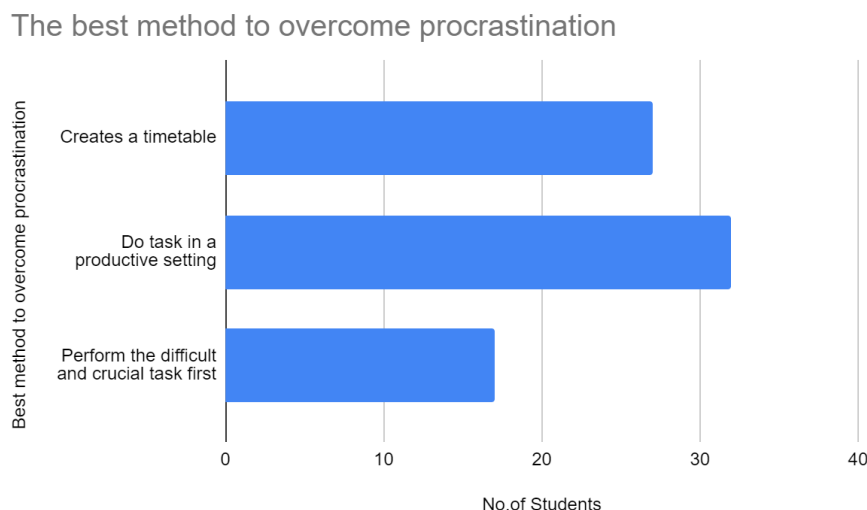


Figure 4 : Bar chart

Based on the bar chart, the best method to overcome procrastination is do task in productive setting, 42.1% (32 students). The second highest method to overcome procrastination which is Creates a timetable, 35.5% (27 students). Lastly, perform the difficult and crucial task first, 22.4% (17 students).

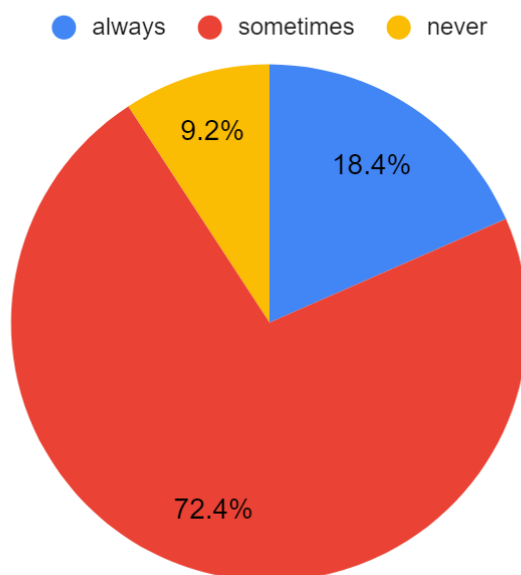


Figure 5 : students that have difficulties identifying priorities

Based on the bar chart above, 72.4% (55 students) choose sometimes, while 18.4% (14 students) choose always. Lastly, 9.2% (7 students) choose never.

5.0 CONCLUSION

As a conclusion, The majority of students have put off doing an assignment that the instructor assigned. Then, in their free time, they often go out. Also, mostly the students have felt the negative impact when they procrastinate and they also think that the reason is completing the

task at the last minute. Lastly, they think the best method to overcome procrastination is by doing tasks in a productive setting.

There are several methods for overcoming procrastination. Students must first plan their schedules carefully. The students struggle to find the time to finish their assignments without effective time management. Additionally, using this strategy can help students study more efficiently and become more organized. The need for students to do their work in a quiet, productive setting so that they can finish the assignment given by a lecturer follows. Sometimes, when students are working in a bad environment, they become easily distracted by the surroundings.

MENTAL HEALTH AMONG UiTM STUDENTS

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ABSTRACT

The level of mental health among university students has been a topic of interest in research. Mental health refers to a person's emotional, psychological, and social well-being. It includes people's thoughts, feelings, and behaviours as well as their coping mechanisms, social interactions, and decision-making processes. For whole well-being and a high quality of life, good mental health is crucial. The focus of this research is to explore the level of mental health among university students in the Universiti Teknologi MARA (UiTM) Johor branch, Pasir Gudang campus. The objective of this research is to find out how students manage their mental health, to determine the causes of mental health among UiTM students, to investigate the signs and symptoms of mental health problems, to investigate the effect of mental health on education and life and to analyse the number of students who are affected by mental health issues using descriptive analysis. There are four factors involved in this research, which are gender, age, status, and faculty. The sample size was 80 university students that were taken by using convenience random sampling. The data were collected through a questionnaire. There are two methods of analysis used, which are qualitative and quantitative methods. The finding shows that 50% of the respondents tend to have depression, and 50% of the respondents tend to have anxiety. It can be concluded that the level of mental health among university students in the UiTM Johor branch, Pasir Gudang campus is in a worse state since the tendency to have mental health problems is greater than 50%.

Keywords: Level of mental health, University students, Depression.

1.0 INTRODUCTION

This study particularly highlighted the independent variable, the Preference for a Mental Health of Students in improving the environment and achievements of student life, it is essential to understand the factors that contributed to it. Therefore, this aims to look at the preferences for a Mental Health of students. Rather than universities and schools, parents and themselves should seek constant updates for the students and explore the effectiveness of a Mental Health for the students. Keeping in touch with the students and exploring their effective Mental Health while studying so that the students can improve their way of achievements and motivating them more than pressuring them. Also, so that universities can help students by acquiring their needs, support, and services. This study explores why students should take care of their mental health among students particularly.

Between having a problem with family and having a problem with academics, it is argued that being a factor of having mental health issues increases mental health issues. With making sleep a priority and trying a relaxing activity, the individual not just can manage their mental health but also social, health, and psychological benefits. In regards to student context, a similar perspective can also be derived. As students, they are required to focus on their learning activities so that they can graduate without any problems. Get regular exercise, make

sleep a priority, try a relaxing activity, eat healthy, regular meals, and stay hydrated to name a few are the basic requirements for active students. By having such competencies and capabilities they are expected to engage actively and healthy in their daily learning activities. It is indicated that in order to have such energy to devote the focus to their very demanding learning activities, the students require maintaining their physical, mental, and psychological skills in check.

One of the ways to manage their mental health is to make sleep a priority. Studies have shown that students who make sleep a priority can manage their mental health and avoid mental health problems and have the potential to perform and engage actively in their learning. So how many hours should they sleep in a day? We argued that between 4-5 hours or 6-8 hours would be the best for hours of sleep in a day. Most of the respondents sleep 6-8 hours in a day to avoid a mental health problem and to get a productive day. In another word, we concluded that making sleep a priority and sleeping 6-8 hours can manage mental health and give positive impacts on academic-related outcomes.

2.0 OBJECTIVES

1. To find out how students manage their mental health.
2. To determine the causes of mental health among uitm students.
3. To investigate the signs and symptoms of mental health problems.
4. To investigate the effect of mental health on education and life.
5. To analyze the number of students who are affected by mental health issues using descriptive analysis.

3.0 METHODOLOGY

Population : All students of UITM Cawangan Johor Campus Pasir Gudang

Sample : 80 students of UITM Cawangan Johor Campus Pasir Gudang

Sampling technique : We use Convenience Sampling because every student at UITM does not have framing sampling and has a non-probability technique. Non-probability sampling techniques are used when the generalization of the population is not important, and at the same time the sampling frame from which the sample will be selected is not available or difficult to obtain. Convenience sampling, as the name suggests, is a procedure where the selection of respondents is at the convenience of the researcher. Often, respondents are chosen because they are in the right place at the right time where the researcher conducts the survey. Then, we select one by one using an online questionnaire.

Data Collection Method: We use questionnaires which are Google Forms and distribute it through online platforms including social media.

4.0 RESULTS

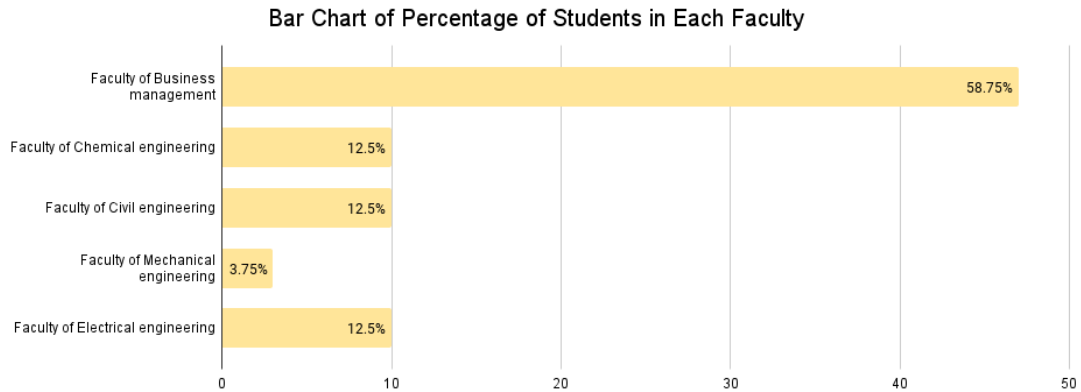


Figure 1: Bar chart of Percentage of Students in Each Faculty

Based on the Bar chart above, the Faculty of Business Management has the most respondents which has 58.75% which is equal to 47 students. The second respondent who has the most respondents is from the Faculty of Chemical Engineering, Faculty of Civil Engineering and Faculty of Electrical Engineering who have the same number of students which is 12.5% representing 10 students. Lastly, the fewest respondents are from the Faculty of Mechanical Engineering which is 3.75% which is only 3 students.

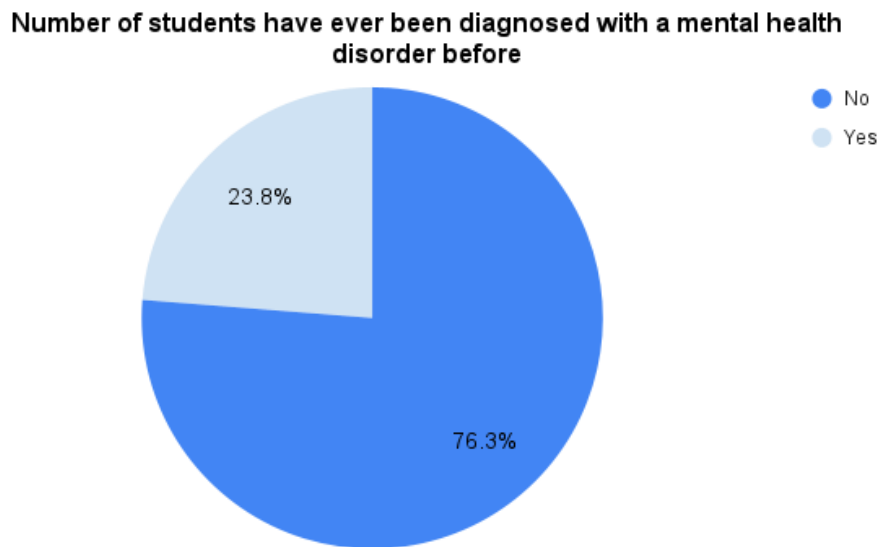


Figure 2 : Pie Chart

Based on the pie chart above, we can conclude that most of the students who have been diagnosed with mental disorders before are 76.3% (61 students). For students who have never been diagnosed with a mental health disorder before, that is 23.8% (19 students).

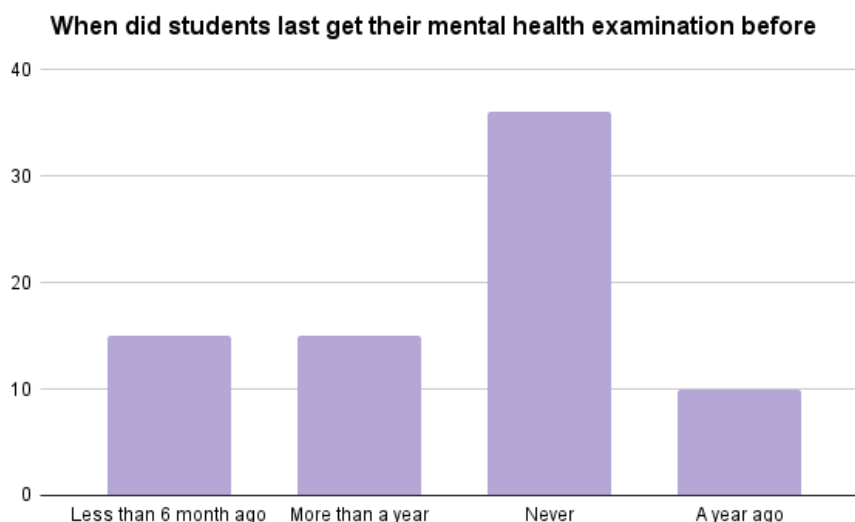


Figure 3 : Bar Chart

Based on the bar chart above, students who have never had their mental health checked before are the highest, which is 36 students. Next, students who had less than 6 months ago and students who had more than a year to undergo their mental health examination before are both the same number, which is 15 students. Finally, for students who underwent their previous mental health examination in the past year, there are only 10 students.

Table 1 : Frequency Table

Symptoms	No. of Students
Suicidal thinking	3
Feeling sad	4
Sleeping problem	1
All above	11
Major change in eating habits	1
Total	20

The mental health symptoms commonly experienced by students are all of the above which are thoughts of suicide, sadness, sleep problems and major changes in their eating habits which is a total of 11 students. Second highest is sadness by 4 students. Next, suicidal thoughts by 3 students. Finally, sleep problems and major changes in eating habits were the same, namely 1 student.

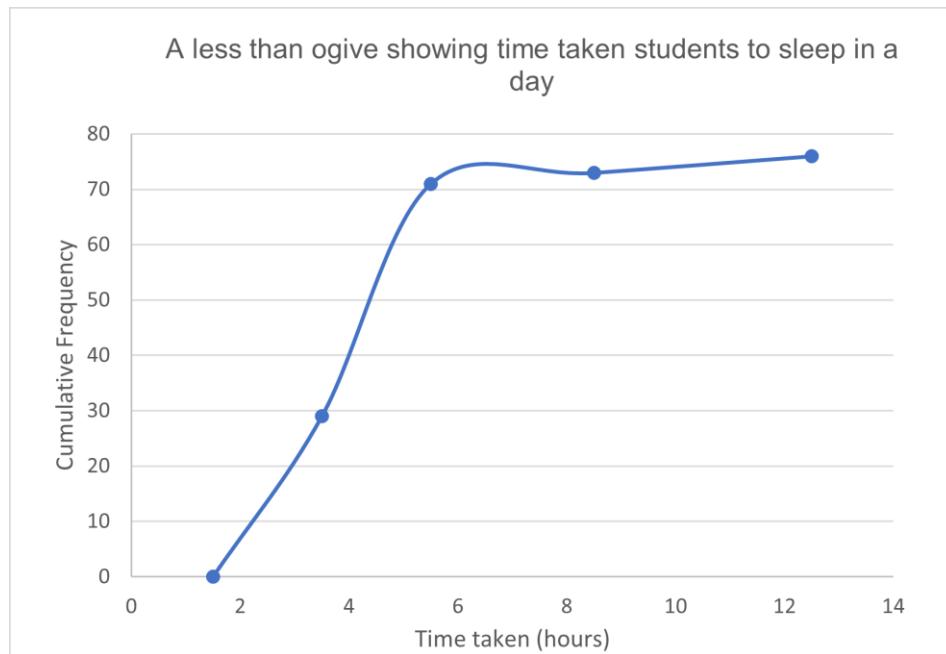


Figure 4 : Ogive

The minimum value in the data set is 1.5 hours since this is where the ogive starts on the horizontal axis. The maximum value in the data is 12.5 hours since this is where the ogive stops on the horizontal axis.

5.0 CONCLUSION

The study shows that most of the participants agree that they should care for their mental health, however they only care about the physical aspect of it. The only way they see in order to be healthy is by not being sad. They failed to recognize that another aspect they needed to take into consideration was to get regular exercise and eat healthy, regular meals, and stay hydrated. Students need to take care of both their mental health and physical health in order to avoid mental health issues and achieve a healthy lifestyle. When they have a balanced life, students can be more productive and be more motivated to study.

THE PREFERRED FORM OF PAYMENT FOR UNIVERSITY STUDENTS IN MALAYSIA

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ABSTRACT

In this modern world with new technology there are many varieties of payment methods that have been made by commercial banks in the world. These are the several types of payment methods including cash, mobile e-wallet, cheque, instant transfer, and cryptocurrencies as the relative newcomers in this modern technology. Since the pandemic started, many businesses take a new step in upgrading their businesses providing new payment method. The percentage of using online transaction increasing due to the urge from the government to encourage Malaysian people to use contact less payments options in response to pandemic concerns. Due to this announcement, almost all university in Malaysia have been introducing online payment for all transaction. Some student are convenient with convention method that is using cash while others are more eager to use online payment in any transaction. Due to this reason, studied has been done to examine the type of payment that is commonly used by students in Malaysia. Based on the finding, students nowadays prefer to make cashless transaction rather than cash. This conclude that students nowadays preferred paying by using QR code payment type as it is easier to use and some of them still carrying cash as for emergency or they just preferred paying by using cash rather than other payment type provided.

Keywords: cashless, payment, online, cash.

1.0 INTRODUCTION

In this modern world with new technology there are many varieties of payment methods that have been made by commercial banks in the world. By introducing new global payment method, there are many possibilities that cash will soon be disappeared. These are the several types of payment methods including cash, mobile e-wallet, cheque, instant transfer, and cryptocurrencies as the relative newcomers in this modern technology. According to "*Amir Akmal Basir*" (September 2009) the e-payment system has been increasing among consumers in Malaysia. This can be observed from the increases in the non-cash retail transactions in recent years. The volume of non-cash transactions in Malaysia increased from 3% up to 7% (from 2003 to 2007).

In 2020, the whole world has been infected by a new virus called Corona Virus or known as COVID-19. Since the pandemic started, many businesses take a new step in upgrading their businesses providing new payment method. Besides, any business that requires a transaction between themselves need to stay in tune with the rapidly evolving payment technologies coming into play. Therefore, consumers are looking for fast, easy, and secure ways to make purchases or pay for services. The usage of e-wallet increased by 131% to over 600 million transactions in 2020 compared to the previous year, the percentage of Malaysians who used

cash payments had dropped 11% to 78% from 89% prior to the pandemic (Minister of Domestic Trade and Consumer Affairs Datuk Seri Alexander Nanta Linggi, 2022). The statistic is increasing due to the instruction of government which is “contact less” payments options in response to pandemic concerns.

In addition, the increase of e-payment method also led to safety and security. For example, risk of theft and human error due to holding cash can be reduced by using the new e-payment method. Also, with the consumer willingness to use e-payments is the confidence offered from the safety and security of commercial banks that provide protection against theft and scammers, such as personal identification numbers. Among the several types of payment, the payment that used by Malaysians are mostly credit cards, internet banking, and e-wallet. Credit cards are now used to buy things that quite expensive and credit cards providers such as Visa has piloting fingerprint authentication on physical cards and mobile devices. This biometric feature has increased the e-payment technology for faster, secure, and more efficient payment.

University is a place that provides students to study and pursue their dreams in the future. In Malaysia, there are 20 public universities and 50 private universities that offered variety courses. Every student has their own bank account and can carry out daily transactions individually. Based on the survey carried by university students they most probably have a variety of payment options. Cash is the most convenient method of payment, but E-payments are on the rise in this decade. There are still students who like to use cheque even now it is obsolete.

This study examines the frequency of students utilised QR payment. In addition, the university itself has provided an ATM machine and the cafe has enabled e-payment for transactions, which are convenient for students with mobile devices and credit cards to make payments. In addition, the university itself has provided an ATM and the cafe has enabled e-payment transactions, which are convenient for students with mobile devices and credit cards. Most university fees are paid through cashless transactions, and according to (Linh Khanh, Le Ha Ngan, 2020) and (Huong Pham) from the University of Hanoi, 52.9% of students are still unfamiliar with this new concept of transactions.

2.0 OBJECTIVES

The objectives of the study are

- To find student preferences on what payment type students prefer to use
- To determine the most prefer bank student use
- To measure satisfaction level among students based on their selection on payment type
- To identify the most prefer category students spend their money

3.0 DESCRIPTION OF DATA

3.1 Population and Sample

Population is one of an element that can be used to complete a set of items that are gathered for interest in the research. In our survey, all private and public universities in Malaysia were included.

Sample is a subset of people that are chosen from the population. The sample for our survey consists of 80 students who utilize various payment methods.

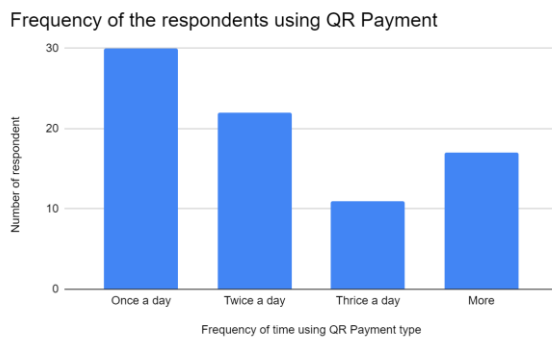
3.2 Sampling Techniques

The sampling technique we used is quota non probability. Random members from our community will be selected to complete the questionnaire. This technique is considered to be more efficient and reduce costs when collecting data from Malaysian students. The 80 respondents represent all communities that utilize various payment types.

3.3 Data Collection Method

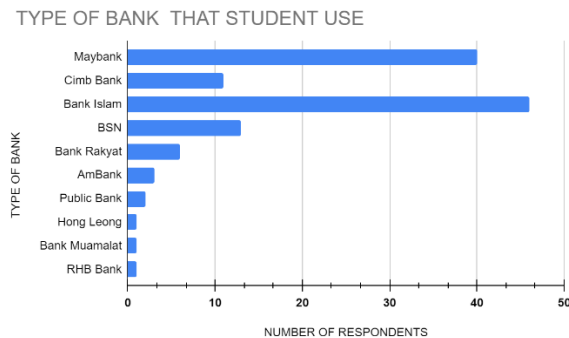
This study using direct questionnaire as data collection method. In this method, we will greet respondents and explain our purpose before providing the link to the questionnaires. Using this method, we will obtain the respondent as quickly as possible. This method utilises primary data sources, as the source is derived from primary information.

4.0 RESULTS



Based on the bar chart, most of the respondents used QR payment once a day while thrice a day are the lowest frequency that has been chosen.

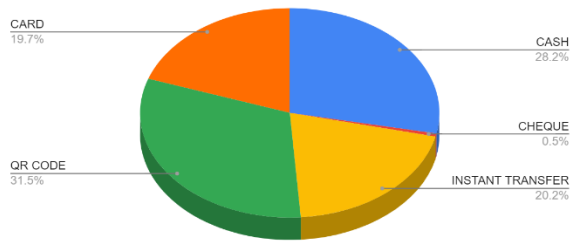
Bar chart of Frequency Of Respondents Using QR Payment



Based on the bar chart above, most of the respondents choose Bank Islam as the main account bank for their spending and saving, this follow by Maybank. The least choosen bank are RHB Bank, Muamalat Bank and Hong Leong Bank.

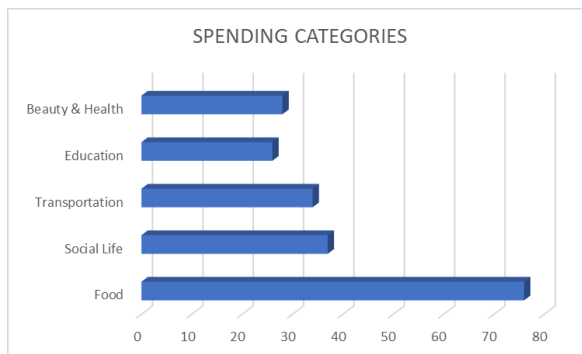
Bar chart of Type Of Bank That Students Use

TYPE OF PAYMENT METHOD



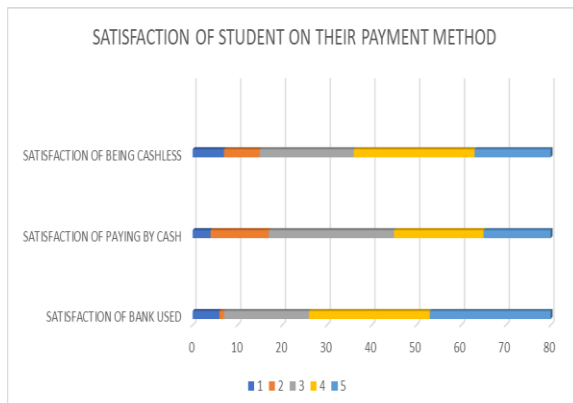
Based on the pie chart, students frequently used QR payment type than the other payment type. The second most prefer method are using cash while the least prefer are using cheque.

Pie Chart Of Different Payment Method That Student Use



This bar chart shows that students spend most of their money on food and consider it as a daily necessity. This result follow by social life as the second highest category. The least category that has been chosen are education.

Bar Chart Of Spending Category



Stacked Bar Chart on Satisfaction Of Students On Their Payment Method

According to the displayed stacked bar graph, 19 of 80 respondents are becoming neutral about the bank they use, while 27 agree and 27 strongly agree. However, one respondent disagrees with it, and the remaining six respondents disagree strongly. The results for payment by cash indicated that 27 respondents supported it, 21 were neutral, and 17 strongly supported it. Seven respondents chose to strongly disagree, while eight respondents disagreed. Finally, 27 respondents who are neutral about daily cashless transactions chose to express their delight with students not carrying cash. 11 respondents expressed agreement, with 7 students expressing strong agreement. However, 18 respondents disagree with the statement, and 17 respondents strongly disagree. This means that students nowadays prefer to have cashless and carry a small amount of cash for emergencies.

5.0 CONCLUSION

In conclusion obtained, students have different type of payment choice that they preferred and others may have different type of payment choice daily. 44 from our respondent's gender is female and 69 of our respondent age is between 18-20 years old and is from the non-resident college student. Most our respondent is from the third semester which conclude the age around 18-20 years old.

As for their preferred bank, Bank Islam was the most popular option (57.5%), as many UiTM students utilised Bank Islam as a common bank. Maybank has the second highest preference among students (50 percent) because it provides the best services.

The most preferred payment method among students is the QR code (83.8%), as it is easier to pay by simply scanning the code and entering the amount, and most stores in Malaysia now provide QR codes. Cash is the second most popular payment method. This suggests that some still carry cash in case of an emergency, while the majority prefer to pay in cash because it is physically easier for them.

For the QR payment type, most student use DuitNow as the most preferred payment type. DuitNow work as the simplest QR payment since it is connected to most of the commercial bank in Malaysia and students can also access it from any application that includes QR payment such as TNG E-Wallet, Boost and GrabPay. While QR payment type is the most comfortable payment type, most student also carried a small amount of cash daily as an emergency.

The category in which students spend the most is food, as the majority of them (28.7%) spend RM250 or more per week on it. As the price of food continues to increase, it has an impact on the amount of money that students carry with them to spend on food.

Most of students are satisfied with the bank they use to pay, and their satisfaction with cash payments is neutral; however, 27 out of 80 respondents are satisfied with daily cashless transactions. The daily transaction recording levels of students are neutral. The fact that students are satisfied using QR Codes to pay demonstrates how simple it is to pay simply by scanning. Some students record their daily transactions to keep track of their spending, whereas others are still adjusting to their spending habits.

This conclude that students nowadays preferred paying by using QR code payment type as it is easier to use it and some of them still carrying cash as for emergency or they just preferred paying by using cash rather than other payment type provided.

UITM STUDENTS' ACADEMIC AND CURRICULUM BALANCING

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ABSTRACT

Academic and Curriculum balancing becoming interesting subject to be studied. Academics are really important to our future and life. Without an academic certificate, we cannot pursue our studies or find a better job. On the other hand, curriculum can help students to boost their confidence, release their stress or just to keep on the merits for next semester. Balancing academic and curriculum activities at the same time may be possible for some students with flying colours, but it can have negative impact on their studies for others who are struggling with their academics. The purpose of the investigation is to see if UiTM students can balance between their academic and curriculum activities well. We also want to investigate whether joining a curriculum activities affect their studies and schedule despite the busyness that they need to go through. Based on the finding most students actively follow curriculum activities despite their busy schedule for academics. Various initiatives has been done to divide time between academic and curriculum. Half of the respondents felt that it was quite difficult for them to balance both academic and curriculum as a student, but according to the opinion of the respondents, almost most of them did not experience the disruption of the curriculum to their studies. Nevertheless, based on the survey most of the respondents got average and excellent results. Therefore, it can be concluded that almost all UiTM students can divide their time well for academics and curriculum despite having a busy daily schedule.

Keywords: Academic, Curriculum, balancing, busy.

1.0 INTRODUCTION

Most people are familiar with Academic and Curriculum activities that are held in our primary school, secondary school and university. Some universities have already removed all curriculum from their course curriculums. Academics are really important to our future and our life. Without an academic certificate, we cannot pursue our studies or find a job. Nowadays, company tend to hire academic people that have more knowledge and experience on the respective field. As a student, academic certificates really help students in a competitive job market in the future. Those certificates are really important to their career. Academies also proven will increase your credibility in your academic record and people will also acknowledge you as a student and person itself. Besides that, academics also can help connect with other people with professional and network connections.

On the other hand, curriculum also helps in our academics because every curriculum in every university is different. Some of the students think that curriculum can help them to boost their confidence, release their stress or just to keep on the merits for next semester. All curriculum subjects have practical events that interact with people. Those practical really help the

students to build their confidence with strangers. For example, there are a few club curriculums that need to do events such as do business, set up a program and many more. These can help students in the future set up programs or large events that include facilitators and invitations. Aside from that, the curriculum can help students relieve the stress of studying.

Furthermore, balancing academic and curriculum activities at the same time may be possible for some students with flying colors, but it can have an impact on their studies for others who are struggling with their academics. Students who continue their studies in university information technology (UiTM) are well aware that curriculum is one of the subjects they must pass. If the student did not pass or did not register the subject, the student will not pass to graduate and they have to repeat and register the subject curriculum again. With this research, we can see whether the students are satisfied with their academics while balancing their life with curriculum.

This research is to analyze the statistics of the academic and curriculum balancing among UiTM students. Despite the busy schedule between academics and curriculum, students still manage their time and schedule. Academics and extracurricular activities are very important to our CGPA. Most students have taken advantage of this by participating in a variety of on-campus activities. Civil engineering, mechanical engineering, electrical engineering, chemical engineering, and business management are among the courses offered at UiTM Pasir Gudang. By looking at the courses offered at UiTM Pasir Gudang, there must be a probability that students will fail in certain subjects, and some have a feeling of giving up on the subjects they are studying. The curricular offers at UiTM Pasir Gudang have many variations. Among them are academic clubs, sports clubs, cultural clubs, and so on. The credit that has been set at UiTM Pasir Gudang is a maximum of 22 credits. With this, most students register 5 to 8 subjects in a semester to meet the credit requirements. Between these many subjects, there must be difficult subjects, and each subject has an assignment and test. For assignments, there are groupings and individual options. The intention of our Google Form is to find out how they divide their study time and curriculum.

The purpose of the investigation is to determine how well UiTM students manage their academic and curriculum. In addition, we also want to investigate whether joining a curriculum activities affect their studies and schedule despite the busyness that they need to go through. In conclusion, with this research, we can get to know if the respondents are active in academics and curriculum. Furthermore, we will get to know their own opinion about whether non-creditable clubs should be included in the university syllabus.

2.0 OBJECTIVES

The following are the overall objectives of this study:

1. To identify spare time students per week
2. To identify main purpose for joining curriculum
3. To identify difficulties in balancing both academic and curriculum
4. To analyze busyness as a student

3.0 DESCRIPTION OF DATA

3.1 Population And Sample

A population can be defined as including all people or items with the characteristic one wishes to understand. Time spent in making the sampled population and population of concern precise is often well spent

Sample is a subset of people that are chosen from the population. The sample for our survey is 80 respondents who are students from UiTM in Malaysia.

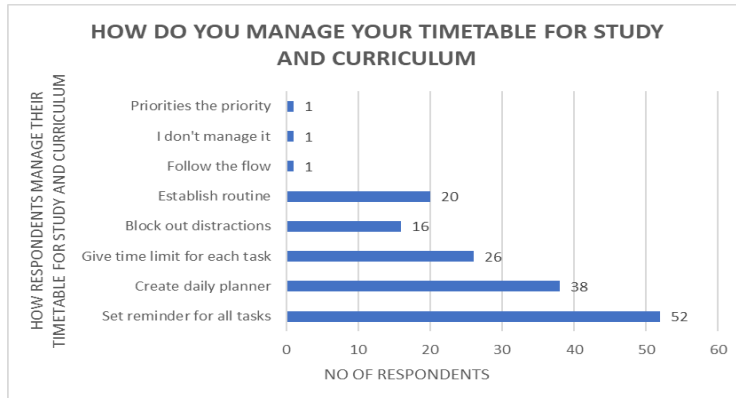
3.2 Sampling Techniques

The sampling techniques used in each study depends on the characteristics of the population of interest and the sampling techniques that are suitable for this research survey is Convenience.

3.3 Data Collection Method

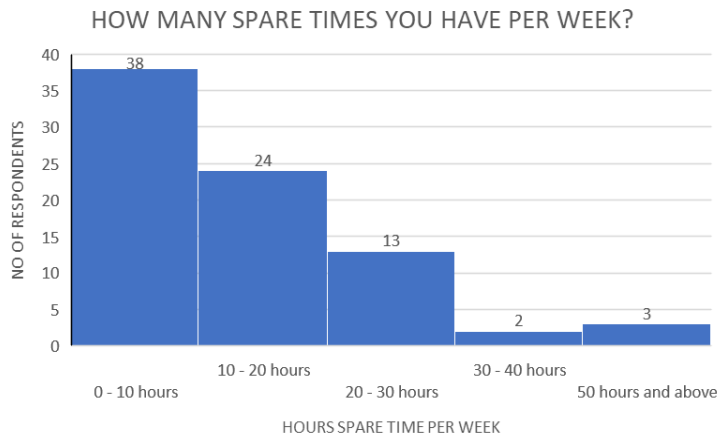
We used the Internet Survey and it has the option to post questionnaires online & invite the public, which is UiTM's students, to participate in the survey and submit their response. After about 1 month, we finally received about 80 respondents which are from UiTM's students all over Malaysia.

4.0 RESULTS



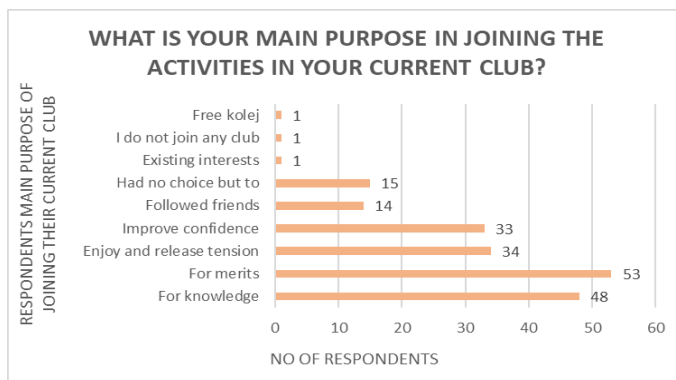
This bar chart shows how to manage the timetable for study and curriculum that is most often practiced by the respondents is to set reminders for all tasks, which is a total of 52 students. The second choice made by the students are create daily planner.

Bar Chart of How Students Manage Timetable for Study and Curriculum



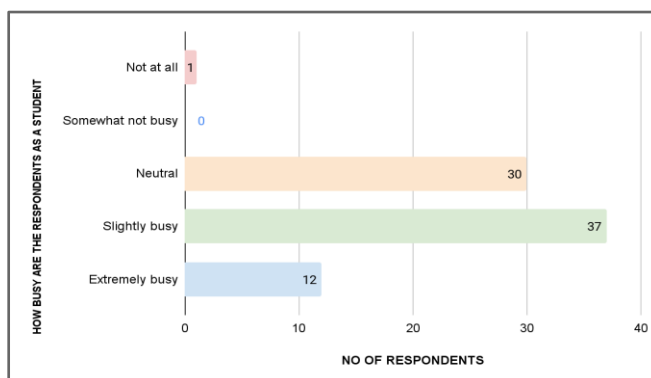
The histogram shown that most of the students have approximate 10 hours per week for their spare times. 30 hours to 40 hours has been chosen to be the least spare times students has per week.

Histogram of How Many Spare Times Students Have Per Week



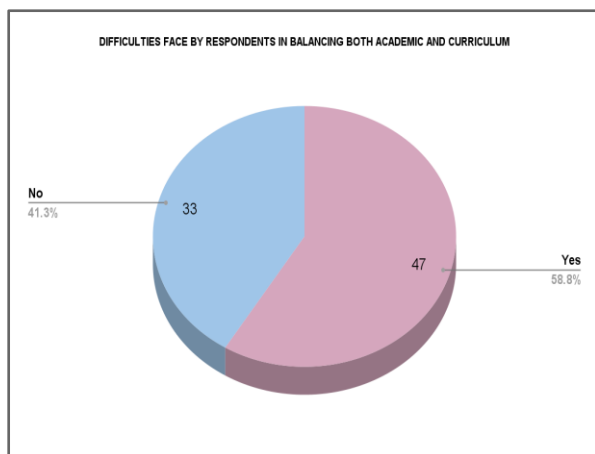
Based on the bar chart, the main purpose of respondents to get involved in club activities is because of merits, which is the best choice with 53 respondents followed by the purpose to gain knowledge with a total of 48 respondents. The least reason students joining club are to get free college and interesting activity.

Bar Chart of Purpose Students Joining Activities In Club



According to the bar chart, 37 respondents are slightly busy with their present club, 30 are neutral, and 0 are considerably not busy at all.

Bar Chart of Busyness As A Students



According to the pie chart above, 47 respondents (58.8%) reported difficulties managing academic and curricular demands, whereas 33 respondents (41.3%) reported no trouble balancing academic and curriculum needs.

Pie Chart of Difficulty Balancing Academic and Curriculum As Students

5.0 CONCLUSION

In conclusion, we have obtained a total of 80 respondents consisting of UiTM students from almost all over Malaysia to answer the survey that we gave titled academic and curriculum balancing among UiTM students. The survey we conducted was only to find out how smoothly and effectively the students manage their time and their time in dividing academic activities and curriculum. According to the survey, almost all of them were answered by female students, 66 people and the rest were 14 people who were male students, it was found that almost most of them were between the ages of 18 and 23 and were diploma students. Respondents also consist of students from various semesters and what can be concluded is that 70 out of 80 respondents have as many as 6 and above subjects. They also actively follow curriculum activities in dividing their schedule for academics. Various initiatives they take to divide time well and organized even though they have less free time for themselves. Half of the respondents also felt that it was quite difficult for them to balance both academic and curriculum as a student, but according to the opinion of the respondents, almost most of them did not experience the disruption of the curriculum to their studies. Based on the survey, most of the respondents got average and excellent results.

So it can be seen that almost all UiTM students can divide their time well for academics and curriculum despite having a busy daily schedule. They prove that by managing their time well it does not prevent them from being active in the curriculum activities carried out on their respective campuses. This shows that the curriculum actually gives space for students to show their creativity and challenge themselves to become more independent and create integrity. Although there are students who do not agree with the creation of this curriculum subject, what can be seen is that there are still many students who give a positive view of this implementation through the survey we conducted.

Some students are having a hard time because of the packed schedule. Also, UiTM encouraged students to take part in any activities that were held by each campus and college. Furthermore, students are becoming fatigued as a result of the packed classes and must participate in activities organised by them. So, they are having a hard time scheduling their own time, but they manage to schedule their time and divide their time with studying and their private lives. Some students are complaining that between one subject and another are closed. Also, they do not have time to eat, pray or rest for a while. Because of the packed schedule, they need to rush to the next class.

UITM STUDENTS' SURVEY ON GROCERY STORE

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ABSTRACT

Grocery store refers to a certain category of retail enterprise that concentrates primarily on the distribution of a diverse range of food goods, which can be either fresh or packed depending on the store's particular offerings. Grocery store has a variety of section that sell different categories types of food. Since, grocery store offer more types of food, it is convenient for the students to buy their necessity there but the problem that students have been facing is most of the grocery stores around their campus are out of reach. In fact, several supermarket stores only have one that is close to a university. The grocery store that is conveniently located close to the campus are occasionally sell items at high prices. One of the characteristics that play apart for choosing the grocery store among students is the availability of handy facilities at students' grocery stores, such as parking, mosques, and toilet. Therefore, the purpose of these studies is to determine which grocery stores offer the most satisfying service and facilities. In addition to this, one of our other goals is to identify a supermarket item with a price that is more reasonable than the others. From, the finding it is found that the cheapest grocery store is Mydin. They offer more product at economical price. From the observation Aeon has been chosen as the most convenient facility among other grocery store. In conclusion, different grocery store provide and give different perspective among UiTM students.

Keywords: grocery store, facilities, food, services, price.

1.0 INTRODUCTION

The term "grocery store" refers to a certain category of retail enterprise that concentrates primarily on the distribution of a diverse range of food goods, which can be either fresh or packed depending on the store's particular offerings. The words "grocery store" and "supermarket" are interchangeable terms, although the phrase "grocery shop" can be used to refer to supermarkets, grocery stores, or any other type of business that carries food products.

A part of the research revealed that grocery stores specialize in food and beverages but also carry a limited assortment of household goods. Supermarkets still have a strong emphasis on food and drink, but they stock a wider variety of products than regular grocery stores. Other supermarkets distinguishing features include clothing, home decor, gardening supplies, and entertainment. Similarly, a pharmacy or a bank are unlikely to be found inside a grocery store.

Furthermore, one of the advantages of shopping at grocery store is people can get a few of sample before purchasing something from the store. At grocery store it has a variety of section that sell different categories types of food. For example, dry goods which may include sugar, flour, and coffee. Besides that, staple foods such as potatoes, soybeans, and wheat are provided. In addition, bakery goods can be purchased alongside canned, frozen, and prepared

foods in the grocery store. On top of that, grocery store also sells a full range of household such as toilet paper, healthcare, and personal items.

The problem that students have been facing is most of the grocery stores around their campus are out of reach. In fact, several supermarket stores only have one that is close to a university. Furthermore, the grocery store that is conveniently located close to the campus are occasionally sell items at high prices for students to purchase it from them. Besides that, one of the characteristics that play apart for choosing the grocery store among students is the availability of handy facilities at students' grocery stores, such as parking, mosques, and toilet.

In order to better accommodate the needs of the students attending University of Technology Mara, the surrounding area features a number of supermarkets and other food retail establishments such as fresh food, dairy product, bakery, cleaning supplies and personal hygiene items and it also has food court in the supermarket. Examples in Lotus food court mall, they provide chicken rice shop, sizzling yee mee, a variety of water such as Air Batu Campur (ABC) and many others. This report is mainly about a survey for UiTM Students to identify the most useful and pocket friendly grocery store among them.

2.0 OBJECTIVE

The following are the overall objectives of this study:

1. To determine where UiTM students shop for grocery
2. To observe the most satisfying service and facilities in grocery store
3. To discover the most economical price among all grocery stores available
4. To identify total amount of money student usually spend

3.0 DESCRIPTION OF DATA

3.1 Population and Sample

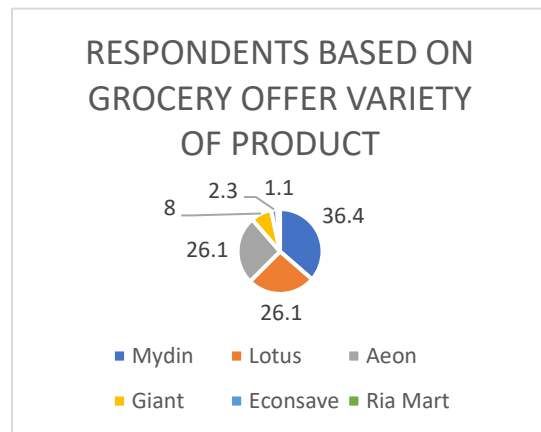
The term "population" is used to refer to all of the objects under study, whereas "sample" refers to a specific selection of those objects. Every participant in our poll is a student at UiTM. From all UiTM students only 88 students will be selected.

This research employs a Quota-sampling methodology. This method is more efficient and less cost than others. A convenience sampling method is used to choose the sample from the population, giving each possible respondent an equal shot of being chosen.

3.2 Data Collection Method

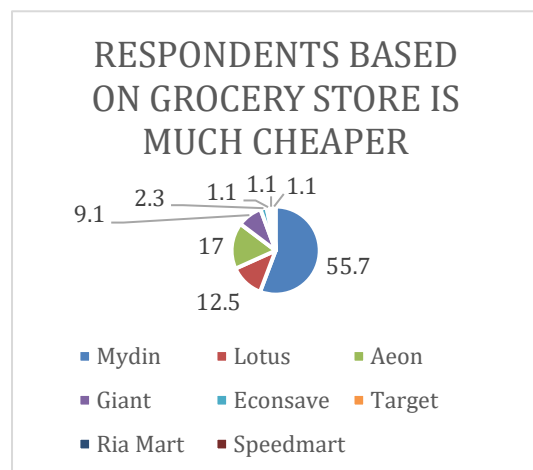
For this survey, we turned to an online form. In this approach, we use a Google Form to create and disseminate a questionnaire to every student. We'll have to wait for the google form questionnaire submissions from the participants. Last but not least, 88 random student were chosen for the study since each individual had the same probability of getting selected.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY



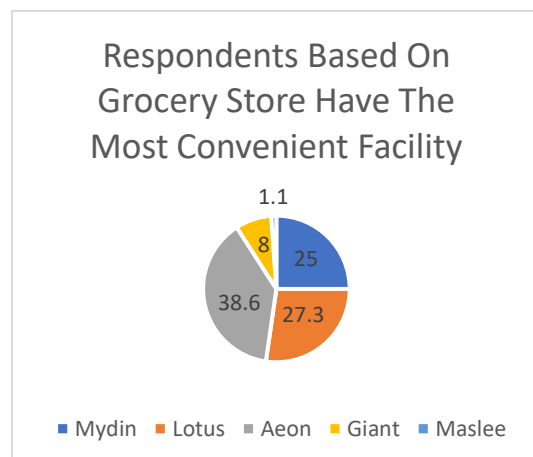
The pie chart shows of Respondent On Grocery Offer Variety Of Product. From the piechart, the highest percentage is from Mydin follow by Lotus and Aeon. The lowest percentage are from Ria Mart.

Pie chart of Respondent On Grocery Offer Variety Of Product



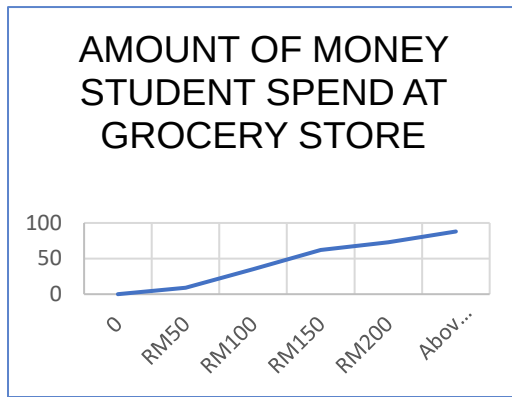
The pie chart shows of respondent on grocery store offer much cheaper price. Mydin has been chosen as the cheapest grocery store. The second store that has been chosen are Lotus. Where else, the most expensive shop that respondents has chosen are Speedmart, Target and Ria Mart.

Pie chart of Respondent On Grocery Offer Which Offer Much Cheaper Price



The pie chart shows of respondent on grocery store have the most convenient facility. The highest percentage chosen are Aeon with 38.6% while the lowest percentage are Maslee which is 1.1 %.

Pie chart of Respondent On Grocery Store Have The Most Convenient Facility



The ogive can approximately be considered to be a straight line except for a very slight decrease at the amount of RM50 and an increase in the amount RM150. Otherwise, those amount of money that students spend were evenly distributed between the amount of RM100 to RM150. This means that most of the students spend between RM100 to RM150.

Ogive on Amount Of Money Student Spend At Grocery Store

5.0 CONCLUSION

In conclusion, we got a total of 88 respondents from a survey in a google form to determine where usually students from University Technology Mara (UiTM) shop for their grocery. We also came up with some new suggestions that can help us with our research. We identify the most popular grocery store among them. For example, Mydin, Lotus, Aeon, Giant and, others. Most of the respondents for this survey is female than male. From the survey, 70.5 percent out of the 88 respondents is 18-19 years old.

Price from each of the stores are observed. From the questionnaire we found that the cheapest grocery store is Mydin. They offer product at economical price. If buying Mydin in high quantity, customer can get wholesale price. And before going to grocery, students need to make a list of groceries. It will help students to reduce the money and to not spend over limit.

Moreover, from the questionnaire about how much student usually spend money per month, most of the students choose between RM100 to RM150. We get to know how much budget that students used to buy grocery. Usually, their pocket money come from their allowance and student loan.

Lastly, we get to observe the most satisfying service and facilities at grocery store. Respondents can choose between agree and disagree, so based on the survey most of students are satisfied with the service and facilities in grocery store. Respondent also choose Aeon as the most convenient facility among other grocery store. From this survey we get to know more about services that they offer and facilities they have. Customer will happy if they are satisfied.

RAPID APPRAISAL FOR ECOSYSTEM SERVICES ASSESSMENT: APPLYING THE TESSA TOOLKIT IN PANTI RECREATIONAL FOREST, JOHOR

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ABSTRACT

This research project addresses the decrease in natural forest products and the importance of considering stakeholders' perspectives in natural resource management efforts. The objectives of the project are to investigate the potential threats affecting the sustainability of Panti Recreational Forest as identified by stakeholders and to determine the perceived ecosystem services by the stakeholders in the area. The rapid appraisal approach from the Toolkit for Ecosystem Services Site-Based Assessment (TESSA) is applied to gather insights from the stakeholders before conducting a comprehensive analysis of ecosystem services. The project includes representatives from various stakeholder groups including the local authorities, professional groups, chalet operators, business operators, community leaders and local communities, with a total of 60 respondents. The project reveals that water management emerges as the most likely issue to occur shortly due to the daily water usage in the area, posing risks to the local community's drainage system. Additionally, the project highlights that the recreational forest provides nature-based recreational opportunities for tourists and local visitors, thereby contributing to the economic sector of the region. By considering the perspectives of various stakeholder groups, effective strategies can be developed to address the identified threats and ensure the sustainable utilization of ecosystem services. Furthermore, the project underscores the positive impacts of the recreational forest in promoting sustainable recreational opportunities that safeguard the forest's ecosystem services while supporting economic growth.

Keywords: ecosystem services, TESSA toolkit, rapid appraisal, stakeholders assessment

1.0 INTRODUCTION

The planning and management of recreational forests in Malaysia are constantly focusing on the opportunities for a variety of recreational activities to boost the local economic sector as well as improve people's quality of life. However, the need to preserve the natural environment is demanding as well. Incorporating stakeholders' values in the decision-making process will contribute to the planning strategies and management for the sustainable environment of the area.

Involving stakeholders' values and attitudes towards the management plan of the recreational forest is an essential step in reducing any conflicts that arise among the stakeholders' groups and producing a successful recreational forest implementation plan (Paletto A. et. al., 2014). Hussein M.K. (2014) researched to assess the involvement of stakeholder groups in the management process of recreational forests in Selangor and found that the landscape management strategies in managed recreational forests are not in line with the environmental sustainability approaches. On the other hand, Paletto A. et. al. (2016) stated that public administration is the most influential aspect of forest management issues. It is proven that stakeholders' assessments are highly needed in the process of managing recreational forests

as any actions taken could influence the way of life among the local community, affecting their economic sector as well as impacting tourism activities. Whenever there are any conflicts, ecosystem services provided by the area might deteriorate as time passes.

Millennium Ecosystem Assessment (MEA) (2005) defined ecosystem services as any type of benefit obtained from the ecosystem that might improve the well-being of humans. Ecosystem services are divided into four categories which are provisioning services (provide raw materials directly from the site such as timber), regulating services (natural benefits resulting from the existence of the area such as climate regulation), cultural services (opportunities offered by the area such as tourism) and supporting services such as the preservation of biodiversity.

2.0 OBJECTIVE

This research project aimed to assess the perspectives of stakeholder groups towards the ecosystem services provided by Panti Recreational Forest located in Kota Tinggi, Johor for the sustainable planning of the area. To achieve the aim of this project, two objectives were formulated. The first objective of the project is to identify which ecosystem services are the most valued and least valued by different stakeholder groups and to determine the possible threats that might affect the sustainability of the recreational forest.

3.0 METHODOLOGY

Toolkit for Ecosystem Services-Based Assessment (TESSA) is a designed tool to guide non-experts in identifying the ecosystem services provided by the area, the data needed to measure the ecosystem services, the method that could be used and how the results could be presented to all stakeholders groups to enhance the awareness regarding the ecosystem services of the area. The TESSA toolkit involved seven steps as the following:

- i. Scoping – to identify the assessment site and the plausible alternative site
- ii. Rapid appraisal – a workshop with stakeholders' groups to identify which ecosystem services to be assessed and the alternative site
- iii. Assessment – to carefully choose the relevant ecosystem services
- iv. Determining the alternative site
- v. Method selection – flexible method provided in the toolkit based on the decision trees
- vi. Data collection
- vii. Data analysis and presentation

This research project focuses on the scoping and rapid appraisal steps to determine which ecosystem services are most valued by the stakeholder groups, identifying the plausible alternative site and investigating the possible threats based on the viewpoints of stakeholders' groups that are likely to happen in the next 10 years.

Primary data collection of this project was using a structured questionnaire as provided in the toolkit which comprises three sections; demographic profile of respondents (Section A), value of ecosystem services (Section B) and the possible threats that might affect the sustainability of the forest (Section C). A total of 60 respondents came from different stakeholder groups such as the local community, community leaders, professionals, local authorities, chalet operators and local tourists were approached carefully to answer the questionnaire provided.

4.0 RESULT & DISCUSSION

Scoping analysis involves the process of selecting the most suitable ecosystem services based on the four categories of ecosystem services and secondary data collection helps in determining the relevant ecosystem services to the site. A list of ecosystem services that are

relevant to Pantii Recreational Forest was presented to the stakeholders' group and they were asked to rank the importance of ecosystem services.

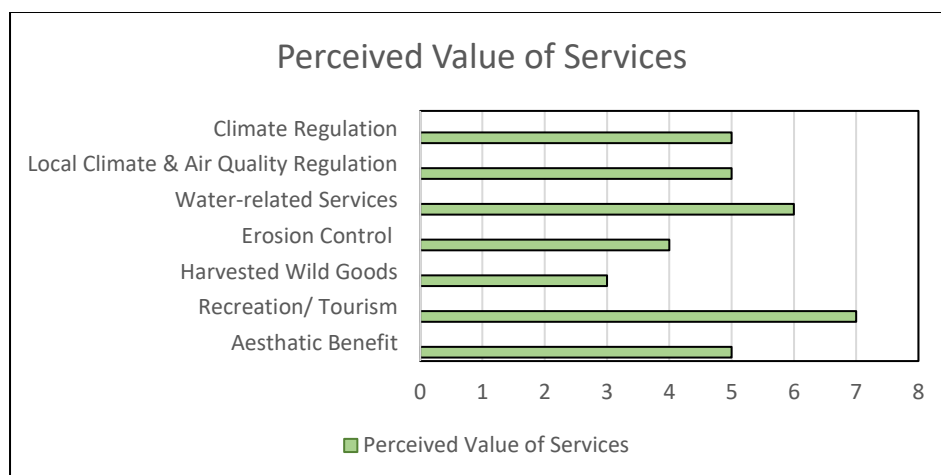


Figure 1: Perceived value of ecosystem services

Figure 1 above shows the perceived values of ecosystem services that respondents think are the most relevant to Pantii Recreational Forest and recreation or tourism activities received the highest score of 7. It is proven that stakeholders' groups are receiving well the role of the forest in providing recreational activities for the local community and attracting tourists to the area. Furthermore, Pantii Recreational Forest is a well-known natural setting with a rich diversity of flora and fauna and also has the potential for a natural conservation education program. Meanwhile, harvesting wild goods from the forest area received the lowest score as there is a current prohibition in harvesting any forest products from the area and this is well aware by the respondents.

A rapid appraisal form was extracted from the TESSA toolkit to measure the impact score of each possible threat that is likely to happen in the next 10 years and might affect the sustainability of the forest. The distribution scores were calculated based on the three elements which are timing, score, and impact. Each score for each element was added and divided into 60 respondents to obtain the mean of impact score. As a result, respondents were most concerned about the sustainable water usage issue in the area as the recreational forest is famous for its water-based activities but at the same time, the forest provided the main source of clean water for the local community. Therefore, the local community especially expressed their hope for the local planners and managers to come out with effective strategies to sustain the quality of the water. Thus, the score influenced the next possible threat listed which is water and air pollution. On the other hand, due to the encroachment from outsiders, it is found that issues such as illegal hunting of animals and deforestation are likely to happen if there are no actions implemented by the local authority.

Table 1: Mean impact score of possible threats

Possible Threats	Mean Impact Score
Usage and management of water resources	6.6
Water and air pollution	6.0
Illegal deforestation products	5.0
Development of residential and commercial areas	4.7
Environmental conservation projects	4.7
Hunting animals	4.7

Fire threat	5.2
Climate change and natural disasters such as flash flood	5.8

5.0 CONCLUSION

Diverse opinions from different stakeholder groups should be assessed to ensure there are no conflicts arise in the future. Perspectives from the stakeholders should be taken into consideration before implementing any management strategies for the area as any actions taken might influence the stakeholders' groups either directly or non-direct. Engaging stakeholder groups in identifying the relevant ecosystem services is a critical step in providing a clear understanding of the value of the services provided by the forest. This project is hoped to help planners and managers in the decision-making process and enforcing any management actions for biodiversity conservation and natural environmental settings. On the other hand, the TESSA toolkit applied in this project could be extended to be applied in other forms of recreational settings such as national parks, urban parks and community parks.

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ZONIFY: SMART ZONING FOR GUNUNG BELUMUT, JOHOR

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ABSTRACT

The Zonify project presents an innovative approach to managing nature-based recreation areas, specifically focusing on Gunung Belumut in Johor. By applying the Recreation Opportunity Spectrum (ROS) framework, the project identifies and categorizes three distinct recreational opportunity classes: rural, semi-primitive motorized and semi-primitive non-motorized. Each class is assessed based on three key attributes: physical setting, social setting and managerial setting. The physical setting analysis considers the attraction offered, the naturalness of the area and potential and risks to man-made resources through on-site observation. Social setting evaluation involves a structured questionnaire to examine visitor density, interactions, experiences and social behaviour. The managerial setting is determined through focus group interviews with stakeholders to gather insights into naturalness, provided facilities, maintenance programs, and the management of recreational activities. Based on the findings from the Zonify project, three zones are recommended for Gunung Belumut: the leisure station, the escape lane and the wonderful journey. These zones ensure the formulation of appropriate recreational activities that align with the existing condition of the area, minimizing potential damage. By implementing this zoning system, nature-based recreational activities can be effectively managed, providing visitors with diverse and enjoyable experiences while preserving the ecological integrity of Gunung Belumut. The Zonify project's integration of ROS and comprehensive assessment of physical, social and managerial settings allow for a sustainable and balanced approach to recreational planning and management in natural areas. This project serves as a valuable model for other nature-based recreation areas, offering a framework that supports responsible and sustainable tourism development.

Keywords: zoning, recreation opportunity spectrum (ROS), nature-based recreation

1.0 INTRODUCTION

Recreation opportunity setting can be defined as the combination of physical, social and managerial settings that ultimately give certain values to a place. The opportunities should include any benefits obtained from the natural setting such as the scenery and vegetation, recreational use and the conditions created by the management of the place such as roads and regulations (Clark et. al., 1979). The Recreation Opportunity Spectrum (ROS) framework guides in giving characteristics based on the recreational opportunities that the area serves (Zhang et. al., 2023).

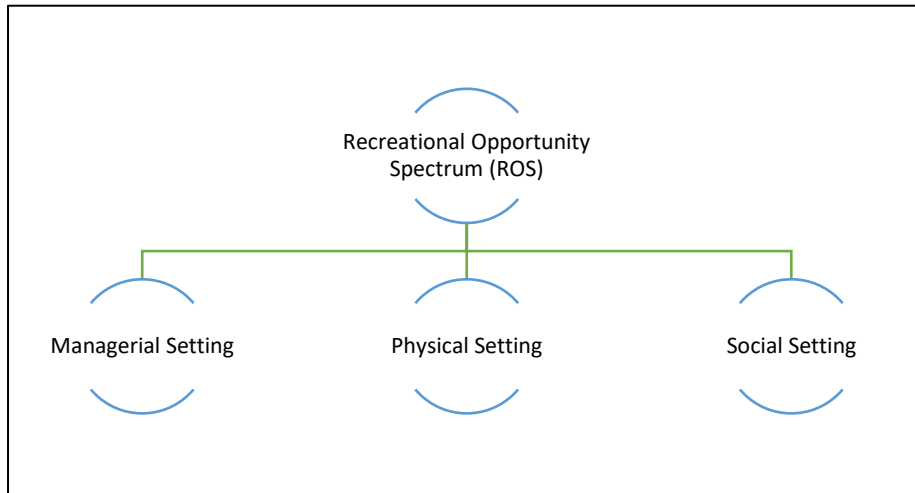


Figure 1: The Recreational Opportunity Spectrum (ROS) framework

The ROS framework started with the assessment of three settings namely the managerial setting, physical setting and social setting. This is an important step in gathering secondary data collection about the place and allows researchers to get to know in-depth the characteristics of the area before deciding the recreational spectrum. Managerial settings involve the collection of secondary data on how the area is currently managed including the booking system, visitors' flow and movement and the existence of nature infrastructure available in the area (Zhang et. al., 2023). The physical setting includes the accessibility of the area, the remoteness of the area and the identification of the biophysical setting. Lastly, the social setting covers the types of recreational activities offered by the area (Zhang et. al., 2023).

Taman Eko Rimba Gunung Belumut, Johor is a recreational forest located approximately 137 kilometres from Johor Bahru town and is a well-known place among the local community because of its uniqueness of flora and fauna and offers types of recreational activities such as water-based activities, camping, hiking and even for education and research purposes. The focal point of the area is the waterfall areas that attract local and non-local tourists. Therefore, it is very important to carefully manage the area in order to serve its purpose in the tourism industry as well as continue contributing benefits to the local community.

2.0 OBJECTIVE

The Zonify project aimed to develop an effective management plan exclusively for Taman Eko Rimba Gunung Belumut, Johor based upon the ROS framework which involve the identification of three settings; managerial, social and physical. Then, recreational opportunities were identified based on the landscape spectrum to be utilized for the creation of zones. Additionally, this project recommend specific theme for each zone and types of activities that are suitable to be offered according to the recreational characteristics identified.

3.0 METHODOLOGY

The Recreation Opportunity Spectrum (ROS) is a system for classifying and managing recreation opportunities based on the following criteria: physical setting, social setting and managerial setting. The combination of the three criteria resulted in six different ROS classes which later produced a map zoning for the area. Therefore, primary and secondary data collection was conducted for this project. Primary data collection involves interview sessions

with the related stakeholder groups such as the local authority, Johor Forestry Department and the local community to obtain the data on the managerial settings. Other than that, on-site observation was conducted to identify the physical setting of the area and social setting data obtained from the structured questionnaires. A total of 385 respondents were involved in the data collection process comprised of the visitors of Taman Eko Rimba Gunung Belulut, Johor.

4.0 ZONING FOR GUNUNG BERLUMUT, JOHOR

There are three zones identified in this project based on the recreational opportunity spectrum which are rural, semi-primitive motorized and semi-primitive non-motorized. A rural zone covers the entrance of the area that an administration office, parking lots, open space with small playground can be found in this area. This zone was named as “Leisure Station” because of its opportunities to offer types of enjoyment activities in this area. As this zone provides man-made facilities such as prayer room, stalls and other amenities available, it is a suitable option for any gathering events and social interaction activities.

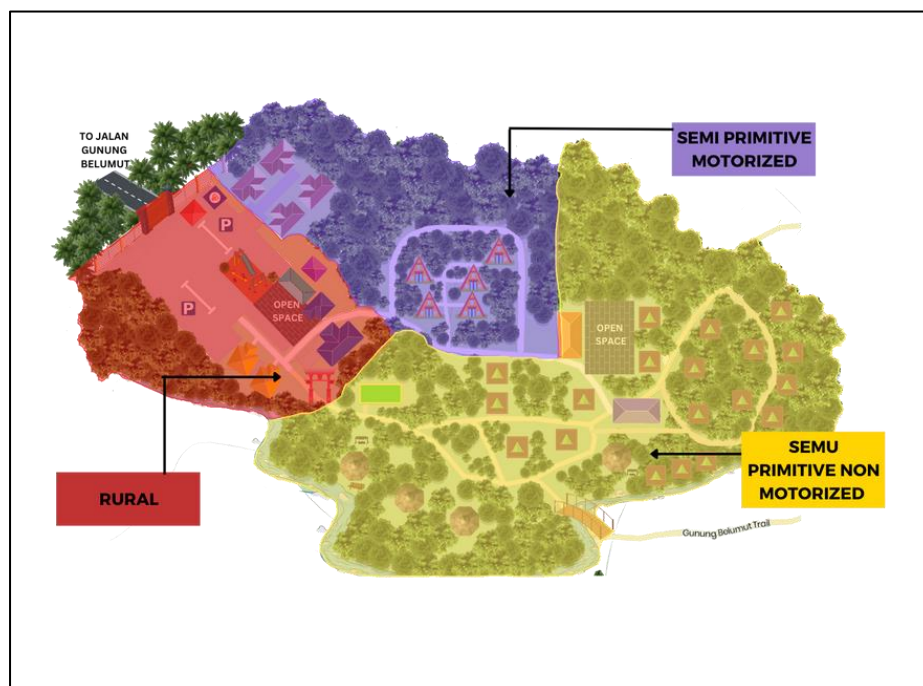


Figure 1: Suggested zoning for Gunung Belulut, Johor using the ROS

The second zone is the semi-primitive motorized area named as the “Escape Lane” zone and its surrounding characteristics portray beautiful natural characteristics that are conducive to conducting fun-based recreational activities. This area is suitable for families with kids and education and interpretation trail activities could be conducted in this area as it is still accessible. The last zone is a semi-primitive non-motorized area given the name “Wonderful Journey” and due to its abundance in naturalness, this area is suitable for hiking activity and survival activity, especially for team-building programs.

5.0 CONCLUSION

This project presents a valuable and effective approach in managing nature-based recreation areas, exemplified by its application to Taman Eko Rimba Gunung Belulut in Johor. This project serves as a model for nature-based recreation areas, promoting sustainable tourism development and the preservation of natural resources. Zonify offers a practical solution that

balances visitor experience with environmental conservation, ensuring the long-term viability and enjoyment of Taman Eko Rimba Gunung Belumut and similar natural destinations.

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**PHRONESIS TABLE:
TRANSFORMABLE SPACE SAVING FURNITURE**

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ABSTRACT

Sustainable Development Goal 4 (quality education) and Goal 9 (industry, innovation, and infrastructure) emphasis on modern ways to make education and innovation better. The Phronesis Table is a new educative and work innovation that combines the functionality of a traditional table with the latest in technology made from upcycling used furniture. The table adapts the concept of transformable space saving furniture which features a built-in lighting system, transparent glass top, hidden storage, extension cord, speaker, USB port, and extendable table width. It has also been installed with wheels, making it easy to move around. The lighting system on the Phronesis Table can be used for a variety of purposes, such as providing ambient light, creating a mood, or highlighting artwork. The transparent glass top allows users to see the contents of the table, while the hidden storage provides a place to keep items out of sight. The extension cord, speaker, and USB port make it easy to connect devices and charge them. The 360° wheels are ideal for homes with small spaces or for businesses that need flexible spaces. The Phronesis Table is a versatile and innovative piece of furniture that can be used in a variety of settings. It is perfect for schools, universities, homes, offices, and businesses. The table is available in a variety of colors and finishes, so you can find the perfect one to match your décor. If you are looking for a versatile, innovative, and durable piece of furniture that is affordable and sustainable, the Phronesis Table is a great option.

Keywords: Phronesis Table, Multi Usage Furniture, Educative Innovation, transformable space saving furniture

1.0 INTRODUCTON

Many people have limited living areas, especially those who live in big cities. Due to limited space at home, the choice of furniture needs to be more selective in its features: space saving and has multi functions properties. More people are living in large cities seeking more job opportunities and modern lifestyle, and this causes the average living area to decrease gradually. Most small apartments only have multipurpose rooms intended for several activities

like studying, watching TV, having dinner, family gathering, etc. (Canepa, 2017). Such an occurrence of decreasing work and study space also happens in many offices and classrooms, in which space saving furniture with multi functions properties can allow for more space. This is known as transformable space saving furniture which uses less space and provides dual functions and is also called dual-function furniture (Wang, 2013). He further explains that transformable space saving furniture is designed based on the concept that the furniture's design must involve at least two forms of appearance and function. It should have both an ordinary appearance and transformed appearance. In this aspect, the Phronesis Table is a new educative and work innovation that combines the functionality of a traditional table with the latest in technology made from upcycling used furniture.

2.0 PROBLEM STATEMENT

Development causes cities to have less available free space. According to Husein (2021) many people who live in large cities can only afford small apartments or condos and as a result this provides a good opportunity for the development of transformable space saving furniture. In his study, it is revealed that most participants have difficulties with their small spaces and supported the idea that multifunctional furniture can be a smart solution for their problems.

Furniture is intended to build an easier and more comfortable life for human beings (Astonkar & Kherde, 2015). Many types of domestic furniture are available for various functions (Kilman, 2016). Design and the placement can make a difference in people's mood; as Gentili, (2017) stated, furniture selection can complement or diminish human needs and feelings; for example, furniture intended for storage may be difficult to move and thereby frustrating for people. To add, furniture is necessary and could also be a luxury and thus, everyone needs it. Nonetheless, some furniture occupies a lot of space and causes wasted spaces. Wang (2013) mentions that flexibility in housing is designed to improve the quality of life in interior architecture. Multifunctional furniture as a flexible method can increase space sustainability and improve the quality of living by serving several functions at once (Husein, 2020). Limited space does not only occur at home but also in offices and classrooms. Thus, having Phronesis Table is the answer to this issue where it is a versatile and innovative piece of furniture that can be used in a variety of settings. It is perfect for schools, universities, homes, offices, and businesses.



Figure 1. Phronesis Table (Front and Side Views)

The figure above shows the front and side views of the product. The table is ergonomic where it is made from upcycling used wooden furniture and thus, long lasting. With the four wheels, it can be moved around and is flexible. As supported by Zhang (2016), the maximum use of a minimum space can be achieved, and people will not feel the limit of the furniture around them (Zhang, 2016). To free up a small space for different functions, the furniture must have specifications that suit the necessary functions and need little space.

3.0 OBJECTIVES

This innovative project aims to create a table which has multi-functional properties and enables the owner to save space and avoid clutter. The table can be used at home, office, and schools, where it can function as a table with a built-in lighting system, transparent glass top, hidden storage, extension cord, speaker, USB port, lights, and extendable table width tables. Besides, with multi functions properties, Phronesis Table supports the concept of transformable space saving furniture.

4.0 NOVELTY

There are many kinds of transformable space saving furniture, such as coffee tables which convert into dining tables, benches that can be used as storage boxes and bookshelves as room dividers or beds. Wang (2013) affirms that transformable space saving furniture is a revolution and innovation in which for people who have small budgets for furniture expenditure and who live in limited spaces, transformable space saving furniture might be their only option.

This Phronesis Table is one type of transformable space saving furniture. It is a versatile and innovative piece of furniture that can be used in a variety of settings. It is perfect for schools, universities, homes, offices, and businesses. The lighting system on the Phronesis Table can be used for a variety of purposes while the transparent glass top allows users to see the contents of the table. The extension cord, speaker, and USB port make it easy to connect devices and charge them. The table is available in a variety of colors and finishes, so you can find the perfect one to match your décor. If you are looking for a versatile, innovative, and durable piece of furniture that is affordable and sustainable, the Phronesis Table is a great option.

5.0 USEFULNESS



Figure 2. Usefulness

The Phronesis Table is a new educative and work innovation that combines the functionality of a traditional table with the latest in technology made from upcycling used furniture. The table features a built-in lighting system, transparent glass top, hidden storage, extension cord, speaker, USB port, and extendable table width. It has also been installed with wheels, making it easy to be moved around anywhere the owner wants it to be placed. The lighting system on the Phronesis Table can be used for a variety of purposes, such as providing ambient light, creating a mood, or highlighting artwork and thus, work can be done at any time of the day. The transparent glass top allows users to see the contents of the table, while the hidden storage provides a place to keep items out of sight. The extension cord, speaker, and USB port make it easy to connect devices and charge them. The 360° wheels are ideal for homes with small spaces or for businesses that need flexible spaces. If the table is not longer needed, the owner can wheel it to be kept in the storage room or move it in another part of the house to match the décor of the house.

In fact, this table has been used in one of the primary schools in Sarawak, where the teachers have given positive feedbacks regarding the table as the teachers have utilised this table in their classrooms for several months. The teachers have used it to place the projector and laptop, store their radio player and books, and wheel it around to create more space for the students to carry out their activities.

6.0 CONCLUSION

Transformable space saving furniture is an innovative product that has much opportunity for future development, and a huge potential market especially in places with limited space. Transformable space saving furniture such Phronesis Table provides small properties with greater space and multiple functions piece of furniture. Furthermore, Zhang (2016) suggests that transformable space saving furniture can be made more effective and efficient if its designers could cooperate with architects and engineers in its manufacture. Husein (2020) recommends that design and art should always be created based on the needs of society and solve the issues to provide people a better living environment, that is why the multifunction furniture and product design needs more attention and development. To sum up, Phronesis Table is a great option if one is looking for a versatile, innovative, and durable piece of furniture that is affordable and sustainable. To commercialize it, it does not cost much to build it as it is created from upcycling used furniture. This is a good opportunity for the development of transformable space saving furniture, and it could affect the market of transformable space saving furniture and Phronesis Table is one golden opportunity. As mentioned by Husein (2020) multifunctional furniture as a flexible method can increase space sustainability and improve the quality of living by serving several functions at once and these types of flexible furniture can balance spaces in terms of beauty and efficiency.

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AMPAIAN PAKAIAN PINTAR

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ABSTRAK

Pelbagai kekurangan ditemui apabila menggunakan mesin pengering untuk mengeringkan pakaian. Contohnya, pembaziran tenaga elektrik dan hanya pakaian tertentu sahaja dapat menggunakan mesin pengering kerana warna pakaian akan luntur, terkoyak ataupun meregangkan pakaian. Sebuah kajian mengatakan pakaian yang dijemur di bawah cahaya matahari menghasilkan sebatian organik yang berfungsi sebagai perfum semulajadi dan melembutkan tekstur pakaian. Lantas, ampaiian pakaian menjadi pilihan masyarakat kerana tidak merosakkan pakaian dan lebih murah berbanding dengan mesin pengering. Namun terdapat masalah yang timbul kerana cuaca tidak menentu yang akhirnya akan menyebabkan pakaian tidak kering kerana hujan dan memerlukan tenaga manusia bagi mengalihkan kedudukan penyidai pakaian di tempat berbumbung dan ini menjadi masalah bagi mereka yang bekerja. Oleh itu, objektif inovasi ini adalah bagi memastikan pakaian tidak basah akibat hujan dan tidak perlu dialihkan kedudukannya bagi mencegah daripada basah serta kos produk rendah dan berpatutan. Dengan itu, idea inovasi ini menyediakan perlindungan daripada hujan secara automatik dengan mengeluarkan bumbung atau perlindungan yang bertujuan bagi menghalang air hujan membasahi pakaian. Bahagian bumbung diperbuat daripada bahan lut sinar dan kalis air. Ianya dapat diaktifkan apabila sensor yang terdapat pada inovasi ini mengesan kehadiran air dan berfungsi menggunakan bateri. Justeru, impak daripada inovasi ini ialah dapat mengurangkan tenaga manusia apabila inovasi ini berfungsi secara automatik. Selain itu, menjadi pilihan masyarakat kerana harga berpatutan dan memaksimumkan penggunaan ruang yang terhad di halaman rumah. Kesimpulannya, inovasi ini dapat diluaskan pasarannya sekiranya penambahbaikan idea dilakukan terhadap fungsi bumbung seperti ditukar menjadi mudah alih iaitu bumbung/perlindung ini dapat digunakan bagi setiap jenis ampaiian baju.

Kata Kunci: Ampaian pakaian, inovasi

1.0 PENGENALAN

Mesin pengering sudah menjadi kelaziman bagi masyarakat untuk mengeringkan pakaian namun terdapat banyak kesan negatif penggunaan mesin pengering iaitu seperti warna pakaian akan luntur, terkoyak ataupun meregangkan pakaian. Pakaian juga boleh berbau tidak menyenangkan ketika menggunakan mesing pengering. Lantas, ampaiian pakaian menjadi pilihan masyarakat kerana tidak merosakkan pakaian dan lebih murah berbanding dengan mesin pengering. Namun cuaca yang tidak menentu akan menyebabkan pakaian tidak dapat kering dan memerlukan pengguna bagi mengalihkan kedudukan ampaiian kebawah tempat berbumbung sekiranya cuaca bertukar menjadi hujan.

2.0 OBJEKTIF

Objektif inovasi ini adalah bagi memastikan pengguna tidak perlu risau kerana pakaian yang dijemur tidak basah sewaktu hujan dan tidak perlu memerlukan pengguna untuk mengalihkan kedudukan ampaiian sewaktu hujan bagi membantu masyarakat yang bekerja yang kesuntukan masa bagi mengalihkan kedudukan ampaiian serta memastikan produk yang tercetus daripada inovasi ini adalah kos berpatutan.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Inovasi ampaiian pakaian pintar ini menggunakan bumbung yang dapat dibuka tutup untuk mengelakkan pakaian daripada basah akibat hujan. Ianya menggunakan sensor air dan sensor kelembapan atau suhu yang akan memberikan signal terhadap servo motor sekiranya hujan bagi menggerakkan bumbung yang di perbuat daripada bahan kalis air dan lutsinar. Apabila bacaan air, kelembapan atau suhu mencecah paras tertentu, maka papan induk atau motherboard akan memproses data input kemudian memberi signal terhadap servo motor bagi menggerakkan bumbung. Sekiranya bacaan air, kelembapan atau suhu kembali paras normal atau tidak mencecah paras tertentu, bumbung akan ditutup atau kekal di posisi awal. Inovasi ini juga hanya menggunakan bateri yang membuatkan ianya mudah alih dan jimat kos elektrik.



Rajah 1: Prototaip ampaiian pakaian pintar menunjukkan fungsi sensor dan bumbung.

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Impak daripada inovasi ini ialah dapat mengurangkan tenaga manusia apabila inovasi ini berfungsi secara automatik. Selain itu, menjadi pilihan masyarakat kerana harga berpatutan dan memaksimumkan penggunaan ruang yang terhad di halaman rumah. Inovasi ini juga akan membuka jalan baharu di dalam industri kerana inovasi ini merupakan pembaharuan.

5.0 KESIMPULAN

Kesimpulannya, inovasi ini dapat diluaskan pasarannya sekiranya penambahbaikan idea dilakukan terhadap fungsi bumbung seperti ditukar menjadi mudah alih iaitu bumbung/perlindung ini dapat digunakan bagi setiap jenis ampaiian baju. Selain itu, penambahan fungsi seperti aplikasi bagi mengawal atau memantau suhu, kelembapan atau fungsi bumbung ampaiian pakaian.

HERITAGE ASSET DISCLOSURE FRAMEWORK (HADiF) 2.0

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ABSTRACT

Heritage Asset (HA) is unique and incomparable to other types of assets as it is significant to the country's history, culture, social and environment. From an accounting perspective, the HA needs to be accounted for in the public sector financial statement in line with the implementation of accrual accounting under the New Public Management (NPM). Not only that, in the context of the world's sustainability, the Sustainable Development Goals (SDG) 11 aims to strengthen the effort to protect and safeguard the world's cultural and natural heritage. Thus, this has required special attention to be given to HA. The current reporting of HA provides rarer guidelines to the preparers, particularly in the valuation and presentation resulting in underreporting of HA. Heritage Asset Disclosure Framework (HADiF) provides a framework specifically for the reporting of HA in the Malaysian Public Sector that integrates both financial and non-financial disclosure information of HA to be reported. HADiF 2.0 detailed the 'narrative component' and disclosure items to be incorporated in the HA report. The enhancement of HA disclosure helps preparers to produce more useful and relevant information about HA and enables the public sector agencies to discharge their public accountability by providing more transparent disclosure. Eventually, the public could assess the HA information to appreciate the country's HA better. Extensive disclosure of HA is able to reflect the value and significance of HA that primarily focuses on cultural and social values.

Keywords: Heritage Asset, Disclosure, Narrative, New Public Management, Accrual Accounting

1.0 INTRODUCTION

Heritage Asset (HA) holds great importance for national identity and serves as a symbol of a country's civilizations, stemming from its cultural, social, environmental, and historical significance. In line with Sustainable Development Goal (SDG) 11, a governmental institution is needed to protect and safeguard cultural and natural heritage. Accounting for HA has also been highlighted in the movement towards the implementation of accrual accounting. In these instances, the governmental organizations are accountable for managing and ensuring sound practices, as well as providing relevant information to various stakeholders. Providing relevant information to the stakeholders underpinning the New Public Management (NPM) indicates the government discharging their public accountability through the information provided. The reporting for HA has become a challenging issue among governmental organisations as the present standard (MPSAS 17) is limited to supports the disclosure of HA to reflect its significance. Prior research suggested to include qualitative information to be disclosed (Aversano, Christiaens & Thielen, 2018; Rosli, Hasbolah & Yahya, 2019; Woon, Chatterjee & Cordery, 2019; Biondi, Grandis & Mattei, 2021).

2.0 OBJECTIVE

As the present reporting framework has its limitations, HADiF aims to integrate both financial and non-financial disclosure information of HA into the Malaysian Public Sector's financial statements. The objective of HADiF 2.0 is to specify the narrative disclosure items to be included in the reporting of HA.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

HADiF 2.0 provides disclosure items that are primarily narrative to be used in the disclosure of HA. The proposed disclosure items were gathered through face-to-face interviews and document reviews. The disclosure items include the name, type, significance, custodian, status, description information, registration number, strategy and mechanism for protection, type of procurement, and pictures of HA.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

HADiF provides a framework suitable for the financial reporting of HA. The primary focus of HADiF 2.0 is to enhance HA disclosure, encompassing both financial and non-financial information. This enhancement serves the purpose of providing useful information to users for better monitoring and reviewing of HA, establishing indicators for HA performance, and assessing government accountability in HA management. Furthermore, it aids reporting entities in producing more useful and relevant information about HA for various stakeholders, reflecting their public accountability. The narrative disclosure can enhance and reflect the value and significance of HA, with a primary emphasis on social and cultural values.

5.0 CONCLUSION

The special characteristics of HA such as irreplaceable and highly prized make it important to be protected for the present and future generations. However, the adoption of accrual accounting for HA has raised technical issues of recognition, measurement and disclosure of such assets, both in the balance sheet and in income statements. With the limitation in the present standards, reporting of HA shall need to incorporate both quantitative and qualitative information to reflect the value of HA mainly in historical, social and environmental. HADiF 2.0 provides better reporting of HA by including both financial and non-financial disclosure information. This could enhance better reporting to various stakeholders as well as act as a monitoring tool within the government to assess the performance and potential of HA, including funding arrangements and decision-making. Furthermore, disclosure of HA could help the government to discharge its public accountability.

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BUSINESS MATHEMATICAL MARVEL

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ABSTRACT

Mathematics is often regarded as a difficult subject, and due to that, students find it difficult to learn mathematics, which affects their motivation to learn mathematics because of a lack of understanding in the classroom due to limited time for in-depth discussion and individualized attention for each student. They also have insufficient communication with lecturers, which may limit activities like discussion and exchanging ideas among students. Additionally, they don't have much of a chance to present solutions in the class. Hence, this project aims to create a fun way of learning mathematics as well as boost motivations for learning the subject matter among business students by creating an interactive video that focuses on the analysis of a few questions in annuity, trade, and cash discount. This video can be stopped or replayed and enables students to organize their thoughts and responses effectively. Moreover, creating the video can enhance confidence and self-esteem in analyzing the solutions since they can be presented without fear of judgement. In conclusion, this video will enhance critical thinking and creativity, addressing students' struggles with mathematics. By promoting communication, self-esteem, and personal development, it helps students overcome problem-solving challenges and promotes effective learning.

Keywords: Business Mathematics, Interactive Video, Learning, Motivation, Problem solving.

1.0 INTRODUCTION

Due to its crucial role in the Fourth Industrial Revolution, mathematics is one of the core topics that contributes to employment in science, technology, engineering, and mathematics (STEM). Due to this, this subject has been added to the curriculum from elementary school through the university level, and the majority of students take mathematics, however, this is not limited to only those who are studying in the STEM fields. Since it requires both problem-solving abilities and a desire to understand the material, not all students prefer this subject.

According to Rozgonjuk, Kraav, Mikkor, Orav-Puurand, and Taht (2020), there has recently been an uptrend in interest in learning mathematics, and a significant amount of literature has developed around this subject. However, Koca (2016) defined motivation to learn as acquiring the skill through constant modeling, feedback on expectations, and explicit instruction to help us comprehend it better. This description is comparable to that given by Middleton and Perks (2014), who state that a learner must be committed to learning in order to develop techniques to facilitate it.

The importance of mathematics in the advancement of science and technology is supported by the Malaysia Education Blueprint (2013–2025). On the other hand, the results of the Blueprint study supported the notion that there was a connection between students' success in the mathematics class and their degree of confidence. However, the problem arises

since most student regard Mathematics as a difficult subject. This attitude leads to lack of motivation among students as well as lack of understanding in Mathematics.

2.0 OBJECTIVES

Hence, the aims of this project are to provide a fun learning mathematics' technique in order to boost students' motivation, interest, confidence, and communication skills in presenting mathematics solutions. Additionally, this project can help the students understand the particular topics in depth. On the other hand, it also provides a platform to present the solutions.

3.0 DESCRIPTION OF PRODUCT

A fun learning video in Figure 1 was recorded, which provided a platform for the students to explain their works and present their understanding. Additionally, this video learning can be a reference for other students who face difficulties in understanding the way to solve this topic. The full version of the video can be found in <https://youtu.be/qyZpjiD8oUo?si=htMaeF6VLZciGhQQ>.

This video can be stopped or replayed and enables students to organize their thoughts and responses effectively. Moreover, creating the video can enhance confidence and self-esteem in analyzing the solutions since they can be presented without fear of judgement.

The screenshot displays a video interface with a student in a hijab speaking. The background is pink with various math-related icons and text. On the left, a 'NOTES' icon is visible. The main content area is divided into two sections: 'SOLUTION' and 'QUESTION 1'. The 'SOLUTION' section lists variables: $A: 80,000$, $t: 12\frac{1}{2}$, $K: 8\% : 0.08$, $m: 12$, $i: 0.08/12$, $n: 12(12\frac{1}{2}): 150$, and the formula $A: R[1 - (1+i)^{-n}]$ with i below it. The 'QUESTION 1' section contains the problem statement: 'The cash price of a lorry is RM80,000. RR Trading bought the lorry through an installment plan of $12\frac{1}{2}$ years and the interest rate charged was 8% compounded monthly.' Below this, the question asks to 'Find the equal monthly payment' and shows the formula $80,000: R[1 - (1 + 0.08/12)^{-150}]$ with $(0.08/12)$ in the denominator. The calculation shows $R: 80,000$ over 94.63465335 , resulting in R . In the bottom right corner, there is an illustration of two students sitting at a desk and raising their hands.

Figure 1: Fun learning video presentation

4.0 NOVELTY

This product provides a fun video learning which focus on Annuity, Trade Discount and Cash Discount problems. Innovation of Business Mathematical Marvel supports SDG 4 : Quality Education.

5.0 CONCLUSION

Finally, this video will improve critical thinking and creativity while addressing young people difficulties with maths. It assists students in overcoming problem-solving obstacles and fosters successful learning by boosting communication, self-esteem, and personal growth.

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HEALTHY LIFESTYLE AMONG MALAYSIAN STUDENTS

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ABSTRACT

Healthy lifestyle have been a major concern for Malaysian government. Many activities and campaign has been done to promote healthy lifestyle among Malaysian people. There are various factors that influence a healthy lifestyle. Understanding the factors that impact the health and well-being of Malaysian students is crucial for developing effective strategies to promote healthier lifestyles and enhance their overall well-being. Therefore, this study will only focusing on healthy lifestyle among Malaysian Students. The aim of this study is to identify awareness among Malaysian students about the importance of leading a healthy lifestyle and importance of fitness and healthy lifestyle among students. From the survey that have been done among all universities students in Malaysia, it is found out that most Malaysian students agree that healthy lifestyle lead to healthier life. Most of them think fasting and dieting are the best way to get a healthy body. Therefore, by prioritizing a creasing awareness, regular physical activity, dietary habit, mental health and stress, students can improve their overall well-being, academic performance, and prospects.

Keywords: Lifestyle, Fitness, Exercise, Healthy

1.0 INTRODUCTION

This study aims to provide an overview of the current state of healthy lifestyle among Malaysian students. It explores various factors that influence their lifestyle choices and sheds light on existing interventions and programs targeting this population. Understanding the factors that impact the health and well-being of Malaysian students is crucial for developing effective strategies to promote healthier lifestyles and enhance their overall well-being.

This study highlights the various factors influencing healthy lifestyle among Malaysian students, including diet, physical activity, sleep, mental health, socioeconomic factors, and cultural influences. It also provides an overview of existing interventions and programs targeting this population. By understanding the current landscape and gaps in research, policymakers, educators, and healthcare professionals can develop targeted strategies and interventions to promote and support healthier lifestyles among Malaysian students. Further research is needed to evaluate the effectiveness of interventions and identify innovative approaches to address the unique challenges faced by this population.

The aim is to empower Malaysian students to make informed choices, adopt healthy behaviours, and cultivate lifelong habits that promote their overall health and well-being.

2.0 OBJECTIVES

The objective of the study are

1. To identify satisfaction level on importance of fitness
2. To determine respondents' healthy lifestyle has improve their life
3. To identify the most preferred exercise among students

3.0 DESCRIPTION OF DATA

To obtain data on the healthy lifestyle of Malaysian students, researchers often employ various research methods, including surveys, questionnaires, interviews, and observational studies. These methods gather information about different aspects of students' lifestyles, such as dietary habits, physical activity levels, sleep patterns, mental well-being, and socio-demographic characteristics. The data collected provides valuable insights into the current state of healthy lifestyle behaviors among Malaysian students.

3.1 Population and Sample

A population of a healthy lifestyle among Malaysian students is essential for their overall well-being and long-term health. A healthy lifestyle among Malaysian students should focus on creating a supportive environment, providing education and resources, and fostering a culture that values and prioritizes physical and mental well-being.

Sample of the study of a healthy lifestyle among Malaysian students are from 80 respondents across the Malaysia data based. Thus, they are all from different universities perform different subset of an item from a population.

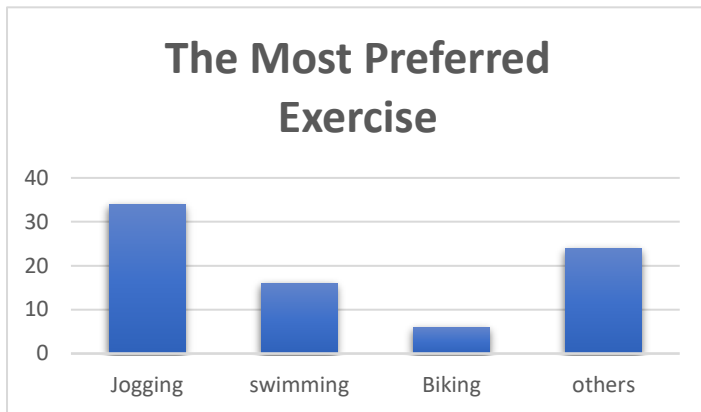
3.2 Sampling technique

Convenience sampling is indeed one of the non-probability sampling techniques. It involves selecting participants based on their easy accessibility and proximity to the researcher. It is important to note that it may not provide a representative sample of the population. The findings obtained from convenience sampling may not be generalizable to the entire population. It is essential to consider the limitations of convenience sampling and acknowledge that the results obtained may not accurately reflect the characteristics and opinions of the larger population. If convenience sampling is suitable for your case study and you have clear reasons for selecting this approach, it can be a valid choice.

3.3 Data Collection Method

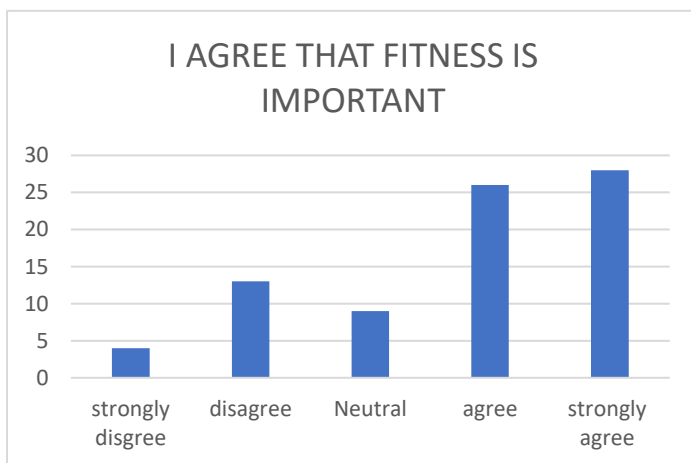
Creating an online survey using platforms like Google Forms is a popular and convenient method for data collection. It offers several advantages, including ease of distribution, cost-effectiveness, and flexibility for respondents to participate at their convenience. The use of online surveys allows for efficient data collection and analysis. The structure of your survey with three sections (A, B, and C) can help organize the data and gather specific information related to the research objectives. Each section may focus on different aspects or variables of interest, ensuring a comprehensive understanding of the topic. Closing the survey after reaching the targeted number of respondents (in this case, 80 respondents) is a good practice to ensure data collection consistency.

4.0 RESULTS



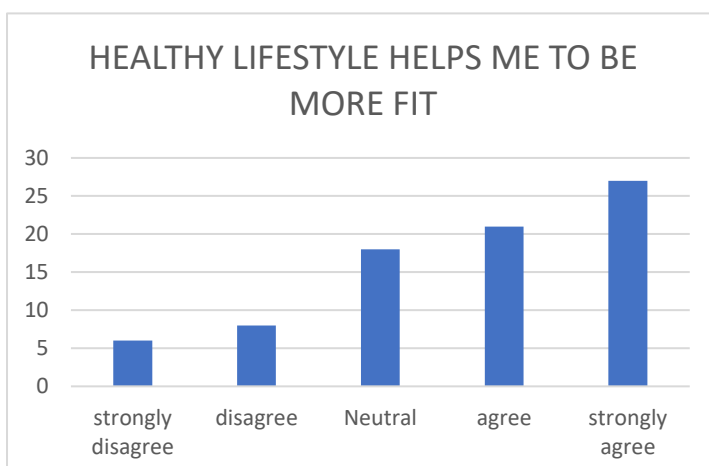
The bar chart above shows the finding of the kind of exercise respondents do. Most respondents preferred to listen to jogging with 34 people. While others has the second highest place with 24 respondents, swimming with 16 people and lastly, biking and with 6 respondents.

Bar Chart Of The Most Preferred Exercises By Respondents



The bar chart above shows only 4 people are strongly disagree that fitness is important while 28 people are strongly agree. While there's people agree that fitness is important which is around 26 people and 13 people disagree on that. Only 9 people that are neutral

Bar Chart Of Fitness Is Important Based On Respondents



Based on the bar chart above shows 27 people strongly agree that healthy lifestyle helps them to be more fit while 21 people are agree to it too. Besides that, 18 people are only neutral and 14 people disagree and strongly disagree.

Bar Chart Of Being Fit In The Respondents' Healthy Lifestyle

5.0 CONCLUSION

Adopting a healthy lifestyle among Malaysian students is crucial for their overall well-being and future success. It is evident that unhealthy habits and sedentary lifestyles have become a growing concern among the youth in Malaysia, leading to various health issues and a decline in academic performance. However, by making conscious choices and implementing positive changes, students can lead healthier lives and pave the way for a brighter future.

Firstly, the increasing awareness to educate Malaysia student about the importance of leading a healthy lifestyle. Consuming a variety of fruits, vegetables, whole grains, and lean proteins provides the necessary nutrients for growth, cognitive function, and physical development. From the above most of the student thinks that healthy life style is important but they not sure because most Malaysian don't usually practice the healthy lifestyle often on their daily life.

Secondly, the encouragement physical activity, regular physical activity should be prioritized among Malaysian students. Engaging in at least 60 minutes of moderate to vigorous exercise daily helps to strengthen muscles, improve cardiovascular health, and enhance mental well-being. Most of the student agree about the physical activity because they think physical activity not only improves physical fitness but also boosts concentration, memory, and overall academic performance.

Thirdly, the improvement of dietary habit. Diet can be good and can be not good depends on how we practice the diet. Healthy diet might bring us to get a good healthy body but bad diet can bring us a bad side effect. Most of the students said their frequently do fasting and diet because they think by fasting and do diet can help them to get a healthy body.

Lastly, is the student foster mental health and stress. Mental health is important especially us as a student we must know how to manage ourself from being stress and burn out. Healthy lifestyle is also including how we manage mental health and stress, that is why it is important to manage our life in a healthy way.

In conclusion, adopting a healthy lifestyle among Malaysian students requires a collective effort from individuals, families, schools, and the wider community. By prioritizing a creasing awareness, regular physical activity, dietary habit, mental health and stress, students can improve their overall well-being, academic performance, and prospects.

ANALYZING LANDSLIDES USING RELATED RATES AND DIFFERENTIATION

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ABSTRACT

A landslide refers to the movement of a mass of soil or rocks. It is a natural disaster that can cause significant damage to human lives, infrastructure, property, and environment. To minimize the effects of landslides, it is essential to recognize the causes and create reliable warning systems. This innovation idea explores the application of related rates and differentiation in analyzing landslides. It also emphasizes how these mathematical formulas can be used to determine the rate of change associated with landslides. The aim of this innovation is to highlight the significance of mathematical equations in understanding the movement of landslides. Therefore, it is important to note that this is a simplified example and real-world landslides may require more complex mathematical models for analysis and considerations. By utilizing the simple concept of related rates, we can expand our understanding of landslides and this information can be used for management and prevention.

Keywords: Related rates, Differentiation, Landslide

1.0 INTRODUCTION

Landslide is one of the most aggressive natural disasters that cause loss of lives and cost damages every year. It destroys the environment, resources, property, and people. Numerous studies have been carried out to identify landslides and to analyze the hazard from landslides including the type, location, stability, trigger factors, susceptibility and risk (Zhao & Lu, 2018). Most of these studies were aimed at increasing the accuracy of landslide prediction by finding suitable techniques for the respective study area.

Alkhasawneh et al. (2014) demonstrated decision tree models that determined factors that may be involved in landslide susceptibility. The results can be used to help mitigate hazards to people and facilities and as basic data for developing plans to prevent landslide hazards, such as in locating, monitoring, and facility sites. Meanwhile, Ur Rehman et al., (2020) applied the potential technique used for landslide identification and investigation. The technique named as Interferometric Synthetic Aperture Radar (InSAR) successfully identified the rates of the movement of the landslides in northern Pakistan area. All the methodologies used can provide the identification of all possible landslides areas that could either directly affect the communities or result in geohazards.

2.0 OBJECTIVE

The aim of this innovation is to highlight the significance of mathematical equations in understanding the movement of landslides.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

This innovation demonstrates how related rates and differentiation are applied in the analysis of landslides using mathematical calculations. Additionally, the innovation can serve as guidance for students who face difficulties with this topic.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The innovation offers an interactive video learning to assist students in understanding the topic on Related Rates in Calculus 1 syllabus.

5.0 CONCLUSION

Analyzing landslides using related rates and differentiation provides a powerful toolset for controlling the risk associated with these natural disasters. The application of mathematical models assists early warning systems, risk assessments, and engineering design. By combining knowledge and techniques, scientists, engineers, and policymakers may collaborate together to minimize the impact of landslides and protect vulnerable communities.

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NON-DESTRUCTIVE METHOD TO ESTIMATE THE VOLUME OF FRUITS

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ABSTRACT

Finding the volume of fruits is important for both consumers and sellers. The objective of this innovation idea is to provide a creative non-destructive method to measure the volume of fruit with ellipsoid shape and irregular shape. The steps to derive the volume of fruits are illustrated with examples. There are many advantages and benefits for seller when the volume of fruits is obtained. The volume of fruits plays a crucial role in storage and transportation logistics. By knowing the volume, one can optimize the packaging, stacking, and transportation methods. This helps in minimizing wastage, reducing damage, and utilizing storage and transportation space efficiently. It also aids in determining the required storage capacity and ensuring that the fruits are stored and transported in optimal conditions. As a conclusion, finding the volume of fruits provides valuable information for various stakeholders, including farmers, sellers and consumers. It helps in assessing quality, optimizing storage and transportation.

Keywords: Fruit, volume

1.0 INTRODUCTION

The volume of a fruit provides insights into its overall quality. Larger fruits may be preferred by consumers as they are often associated with juiciness, ripeness, and better taste. By determining the volume, fruit producers and sellers can assess the quality and value of their products, helping them make informed decisions about harvesting, packaging, and pricing. However, there are many fruits with irregular shape and hence it would be difficult to calculate or estimate the volume of fruits. The innovation idea that we are going to introduce is a non-destructive method to estimate the volume of fruits. Therefore, the non-destructive method is a technique that enables the estimation of the volume of fruits without causing any form of damaging, destruction, or altering the structure of the fruits.

2.0 OBJECTIVE

To provide a creative non-destructive method to measure the volume of fruit.

3.0 METHODOLOGY

The non-destructive method to measure the volume of fruit with ellipsoid shape is through integration.

4.0 ADVANTAGE

When the volume of fruits is obtained, there are many advantages and benefits for seller. By knowing the volume, one can optimize the packaging, stacking, and transportation methods. This helps in minimizing wastage, reducing damage, and utilizing storage and transportation space efficiently. It also aids in determining the required storage capacity and ensuring that the fruits are stored and transported in optimal conditions.

5.0 CONCLUSION

This innovation idea presents a non-destructive method to measure the volume of fruit. By knowing the volume of fruits provides valuable information for various stakeholders, including farmers, sellers and consumers. It helps in assessing quality, optimizing storage and transportation. Hence, this innovation idea plays a crucial role in storage and transportation logistics for fruit industry.

MENU RAHMAH SURVEY IN MALAYSIA

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ABSTRACT

January 2023, KPDN has launched the Menu Rahmah Program in partnership with strategic partners Food Shop Operators (Cooking) and the Association of Restaurant and Food Stall Operators. Participants in the Menu Rahmah Programme have committed to providing daily meals (lunch or dinner) for a price that does not exceed RM 5 per meal. The meals in the Menu Rahmah Program typically include one type of vegetable and either chicken or fish as the protein component. As Menu Rahmah grows in popularity and becomes a key part of Malaysia's social welfare initiatives, its execution, impact, and efficacy must be evaluated. Understanding the opinions and experiences of both consumers and stakeholders can provide useful insights into improving project outcomes and addressing potential issues. Therefore, studies have been done to collect detailed information on the experiences, views, and issues associated with Menu Rahmah. From the studies, most of the respondents agree and satisfied with the Menu Rahmah that is launch by the government. Almost all respondents agree that Menu Rahmah are very helpful in reducing their financial burden. In conclusion, Menu Rahmah is one of the good initiative launch by the government to help Malaysian people reduce their financial problem and government should oblige all food stall around Malaysia to provide at least one Menu Rahmah in their menu.

Keywords: Menu Rahmah, financial, meal, price

1.0 INTRODUCTION

KPDN has launched the Menu Rahmah Program in partnership with strategic partners Food Shop Operators (Cooking) and the Association of Restaurant and Food Stall Operators in order to help and lower the cost of living, especially for the Hardly Poor among the B40,. Participants in the Menu Rahmah Programme have committed to providing daily meals (lunch or dinner) for a price that does not exceed RM5 per meal. The meals in the Menu Rahmah Program typically include one type of vegetable and either chicken or fish as the protein component.

As Menu Rahmah grows in popularity and becomes a key part of Malaysia's social welfare initiatives, its execution, impact, and efficacy must be evaluated. Understanding the opinions and experiences of both consumers and stakeholders can provide useful insights into improving project outcomes and addressing potential issues. Menu Rahmah's research investigations have generally focused on customer opinions and satisfaction levels. However, a complete study that investigates various aspects, such as restaurant owners' or operators' perspectives, the influence on small enterprises, and the overall success of Menu Rahmah in promoting food security and social well-being, is required.

This study aims to collect detailed information on the experiences, views, and issues associated with Menu Rahmah. The findings will contribute to the existing literature on social welfare programs, provide ideas for improving Menu Rahmah implementation, and assist policymakers in making informed judgments about the initiative's sustainability and scalability. Overall, the purpose of this research is to investigate the numerous features of Menu Rahmah, including the perspectives of both consumers and stakeholders, to improve the knowledge and effectiveness of this social effort in Malaysia. To find out the satisfaction of Malaysians towards the Menu Rahmah, we have researched the government's decision to make the Menu Rahmah.

2.0 OBJECTIVES

The following are the overall objectives of this study:

1. To understand the main reasons customers purchase Menu Rahmah
2. To determine the average frequency of their purchases per day.
3. To evaluate the satisfaction levels and impact of Menu Rahmah on individuals' daily lives.
4. To identify people view on Menu Rahmah
5. To determine how Menu Rahmah affect people's life

3.0 DESCRIPTION OF DATA

The interesting elements that can be found within a collection of information are identified, arranged, and summarized in a description of the data. The process of gathering data includes posing essential questions to community members or unidentified individuals, and then compiling and presenting the responses with the right graphics. As a result of the data gathering, respondents are given aid in responding to questions, interpreting outcomes, and coming to judgements about probability and patterns.

3.1 Population and Sample

The population is made up of the components that make up the study's focus and that can be utilized to finish a collection of components gathered to spark interest in the study. The people in the immediate area of the researcher make up the population in our survey.

A sample is a part of the population taken for research purposes.

- The sample of our study is 81 respondents among Malaysians

3.2 Sampling Techniques

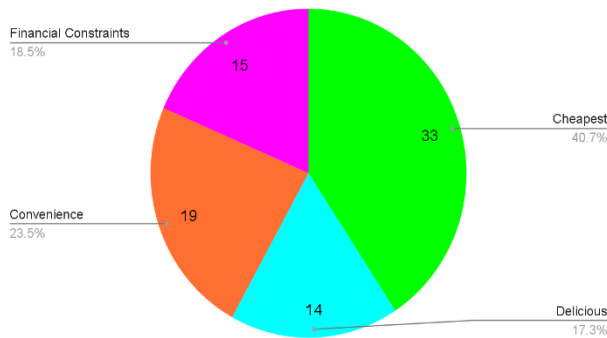
We employ a non probability sampling method, which is a straightforward form of random sampling. Because it is less complicated than other sample techniques, simple random sampling can help us save time and money. In order to get results, this strategy does not necessitate a difficult or drawn-out process. The questionnaire will be filled out by randomly selected respondents from every state in Malaysia.

3.3 Data Collection Method

Another technique that we employ for data collection is an online survey. Using a Google form, we run an online survey. Internet surveys are the most economical way to reach the largest possible audience. With this approach, researchers can also encourage the public to participate in surveys by posting their questions on social media sites like WhatsApp or Instagram. As a result, conducting surveys online is secure and safe. This is brought on by the lack of direct and physical communication

4.0 RESULTS

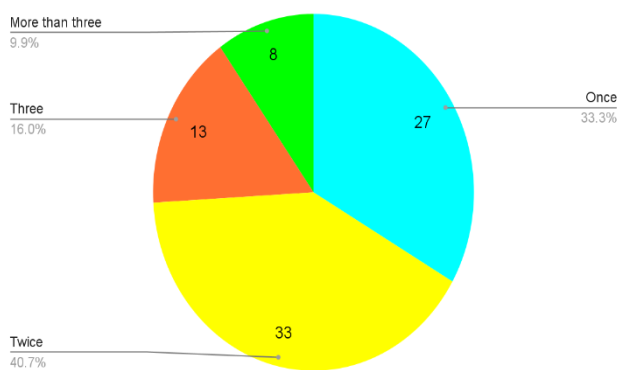
Count of Reasons People Buy Menu Rahmah



This pie chart shows that most of the respondents chose cheapest as their reason for buying Menu Rahmah which has 40.7% percentage while the least chosen option is delicious that was only chosen by 17.3% of the respondents.

Pie Chart Of Reasons People Buy Menu Rahmah

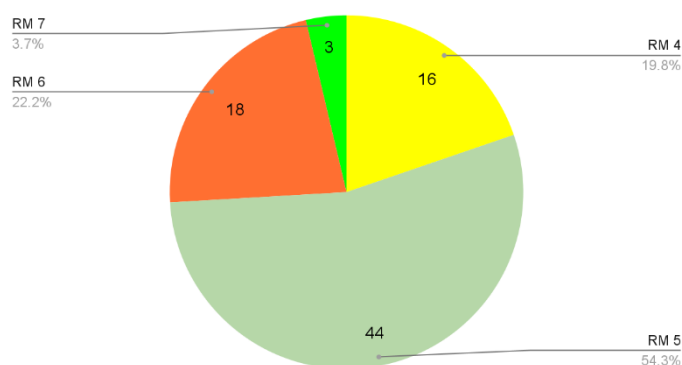
Count of amount of times people buy Menu Rahmah in a day



Based on the pie chart, 40.7% of the respondents, which is the most of them, buy Menu Rahmah twice a day while only 9.9% of them buy it more than three times a day.

Pie Chart Of The Amount Of Times People Buy Menu Rahmah In A Day

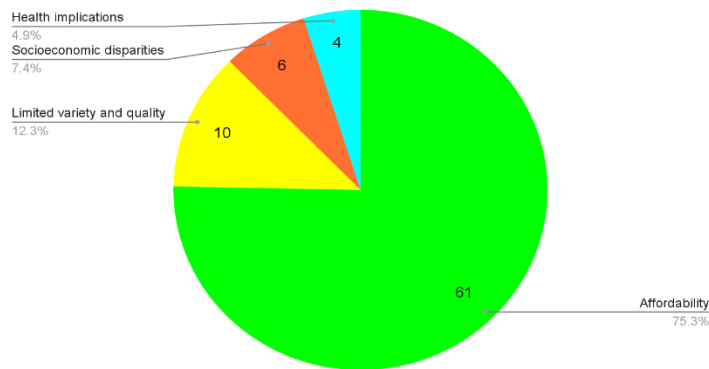
Cost of Menu Rahmah to people



This pie chart concludes that 54.3% of the respondents, which is the majority of them, had to pay RM 5 to buy Menu Rahmah while only 3.7% of the respondents needed to pay RM 7 for it.

Pie Chart Of Cost Of Menu Rahmah To People

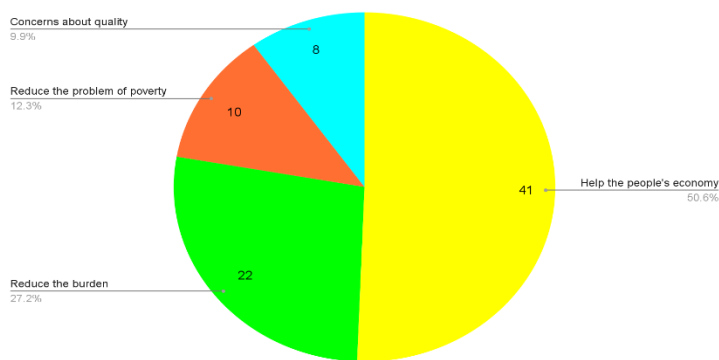
How Menu Rahmah affects people's life



This pie chart illustrates that the majority of respondents which is 75.3% chooses affordability as how Menu Rahmah has affected their life. The least chosen response is health implications which were chosen by only 4.9% of the respondents.

Pie Chart Of How Menu Rahmah Affects People's Life

People's view of the Menu Rahmah initiative

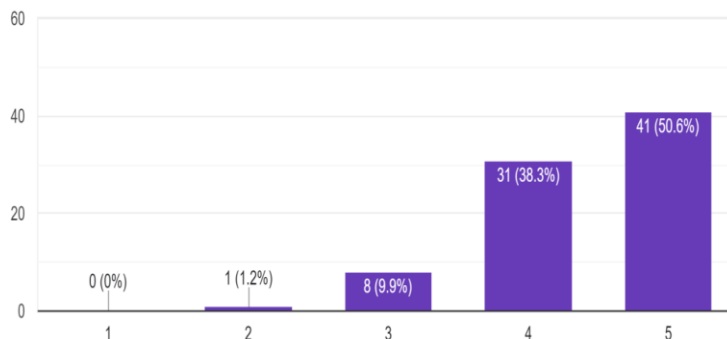


The pie chart above shows that the majority of the respondents, which is 50.6% of them, view Menu Rahmah as a way to help people's economy while only 9.9% of the respondents have concerns about the quality of Menu Rahmah.

Pie Chart Of People's View Of The Menu Rahmah Initiative

Is Menu Rahmah give satisfaction to your daily life?

81 responses



Based on the data above, Majority of respondents said that Menu Rahmah has given satisfaction to their lives, there are 0 respondents who strongly disagreed with Menu Rahmah. 1 respondents disagree and 8 respondents feel neutral about the satisfaction of Menu Rahmah. Next, 31 of the respondents are equivalent. 50.6% of 81 respondents strongly agree about it. In this case, the majority of respondents feel, Menu Rahmah gives satisfaction to their lives

Bar Chart Shows That Menu Rahmah Gives Satisfaction To People's Life

5.0 CONCLUSION

In conclusion, a lot of people are interested in purchasing the Menu Rahmah because According to a study, Malaysians frequently purchase Rahmah's menu due to its cheapest with as many reasons as they purchase Rahmah Menu, which has a percentage of 40.7%, followed by 'convenient' at 23.5%, 'delicious' at 17.3%, and financial constraints" at 18.5%. Malaysians favor "cheap" solutions since they can reduce their financial load and increase their savings. In addition, Malaysians feel that the price of RM 5 is the right price for them to buy Rahmah Menu food, this is because RM 5 does not burden Malaysians and can benefit both parties between buyers who want food. which is delicious at a cheap price, and the seller provides food at a low cost, in other words, this shows that Rahmah's menu can help many parties and can generate the national economy. Malaysians can use their money for other requirements as well. This demonstrates that Menu Rahmah can, in some cases, reduce people's burdens.

Next, Menu Rahmah mostly were bought 2 times a day by the people which has a percentage of 40.7%. The 2nd most chosen option was 1 time which is 33.3% of them while the third one is 3 times which is 16% of them. The least chosen option was more than 3 times which was only chosen by 9.9% of the people. The reason why most people buy it twice a day is that there is no restriction on how many times that you can buy Menu Rahmah in a day. Besides, the price might be suitable for the people to buy it for twice a day as it is cheap and the quality is also good so they do not need to feel worried about the quality. This shows that Menu Rahmah can be bought as many times as you like.

Furthermore, we can see that Menu Ramah can evaluate the satisfaction levels and impact of Menu Rahmah on individuals' daily lives, of which 41 over 81 respondents strongly agree that Menu Rahmah gives them satisfaction in daily life with 50.6%. 31 respondents agree with 38.3%, 8 respondents neutral with 9.9%, and 1 respondents disagree with 1.2 %. This shows that half of the respondents strongly agree with Menu Rahmah which gives them satisfaction because of affordability that gives an effect for their life.

Other than that, the majority of Menu Rahmah's target audience is college students which is 33 respondents representing 40.7% of the respondents. The second highest target audience are office workers with 20 respondents representing 24.7% of the respondents. Next, 12 of the respondents are high school students and 8 respondents are pensioners and the least 8 respondents were unemployed people. The reason why most people that purchased the Menu Rahmah are there is no restriction on what kind of occupation they do. Other than that, the Menu Rahmah showed that it can help many people that came from many occupations. This clearly shows that Menu Rahmah can be bought by any person.

All of these results show and explain to us the reason why UITM Pasir Gudang students agree with the Menu Rahmah introduced by the Malaysian government. Therefore, government should continue with this initiatives and make it better in the future.

STUDYING THE EFFECTS OF DEPRESSION AMONG UNIVERSITY STUDENTS IN MALAYSIA

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ABSTRACT

Depression is a prevalent mental health disorder that knows no boundaries when it comes to age, gender, or socioeconomic status. It affects people from all walks of life, regardless of their background or achievements. University life can be a transformative period, marked by academic pressures, social transitions, and increased responsibilities. These factors, along with the challenges of adapting to a new environment and the potential separation from family and friends, can contribute to increased vulnerability to mental health issues, including depression among universities students. Narrowing the focus of the study to Malaysian university students offers an opportunity to delve deeper into the complexities surrounding depression within this specific population. By examining the prevalence, cultural factors, and impact on academic performance, researchers can contribute to the development of targeted interventions, policies, and support services that address the unique needs and challenges faced by Malaysian university students experiencing depression. Based on the finding, it shown that many student are struggling with mental health issue which effect their daily life activities. From the survey, it also concluded that students feel anxiety a lot of time in a month. This is due to the financial problem, family problem and also bundle of assignment. Therefore university should run a program that is more relax for students to join to distract them from depression and students also must learn to take care of their mental health in order to ensure better future.

Keywords: Depression, mental health, anxiety

1.0 INTRODUCTION

Depression is a complex and debilitating mental health condition that affects millions of individuals worldwide. It is characterized by persistent feelings of sadness, hopelessness, and a loss of interest in activities that were once pleasurable. While everyone experiences periods of sadness or low mood, depression goes beyond temporary emotional fluctuations, often lasting for weeks, months, or even years. This condition can have a profound impact on a person's daily functioning, relationships, and overall quality of life. Understanding depression and its various facets is crucial in order to provide support, promote mental well-being, and reduce the stigma associated with this condition.

Depression is a prevalent mental health disorder that knows no boundaries when it comes to age, gender, or socioeconomic status. It affects people from all walks of life, regardless of their background or achievements. While the exact causes of depression are not fully understood, a combination of genetic, biological, environmental, and psychological factors are believed to contribute to its development. Traumatic life events, chronic stress, hormonal imbalances, and

certain medical conditions can increase the risk of developing depression. Moreover, individuals with a family history of depression or those who have experienced previous episodes are more vulnerable to this condition.

One of the key features of depression is the persistent feeling of sadness or emptiness. This emotional state can be accompanied by a range of other symptoms, including loss of interest or pleasure in activities, changes in appetite and sleep patterns, fatigue or lack of energy, difficulty concentrating, feelings of worthlessness or guilt, and recurrent thoughts of death or suicide. It is important to note that depression is not simply a matter of feeling down; it is a complex disorder that affects both the mind and body. Physical symptoms such as headaches, digestive problems, and chronic pain are also commonly associated with depression.

Depression not only impacts an individual's emotional and physical well-being, but it can also have far-reaching consequences in various aspects of life. Relationships may suffer as the depressed person may withdraw from social interactions or have difficulty expressing emotions. Work or school performance can be negatively affected, leading to a decline in productivity and academic achievements. Additionally, depression can increase the risk of developing other mental health disorders, such as anxiety or substance abuse, further exacerbating the overall burden on the individual. It is important to recognize the multifaceted nature of depression and the significant toll it can take on a person's life.

Seeking help for depression is crucial, as it is a treatable condition. Treatment options include psychotherapy, medication, or a combination of both, depending on the severity and individual needs. Cognitive-behavioral therapy (CBT), interpersonal therapy (IPT), and other evidence-based approaches have been shown to be effective in managing depression. Additionally, lifestyle changes such as regular exercise, a balanced diet, and engaging in activities that bring joy and fulfillment can play a significant role in alleviating symptoms. It is important for individuals experiencing depression to reach out to healthcare professionals, friends, or family members for support and guidance on the path towards recovery. Remember, no one has to face depression alone, and with the right support, treatment, and self-care, individuals can regain control over their lives and experience renewed hope and happiness.

Malaysia, a multicultural country in Southeast Asia, has a growing population of young adults pursuing higher education. University life can be a transformative period, marked by academic pressures, social transitions, and increased responsibilities. These factors, along with the challenges of adapting to a new environment and the potential separation from family and friends, can contribute to increased vulnerability to mental health issues, including depression.

Research focusing on depression among Malaysian university students is important for several reasons. Firstly, it allows for a better understanding of the prevalence and severity of depression within this specific population. This knowledge can inform policymakers, university administrators, and mental health professionals about the magnitude of the issue and the need for targeted interventions and support services.

Secondly, studying depression among Malaysian university students can shed light on the unique cultural and societal factors that may influence the manifestation and perception of depression. Malaysia's multicultural context, with diverse ethnic groups and varying cultural norms, can impact help-seeking behaviors, stigma, and coping mechanisms related to mental health issues.

Furthermore, exploring the relationship between depression and academic performance among Malaysian university students is vital. Depression can have a detrimental impact on concentration, motivation, and overall functioning, potentially compromising educational outcomes. Understanding this association can provide insights into the specific challenges faced by students and the potential need for academic support systems.

In conclusion, narrowing the focus of the study to Malaysian university students offers an opportunity to delve deeper into the complexities surrounding depression within this specific population. By examining the prevalence, cultural factors, and impact on academic performance, researchers can contribute to the development of targeted interventions, policies, and support services that address the unique needs and challenges faced by Malaysian university students experiencing depression.

2.0 OBJECTIVES

The objective of the study are

1. To determine the prevalence of depression among Malaysian university students.
2. To examine the impact of depression on academic performance among Malaysian university students.
3. To identify mental type of mental health issue by Malaysian university students
4. To identify the history of getting medical psychology
5. To determine frequency of mental health per month among Malaysian university students

3.0 DESCRIPTION OF DATA

A description of the data identifies, organizes, and summarizes the interesting the interesting features that can be found within a collection of information. Data collection will involve asking members of a community or random people pertinent questions, after which the answers will be gathered and presented using appropriate visuals. Respondents are provided with assistance in answering questions, analyzing results, and drawing conclusions regarding probabilities and patterns as a result of the collection of data.

3.1 Population and Sample

The elements that are the subject of the study and that can be used to complete a set of items that are gathered for the interest in the research are referred to as the population. In our survey, The population consists of Malaysian university students.

The sample is a subset of the population from which individuals are selected. For our survey, 32 respondents are selected as samples.

3.2 Sampling Technique

The sampling technique we use is Convenience sampling technique that is non-probability sampling that involves the sample being drawn from that part of the population that is close to hand. Convenience sampling techniques can help us save time and money because it is . This method does not require a complicated or lengthy procedure to obtain responses. Random respondents from Malaysian university student will be selected to complete the questionnaire.

3.3 Data Collection Method

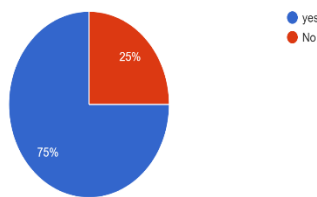
There are a few data collection methods that are commonly used to obtain the data which is face to face interview, telephone interview, mail/direct/e-questionnaire and direct observation. Every method has its own advantages and disadvantages. My group selected the e-questionnaire method as our data collection method. A questionnaire is a set of questions designed to generate the data necessary for achieving the objectives of a research project. It

must be able to provide a two-way communication between the respondent and the researcher to ensure accuracy of the data collected.

The convenience of employing this technology and the ability to cover a larger area are its benefits. Additionally, it involves a significantly cheaper cost and doesn't require making any special arrangements in advance to conduct the survey. This is because we are simply preparing the question and asking the reply to provide an answer. Additionally, by employing this technique, we were able to provide the respondents adequate time to complete the questionnaires. Lower response rates are one of this method's drawbacks. This is because it's possible that the respondent choose not to answer our query. The people who don't respond to the questionnaire might not always be the people it is intended for.

4.0 RESULTS

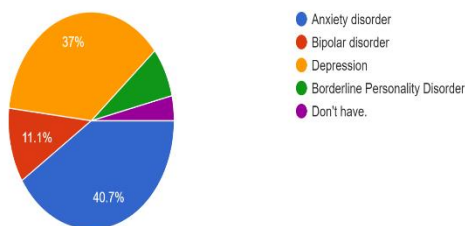
Do you have mental health issue?
32 responses



Based on the chart showing 76.7% students in UITM Pasir Gudang are not struggling with mental health issues. Meanwhile on the other hand, 23.3% are struggling with mental health issues. This shows that there students that are struggling with mental health issues right now.

Pie Chart Students Struggling With Mental Health Issues.

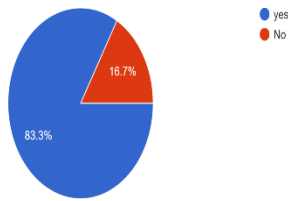
Types of mental health issues
27 responses



Charts above are asking for respondent to pick which mental health issues that they are facing through . The disease that are picked by majority are anxiety disorder with 40%. Next, Depression with 36%, followed by bipolar disorder with 12% and borderline personality disorder with 8%.

Pie Chart Type of Mental Health Students Facing

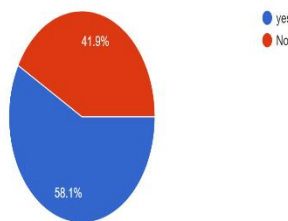
Is it caused by stress?
30 responses



Based on the pie charts above, 83.3% of respondent agree with the question which is mental health problems are caused by stress. Meanwhile 16.7% respondent disagree with the question given. This clearly shows that stress are one of the main factor for mental health issues that are faced by UITM Pasir Gudang students.

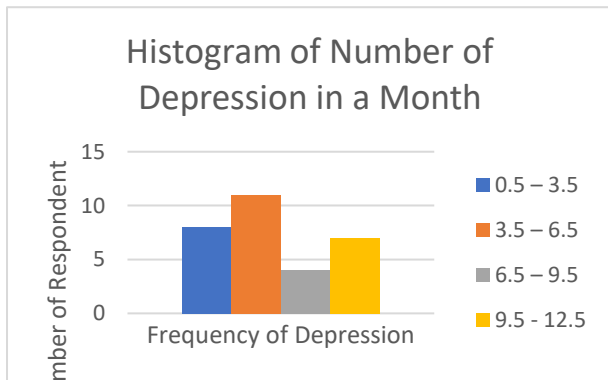
Pie Chart Causes of Mental Issue

Having a psychology medical history?
31 responses



Based on the charts above, 55.2% agree with the questions which means they do have medical history related to psychological disease. Meanwhile, 44.8% don't have any medical history related to mental illness.

Pie Chart Having Psychology Medical History



Based on the histogram, the highest rate is orange with 36.7%. Secondly, blue with 26.7% and followed up with green with 23.3%. Lastly, with lowest rate is yellow with 13.3%. With this data, we can conclude that most students feel anxiety in the frequency of 4 to 6 times in a month.

Histogram of Number of Depression In A Month

5.0 CONCLUSION

Our team had conducted the survey and research among the students in Universiti Teknologi Mara Pasir Gudang, Johor for survey of students that are struggling with mental health issues, the types of mental health issues that students are facing, the reasons why students are facing through mental health issues, the frequency of feeling anxiety in a month, the terrible of anxiety faced by UITM Pasir Gudang students, the effects of mental health in daily life among students and lastly the effect of mental health issues in relationships with people around. From the analysis, we can infer that how many students are struggling to deal with mental health issue.

First of foremost, there are lot of student who has mental health issue which 76.7% of student's UITM Pasir Gudang, Johor. Its show that it is a big number there show that a lot of student has to deal with mental health issue. That's mean mental health issue is a serious problem in this modern era cause of this survey are the evidence to prove that many student are struggling with that.

Other than that, we also survey their types of mental health issue that students are facing. The two highest types of mental health issue are the most common mental health issue which are anxiety disorder and depression. It show that 40% of student's UITM Pasir Gudang, Johor are having anxiety disorder while 36% are having depression. It means that these two things need to be focus by institution to prevent it to be worst in future.

Besides, we also make survey about their frequency of feeling anxiety in a month. Its show that students feel anxiety a lot of time in a month. It means that the student need to be help such as institution having a lot of program which is fun program, to attract them from thinking or feeling an anxiety.

Lastly, a lot of students agree that mental health issues effect their daily life. Its is 93.3% agree with that because of their mental is a main things in their life it fan effect everything such as how do you think properly while you having a mental health problem. Student need to face a lot of things in their daily life, so that they need a good mental health to facing their challenger daily life.

In conclusion, we must taking care of our mental health because of mental health is our main things in life, it is to ensure our future better and to be a successful person.

STUDENTS HABITS AND ACADEMIC PERFORMANCE AMONG STUDENTS IN UiTM PASIR GUDANG

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ABSTRACT

Academic performance refers to a student's level of achievement in their educational endeavours. The evaluation of education quality in universities often relies on students' academic performance, which is influenced by various factors, including study habits. Study habits refer to individual behaviours and skills related to studying, encompassing study methods that enhance motivation and facilitate effective learning. These habits are crucial for achieving success and differ from person to person. The connection between student behaviour and academic achievement has been extensively studied. Studies consistently show that good habits, such as positive habits like effective time management and active engagement in learning, lead to better academic outcomes. The objective for this study is to examine the relationship between study habits and the academic achievement of students at UiTM Pasir Gudang, Johor (UiTM). From the study, it can be concluded that study habits give a big contribution to the academic performance. Most of respondents like to study in calm and peaceful environment without any disruptions from outside world especially hand phone. This condition lead to a better performance in their academic.

Keywords: Academic performance, behaviour, student's habit

1.0 INTRODUCTION

Academic performance refers to a student's level of achievement in their educational endeavors. It includes a variety of factors. All of this can be determined by one's study habits throughout one's life. It is an action that students execute on a regular basis, such as reading, taking notes, and leading study groups, in order to achieve their learning objectives. The evaluation of education quality in universities often relies on students' academic performance, which is influenced by various factors, including study habits. Study habits refer to individual behaviors and skills related to studying, encompassing study methods that enhance motivation and facilitate effective learning. These habits are crucial for achieving success and differ from person to person.

Study habits reveal how much a person intends to study, how far a student wishes to progress, and how much they wish to earn. There are several good study habits, such as studying in a quiet environment, maintaining a daily study routine, minimizing distractions from devices like TV and mobile phones, taking notes of important information, taking regular breaks, listening

to soft music, adapting study methods to individual learning styles, and prioritizing difficult content. On the other hand, procrastination, avoidance of studying, studying in unsuitable conditions, and exposure to loud music or television during studying are considered as poor study habits.

The connection between student behavior and academic achievement has been extensively studied. Studies consistently show that good habits, such as positive habits like effective time management and active engagement in learning, lead to better academic outcomes. On the other hand, bad habits like procrastination prevent students from succeeding. Understanding and encouraging good habits can significantly impact students' academic performance and overall achievement.

As a result, understanding the positive habits can enhance students' academic performance and create a conducive learning environment. Recognizing the critical role of study skills and habits in students' academic success, and acknowledging their variability among individuals and contexts, this study was designed and conducted. It is considered that good study habits are associated with scholastic or academic success.

2.0 OBJECTIVES

The objectives are to examine the relationship between study habits and the academic achievement of students at UiTM Pasir Gudang, Johor (UiTM) :

1. To investigate how students deal with distraction from social media or notification while studying.
2. To know the strategy for student's to retain and remember information effectively.
3. To identify the suitable environment for students to study.
4. To determine how they prepare themselves for exams and assessments.

3.0 DESCRIPTION OF DATA

This section will explain how the data is described. This comprises the study's demographic and sample, as well as the sampling technique and data collection methods. Then, data collection is asking relevant questions to community members or unknown individuals, collecting and presenting the responses to the questions, analyzing the results, and making probabilistic and pattern judgments. Because of their actual knowledge and more meaningful responses, all of the students were picked as respondents.

3.1 Population and Sample

The population refers to the elements of the study that can be applied to complete a set of items obtained for the aim of the research. Our survey population consists of all students studying in various courses at UiTM Pasir Gudang.

The population refers to the elements of the study that can be applied to complete a set of items obtained for the aim of the research. Our survey population consists of all students studying in various courses at UiTM Pasir Gudang.

3.2 Sampling Techniques

Sampling technique is the technique on how samples are being collected and can be divided into two categories which are probability sampling technique and non-probability sampling technique. For this survey, the sampling method used is non-probability sampling, specifically

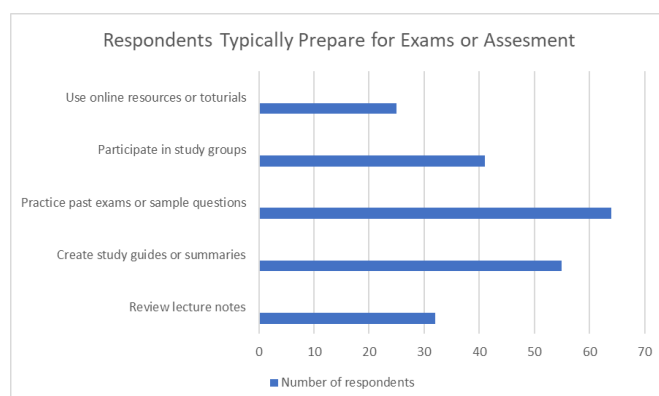
convenience. Convenience sampling is a method where the sample is taken from a group of people easy to contact or to reach, such as standing in a mall or grocery store and asking people to answer questions. This is sometimes referred to as grab sampling or availability sampling.

3.3 Data Collection Method

The data collection method that we use is another method of an internet survey which is an online questionnaire. We conduct an online survey using a Google Form. Internet surveys are the most cost effective method for reaching the greatest number of people.

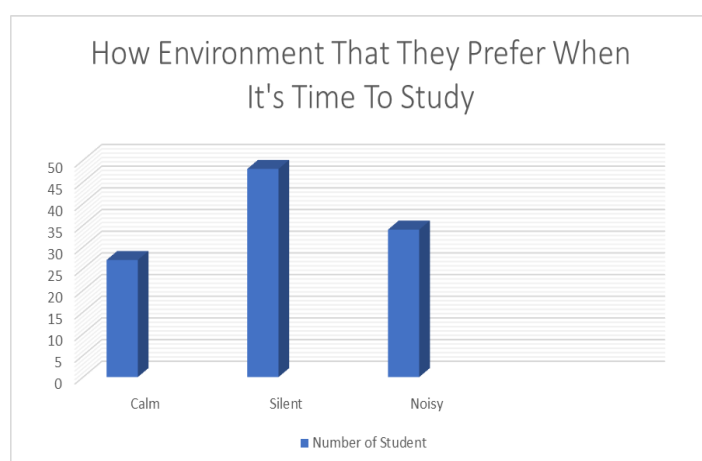
In this method, researchers may also post their questionnaires on social media platforms such as Whatsapp or Instagram and invite the general public to participate in the survey and submit their responses. Therefore, it is safe and secure to conduct Internet surveys. This is due to the absence of physical and direct communication. We choose this method to give students more time to think of a proposer response to get good results.

4.0 RESULTS



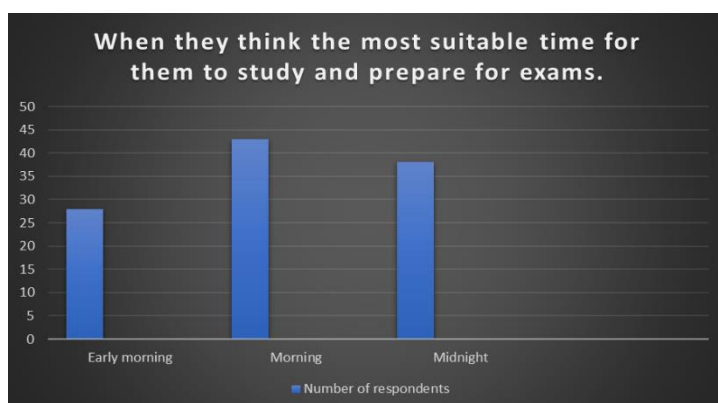
Bar Chart shows the students who prepare for their exams and assessment based on their style. This indicates that out of the 64 respondents, the majority of UiTM Pasir Gudang students preferred a preparation method by practicing past exams or sample questions. On the other hand, the least preparation that students prefer for their upcoming exams is to use online resources or tutorials which only 25 respondents respond to in our questionnaire.

Bar chart of Students based on their preparation for exams or assessment.



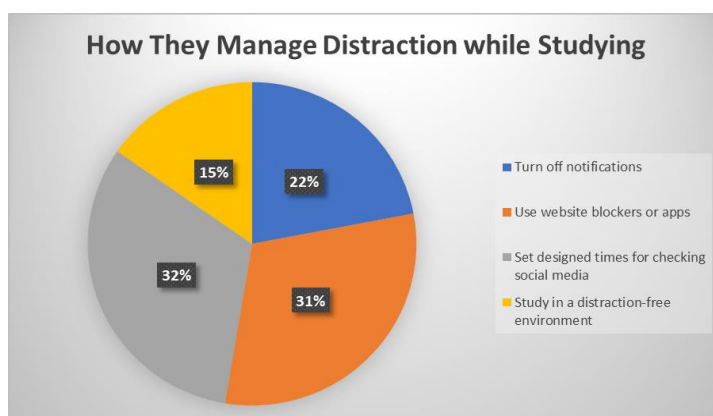
Bar Chart shows how students want their environment to be during study sessions. It has been shown that the majority of student respondents prefer study when it is in mode silent which is 48 respondents. It also shows that least of students choose to study in calm situations, of which only 27 respond for it. To conclude, students are most likely to take a study in silent situations to be more focused and strive for the best

Bar chart of How Students prefer their environment to be.



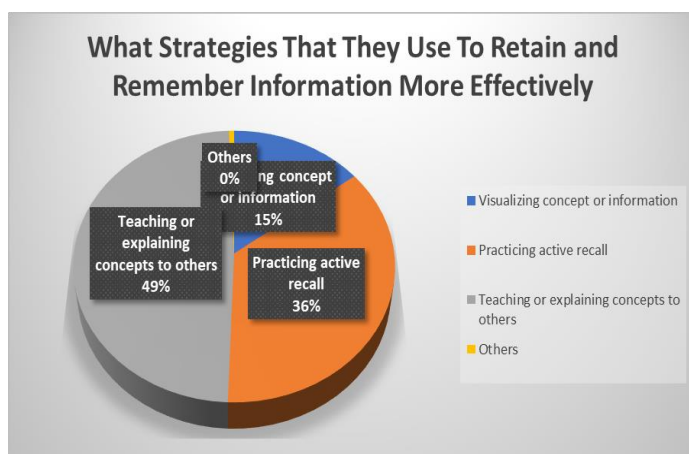
Bar Chart shows how students think the most suitable time for them to study and prepare for exams. It has been shown that the majority of student respondents like to study at night, which is 43 respondents. It also shows that few students do not prefer to study in the early morning, of which only 28 respond. To conclude, students are most likely to study in the night, not in the early morning. Maybe when it is too late

or too soon, they must be tired and **Bar chart of the most suitable time for them to** are not motivated to study and prepare **study and prepare for exams.** for exams.



Pie Chart shows which respondents prefer to set designated times for checking social media. It has been shown that respondents prefer to set designated times for checking social media is 61.5%. While for using website blockers or apps it is 58.7% which is higher then the percentage of study in a distraction-free environment because that is only 29.4%.

Pie Chart How Students Manage Distraction



Pie Chart shows the strategies that students use to remember information effectively. 79.8% of students think that teaching concepts to others is more effective. Some UiTM Pasir Gudang students also think that practicing active recall is the best way to remember information, with 58.7% responding to it. 23.9% of students prefer to visualize concepts or information. Only 1 person thinks for others, which is only 0.9%.

Pie chart of the strategies that students use to remember information more effectively.

5.0 CONCLUSION

As a conclusion, from the 109 respondents that we get from students of UiTM Pasir Gudang, they choose to manage their distractions by setting designated times for checking social media and using website blocker or apps. These ways really can help them to focus more on their study. They also turn off their notifications from their phone to focus on their study group or study on their own. This seems to be effective if done by every student because most of the students are distracted by their mobile phones which makes them complacent.

Other than that, based on the respondents answer they prefer to study in a private study room. The reason why they prefer private study rooms is because they can feel peace and can study alone without any distraction from other people. This can make students feel comfortable to study. Comfortability of the students is important to make them focus more for what they are doing.

Furthermore, based on the respondents that have answered the survey, it clearly shows that students mostly use past year papers or any example of the question to study. This is because even the lecturer asks their students to use past year papers to make a revision. Last year's paper was more similar to the examination question. So, students can be more ready to answer the question and have ideas to answer the question.

Last but not least, all of the students on campus at UiTM Pasir Gudang did acknowledge the importance of managing their habit that can affect their academic performance, and this shows that some of the students are having their own style of studying. Based on the google form, students in UiTM Pasir Gudang need a silent environment to make them focus for their study. However, students also take 15 minutes of break every 2 hours of studying. This is to make their mind relaxed. So that, they will be more focused on their next study and do not feel sleepy.

PASTA BUNGA TELANG

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ABSTRAK

Bunga telang dalam nama saintifiknya ialah *Clitoria ternatea* yang mempunyai bunga berwarna ungu terang dengan pangkal berwarna kuning kehijauan. Di Malaysia, penggunaan bunga telang lebih kepada pewarna dalam nasi kerabu. Bunga telang boleh digunakan sebagai pewarna semulajadi dalam produk makanan dan minuman tanpa campuran bahan pewarna yang lain. Warna makanan dikelaskan kepada semula jadi dan tiruan berdasarkan kepada cara penghasilan pewarna tersebut. Namun, produk mi di pasaran terdiri daripada pelbagai jenis yang berbeza dalam warna dan cara pemprosesan yang berbeza. Kebanyakan produk makanan yang dijual di pasaran mengandungi bahan pewarna tiruan dan campuran bahan-bahan lain yang akan menjejaskan kesihatan. Ramai orang tidak mengetahui khasiat dan kegunaan bunga telang secara amnya. Warna makanan adalah penting untuk penghasilan produk makanan kerana ia boleh mengubah atau menambah warna kepada makanan untuk menjadikannya lebih menarik kepada pengguna. Objektif bagi penghasilan produk ini adalah untuk menghasilkan produk makanan daripada bunga telang, untuk mengetahui kandungan nutrisi serta kebaikan pasta bunga telang, dan untuk mengkaji tahap penerimaan pengguna bagi produk pasta bunga telang. Bagi idea inovasi iaitu penghasilan pasta menggunakan bunga telang sebagai bahan utama pewarna dalam pasta dan pasta akan berwarna biru mengikut pewarna semulajadi bunga telang. Pasta bunga telang dihasilkan perlu dikering dalam acuan berbentuk bulat dan diletak dalam kotak pembungkusan. Pasta bunga telang sesuai untuk semua peringkat umur, tahan lama, serta mengandungi khasiat yang boleh memberi manfaat kepada pengguna. Oleh itu, produk inovasi yang dihasilkan ini boleh menarik minat pengguna dan keunikan pasta ini juga menjadi satu nilai tambah produk dan mempelbagaikan lagi pilihan pengguna di pasaran.

Kata Kunci: bunga telang, pasta, pewarna, makanan.

1.0 PENGENALAN

Bunga telang atau bunga biru ialah spesies tumbuhan leguminous yang mempunyai bunga ungu terang dalam keluarga Fabaceae. Bunga telang juga dikenali dengan pelbagai nama seperti Butterfly pea (Inggeris), bunga teleng (Java), dan Mazerion Hidi dari Arab (Budiasih, 2017). Di negara-negara Asia Tenggara seperti Malaysia dan Thailand akan menggunakan ekstrak bunga telang dalam penghasilan pencuci mulut, air. Bunga telang juga diambil sebagai sayuran di kawasan Asia Tenggara (Leong et al., 2017). Bunga telang biasa digunakan sebagai pewarna semulajadi dalam nasi kerabu untuk mendapatkan warna biru. Bunga telang mempunyai banyak khasiat dari segi kesihatan manusia antaranya merupakan antioksidan (Rabeta dan An Nabil, 2013). Bunga Telang juga baik untuk pernafasan manusia dan boleh mencegah asma. Asma ialah gangguan keradangan kronik di saluran pernafasan yang boleh menyebabkan pesakit mengalami batuk dan sesak nafas. Serangkaian kajian telah dijalankan untuk mengesahkan kesan bunga telang sebagai anti asma dan pengurangan batuk (Singhet et al., 2018) Bunga telang mengandungi flavonoid boleh dikembangkan lagi dalam pelbagai industri makanan. Oleh itu, selain meningkatkan kualiti warna, ia juga boleh memberi kesan

yang baik kepada kesihatan. Oleh itu, selain meningkatkan kualiti warna, ia juga boleh memberi kesan kepada kesihatan dan penggunaan bunga telang dalam produk makanan menjadi sebagai pewarna boleh memberi khasiat kepada pengguna. (Makasana et al., 2017).

2.0 OBJEKTIF

1. Untuk menghasilkan produk makanan daripada bunga telang.
2. Untuk mengetahui kandungan nutrisi serta kebaikan pasta bunga telang.
3. Untuk mengkaji tahap penerimaan pengguna bagi produk pasta bunga telang.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

3.1 Cara operasi

Aplikasi pasta bunga telang dapat dilihat memberi impak positif kepada pengguna yang menggemari makanan berasaskan pasta dan memberi kepelbagaian produk yang ada di pasaran. Idea inovasi ini menjurus kepada penghasilan pasta daripada bunga telang dan warna pasta terhasil semulajadi dan selamat dari warna bunga telang itu sendiri. Pembangunan inovasi ini amat penting bagi menjamin sistem makanan yang selamat dan lebih mapan untuk jangka masa yang panjang. Dalam masa yang sama, khasiat dari bunga telang itu sendiri dapat memberi manfaat kepada pengguna. Perkongsian idea inovasi ini merangkumi perkongsian kolaboratif antara ahli akademik, pelajar dan komuniti bagi memastikan pengkomersialan dapat direalisasikan.

3.2 Carta alir proses penghasilan produk

Produk ini telah dijalankan berdasarkan perancangan yang dibuat dengan teliti. Proses penghasilan produk pasta bunga telang adalah seperti dalam carta di bawah:



Rajah 1:

Campurkan semua bahan serbuk tepung roti dan serbuk bunga telang yang telah ditimbang. Kemudian tambahkan telur, garam dan minyak zaitun ke dalam mesin pengadun sehingga menjadi doh lembut. Kemudian, direhatkan selama satu jam.



Rajah 2:
Uli doh dan bahagikan kepada beberapa bahagian.



Rajah 3:
Letakkan doh ke dalam mesin leper doh. Ulangi langkah yang sama untuk mendapatkan ketebalan yang dikehendaki.



Rajah 4:
Seterusnya masukkan doh yang leper ke dalam mesin pembuat pasta.



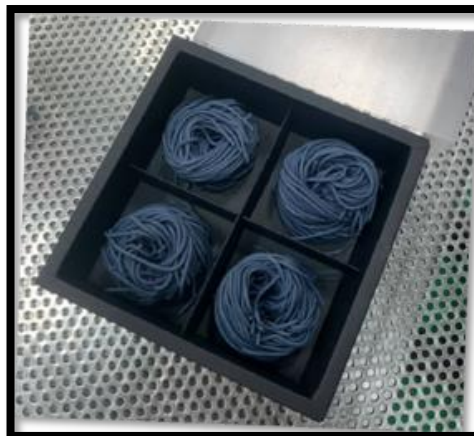
Rajah 5:

Selepas itu, pasta perlu dimasukkan ke dalam acuan untuk dibentuk sebelum proses pengeringan



Rajah 6:

Letakkan pasta yang telah dibentuk ke dalam mesin pengering untuk proses pengeringan. Selepas itu, letakkan pasta dalam bungkusan plastik dan letakkan di dalam kotak pembungkusan.



Rajah 7:

Produk akhir: pasta bunga telang

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Produk inovasi pasta bunga telang dihasilkan untuk memberi manfaat pemilihan makanan yang berkhasiat di samping memberikan kelainan kepada pasta itu sendiri. Pasta bunga telang dilihat sebagai produk yang relevan dan mempunyai khasiat tersendiri daripada warna semulajadi bunga telang. Penghasilan produk ini dapat memberi nilai tambah kepada bunga telang dengan menjadikan ia satu produk yang unik dan sesuai untuk kanak-kanak hingga dewasa. Melihat kepada negara Jepun yang menghasilkan pelbagai jenis mi ramen dan berbeza dari segi rasa, warna dan tekstur. Jadi, tidak mustahil pasta bunga telang boleh menarik perhatian pengguna dalam pemilihan produk pasta.

Pasta dihasilkan dalam bentuk kering dan dibungkus dalam kotak. Kaedah pembungkusan yang memudahkan penyimpanan pasta kerana kotaknya boleh ditutup dan disimpan di tempat yang kering. Oleh yang demikian, pasta bunga telang satu produk yang boleh menarik perhatian pengguna dalam mempelbagaikan cara masakan dan tarikan menu tertentu. Kegunaan pasta sangat meluas dengan pelbagai resipi yang boleh digunakan.

5.0 KESIMPULAN

Secara tuntas, banyak faedah yang diperoleh dalam kehidupan hasil daripada inovasi. Penghasilan inovasi produk pasta bunga telang dapat memberi kelainan dalam produk pasta yang boleh diketengahkan lagi dalam pasaran domestik dan juga di peringkat pasaran global. Selain itu, ia dapat mencipta pasaran baru seiring dengan produk pasta sedia ada dari luar negara yang berada di pasaran Malaysia. Kualiti produk inovasi ini diberi perhatian khusus dari segi kaedah pembungkusan, warna, bau, tekstur dan ketahanan produk yang boleh memberi manfaat kepada komuniti.

ENHANCING JAVA LEARNING PROCESS: INTRODUCING AN INTERACTIVE MOBILE APPLICATION WITH VISUALIZATION

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ABSTRACT

Java is a vital programming language, yet conventional text-based tutorials pose challenges for students. To address this, an innovative and interactive mobile app for learning Java will be developed, focusing on trees, lists, and graphs. The goal is to enhance learning through visualisation, fostering a deep understanding of Java principles. The app will also serve as supplementary material for tutorial classes. Following the ADDIE model as the methodology, the app will be designed with user-friendly features and developed using Figma and React Native exclusively for Android. The app is accessible to Year 1 Software Engineering Information System (SEIS) students, and usability evaluations will showcase its effectiveness. The expected outcome is that users will find it highly usable, thereby overcoming any challenges they may face when learning Java and enhancing their engagement and understanding of the subject. In conclusion, the project aims to enhance Java education, offering an interactive app that empowers students to master coding principles effectively. Positive outcomes from usability evaluations are expected, reaffirming the app's significance in coding education.

Keywords: Java, mobile application, interactive platform, learning.

1.0 INTRODUCTION

Java is one of the most popular object-oriented programming languages used for web development and mobile applications. Learning how to code in Java has become an essential skill in today's digital age. However, many students find conventional text-based tutorials challenging to grasp fully. These tutorials, often used in conventional classroom learning, may have drawbacks leading to complexities that hinder them from fully understanding Java concepts. To address this issue, a team has been created to embark on a project to develop an interactive mobile application that facilitates the learning of Java coding concepts through the power of visualization.

2.0 OBJECTIVE

The primary objective of this project is to develop an innovative and interactive mobile application that guides users through the intricate world of Java coding, with a specific focus on trees, lists, and graphs. The goal is to enhance the learning experience by utilizing visual aids like images and graphics, creating a comprehensive platform that fosters a deep understanding of Java coding principles. Furthermore, this application will also serve as valuable supplementary material for tutorial classes, offering students a comprehensive and engaging tool for learning.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

This mobile application represents a ground-breaking approach to learning Java coding. It comes with a user-friendly interface and real-time coding visualization will overcome the limitations of conventional text-based tutorials, providing a more intuitive and engaging learning experience. A clear outline of the idea has been provided, specifying the platform, target audience, topics covered, and the structured methodology that will guide the development of this application.

This application will be developed exclusively for Android, ensuring widespread accessibility to Year 1 students of the Software Engineering Information System (SEIS) course, our target users. It is custom-tailored for these students, catering to their unique learning requirements and preferences. Additionally, the core focus of the application revolves around the essential Java coding concepts of trees, lists, and graphs. This concentration provides a focused and comprehensive learning experience.

Furthermore, the development approach adheres to the ADDIE model, as the methodology, comprising the following phases:

- **Analyse:** A meticulous assessment of the learning needs and requirements of the target users to ensure that this application aligns seamlessly with their educational objectives.
- **Design:** Drawing insights from the analysis, an innovative mobile application has been crafted. This application incorporates a range of educational tools, including visual aids, step-by-step tutorials, interactive exercises, and quizzes.
- **Development:** During the development phase, creating the application itself with a strong emphasis on a user-friendly design and real-time coding visualization integration is the main focus. To achieve the goals, the team will be utilizing a combination of design tools, such as Figma, and React Native, a versatile and efficient framework for mobile app development, to create an engaging and effective learning platform.
- **Implementation:** This mobile application is available on the Android platform, ensuring that the target users can easily access it. This choice is in line with the fact that the intended users widely use Android devices, providing them with a familiar and optimized environment to learn Java coding concepts related to trees, lists, and graphs.
- **Evaluation:** Stringent testing procedures are carried out to validate the application's effectiveness, usability, and overall satisfaction. Usability evaluations are expected to be carried out among the target users which will include user feedback and mobile application testing.

This well-structured approach aligns with the project's objectives of delivering an effective, accessible, and engaging learning tool for students, equipping them with the knowledge and skills required to master Java coding concepts related to trees, lists, and graphs.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

Usability evaluation will be conducted, including gathering user feedback and conducting rigorous testing, which will serve as a means to showcase the effectiveness of the developed mobile application. Users are expected to perceive the application as highly usable, beneficial, easy to learn from, and ultimately, satisfying. The distinctive advantages of this innovative approach reside in its capacity to tackle the challenges commonly encountered by Year 1

students of the SEIS course, thereby enhancing their understanding and engagement with Java coding concepts, specifically those related to trees, lists, and graphs. The impact of this application is profound, empowering each student to acquire and master these fundamental coding principles effectively.

5.0 CONCLUSION

In conclusion, this project aims to enhance the way students learn Java coding. Through an interactive mobile application with visualization, the team aspire to provide an engaging and comprehensive learning tool. This approach not only fosters a deeper understanding of Java coding concepts but also empowers coding enthusiasts to develop essential skills effectively. As this journey is embarked upon, positive outcomes from usability evaluations are anticipated, further validating the significance of this endeavour in the realm of coding education.

MALAYSIAN PRE-SCHOOL ANIMAL EDUCATION VIRTUAL REALITY (VR) APPLICATION

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ABSTRACT

Introducing a Virtual Reality (VR) application called VRMiniZoo, a pre-school animal education VR product that is Malaysian Muslim culture-based. Culture-based education is an approach, in which teaching and learning happen based on the values, norms, beliefs and practices that are the foundation of any culture. In Malaysia, it is common to educate the pre-school students on the local culture and mannerism. Pre-school education is considered as an important intervention in a child's early development in which at this age, their experiences will be sensitive to their future academic and social life. VRMiniZoo creates different teaching scenarios and approaches in animal education for the pre-school students, providing an alternative to the conventional method of physical 'field trips' by implementing VR and gamification aspects of the MDA framework. The Mechanics Dynamics Aesthetics (MDA) is a formal approach in correlating gaming design elements with software deliverables. Through the successful implementation of the basic VRMiniZoo application (Version 1) at one of the Malaysian Islamic pre-school or Early Learning Center (ELC), the teachers agreed that the VRMiniZoo is able to serve as an assisting tool. The tool contributed in giving understanding of the children's reactions, motivation, and engagement in their animal topic learning session. Moreover, with VR the children are able to think creatively when immersed in a new environment while staying in comfortable settings such as at home or school.

Keywords: virtual reality, gamification, Malaysian pre-school, animal education

1.0 INTRODUCTION

The use of mobile learning is recognized as a tool that can foster the knowledge experiences for pre-school age children. In pre-school education, several studies claim that properly designed digital educational activities emerge as an important educational tool for efficient and effective learning, especially in the field of early literacy skills (Papadakis & Kalogiannakis, 2020). The integration of handheld computers is seen to enhance student learning and achievement even at the early stage. Pre-school classes evidently used handheld devices in such curriculum areas as reading, mathematics, social studies and science. Hence, the usage of digital content and handheld devices (e.g., mobile phone, tablet, iPad) are promising practices in this domain (Auchincloss & McIntyre, 2008). Blending physical and virtual worlds, Virtual Reality (VR) offers a new platform for learning. Considering that pre-school years are critical for the formation of academic skills and intellectual development (Campbell et al., 2002), it is beneficial to explore the educational potential of emerging technologies, such as VR, for young children in Malaysia.

VR originated from the game industry and, in general, game environments are supportive in empowering the learner, problem-solving and understanding complex situations (Gee, 2005). VR in education can transform the way educational content is delivered and be used to enhance student learning and engagement. It works on the premise of creating a virtual world, real or imagined, and allows users to see it and interact with it. Users understand, create, analyse, and recognize information within a virtual world better and quicker. Due to this immersion, the memorization and evaluation of the information are more stimulated (Bush, 2006). Gamification has been defined as the use of “game-based mechanics, aesthetics, and game thinking to engage people, motivate action, promote learning, and solve problems” (Kapp, 2013). It can also be defined as a set of activities and processes to solve problems by using or applying the characteristics of game elements (Deterding et al., 2011). The rewards or the spirit of competition can spur students’ concentration and interest and lead to more effective learning.

Angelino et al. (2019) reported that gamification and VR help enhance the student’s motivation and engagement, even without having the presence of an educator. Other benefits include that it enhances social learning, as VR and games allow multiple students to communicate and engage with each other (Azar & Tan, 2020). The gamification and VR product is very much suitable for distance learning. It allows bridging between educators and learners and between learners and other learners. Implementing gamification encourages seamless formal and informal learning integration through play (Bohil et al., 2011). Physical play is an important and effective way for young children to learn, in which it provides essential skill-building. Similarly, technology is just as crucial to a young child’s development when used correctly.

Animal education and interaction are important components of early education. Usually, in pre-school teaching in Malaysia, animals are introduced to children through visual aids (e.g., images from physical or digital pictures, videos etc.). Field trips such as trips to the nearby zoo or real live pet shows are sometimes arranged by the teachers with the consent and acknowledgements of the parents. Nowadays, it is impossible to hold such activities as currently the world is being hit with the pandemic of coronavirus disease 2019 (COVID-19). In Malaysia, an order to close schools and higher education institutions have been issued by the Ministry of Education (MOE) and Ministry of Higher Education (MOHE), respectively, as an emergency measure to stop the spreading of the infection (Shahzad et al., 2020). Hence, teaching and learning have been conducted using digital, virtual, synchronous and asynchronous methods involving various devices such as desktop, notebook and mobile computers (e.g., phone, tablet, etc.).

2.0 OBJECTIVE

This research proposed the idea of (i) developing a virtual reality (VR) application for the Malaysian pre-school animal education content, (ii) applying gamification elements into the VR product, as well as (iii) infusing the Malaysian Muslim culture-based content. In other words, the aim is to produce a gamified VR application with the content of pre-school animal education and interaction, that promotes Islamic mannerism and Malaysian culture. The development of the product is based on the materials and information provided by the teachers from IMAN Early Learning Center (ELC), Taman Pagoh Jaya, situated in Pagoh district, Johor state.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

This product may be used at home or school and is suitable for pre-school children aged 4 to 6 years old equipped with a kid’s friendly ‘zoo tour guide’ voice. It is easy to use with or without the teachers’ guidance or supervision. The interactive content involves users performing actions such as walking and selection (reading and playing game) by the method of ‘gazing’. The product primarily focused on the Malaysian language and culture-based content that reflects Islamic values and culture (e.g.: ‘doa’ or prayer recitation, Islamic greeting, etc.).

However, the English language is also provided (upon selection at the start of the application) but still retains the Malaysian culture and Islamic values. In the future works, the product will be offering different themes or virtual environments other than the Malaysian National Zoo, which are the (i) Safari, (ii) Dinosaur and (iii) Extinct Animals, at a price (in-app purchase).

The development of the VR product is based on the ADDIE model, where each phase in ADDIE has its own purpose. ADDIE, which stands for Analysis, Design, Development, Implementation and Evaluation, is a learning model used by instructional designers and training developers to create effective learning experiences. ADDIE allows the developers to set the pace of work while carrying out the construction process and has always been the popular research methodologies choice involving the development of multimedia educational products (e.g., Achdiyat et al., 2021; Roslan et al., 2019; Roslan et al., 2018). It is also the choice for VR technological products development (Fudholi et al., 2020; Hanson & Shelton, 2008).

Based on the MDA gamification framework, the gamification items correspond to each of the gamification elements (mechanics, dynamics, aesthetics) were implemented in the product. According to the MDA framework proposed by Hunicke et al. (2004), gamification can be divided into three design components. The first is mechanics, describing the particular components of the game; at the level of data representation and algorithms, they do not change from one player to the next but stay the same (Robson et al., 2015) and are the foundational aspects of the gamified experience. Next is dynamics, describing the run-time behaviour of the mechanics on acting on player inputs and any other outputs over time and 'how' the player follows the mechanics. Lastly, aesthetics describes the desirable emotional responses evoked in the player when reacting with the game system (Hunicke et al., 2004), whereas Robson et al. (2015) conceptualized aesthetics as emotions. Most encountered gamification elements in literatures are listed in Table 1 based on the study of van Elderen & van der Stappen (2019), which also highlighted the gamification items in the gamified VR application. Meanwhile, Figure 1 shows functions and features of the application, which reflect the MDA gamification items stated in Table 1.

Table 1: Gamification items based on MDA framework

Mechanics		Dynamics		Aesthetics / Emotions	
Points	✓	Increasing Task/Level & Mission	✓	Meaningful Stories	✓
Badges	✓	Social Games & Teamwork		Avatars	
Leaderboards					
Performance Graphs					
Virtual Gifts & Items					

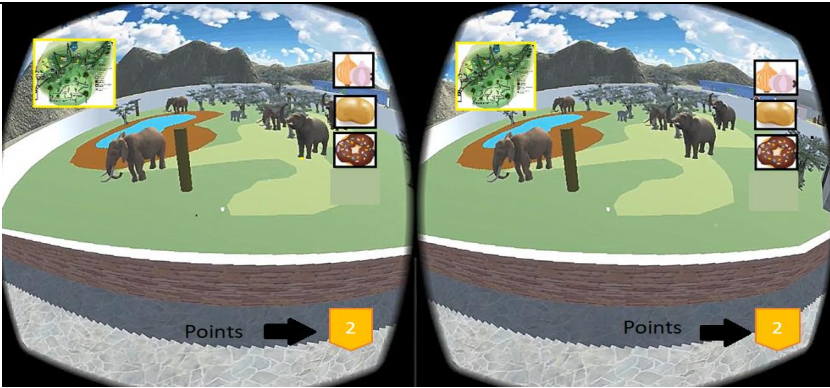
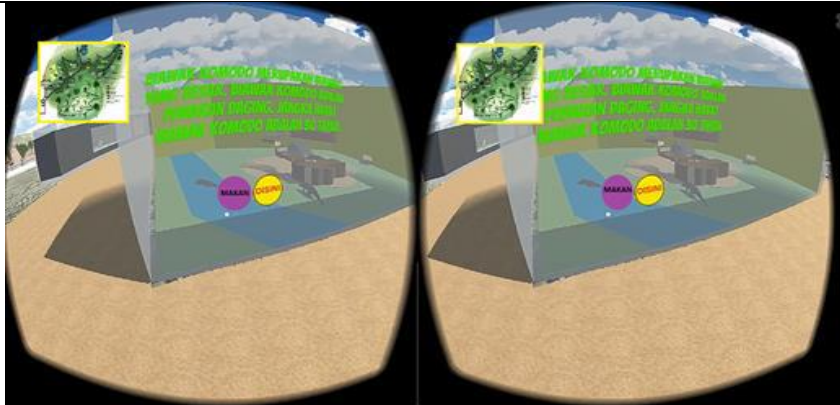
	Item	VRMiniZoo gamification feature
Mechanics	Points	
	Badges	
Dynamics	Increasing Task/Level & Mission	
Aesthetics/Emotions	Meaningful Stories	VRMiniZoo is presented as a zoo exploration in a pre-school field trip. The children actually have to walk their way to the zoo entrance and let themselves in the zoo by 'gazing' at the 'Enter' button. The storyline starts with the 'teacher' character giving instructions and explaining the rules of the trip and the zoo regulation. Next, the exploration continues with the zoo tour guide's voice assisting the children along the way, including all the game tasks until the end.

Figure 1: Functions and features which reflect the MDA gamification items

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The products' unique feature, which is the Malaysian Muslim culture, is predicted to attract Malaysian Islamic-based pre-schools. It encourages children in decision making and critical thinking (Ikhsan et al., 2020), deciding on which animal to see with the guidance of the virtual map and which zoo trail path they would want to take. Teachers will be able to expose the children to a zoo environment through virtual tours. It might also be used as a replacement for 'field trip' activity in pre-school. This virtual experience is more enriching than printed material, and cost-efficient as the interaction with animals is done via VR headsets and mobile phones.

The implementation of the first version of the product has been done in 2021 during the Malaysian Movement Control Order (MCO) in the online learning sessions with IMAN ELC Taman Pagoh Jaya, Pagoh, Johor. As the usage had received great responses from the children and teachers, the product is currently being upgraded with all the features mentioned in Figure 1.

The product has been named as VRMiniZoo and has been copyrighted through MyIPO with file number LY2021J00697 in March 2021. It has a high potential for commercialization in Malaysia and internationally. For the upgrades, it will be offering two languages (Malay & English) and can be used in the school environment (with teacher assistance), or even independently outside of the classroom (home with parent assistance). As it will also offers different themes (Malaysian National Zoo, Safari, Dinosaur and Extinct Animals), users' retention or continuance usage intention is predicted to be high due to the choices given.

5.0 CONCLUSION

This study aims to produce an educational gamification-based virtual reality application called VRMiniZoo, with Malaysian Muslim culture pre-school animal educational content. Tool improvement plan document had been produced after the usage evaluation with the educators/teachers. In conclusion, VRMiniZoo had managed to incorporate all the gamification items according to the MDA gamification framework, and by the responses of children and teachers of Taman Pagoh Jaya IMAN ELC, the product managed to increase the children engagement in learning during the pandemic era and continued to attract usages in the current post-pandemic era.

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ADJUSTABLE BRICKLAYING MORTAR APPLICATOR

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ABSTRAK

Sijil Teknologi Pembinaan Bangunan (STP) adalah salah satu program yang terdapat di Kolej Komuniti Bandar Penawar. Program ini memberi pendedahan kepada pelajar berkaitan kemahiran dalam kejuruteraan dan pembinaan. Antara kemahiran yang dipelajari ialah mengikat bata di dalam kursus Bahan Binaan Bangunan semasa semester satu. Memandangkan pelajar tidak mempunyai pengalaman dan kemahiran dalam kerja mengikat bata, hasil kerja amali mereka tidak seragam dan tidak teratur. Selain itu, pelajar mengambil masa yang lama untuk menyiapkan amali tersebut dan akan mengganggu tempoh masa pembelajaran dan pengajaran (PDP). Oleh itu, suatu kajian atau projek inovasi dihasilkan bagi membantu para pelajar menjalankan amali di bengkel. Satu produk telah dihasilkan iaitu *Adjustable Bricklaying Mortar Applicator* (ABMA). ABMA mampu menghasilkan lapisan bata yang lebih kemas dan teratur. Selain itu, alat ini dapat memenuhi keperluan kerja mengikat bata serta tempoh masa yang diperlukan dapat dipercepatkan. Setelah produk ini selesai, satu soal selidik telah dijalankan dengan menyebarkan *Google Form* kepada pelajar dan pensyarah kolej komuniti. Berdasarkan hasil kajian soal selidik, majoriti responden sangat bersetuju dengan keberkesanan ABMA dalam membantu para pelajar menjalankan amali mengikat bata di bengkel. Akhir sekali, ABMA ini diharap mampu di komersialkan di pasaran untuk digunakan di dalam sektor pembinaan atau sebagai alat bantu belajar dengan beberapa penambahbaikan pada alat.

Kata Kunci: *Adjustable Bricklaying Mortar Applicator*, Teknologi Pembinaan Bangunan

1.0 PENGENALAN

Sektor pembinaan adalah antara penyumbang utama pembangunan ekonomi negara. Ini boleh di buktikan dengan terdapatnya banyak projek pembinaan yang dijalankan oleh pihak kerajaan mahupun syarikat swasta. Kerajaan sentiasa memberi tumpuan kepada sektor pembinaan bagi memastikan sektor ini terus berkembang pesat dan mampan serta berdaya saing. Projek pembinaan adalah meliputi pembinaan bangunan, infrastruktur dan kemudahan awam. Seiring dengan perkembangan sektor pembinaan ini, negara memerlukan ramai tenaga kerja sama ada pekerja mahir ataupun tidak mahir.

Di Kolej Komuniti Bandar Penawar pelajar perlu membuat amali dengan menggunakan peralatan dan bahan seperti sudip simen, baldi simen, timbang air, pasir, dan simen. Namun begitu, pelajar mengalami masalah dalam menjalankan aktiviti mengikat bata menggunakan kaedah konvensional kerana kekurangan pengalaman. Oleh yang demikian, pengkaji mengambil satu inisiatif untuk membuat produk inovasi yang dapat membantu pelajar iaitu *Adjustble Bricklaying Mortar Applicator* atau singkatannya ABMA.

Produk ini terhasil untuk memudahkan kerja-kerja amali atau memudahkan pelajar yang kurang mahir mengikat bata. Dengan itu tercetuslah idea untuk mencipta sebuah produk yang bernama *Adjustable Bricklaying Mortar Applicator* (ABMA). Produk ini sesuai digunakan oleh pelajar yang kurang mahir mengikat bata, dengan adanya produk ini pelajar boleh menghasilkan lapisan mortar yang cantik, proses kerja yang laju dan hasil kerja yang cantik seperti buruh professional. Pelajar juga tidak perlu menggunakan penimbang air semasa menjalankan kerja-kerja ikat bata kerana produk inovasi ini. ABMA sudah dilengkapi dengan penimbang air. Dengan adanya produk ini pelajar dapat menyiapkan atau membuat amali mengikat bata dengan lebih cepat. Di samping itu, dengan menggunakan alat ini masa yang diambil tidak terlalu lama untuk menyiapkan kerja-kerja amali mengikat bata.

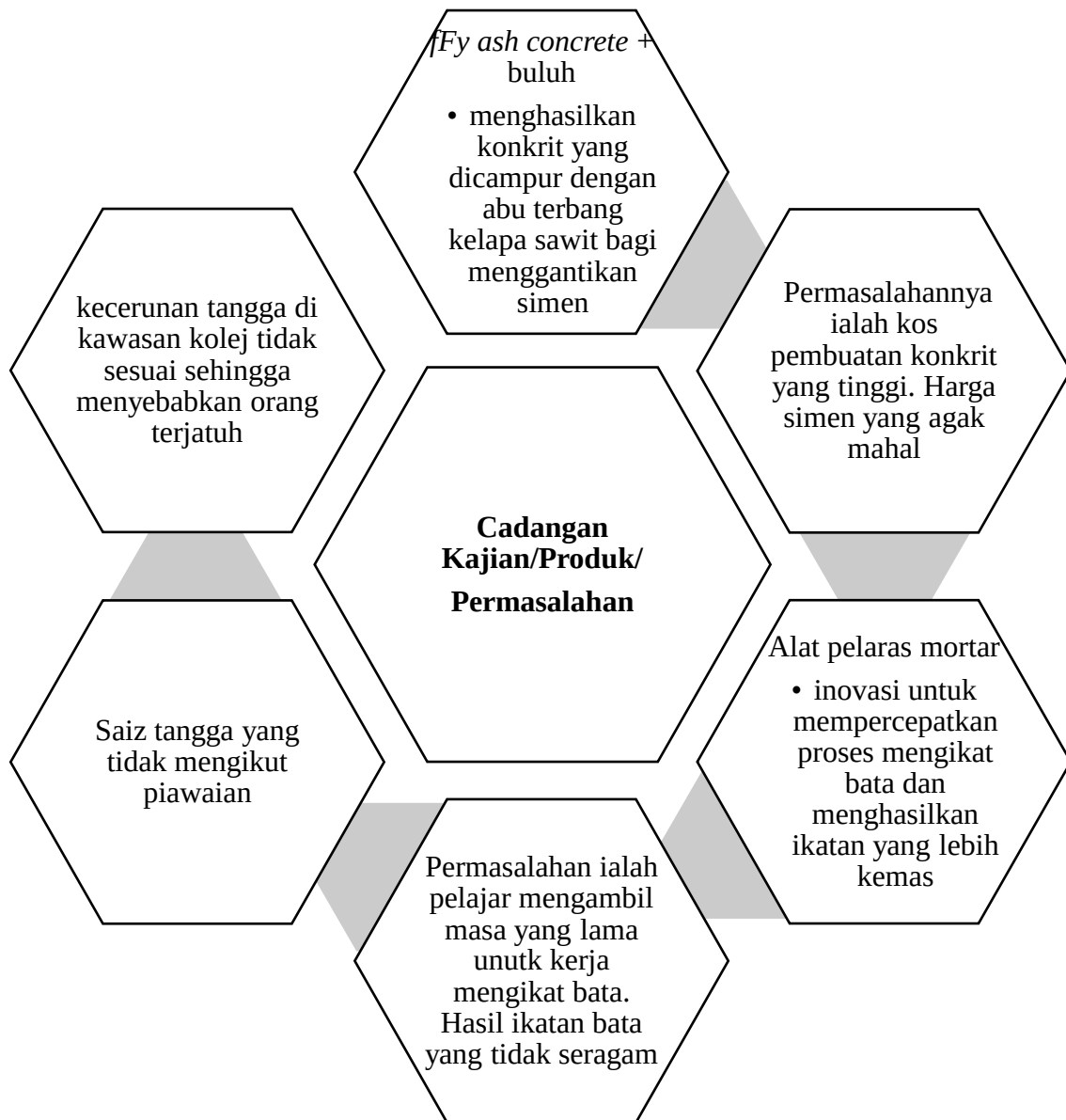
2.0 OBJEKTIF

Objektif penghasilan *Adjustable Bricklaying Mortar Applicator* (ABMA) ini ialah :

1. Menghasilkan produk inovasi yang membantu proses ikatan mortar yang kemas semasa kerja ikatan bata.
2. Menguji produk bagi memenuhi fungsi asas mengikat bata.
3. Menghasilkan produk inovasi yang membantu mempercepatkan masa bagi proses mengikat bata.

3.0 SKOP PROJEK

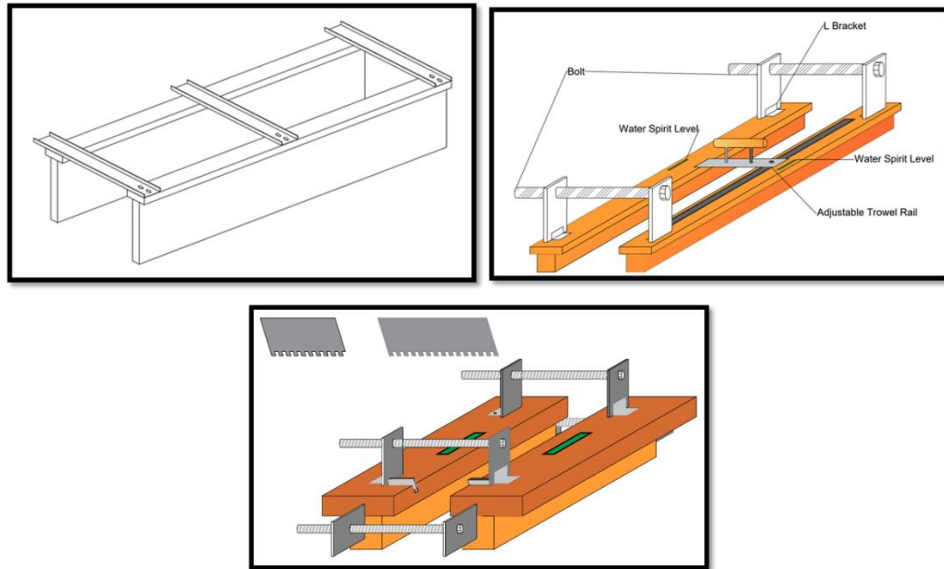
Skop projek ini, pengkaji hanya menumpukan kepada pelajar – pelajar terutamanya mereka yang ingin menjalankan amali mengikat bata di bengkel bagi program STP iaitu kursus STP10203 Bahan struktur binaan. Hal ini kerana, penggunaan alat ini lebih kepada alat bantu pembelajaran untuk melancarkan kerja – kerja amali pelajar. Selain itu, produk ini juga boleh digunakan untuk kerja – kerja pembaikan dan pengubahsuaian kecil bangunan. Oleh itu, untuk memudahkan kerja dan proses pembelajaran, kumpulan kami telah menghasilkan satu produk yang dapat mengurangkan masalah ini. Alat ini di beri nama alat pelaras mortar yang mana mempunyai beberapa ciri tambahan dan penambahbaikan. Berikut adalah pemilihan tajuk projek yang sesuai.



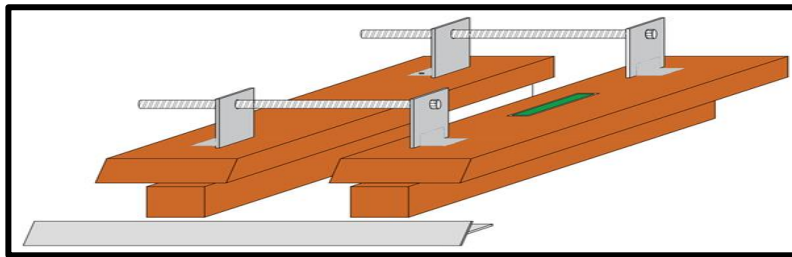
Rajah.1: Hasil sumbang saran

4.0 Proses mereka bentuk

Berdasarkan idea yang telah dipilih, pengkaji mengembangkan lagi idea tersebut dengan membuat lakaran produk *Adjustable Bricklaying Mortar Applicator* (ABMA). Pengkaji mengambil kira beberapa faktor sebelum membuat lakaran produk seperti saiz, bahan yang digunakan dan ciri – ciri tambahan. Seterusnya, lakaran produk ini dilukis dengan menggunakan perisian AutoCAD. Terdapat beberapa lakaran produk yang telah dibuat setelah mendapat cadangan daripada penyelia projek.



Rajah 6.2: Beberapa lakaran produk yang dihasilkan



Rajah 6.3: Lakaran produk akhir

4.0 KESIMPULAN

Kesimpulannya, di akhir projek ini pelajar berjaya menghasilkan satu produk inovasi yang mampu mempermudah kerja amali mengikat bata di bengkel bagi kursus Bahan Binaan Bangunan. Dengan adanya beberapa ciri tambahan, ABMA ini mampu membantu menghasilkan ikatan bata yang lebih kemas dan teratur. Antaranya, pemasangan *water spirit level* pada permukaan ABMA secara menegak dan melintang dapat memastikan tahap mendatar (*horizontal*) serta tahap menegak (*vertical*) lapisan bata yang dibina oleh pelajar. Selain itu, ABMA mampu berfungsi dengan baik dan memenuhi fungsi asas mengikat bata. Setelah ujilari dilakukan, sememangnya ABMA berkesan sebagai alat membantu kerja mengikat bata serta alat bantu pengajaran dan pembelajaran (PDP). Di samping itu, alat pelaras mortar ini mampu mempercepatkan masa bagi proses mengikat bata jika dibandingkan dengan kaedah konvensional. Ini berdasarkan ujilari yang akan dijalankan dengan membandingkan kedua – dua kaedah mengikat bata dalam menyiapkan dua lapis ikatan bata. Ujilari ini dijalankan oleh dua orang pelajar STP kerana mereka mempunyai tahap kemahiran yang sama. Tempoh masa yang diperlukan dengan menggunakan ABMA ialah 1 minit 19 saat manakala dengan menggunakan kaedah konvensional ialah 3 minit 36 saat.

Setelah pembentangan projek akhir terdapat beberapa komen atau cadangan daripada penelitian panel juri. Berdasarkan cadangan panel juri, jika ABMA ingin dikomersialkan ia perlu diubahsuai dari segi bahan. Bahan asal iaitu kayu boleh ditukar dengan plastik atau aluminium. Hal ini kerana, kayu akan mengembang apabila terkena air atau lembapan dan menyebabkan ABMA tidak akan tahan lama. Walaupun kayu tersebut telah dilapisi dengan cat atau syelek,

lama – kelamaan ia akan rosak dan reput. Selain itu, cadangan penambahbaikan yang lain ialah penambahan skala kelebaran pada komponen *scraper*. Ciri tambahan ini bagi memudahkan proses melaras ABMA mengikut kelebaran bata. Secara tidak langsung, masa penyediaan ABMA sebelum digunakan untuk kerja mengikat bata dapat dipercepatkan. Akhir sekali, menerusi kursus Projek Akhir STP ini dapat melahirkan pelajar - pelajar yang berfikir kritis dan inovatif dalam menyelesaikan sesuatu masalah. Kursus ini juga memberi persediaan kepada pelajar sebelum melangkah ke alam pekerjaan yang sebenar.

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IMPROVING A GAMIFIED M-LEARNING APPLICATION BASED ON THE CONTINUANCE USAGE INTENTION INFLUENCING FACTORS

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ABSTRACT

The inclusion of gamification technology can have a positive effect on the development of innovative mobile-learning (m-learning) application. It is difficult to maintain the students' retention in a m-learning tool, hence measures should be taken by the developers and researchers to keep the users interested in the tool. This study aims to utilise the knowledge gathered from a correlational survey research involving 140 first year Diploma of Information Technology respondents, to find the influencing factors of continuance usage intention towards a gamified e-quiz mobile application among Malaysian Higher Education students. Based on the result of the influencing factors; (i) perceived ease of use, (ii) perceived usefulness, (iii) social influence and (iv) perceived enjoyment, gamification items in the m-learning tool are linked with the constructs. Pearson Correlation Analysis showed that there is a positive relationship between perceived ease of use ($r_s = .593^{**}$ $p > 0.05$), perceived usefulness ($r_s = .694^{**}$ $p > 0.05$), social influence ($r_s = .720^{**}$ $p > 0.05$) and perceived enjoyment ($r_s = .700^{**}$ $p > 0.05$) with continuance usage intention. Further analysis using multiple regression shows that social influence and perceived enjoyment, influence the continuance usage intention among the students with a contribution of 35.1% ($\beta = .351$) and 31.9% ($\beta = .319$), respectively. Tool Improvement Plan (TIP) document can be produced based on the corresponding influential factors. This way, the m-learning tool developers can make wise judgement on important tool upgrades.

Keywords: mobile learning, gamification, continuance usage intention, e-quiz

1.0 INTRODUCTION

Gamification is referred to as using game design elements within non-game contexts. The main idea is to take the 'building blocks of games and implement these in real-world situations, to motivate specific behaviors within the gamified situation (Deterding et al., 2011). Many studies have highlighted gamification as a promising concept applied within various contexts (Werbach & Hunter, 2012, Zichermann & Cunningham, 2011, Zichermann & Linder, 2013). Hunicke et al. (2004) and Mora et al. (2017) split gamified solutions into three elements as follows; (i) rules (mechanics), (ii) system (dynamics), and (iii) fun (aesthetics), which represent as the MDA framework. The MDA framework acts as a formal structuralist approach to understanding games to bring design, development, criticism, and technical game research closer. Gamification in education is an approach that proposes dynamics in association with game design within the educational environment to stimulate direct interaction with students, allowing them to significantly develop their social, curricular, and cognitive competencies (Alsawaier, 2018).

In education, assessment is a critical phase that supports teaching and learning success, used to monitor the students' learning progress mathematically (Pitoyo et al., 2019). Various types of assessments can be done depending on the academic task given to the students, such as individual assignments, group assignments, midterms, quizzes, and final examinations. Incorporating quizzes and games may encourage long-term retention of material (Viney et al., 2016), motivate self and peer assessment (Nadeem & Falig, 2020) as well as increase students' interest (Lim & Md Yunus, 2021). Formative assessment based on multiple-choice questions (MCQs) can aid students with different learning styles and prepare them for high-stakes exams (Einig, 2013). Moreover, completing gamified MCQs allows the learners to practice summative assessments in an engaging and motivational approach (Douglas & Ennis, 2012). With vast selections of existing gamified e-quizzes platforms and applications, educators are left with an important decision to select the best tool that suits their students and the teaching and learning requirement. Often, an educational institution will come up with its educational products to accommodate the needs of its students, educators, academic administrators, and management (Troussas et al., 2020; Zakaria et al., 2020).

Although the user acceptance of new technological product is a challenge, it is more strenuous to keep the existing users interested in using the accepted or adopted product for a long time. Hence, it becomes essential for a technological product to be evaluated from the users' perception. It will determine their intention towards its use which eventually affects the decision-makers on the necessity of maintenance and future upgrade of their 'in-house developed product. Research associated with continuance usage intention on product usage of e-learning (e.g., Muqtadiroh et al., 2019), massive open online course (MOOC) (e.g., Dai et al., 2020), learning management system (LMS) (e.g., Ashrafi et al., 2020) and mobile learning application (e.g., Tam et al., 2020) had been made. However, research on continuance usage intention specifically for a gamified e-quiz mobile application has not been explored much. Therefore, this study aims to investigate the factors related to an individual continuance usage intention to use a gamified e-quiz mobile application named Kingdom Quizzes (KQ), which are essential to any technology implementation, and to understand the reasons technologies discontinuance.

2.0 OBJECTIVE

The study aimed to explore the influence of students' perceived ease of use, usefulness, enjoyment, and social influence on students' continuance usage intention in using a gamified e-quiz mobile application.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

This study implemented a correlational research design to predict factors influencing continuance usage intention in using gamified e-quiz mobile application among Malaysian Higher Education institution students. Data were collected among 140 first-year students from the Diploma of Information Technology program, Universiti Tun Hussein Onn Malaysia (UTHM) at one specific point of time conducted at the end of their study semester. These students are the registered users of the technological product named Kingdom Quizzes (Roslan et al., 2021). The students used Kingdom Quizzes application for one semester in their online learning session. The quizzes were executed using their own mobile devices starting from the second week of the semester. In the 12th week of the semester, the students were given a Google Form link for the questionnaire in which they were required to fill in during the virtual class session using Google Meet.

For the study, the researchers developed an instrument to collect the data. The questions were divided into two sections: Section A: Demography and Section B: Close Ended Questions. There are five variables in this study: four independent variables (perceived usefulness, perceived ease of use, perceived enjoyment, and social influence) and a dependent variable

(continuance usage intention). Eight items of perceived ease of use construct were adapted from Davis (1989), Sánchez and Huerous (2010), and Venkatesh et al. (2012). Meanwhile, eight items were used to measure the perceived usefulness construct adapted from Davis (1989), Sánchez and Hueros (2010), Bhattacharjee (2001), and Venkatesh et al. (2012). The next factor, social influences, consists of seven items adapted from Venkatesh et al., (2003, 2012) scales. The last element, perceived enjoyment, has six items, adapted from Thong et al. (2006) and Venkatesh et al. (2012) scales. Lastly, continuance usage intention, which will assess students voluntarily pursuing or continuing using the Kingdom Quizzes application, has seven items adapted from Bhattacharjee (2001) and Roca et al. (2006) scales.

All the dependent and independent variables were reliable instruments in measuring all the variables studied based on the Alpha Cronbach analysis. Values for the reliability test resulted as follows, perceived ease of use (0.76,) perceived usefulness (0.818), social influence (0.643), perceived enjoyment (0.756), and lastly, continuance usage intention (0.776). SPSS Statistics software was used in the analysis process, which involved all the 140 feedbacks received. The responses were free from missing or invalid data. The instrument was carefully prepared using the Google Form, which enforced the validation (compulsory input restriction) and selection from a drop-down list (scale) to avoid 'garbage' input data. Analyses done were based on inferential statistics (Pearson's correlation) to find relationships between all independent variables towards the dependent variable, regression and also multiple regression to find the level of contribution of all independent variable as predictors for continuance usage intention towards Kingdom Quizzes application.

4.0 FINDINGS

The analysis of the study began with determining the relationships between the four factors with Kingdom Quizzes application continuance usage intention. There was a positive correlation between perceived ease of use ($r = .593$; $p < .001$), perceived usefulness ($r = .694$; $p < .001$), social influence ($r = .720$, $p < .001$) and perceived enjoyment ($r = .700$; $p < .001$) with students' continuance usage intention, as being displayed in Table 1.

Table 1: Correlation coefficients between the four variables with continuance usage intention

	Perceived Ease of Use	Perceived Usefulness	Social Influence	Perceived Enjoyment
Continuance Usage Intention	.593**	.694**	.720**	.700**

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

Afterward, a regression analysis was also conducted to test the study's objective and identify the different factors influencing the students' intention to use the Kingdom Quizzes application. Table 2 shows the multiple correlation coefficients was 0.610, indicating approximately 61% of the variance of the students' continuance usage intention, accounted for by perceived ease of use, perceived usefulness, perceived enjoyment, and social influence.

Table 2: Model summary

Model	R	R Square	Adjusted R Square
1	.781	.610	.598

a Predictors: (Constant), Perceived Enjoyment, Perceived Ease of Use, Social Influence, Perceived Usefulness

Meanwhile, Table 3 indicated that the influencing factors were statistically significant at 0.05 level of significance ($F(4,139) = 52.76$, $p = .000$). This showed that any factor listed could significantly predict the continuance intention to use the Kingdom Quizzes application.

Table 3: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	34.77	4	8.693	52.76	.000
Residual	22.24	135	.165		
Total	57.01	139			

a Dependent Variable: Continuance Usage Intention

b Predictors: (Constant), Perceived Enjoyment, Perceived Ease of Use, Social Influence, Perceived Usefulness

On the other hand, Table 4 illustrates the results of the multiple regression analysis which indicated that social influence and perceived enjoyment manage to influenced the students' continuance usage intention towards Kingdom Quizzes application. The relative order of preference of the predictive factors was based on beta values (β) which are summarised as follows: social influence ($\beta = .351$), and perceived enjoyment ($\beta = .319$). In other words, social influence contributed 35.1% of the variance, and perceived enjoyment explained 31.9% in students' continuance intention to use the Kingdom Quizzes application.

Table 4: Model coefficients

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig
	B	Std. Error	Beta		
Constant	.237	.292		-.809	.420
Perceived Ease of Use	.101	.098	.079	1.022	.308
Perceived Usefulness	.137	.111	.125	1.233	.220
Social Influence	.344	.091	.351	3.774	.000
Perceived Enjoyment	.407	.108	.319	3.793	.000

a Dependent Variable: Continuance Usage Intention

5.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The results showed that users' continuance usage intention towards a gamified e-quiz mobile application is predicted by social influence and perceived enjoyment with beta values (β) 0.351 and 0.319, respectively. Although all the four studied factors appeared to have positive relationships towards continuance usage intention, only social influence and perceived enjoyment ($p = .000$) were defined as the predictors. In contrast to previous research (Tam et al., 2020; Singh 2020), which gave high regards on perceived usefulness and perceived ease of use factors towards influencing the continuance use intention of a technological product.

The strengths of those positive relationships between perceived ease of use, perceived usefulness, social influence, and perceived enjoyment with continuance intention were analyse based on the rule of thumb Guilford and Fruchter (1973). The result of r for perceived ease of use ($r = .593$; $p < .001$) indicated moderate relationship with continuance usage intention. Meanwhile, perceived usefulness ($r = .694$; $p < .001$) also showed a moderate relationship. However, social influence and perceived enjoyment showed high relationships with continuance usage intention based on $r = .720$ and $r = .700$, respectively. The findings in this research highlighted the perceived enjoyment as a strong factor and has a high relationship towards continuance usage intention with 31.9% contribution. Meanwhile, social influence accounted for 35.1% of the variance, which serves as the highest contributor. These

factors explained a considerable 61% variance of continuous intention to use Kingdom Quizzes application.

The result revealed that an individuals' intention to continue using a gamified e-quiz mobile application is affected by the variables of perceived enjoyment and social influence. However, when comparing the results of this study with those of previous continuance use intention studies, it differs in terms of perceived usefulness and ease of use being significant predictors for continuance intention of a technological product. Firstly, to explain the inconsistency result of perceived usefulness and perceived ease of use, it may be because the second-semester students already have experienced other educational platforms (e-Learning) such as LMS, MOOC, and mobile applications products (M-learning) in their first semester of study, which means that they are already used to those products performing significant academic tasks successfully with ease, hence it has become somewhat of a norm for them, that a product will manage to fulfil its purpose effortlessly. Secondly, to explain the reason of perceived enjoyment appealed more in this study's finding, using an educational gamified mobile application product seemed to offer the students a new experience, perspective, and expectation. A gamified mobile application considers the theory of gamification in educational settings to provide content in an attractive mode to gain a higher level of attention from learners.

Contrary to the conventional educational product, for instance, mobile application or learning management system (LMS) that do not incorporate any gamification elements, the gamified mobile application was initially constructed to entice and motivate learners to perform academic tasks wherever they are. Thirdly, regarding the highest contributed factor for continuance intention, which is the social influence (35.1%), this result indicated that gamified e-quiz mobile application users were managed to be coerced, persuaded, and pressured into using the educational product whether from their circle of friends, family, peers, educator or even the institution itself. The feeling of being influenced will naturally affect their behavior. This notion has also been approved in previous research, such as in Lee (2010) and Chen et al. (2012) studies.

6.0 CONCLUSION

Based on the results of this study, factors perceived enjoyment and social influence were proven to have strong influences toward continuance usage intention. This indicated that creating fun, interactive, and engaging educational content in a mobile application that helps connect educators, students, and their peers, are helpful activity for users' continuance intention. The gamification items that correspond to these significant predictors also indicate that the utilisation also had a significant effect. This shows that the construction of attractive and engaging gamification items will secure the effectiveness of the gamification-based, educational technological product. This should be taken rather seriously by the education institutions' management as it also determines the future direction of the painstakingly developed product, which should also be a worthy investment in the quest to populate their institutions' online learning resources. It can be summarised that constructing educational content through gamification techniques would be an impetus to students' continuance use intention (Hassan et al., 2019; Shi et al., 2019). Therefore, it is best for the developers or researchers to produce a tool improvement plan (TIP) document based on the findings for restructuring or upgrading the products' gamification items accordingly. This will act as a clear guideline for the technical team in conducting the products' maintenance and as a reference document for the stakeholders in making product upgrade decisions.

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OS STICK

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ABSTRACT

In a world where creativity is always being pushed to new heights by technology, a wonderful development has emerged. With the amazing Stick Drone, a cutting-edge marvel that redefines the idea of aerial mobility, get ready to soar into the future. The Stick Drone is your ideal companion whether you're taking breath-blowing aerial pictures, exploring enormous vistas, or just enjoying the thrill of flight. The problem when we want to take a selfie is awkward angles. It can be difficult to get the ideal perspective for a selfie, especially if you're attempting to capture more than just your face. Find the most attractive position by experimenting with various angles while holding the camera just above or below your face. To give your selfies more variety and individuality, tilt your head slightly and don't be afraid to try out new stances or expressions. Another problem is ask other people to take the photos. Photo quality and composition, occasionally, the quality or composition of photographs taken by others may not live up to your standards. Although it's difficult to totally regulate these factors. Next problem is can't take a lot of photos. Limitations of the stand tripod. Changing the position, angle, or height between photos when using a selfie stick or tripod can be time-consuming. The objective is enhancing self-photography. A selfie stick drone's main goal is to give consumers a cutting-edge, practical equipment for taking excellent self-portraits. It intends to enable users to take distinctive angles, viewpoints, and wide-angle pictures that were previously challenging to produce with handheld devices by fusing the aerial capabilities of a drone with the functionality of a conventional selfie stick. Next objective is aerial photography and videography is made possible. Another goal of OS Stick is to give users the freedom to investigate the potential of aerial photography and videography. These OS Stick, which can fly and hover, provide a distinctive viewpoint and capture breathtaking aerial photographs and videos that were previously only accessible to professional photographers or videographers. Aerial footage may now be readily incorporated into users' creative projects and visual narratives. The uniqueness and functionalities of OS Stick is lightweight, compact, and highly portable. The OS Stick is designed to be small and portable. You can take stunning aerial selfies everywhere you go thanks to its compact size, which makes it simple to put in a bag or even fit in your pocket. The advantage of OS Stick is you don't need to ask people to take your photos. A selfie drone gives you total autonomy and control over your photo-taking process. You can snap pictures whenever and wherever you choose because you are not dependent on others to get the shots you want. Next is can help you to get a good angle. Selfie drones may fly very high in the air, enabling you to take pictures from an elevated angle. This viewpoint provides a wider view of the scene and a unique and eye-catching angle that is difficult to achieve with conventional handheld shooting. Another benefit is easy to do vlog and join trend on TikTok. Selfie drones are equipped with stabilisation devices that allow them capture steady, fluid video. This is especially useful for vlogging and TikTok videos because it makes sure that your content looks clean and professional even when you're moving around or in difficult settings. OS Stick are quite portable, so you can bring them with you wherever you go. You may easily bring your drone along to shoot. breathtaking aerial images of your trip experiences, whether you're visiting a new city, going on a hike in the mountains, or just relaxing on a beach. In conclusion, OS Stick provide a variety of special features and

functionalities that address the requirements and tastes of contemporary consumers. These gadgets appeal to a wide range of user groups due to their many advantages.

Keywords: selfie, stick, photograph, photo

1.0 INTRODUCTION

In a world where creativity is always being pushed to new heights by technology, a wonderful development has emerged. With the amazing Stick Drone, a cutting-edge marvel that redefines the idea of aerial mobility, get ready to soar into the future. Imagine a small, light-weight craft that can soar through the air with ease while providing you with a bird's-eye perspective of the entire planet. A ground-breaking invention called the OS Stick aims to make flying more accessible to everyone. This futuristic masterpiece flawlessly combines form and function with its clean, minimalist design. The Stick Drone is your ideal companion whether you're taking breath-blowing aerial pictures, exploring enormous vistas, or just enjoying the thrill of flight.

2.0 OBJECTIVE

The objective is enhancing self-photography. A selfie stick drone's main goal is to give consumers a cutting-edge, practical equipment for taking excellent self-portraits. It intends to enable users to take distinctive angles, viewpoints, and wide-angle pictures that were previously challenging to produce with handheld devices by fusing the aerial capabilities of a drone with the functionality of a conventional selfie stick. Next objective is aerial photography and videography is made possible. Another goal of OS Stick is to give users the freedom to investigate the potential of aerial photography and videography. These OS Stick, which can fly and hover, provide a distinctive viewpoint and capture breathtaking aerial photographs and videos that were previously only accessible to professional photographers or videographers. Aerial footage may now be readily incorporated into users' creative projects and visual narratives.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The creation of this product aims to make it easier for tourists when traveling, especially when taking photos and videos. This is because this OS Stick is very easy to use when traveling with family, in large groups, or when traveling alone. This is said because the OS Stick was created for tourists who often travel or customers who often take pictures or videos of their daily lives. OS Stick was created to meet all the needs of travelers because this product is small and portable, can be easily carried and fit in a travel bag, and does not require much space. In addition, this OS Stick is also equipped with tracking technology to automatically follow tourists, which can make it easier for tourists to take their own videos.

In addition, this product also has hand signal control for easy selfies and videos, and this OS Stick is also operated and easy to fly with the Bluetooth application included in this product to connect the phone with the OS Stick. This product is also equipped with GPS positioning for accurate flight control, and for the safety of this product, it also has an obstacle avoidance sensor for safer flight. Therefore, this OS Stick is able to provide many benefits to tourists, namely that tourists can take interesting photos and videos from the air and capture their travel memories in an interesting and new way that is more fun by using it. This is because this OS Stick is specially designed for those who like to take pictures and videos, and this OS Stick is also suitable for solo travelers, travelers traveling with family, and anyone who wants to take photos or record amazing videos from the air while traveling or doing leisure activities.

Table 1: Price of OS Stick

	Item	Price	Unit	Total
1	Battery RC Dron	89	1	89
2	Plane Battery 3.7v	20	1	20
3	Two-Way Charging Hub	39	1	39
	Total			148

Example of Figure is given below.

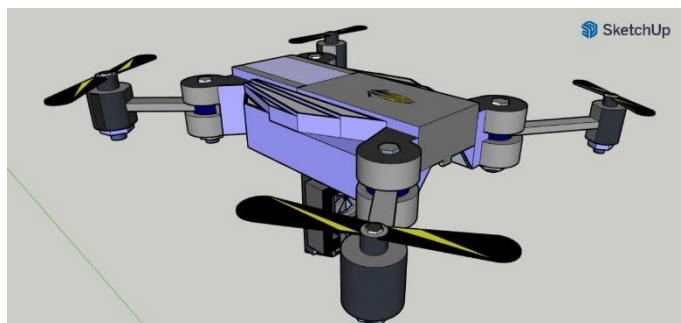


Figure 1: OS Stick

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The advantage of OS Stick is you don't need to ask people to take your photos. A selfie drone gives you total autonomy and control over your photo-taking process. You can snap pictures whenever and wherever you choose because you are not dependent on others to get the shots you want. Next is can help you to get a good angle. Selfie drones may fly very high in the air, enabling you to take pictures from an elevated angle. This viewpoint provides a wider view of the scene and a unique and eye-catching angle that is difficult to achieve with conventional handheld shooting. Another benefit is easy to do vlog and join trend on TikTok. Selfie drones are equipped with stabilisation devices that allow them capture steady, fluid video. This is especially useful for vlogging and TikTok videos because it makes sure that your content looks clean and professional even when you're moving around or in difficult settings. After that , it easy to carry , not heavy and suitable for travelling. OS Stick are quite portable, so you can bring them with you wherever you go. You may easily bring your drone along to shoot. breathtaking aerial images of your trip experiences, whether you're visiting a new city, going on a hike in the mountains, or just relaxing on a beach.

5.0 CONCLUSION

In conclusion, OS Stick provide a variety of special features and functionalities that address the requirements and tastes of contemporary consumers. These gadgets appeal to a wide range of user groups due to their many advantages. First off, since users can easily control the drone's movements and take pictures or movies from specific angles, selfie stick drones do away with the need to rely on third parties for photography. Because of their autonomy, they are more creative and liberated while capturing special moments.

EZ ALLEN KEY

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HISHAM, AIMA FIRDAUS BIN MOHD RADUAN, MUHAMMAD IQBAL BIN RISMAN &
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ABSTRAK

Abstrak hendaklah dihantar dalam SATU Bahasa sahaja: Bahasa Melayu ATAU Bahasa Inggeris. 'Allen Key' adalah salah satu jenis alat tangan yang berfungsi untuk mengetatkan dan melonggarkan nut, ada pelbagai jenis kunci yang umum atau sering digunakan, salah satunya adalah kunci allen heksagon. fungsi EZ Allen Key ini sangat memudahkan kerja. Semasa melaksanakan kerja-kerja penyelenggaraan penghawa dingin khususnya, kedudukan nat pada outdoor unit adalah berada pada kedudukan yang sukar dan sempit. Set allen key di pasaran yang sedia ada kebanyakannya mempunyai 6 hingga 20 batang dan berkemungkinan mudah hilang. Semasa kerja-kerja penyelenggaraan penghawa dingin dilaksanakan juga, kebiasaannya masa yang lama diambil untuk memilih saiz mata allen key kerana set mata allen key yang pelbagai saiz. Tercetuslah idea untuk menghasilkan alat yang mudah dan pantas ini iaitu EZ Allen Key ini. Objektif membangunkan projek ini adalah untuk menghasilkan alat yang menggunakan saiz mata allen key yang betul untuk kerja penyelenggaraan bangunan. Menghasilkan alat yang menjimatkan masa untuk membuka dan mengetatkan nut untuk kerja penyelenggaraan. EZ Allen Key ini mudah dibawa ke mana mana dan sukar untuk hilang. Rekabentuknya yang hanya menggunakan tiga saiz mata allen key di mana skop produk ini hanya diaplikasikan untuk membuat penyelenggaraan penghawa dingin dengan mudah dan tidak melambatkan masa. Selain itu, memudahkan kerja melonggarkan dan mengetatkan nut di tempat yang sempit. Seterusnya produk yang direka tidak berat dan senang untuk dibawa kemana mana tanpa beban yang berat. Di samping itu produk ini juga mudah untuk menukar saiz mata allen key yang berbeza saiz. Rekabentuk pemegang produk boleh ditambahbaik untuk tujuan komersial dan menggunakan material yang berbeza selain besi. Kesimpulannya, dengan terhasilnya inovasi ini, dapat membantu kerja-kerja penyelenggaraan bangunan terutama proses membuka "*nut*" pada penghawa dingin dan bangku dengan mudah, berkesan dan pantas.

Kata Kunci: EZ Allen Key, mudah & nut

1.0 PENGENALAN

Pertandingan ini memberi ruang kepada pelajar untuk menterjemahkan idea inovatif dan kreatif kepada situasi praktikal dan juga membantu pelajar meningkatkan kemahiran dalam bidang penyelidikan. Kerja-kerja penyelenggaraan di bengkel menggunakan pelbagai jenis dan saiz peralatan. Namun begitu, apabila terlalu banyak peralatan yang perlu dibeli, kos operasi menjadi lebih tinggi dan memerlukan kawasan penyimpanan yang lebih besar. Inisiatif diambil adalah untuk menghasilkan satu peralatan penyelenggaraan iaitu EZ Allen Key bagi memudahkan menukar saiz sepana dengan saiz nat. Produk ini ialah inovasi bagi allenkey yang mempunyai pelbagai fungsi dimana kegunaan menyelenggara penghawa dingin dan sebagainya. EZ ALLENKEY juga boleh menghematkan kegunaan ruang penyimpanan di rumah. Sebelum produk ini dihasilkan, kebanyakan allenkey mudah hilang jika diletakkan merata-rata. Allenkey juga salah satu peralatan yang penting bagi kerja penyelenggaraan bangunan. Kunci allen, atau yang sering disebut kunci inbus, adalah jenis kunci yang

digunakan untuk mengencangkan atau mengendurkan baut dengan bentuk tertentu. Di bidang otomotif, fungsi kunci allen biasanya untuk melonggarkan kaliper cakram, baut pada shock breaker, dan komponen lain yang memiliki baut.

Bentuknya menyerupai huruf "L" sehingga kunci ini kadang disebut kunci L. Umumnya, kunci allen terbuat dari material baja heksagonal jenis high tensile. Selain berbentuk huruf L, beberapa jenis kunci allen juga ada yang dibentuk mirip huruf T dan bekerja seperti kunci socket. Untuk ukuran mata kuncinya sendiri ada pada rentang 1,5 mm hingga 10 mm. Penggunaan kunci harus sesuai dengan ukuran ini untuk menghindari kerusakan pada kepala baut. Kumpulan kami mendapat idea untuk menggabungkan allen key kepada satu tetapi tidak semua saiz hanya untuk saiz yang penting untuk membuat kerja penyelenggaraan penghawa dingin atau sebagainya. Produk yang kami buat ialah menyambungkan allen key di bearing dan tidak mudah hilang.

ALLEN KEY adalah salah satu jenis *hand tool* yang berfungsi untuk mengetatkan dan melonggarkan nut, ada pelbagai jenis kunci yang umum atau sering digunakan, salah satunya adalah kunci allen heksagon. fungsi *EZ Allen Key* ini sangat memudahkan kerja.

Semasa melaksanakan kerja-kerja penyelenggaraan penghawa dingin khususnya, kedudukan nat pada outdoor unit adalah berada pada kedudukan yang sukar dan sempit. Oleh itu ia menyukarkan untuk membuat pusingan pada nut semasa melonggarkan dan mengetatkan. Set allen key di pasaran yang sedia ada kebanyakannya mempunyai 6 hingga 20 batang dan berkemungkinan mudah hilang, Semasa kerja-kerja penyelenggaraan penghawa dingin dilaksanakan juga, kebiasaannya masa yang lama diambil untuk memilih saiz mata allen key kerana set mata allen key yang pelbagai saiz.

2.0 OBJEKTIF

Objektif membangunkan projek ini adalah seperti berikut;

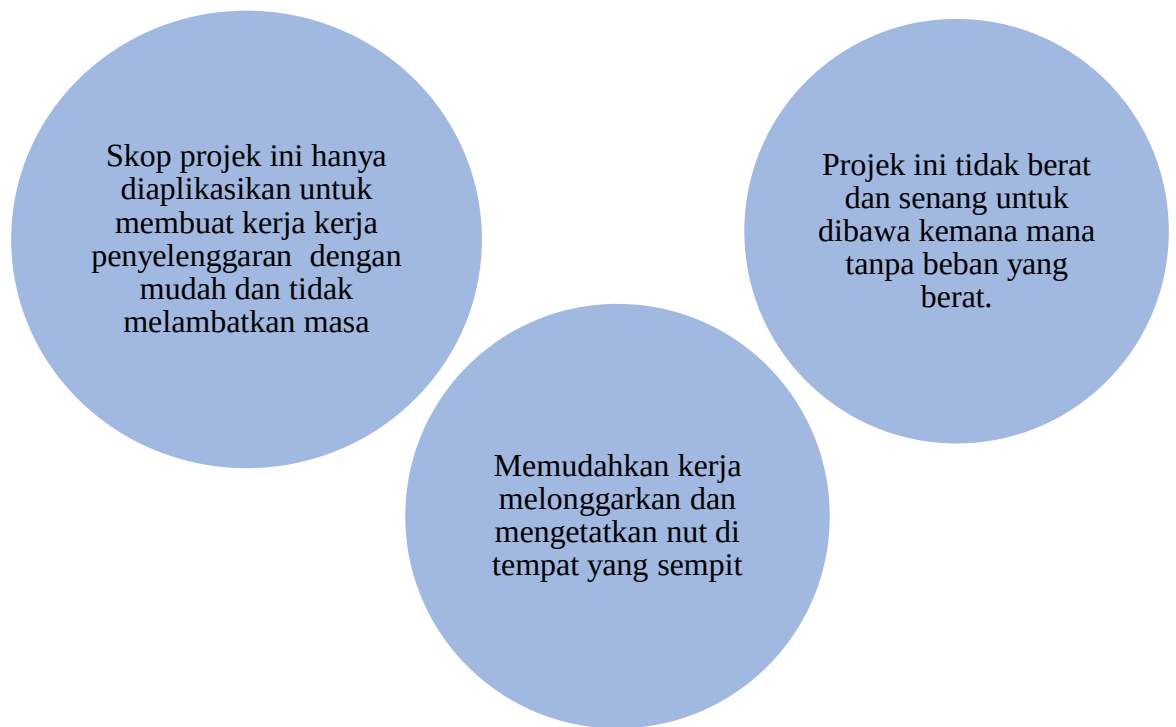
1. Menghasilkan alat yang menggunakan saiz mata allen key yang betul untuk kerja penyelenggaraan bangunan.
2. Menghasilkan alat yang menjimatkan masa untuk membuka dan mengetatkan nut untuk kerja penyelenggaraan.
3. *EZ ALLEN KEY* ini mudah dibawa ke mana mana dan sukar untuk hilang.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Menjelaskan had-had pelaksanaan projek yang dijalankan. Bertujuan memastikan projek tidak terkeluar dari skop atau had yang ditetapkan. Skop projek ini hanya diaplikasikan untuk membuat penyelenggaraan penghawa dingin dengan mudah dan tidak melambatkan masa. Selain itu, memudahkan kerja melonggarkan dan mengetatkan nut di tempat yang sempit. Seterusnya projek yang kami buat ini tidak berat dan senang untuk dibawa kemana mana tanpa beban yang berat. Di samping itu projek ini juga mudah untuk menukar saiz mata allen key yang berbeza saiz.

3.1 Pemilihan Tajuk

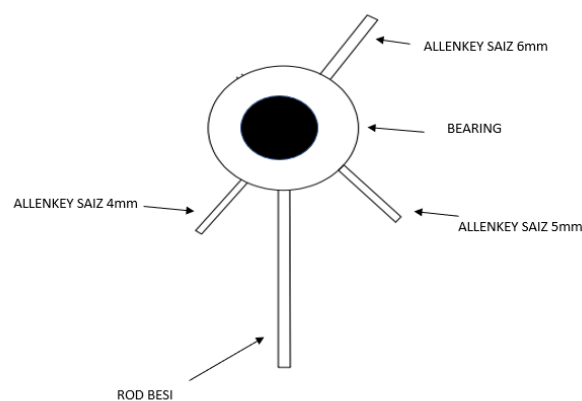
Semua ahli kumpulan telah melakukan sesi sumbang saran untuk memilih tajuk projek yang akan dilaksanakan. Kemudian, tajuk telah dikemukakan kepada penyelia projek untuk didaftarkan. Rajah dibawah merupakan templat sumbang saran yang digunakan untuk mengumpulkan idea semua ahli kumpulan



Rajah 1: Rajah Rajah dibawah merupakan templat sumbang saran yang digunakan untuk mengumpulkan idea semua ahli kumpulan.

3.2 Proses Reka Bentuk

Berikut merupakan lakaran reka bentuk produk:



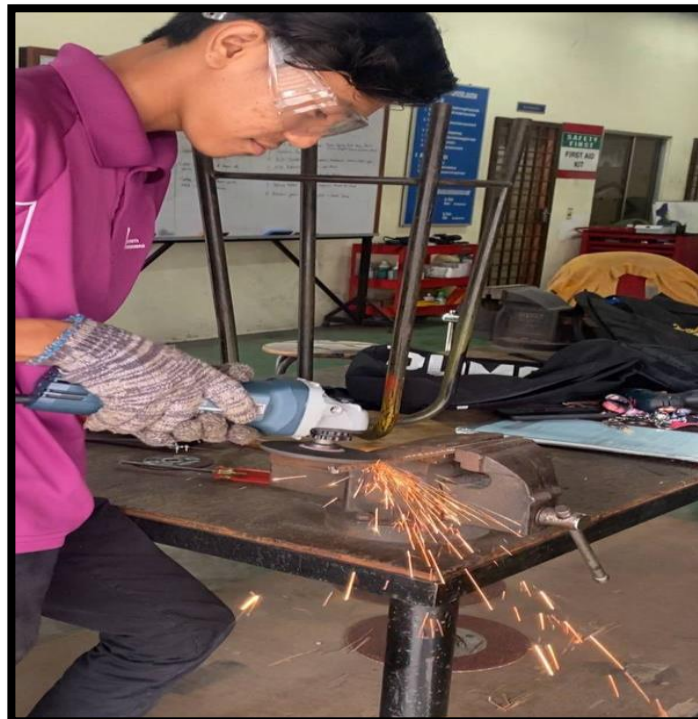
Rajah 2: Lakaran hadapan projek

3.3 Proses Pembinaan Produk

Pelaksanaan projek terdapat banyak langkah yang perlu dijalankan contohnya melakukan permotongan, membuat sambungan pada tiga allenkey, pemegang dan lain-lain. Berikut ialah proses kerja membuat produk ini serta rajah proses:



Rajah 3: Langkah 1 memotong besi untuk membuat pemegang



Rajah 4: Langkah 2 Mencanai besi supaya tiada permukaan yang karat



Rajah 5: Langkah 3 Kumpulkan hasil projek yang siap dipotong



Rajah 6: Langkah 4 Weldingkan ke semua bahan yang sudah dipotong



Rajah 7: Langkah 5 Spraykan bahan supaya tidak karat



Rajah 8: Langkah 6 Hasil projek yg sudah disiapkan



Rajah 9: Langkah 7 Proses ujilari



Rajah 10: Langkah 8 Proses uji lari di penghawa dingin

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Bagi mengenal pasti maklum balas responden mengenai reka bentuk produk pula, penyelidik membina item dengan menggunakan 4 pilihan skala likert:

1= sangat tidak setuju

2= tidak setuju

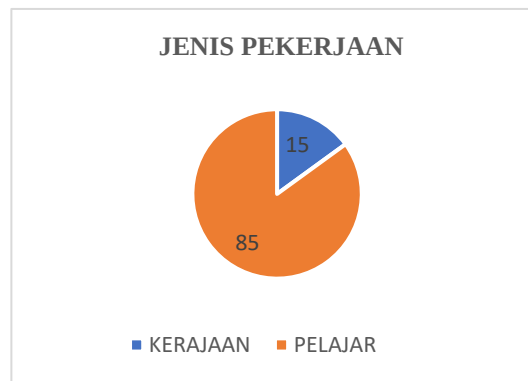
3= setuju

4= sangat setuju

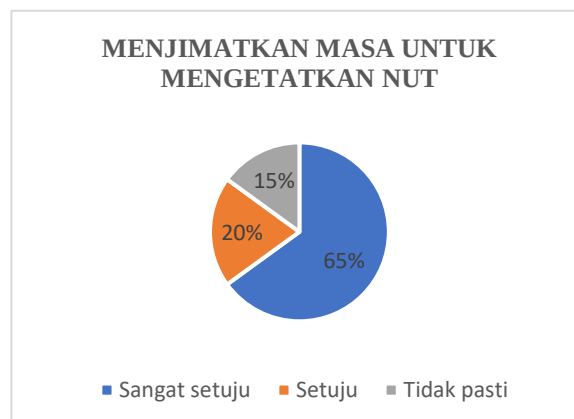
Dari aspek ciri ciri produk menunjukkan berminat untk membeli produk ini sekiranya dikomersialkan . 65% mengatakan sangat setuju. 20% mengatakan setuju. 15% mengatakan tidak pasti.

Berikut merupakan dapatan bagi item bahagian demografi :

- a) menunjukkan latar belakang jantina berdasarkan keputusan masing-masing 80% responden merupakan lelaki 20 % responden merupakan perempuan
- b) Projek ini dapat menjimatkan masa untuk membuka nut menunjukkan YA 100%
- c) Produk EZ ALLENKEY ini mudah dibawa kemana mana menunjukkan sangat setuju 70% dan setuju 30%.
- d) Menunjukkan latar belakang umur para responden. 25% responden menunjukkan 18 tahun kebawah. 70% responden 19-23 tahun. 10% responden 34 tahun keatas
- e) Menunjukkan latar belakang pekerjaan responden. 15% kerajaan. 85% pelajar.



Rajah 11 : menunjukkan graf pekerjaan



Rajah 12 menunjukkan produk ini dapat menjimatkan masa untk membuka nat.

Bagi item bahagian kajian produk, semua responden bersetuju inovasi produk ini boleh dipasarkan, memberi impak dan menjimatkan masa.

5.0 KESIMPULAN

Secara keseluruhannya, projek ini berjaya menghasilkan pelbagai fungsi dengan reka bentuk yang unik. Ez allenkey juga sesuai digunakan di rumah kediaman. Projek ini juga dapat membuat penyelenggaraan dan boleh menjimatkan ruang penyimpanan di dalam rumah. Berdasarkan maklum balas dari soal selidik yang telah dijalankan majoriti responden bersetuju bahawa produk ini adalah unik, sesuai untuk rumah kediaman dan berpotensi untuk di komersialkan. Namun begitu aspek kemasan dan fungsi perlu di tambah baik untuk meningkatkan nilai komersial produk.

BetterUS : A MOBILE APPLICATION THAT PROMOTES HEALTHY LIFESTYLE

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ABSTRACT

This project describes the development of a mobile application that promotes healthy living among people at young age. Technology in the modern period has been aiding the public by keeping track of their health and fitness, which encourages them to embrace good lifestyle choices that enhance their overall health. The purpose of this project is to design a mobile application that can track health conditions in order to prevent chronic diseases such as cardiovascular diseases at an early stage. Nowadays, majority of the population under the age of 40 are diagnosed with serious health conditions. Most fatal diseases frequently come to attention when they are in a critical stage. This project aims to cater or meet the need of Malaysians by creating an application that suites Malaysians lifestyle that is currently lacking in healthy-based application available today. Moreover, this application can be used to warn the potential disease based on the symptoms that the user provided and a proper medication is suggested or a face-to-face consultation with a doctor if required. User will be required to key in their health status and health history as well as their daily food intake to maintain their healthy lifestyle. The health application can act as an early detection tool of chronic diseases and provide online consultation with preferred doctor which enhances people's quality of life. Mobile health tracking applications are changing the way the health consumers especially young age handles their personal health care.

Keywords: Mobile application, health, diseases, quality of life.

1.0 INTRODUCTION

In recent years, the unhealthy lifestyle among young people in Malaysia has become a growing concern. The majority of the population under the age of 40 is diagnosed with serious health conditions. Malaysia is regarded as an unhealthy nation due to the high prevalence of obesity and heart disease ('Malaysia, Unhealthy Nation With Low Health Awareness,' 2021). According to statistics, 3.6 million Malaysians have diabetes, which is currently the highest in Asia, and 6.1 million Malaysians suffer from hypertension. Unhealthy urban lifestyles, which include sedentary behavior, stressful job environments, and bad nutritional practices, are the major contributors to this pandemic.

Among the factors that contribute to an unhealthy lifestyle, dietary habits have taken a turn for the worse. Over time, there has been a sharp rise in the excessive consumption of processed foods and fast food, which frequently substitutes for a balanced and nutritional diet (Gan *et al.*, 2019). According to Irazusta *et al.* (2007), poor dietary practices, such as consuming too many or too few macronutrients, are a significant factor in the etiology of chronic illnesses, such as obesity, cancer, and cardiovascular disease. Besides that, one of the most significant concerns is the increase in sedentary behavior. According to Carballo-Fazanes *et al.* (2020), an excessive amount of sedentary behavior and physical inactivity is linked to a higher risk of

obesity, cancers, cardiovascular illnesses, and diabetes. The likelihood of depression and anxiety has also been found to be higher when physical activity is reduced. Furthermore, many young Malaysians' demanding academic or professional schedules and hectic lifestyles have contributed to elevated stress levels and insufficient sleep. Chronic stress, lack of sleep, and compromised immunity can all have a detrimental effect on mental health (Murukesu *et al.*, 2021).

Nowadays, the majority of the population under the age of 40 is being diagnosed with serious health conditions, such as cancer, diabetes, and cardiovascular diseases. Many life-threatening illnesses become noticeable by people when the disease reached an advanced phase or critical phase. Hence, it is crucial to consistency monitor someone's health status to prevent these conditions. The proposed mobile application developed with aim of helping Malaysian users to keep track their health and receive recommendation of healthier eating habits.

2.0 OBJECTIVE

The main objective of designing this mobile application is to promote healthy lifestyle among youth. It functions as a powerful instrument to promote awareness of healthy lifestyles and is specifically developed to address the requirements of Malaysians through a health-focused app tailored to align with their way of life. This brand-new application will improve choices for leading a better life. Additionally, the app has the capability to notify users of potential illnesses based on the symptoms they gave. Detecting diseases at an early stage can aid in the management of more severe cases. Moreover, the application will suggest suitable medications or advise an in-person consultation with a physician if deemed essential. In mild cases, specific medications will be recommended as temporary treatments, while in severe cases, users will be advised to visit the nearest hospital for a consultation.

3.0 DESCRIPTIVE OF INNOVATION

3.1 Login Page

The login page is the initial page of the BetterUs application, where users can sign up as new users. Once signed up, users can access the main page of *BetterUs*. The interface displays the login page of *BetterUs*, as shown in Figure 1 (left).

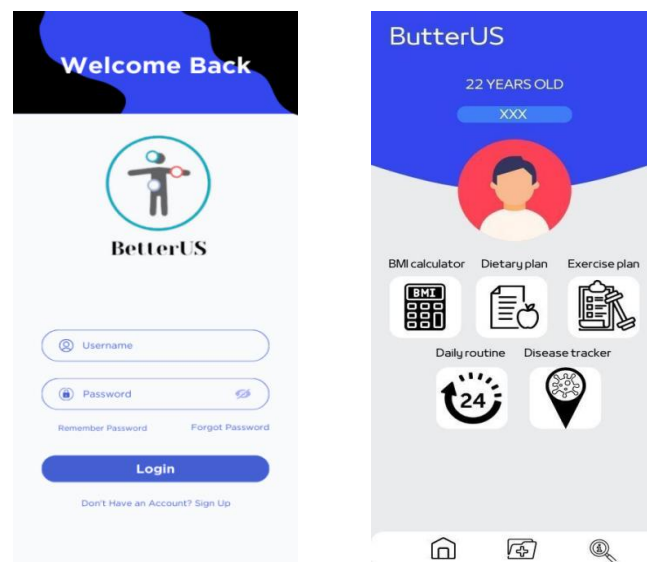


Figure 1 : Login page of *BetterUs* (left) and Menu page of *BetterUs* (right)

3.2 MenuPage

From the *BetterUs* menu page (Figure 1 (Right)), users have the option to access five other interfaces: the BMI calculator, dietary plan, exercise plan, daily routine, and disease tracker. Below, there are three icons: the home page, laboratory report attachment, and options.

3.3 Interface 1(BMI Calculator)

In Interface 1 (BMI calculator), as shown in Figure 2 (Left), users can input their height and weight. The *BetterUs* system will then automatically display the user's BMI. Users can compare their BMI with the standard BMI chart and click on the dietary plan link to access the next interface, where they can view the dietary plan



Figure 2 : Interface 1 (BMI calculator) of *BetterUs* (Left) and Interface 2 (dietary plan) of *BetterUs* (Right)

3.4 Interface 2 (Dietary Plan)

In Interface 2 (dietary plan), as shown in Figure 2 (Right), the user's weight, height, and target calories are displayed at the top of the interface. Users can input the foods they eat along with their respective calorie counts, and the *BetterUs* system will also suggest foods and drinks.

3.5 Interface 3 (Exercise Plan)

From the dietary record, *BetterUs* system will automatically suggest some suitable exercise to users. Besides, after doing the particular exercise, users can record their achievement on the bottom of the interface as presented in Figure 3 (Left).

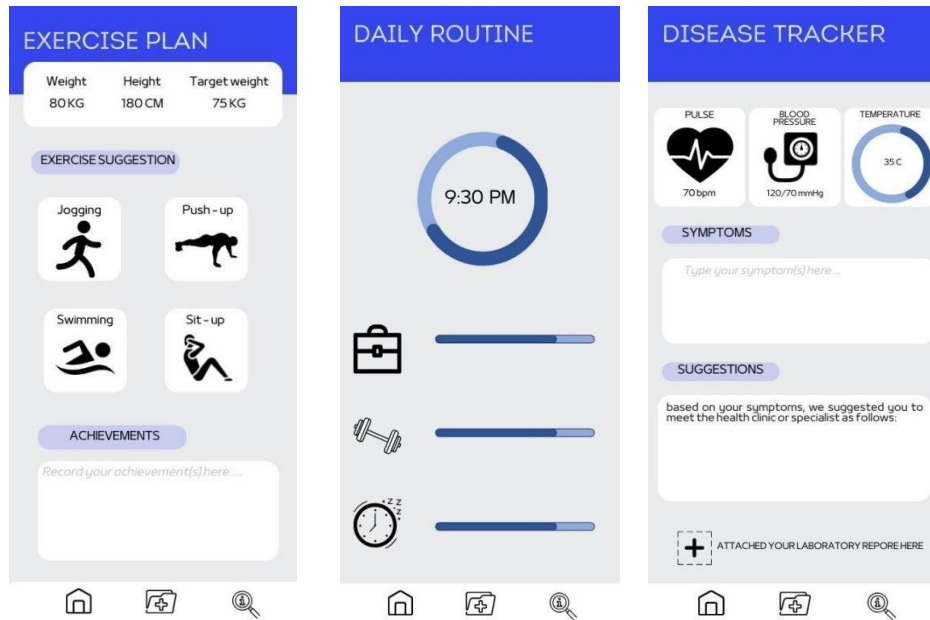


Figure 3: Interface 3 (Exercise Plan) of BetterUs (Left), Interface 4 (Daily Routine) of BetterUs (Middle) and Interface 5 (Disease Tracker) of BetterUs (Right)

3.6 Interface 4 (Daily routine)

In this interface, as shown in Figure 3 (Middle), users can track their daily routine, including work duration, workout duration, and rest time, all recorded by the BetterUs system

3.7 Interface 5 (Disease Tracker)

As illustrated in Figure 3 (Right), users can measure their pulse, blood pressure and body temperature by using a fingerprinting reader on their phone. Besides, users key in their symptoms on the box and BetterUs system will suggest the preferred doctor for users to consult. The consultation will be based on the attachment of laboratory report by using the '+' button below the interface.

4.0 ADVANTAGE

The advantage of BetterUs application is personalised health insight. Users receive their personalised health insight based on the individual personal data and lifestyle choice. Next, BetterUs application aims to prevent and manage the disease. BetterUs application provides tips, information and remainder to help users prevent chronic diseases such as congestive heart disease and manage the existing condition and promote overall well-being. Besides, BetterUs application provides activity tracker. BetterUs application will track user's physical activity and encourage the users to stay active throughout the day.

5.0 CONCLUSION

The goal of this project is to form a link between promoting healthy lifestyle and mobile applications. The project was started because it was realised how common chronic diseases are in Malaysia now, how important it is to maintain a healthy lifestyle, and how independent and well-linked mobile applications are becoming. Mobile health tracking application are changing the way the health consumers especially young age handles their personal health care.

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VACBAG: PACKING MADE EASIER

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ABSTRACT

VacBag is an innovative packing solution designed to streamline the process of organizing and transporting personal belongings. The objectives of VacBag are to simplify packing, reduce luggage weight and volume and enhance convenience for travellers. Novelty in the VacBag lies in its unique design that combines a vacuum-sealed storage bag with built-in compartments and adjustable dividers. By incorporating these features, VacBag allows users to easily organize and pack their belongings while maximizing space efficiency and reducing the overall weight of their luggage. Additionally, VacBag addresses the problem when the airline loses luggage by having a built-in GPS and identification smart chip. The commercialization potential of VacBag is significant due to the increasing demand for efficient packing solutions and the need for optimized baggage handling processes in airports. The benefits of VacBag are distinct as it offers improved handling quality, simplified logistics, and trouble-free storage for travellers. It aims to revolutionize the packing process by offering a unique and innovative solution that simplifies packing, reduces luggage weight and volume, and enhances convenience for travellers.

Keywords: compressed bag, travellers, storage, organization

1.0 INTRODUCTION

In an era of constant travel and exploration, the way we pack and transport our belongings is undergoing a transformation. Traditional luggage and packing methods often lead to inefficiencies, increased weight, and sometimes even the loss of luggage during air travel. To address these challenges, VacBag has emerged as a groundbreaking solution. VacBag is a revolutionary packing innovation designed to simplify the packing process, reduce luggage weight and volume, and enhance convenience for travellers.

2.0 OBJECTIVE

The primary objectives of VacBag are as follows:

- **Simplify Packing:** VacBag aims to streamline the packing process, making it more efficient and less time-consuming for travelers. With its unique design, it offers a user-friendly experience that allows individuals to organize their belongings effectively.
- **Reduce Luggage Weight and Volume:** VacBag incorporates vacuum-sealed storage technology, which not only compresses clothing and other items but also eliminates excess air, reducing the overall weight and volume of luggage. This feature is especially valuable for those looking to avoid excess baggage fees and travel with greater ease.

- **Enhance Convenience for Travelers:** VacBag is designed with the traveler's convenience in mind. It includes built-in compartments and adjustable dividers, making it easy to separate and organize items. Additionally, it addresses the common problem of lost luggage by incorporating a built-in GPS and identification smart chip.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

VacBag is a multifunctional packing solution that combines several innovative features:

- **Vacuum-Sealed Storage:** The core feature of VacBag is its vacuum-sealed storage technology. Users can place their clothing and other belongings inside the bag, and a built-in vacuum pump removes excess air, effectively compressing the contents. This not only saves space but also reduces the weight of the luggage.
- **Built-in Compartments and Adjustable Dividers:** VacBag includes compartments and dividers that allow users to organize their items efficiently. Whether it's separating clean clothes from dirty ones or categorizing belongings, VacBag offers versatility and organization.
- **GPS and Identification Smart Chip:** To address the issue of lost luggage, VacBag integrates a GPS tracker and an identification smart chip. Travelers can track the location of their luggage in real-time, and airline personnel can quickly identify the owner of any misplaced bags.
- **Durability and Portability:** VacBag is designed to withstand the rigors of travel. It is made from durable materials that protect belongings from moisture and damage. The bag is also designed to be lightweight and easy to carry, ensuring that travellers can move effortlessly through airports and other travel hubs.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The novelty of VacBag lies in its unique combination of features, which sets it apart from traditional luggage and packing solutions. The incorporation of vacuum-sealed storage, built-in compartments, adjustable dividers, and GPS tracking make VacBag a game-changer in the travel industry.

The commercialization potential of VacBag is significant for several reasons:

- **Growing Demand for Efficient Packing Solutions:** As more people engage in travel for business and leisure, there is an increasing need for efficient and space-saving packing solutions. VacBag directly addresses this demand by optimizing packing and reducing luggage volume.
- **Optimized Baggage Handling:** Airlines and airports are constantly seeking ways to improve baggage handling processes. VacBag's built-in GPS and identification smart chip can streamline luggage tracking, reduce the incidence of lost baggage, and enhance the overall travel experience for passengers.
- **Improved Traveler Satisfaction:** By simplifying the packing process, reducing luggage weight and volume, and offering convenience features like GPS tracking, VacBag has the potential to significantly improve traveller satisfaction. Happy customers are more likely to recommend the product to others and become loyal users.

5. CONCLUSION

VacBag is a groundbreaking innovation in the world of travel and luggage solutions. With its unique combination of features designed to simplify packing, reduce luggage weight and volume, and enhance convenience, VacBag is poised to revolutionize the way travellers prepare for their journeys. Its potential for commercial success is high, driven by the increasing demand for efficient packing solutions and the need for optimized baggage handling processes in airports. In a world where travel is a fundamental part of modern life, VacBag offers a distinct advantage by improving handling quality, simplifying logistics, and providing trouble-free storage for travellers. It is an innovative solution that promises to redefine the packing experience, making travel more convenient and enjoyable for everyone.

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DEVELOPMENT OF INTEGRATED MICROFLUIDIC PLATFORM RAPID TEST KIT FOR FAST DETECTION OF INFLUENZA A

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ABSTRACT

The recent increases in influenza A cases in Malaysia have raised public concern due to the ability of the virus to cause respiratory infections. There are several diagnostic methods available to detect the influenza A virus such as reverse transcript-polymerase chain reaction (RT-PCR) and rapid influenza diagnostic tests (RIDTS). However, these methods are time consuming and expensive. Moreover, other available fast diagnostic method can be less accurate and thus, resulting to false negatives. Therefore, a rapid test kit (RTK) with high accuracy and sensitivity for the detection of influenza A is highly required. In this study, a simple test kit for the detection of influenza A is proposed by using surface-enhanced Raman Spectroscopy (SERS) technique integrated with microfluidic devices containing microchannels. The detector will be prepared from material functionalized with a composite of silver (Ag)-doped carbon nanotubes (CNT) and carbon nitride (CN). The use of CNTs material to capture the viruses obtained from various biological fluids, such as saliva and nasal samples can be an effective method to produce result with high sensitivity. The detection and sensing of the influenza A virus will be based on their Raman Signature. The SERS technique used in this study to detect the presence of virus will be enhanced by the Raman effect that provided by plasmonic material (Ag) when it doped with the composite (CNT-CN). Due to the intertubular distance of CNTs that matches with the size of the virus, it can be used to trap and concentrate the virus at the detector. Hence, these properties allow for the detection of the virus at low concentration level. Provided that the device is successfully developed and proven to reliably detect the virus, this proposed RTK could be a important diagnostic tool to prevent another major pandemic.

Keywords: Influenza A; RTK; carbon nanotubes; carbon nitride, biosensors.

1.0 INTRODUCTION

Type A Influenza virus or commonly known as Influenza A is the virus that can cause flu outbreaks. This virus has been reported to cause serious respiratory infections in both human and animals (Peiris *et al.*, 2009). Although the virus is not usually dangerous for a healthy person, it can cause serious health problems for those with certain medical conditions (Javanian *et al.*, 2021). There are several techniques and methods for detecting the influenza A virus, including reverse transcriptase-polymerase chain reactions (RT-PCR) and rapid influenza diagnostic tests (RIDTs) (Morehouse *et al.*, 2022). However, the current methods are expensive and take a longer time to complete. Therefore, a new method to detect influenza A with fast and high accuracy is suggested. In this study, we propose a prototype of a RTK prepared from microchannel integrated platforms that are coupled with silver (Ag) functionalized carbon nanotubes (CNTs) and carbon nitride (CN) for detection of influenza A

virus in the body fluids, such as saliva or nasal samples, by using surface-enhanced Raman Spectroscopy (SERS) technique. The proposed RTK will be following the method outlined by Jadhav *et al.* (2021) except for the addition of Ag and CN. The proposed RTK is expected to show high sensitivity due to the ability of CNTs to trap the virus. Hence, allowing the virus to be concentrated at the detection point (Yeh *et al.*, 2016). In addition, the intensity of Raman Signal will be enhanced upon functionalization with Ag due to its plasmonic properties (Moore *et al.*, 2018). The enhanced Raman Signal will also allow the detection of the virus at low concentration levels, especially for infected individuals at early stage. Moreover, the incorporation of CN into tubular CNTs will also improve the SERS and sensing performance. Therefore, it is expected that by trapping the respective virus using modified microfluidic device coupled with SERS can be useful in detecting influenza A viruses obtained from body fluids sample (Yeh *et al.*, 2020). Based on the aforementioned properties, the proposed technique is also expected to have the ability to detect mild cases by using SERS technique. This is important as it would help identify the asymptomatic cases in order to reduce and prevent transmission of the virus.

2.0 OBJECTIVE

The objective of this study is to develop a rapid test kit for the detection of influenza A with high accuracy and high sensitivity using SERS technique coupled with plasmonic materials (Ag). The test kit will be developed using composite of CNTs and CN, while the surface of CNTs will be doped with Ag. Additionally, the proposed rapid test kit is designed to be low-cost and convenient to use.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The proposed rapid test kit (Figure 1) will have a similar design to a commercial test kit. The test kit will be prepared using a composite of CNT/CN doped with Ag. CNT/CN is used as it has strong resonance scattering and the ability of CNT to trap the virus. The incorporation of CN in CNT will improve the SERS properties. Meanwhile, plasmonic material, Ag will be doped with CNT/CN in order to enhance the intensity of Raman Signal. The influenza A viruses will be trapped within the tubular structure of CNT and the presence of CNT will help concentrate the virus obtained from body fluids sample such as saliva or nasal. The detection of the virus with high accuracy and sensitivity in the saliva sample using the SERS technique will take only a few minutes. If proven successful, this test kit could become the method of choice worldwide.

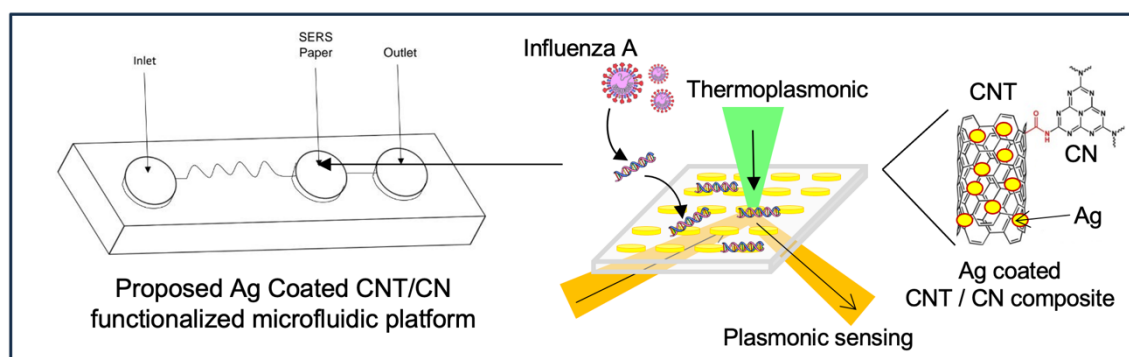


Figure 1: Description of test kit

Therefore, it is expected that this test kit could offer a long-term alternative for the diagnosis of influenza A virus. Furthermore, the development of this test kit could serve as a guideline for designing portable platforms to detect future viruses and prevent viral pandemics.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

In addition to its application in detecting the influenza A virus, the proposed test kit can also be further developed to detect various types of viruses, enabling universal virus detection. The use of CNTs can help concentrate the virus by trapping it within their tubular structure, thus allowing the detection of the virus at lower concentration. Hence, it can be used to detect individuals with asymptomatic infections, reducing the possibility of transmission. In term of the usage, it is designed to be user-friendly. Trained non-medical workers and volunteers can conduct rapid tests, including self-administered ones, with minimal need for special equipment. This is particularly beneficial in regions that have restricted resources or limited access to specialized laboratories. With these advantages, it can have a huge impact on society, where they can save time as the rapid test kit only takes 20 minutes or less to get their results.

5.0 CONCLUSION

It is proposed that this invention could provide valuable diagnostics for the field of biomedical science, contributing to the initiative of reducing viral infections, particularly Influenza A. Consequently, the development of this fast, highly accurate, and sensitive test kit will facilitate the design of future kits to prevent future outbreaks.

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SISTEM PENGURUSAN PERPUSTAKAAN

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ABSTRAK

Seiring dengan kemajuan teknologi, adalah penting untuk menaik taraf semua sistem dengan cara yang mesra pengguna. Sistem Pengurusan Perpustakaan (LMS) ialah alat untuk menukar perpustakaan tradisional kepada perpustakaan digital. Pencarian buku di perpustakaan tradisional adalah prosedur yang menyusahkan, dan tiada pemeliharaan pangkalan data yang sesuai untuk kebimbangan kehilangan data. Pembangunan keseluruhan tugas adalah perlahan, dan ia tidak dapat disiapkan segera untuk membuat laporan. Ia juga mesti meneliti dan membatalkan data pinjaman buku pada masa yang sama. Bekerja di banyak kawasan pada masa yang sama adalah tugas yang memakan masa. LMS akan memudahkan kerja pustakawan. Peminjam buku tidak perlu beratur panjang untuk memulangkan buku lama dari perpustakaan. Pustakawan boleh mencari buku dengan cepat menggunakan LMS. Pustakawan boleh menambah/mengubah suai/mengemas kini/memadam buku dan data pengguna dalam LMS, yang mempunyai fungsi pencarian yang efektif. Mereka boleh menukar sebarang data dalam pangkalan data sebaik sahaja dia berada dalam sistem. Hanya pengguna yang dibenarkan boleh menggunakan sistem LMS; mereka mesti log masuk menggunakan id dan kata laluan mereka. Seperti yang dinyatakan sebelum ini, LMS dibina dengan cara yang mesra pengguna, membolehkan kami mencetuskan sistem dengan mudah. Kerana semua data disimpan dan diambil daripada pangkalan data SQL, ia secara semula jadi selamat. Kesannya, teknologi ini dapat menambah kaedah baru pada konfigurasi perpustakaan digital.

Kata Kunci: pangkalan data, perpustakaan, buku, data.

1.0 PENGENALAN

Kebanyakan semua transaksi buku dalam sistem perpustakaan semasa dilakukan secara manual, yang mengambil masa tambahan untuk proses seperti meminjam buku atau memulangkan buku, serta mencari ahli dan buku. Satu lagi kelemahan penting ialah menghasilkan senarai buku yang dipinjam dan buku yang tersedia di perpustakaan akan mengambil lebih banyak masa: kini, ia adalah prosedur sehari untuk mengesahkan semua data.

Jadi, selepas melakukan analisis kebolehlaksanaan, kami memutuskan untuk mengkomputerkan sistem pentadbiran perpustakaan manual. Sistem yang dicadangkan ialah sistem pengurusan perpustakaan yang automatik. Program kami membolehkan pengguna menambah ahli dengan cepat, menambah buku, mencari ahli, mencari buku, mengemas kini maklumat, meminda maklumat dan meminjam dan memulangkan buku.

Kita mesti menjejaki info dan mendapatkan maklumat tentang buku yang boleh diakses di perpustakaan yang kebanyakannya memberi tumpuan kepada fungsi asas dalam perpustakaan seperti menambah ahli baharu, dan buku baharu, menyediakan maklumat

baharu, mencari buku dan ahli, serta keupayaan untuk meminjam dan memulangkan buku. Ia mempunyai antara muka reka bentuk yang mesra pengguna dan diprogramkan dengan baik, serta fungsi carian, dan pelaporan yang mantap. Fungsi penajaan laporan sistem perpustakaan membantu mendapatkan tanggapan yang kukuh tentang buku yang dipinjam oleh ahli dan membolehkan pengguna menghasilkan salinan cetak.

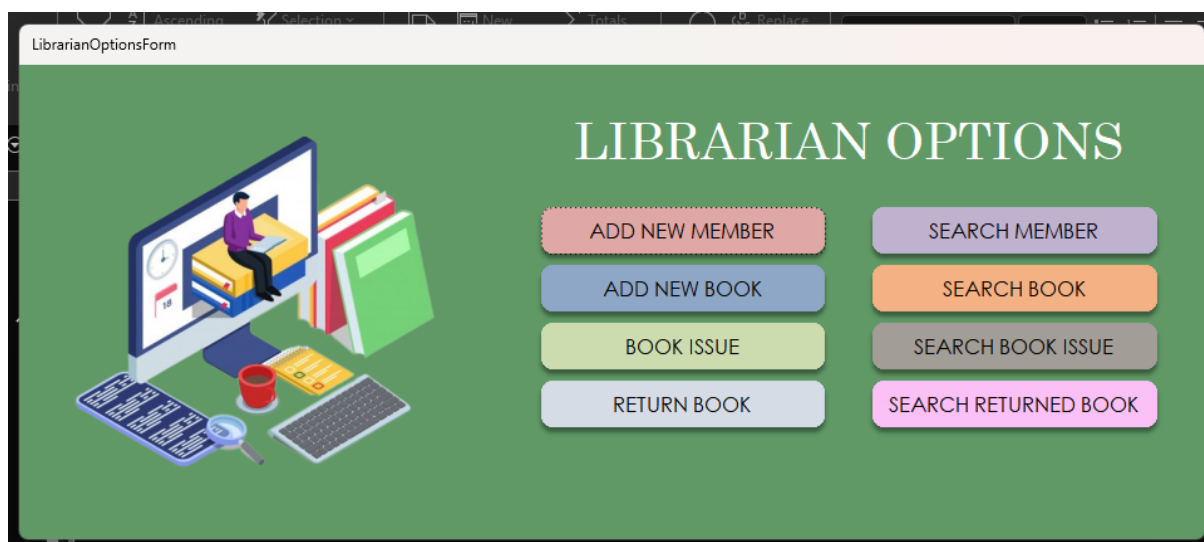
2.0 OBJEKTIF

Matlamat projek Sistem Pengurusan Perpustakaan adalah untuk mewujudkan sistem berkomputer yang berfungsi sepenuhnya untuk mengurus semua operasi harian perpustakaan.

1. Sistem menjimatkan masa dan tenaga pustakawan daripada prosedur kemasukan data manual.
2. Untuk menguruskan maklumat ahli seperti nama, alamat, nombor telefon, tajuk buku, tarikh pinjaman dan butiran tarikh tamat tempoh.
3. Sistem ini boleh mengurangkan kertas kerja dan kelewatan.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Pustakawan akan memulakan laluan sistem ini dengan memasukkan id pengguna dan kata laluan untuk log masuk dan mengakses keseluruhan sistem pustakawan. Pustakawan akan dibawa ke papan pemuka LMS serta-merta selepas selamat memasuki sistem.



Rajah 1 : Papan pemuka akan memaparkan lapan butang: tambah ahli baharu, cari maklumat pengguna, tambah buku baharu, cari maklumat buku, isu buku, pencarian isu buku, pemulangan buku, dan pencarian pemulangan buku.

Butang tambah ahli baharu membolehkan pustakawan mendaftar ahli baharu dalam perpustakaan. Tambahan pula, pustakawan boleh mencari maklumat ahli atau pengguna atau peminjam buku dengan mengisi nombor Kad Pengenalan mereka dalam kotak carian untuk mencari maklumat ahli.

Butang tambah buku baharu berfungsi untuk mengekalkan sistem semasa dan menambah buku baharu. Pustakawan juga boleh melakukan pencarian maklumat buku dengan mengisi no ISBN atau tajuk buku atau pengarang buku.

Selain daripada itu, pada isu buku, pustakawan akan mengendalikan proses peminjaman buku. Beberapa maklumat yang penting seperti maklumat buku, maklumat peminjam dan tarikh isu berlaku dan tarikh pemulangan buku akan dimasukkan ke dalam sistem. Pada masa yang sama, pustakawan boleh membuat pencarian tentang maklumat isu buku yang ada di dalam sistem.

Proses pemulangan buku adalah lebih kurang sama dengan proses sebelum ini iaitu proses peminjaman buku. Di pemulangan buku ini, jika peminjam lewat memulangkan buku pada tarikh yang telah ditetapkan maka, mereka akan didenda dengan bayaran tertentu yang akan dipaparkan oleh sistem. Proses pemulangan buku ini juga mempunyai fungsi pencarian dengan hanya memasukkan ID pemulangan buku yang sedia ada di dalam sistem.

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Sistem Pengurusan Perpustakaan boleh membantu anda beralih dengan lancar daripada perpustakaan yang diuruskan secara manual kepada perpustakaan automatik, menjadikannya lebih cekap dan berkesan.

Peranan utama Sistem Pengurusan Perpustakaan adalah untuk menyimpan semua data pada bahan yang ditemui dengan selamat dalam perpustakaan dalam storan data awan. Selain itu, ia membantu pengurusan dalam mengekalkan aliran sumber yang stabil di perpustakaan. Ini meliputi buku yang sedang digunakan, di rak atau dipinjam. Ia boleh menjejaki buku yang sepatutnya dipulangkan pada tarikh yang ditetapkan.

Memantau data harian tentang jumlah jilid yang dikeluarkan, tidak dikembalikan, dikeluarkan semula dan tersedia boleh menjadi tugas yang memakan masa untuk pustakawan. Sistem pengurusan perpustakaan meningkatkan keberkesanan perpustakaan dengan membolehkan semua tugas diselesaikan dengan satu klik, menjadikan kerja pustakawan lebih mudah.

Menguruskan permintaan dan ketersediaan buku boleh menjadi sukar bagi pustakawan. Dengan bantuan sistem pengurusan perpustakaan, mereka boleh mengesahkan rekod dengan pantas, melihat sejarah dan mengeluarkan buku dengan sewajarnya.

5.0 KESIMPULAN

Sistem Pengurusan Perpustakaan (LMS) ialah alat yang menukar perpustakaan tradisional kepada perpustakaan digital, menjadikan proses pencarian buku dan penyelenggaraan pangkalan data lebih mudah. LMS membenarkan pustakawan mencari buku dengan cepat, menambah, mengubah suai, mengemas kini atau memadam buku dan data pengguna, dan hanya membenarkan pengguna yang dibenarkan mengaksesnya. Ia dibina dengan cara yang mesra pengguna, membolehkan pencetus mudah dan menyimpan data dengan selamat dalam pangkalan data SQL.

LMS boleh membantu perpustakaan yang diuruskan secara manual kepada perpustakaan automatik, menjadikannya lebih cekap dan berkesan. Ia menyimpan semua data perpustakaan dengan selamat dalam storan awan dan membantu mengekalkan aliran sumber yang stabil, termasuk buku yang digunakan, di rak atau pinjaman. Ia juga menjejaki buku yang harus dipulangkan mengikut tarikh yang ditetapkan.

LMS meningkatkan kecekapan perpustakaan dengan membolehkan tugas diselesaikan dengan satu klik, menjadikan kerja pustakawan lebih mudah. Ia juga membantu mengurus permintaan dan ketersediaan buku, membolehkan mereka mengesahkan rekod dengan cepat, melihat sejarah dan mengeluarkan buku dengan sewajarnya.

PERANTI PENJAGAAN JARAK SOSIAL

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ABSTRAK

Pada akhir tahun 2019, seluruh dunia digemparkan dengan wabak COVID-19 yang telah meragut nyawa manusia hampir tujuh (7) juta secara global dan telah diistiharkan sebagai pandemik oleh Pertubuhan Kesihatan Sedunia (WHO) pada 11 Mac 2020. Walaupun kebanyakan negara telah mengistiharkan bahawa wabak ini telah berakhir dan tahap SOP dilonggarkan tetapi kita harus ingat bahawa virus ini masih lagi berada disekeliling dan tahap berjaga-jaga masih perlu diamalkan oleh setiap individu bagi mencegah daripada dijangkiti oleh wabak ini. Salah satu kaedah pencegahan adalah dengan mengamalkan penjarakan sosial yang bertujuan untuk melewati penyebaran dengan meminimumkan jarak hubungan dekat antara individu. Berdasarkan analisis dan pengamatan, kebanyakan individu mulai alfa dan lalai serta menganggap bahawa wabak ini sudah tiada tetapi sebenarnya virus ini masih wujud disekeliling kita dan masih banyak jangkitan serta kematian disebabkan wabak ini. Satu peranti yang dinamakan “Peranti Penjagaan Jarak Sosial” telah dicipta hasil daripada idea untuk menyelesaikan masalah kelalaian dan kealpaan masyarakat dalam menjaga jarak sosial yang boleh menyebabkan risiko dan kadar jangkitan kes COVID-19 sentiasa berlaku setiap hari. Peranti ini dibina dengan ciri rekabentuk yang berbeza, ringan, mesra pengguna dan mempunyai kepelbagaian penggunaannya (mudah dipakai gantung pada leher atau diletak atas meja) serta sesuai digunakan oleh setiap individu dalam komuniti, industri, pejabat, sekolah dan tempat awam yang memudahkan penggunaannya untuk berada di tempat awam tanpa rasa risau dari dijangkiti oleh virus COVID-19 kerana peranti ini mampu membantu memperingatkan setiap pengguna supaya sentiasa kekal berada pada jarak sosial yang selamat iaitu tidak kurang dari 1-meter. Peranti ini juga membantu golongan buta dan pekak untuk mengekalkan jarak hubungan dekat mereka dengan individu lain agar berada pada jarak sosial selamat dan membantu setiap individu daripada risiko dijangkiti oleh penyakit berjangkit yang lain. Peranti ini menggunakan unit kawalan Arduino Nano dengan gabungan bersama dua penderia masukan yang menggunakan teknologi pantulan ultrasonik dan sinaran inframerah yang berfungsi secara serentak untuk mengesan dan mengukur jarak hubungan dekat seseorang individu dengan individu lain melalui pengukuran masa pelepasan dan penerimaan gelombang yang dipantulkan dan juga mengesan gerakan dari perubahan tahap radiasi sinaran inframerah yang membolehkan penderia membezakan antara benda hidup (manusia) dengan benda pegun. Peranti ini beroperasi dengan menggunakan bateri bernilai antara 3.7V ~ 5V yang boleh dicas semula dan berkendali secara automatik apabila ianya dihidupkan. Pembaz dan L.E.D digunakan sebagai peranti keluaran yang memberi indikasi jika hubungan dekat antara individu kurang dari 1-meter. Peranti ini juga dilengkapi dengan O.L.E.D yang digunakan untuk memaparkan jarak antara individu (maksimum 4 meter – ukuran lalai), indikasi situasi dan bilangan kontak rapat. Kajian pemantaun terhadap pasaran yang dilaksanakan dan terbukti bahawa peranti ini masih belum ada dipasaran tempatan. Hasil soal selidik kepada pengguna juga membuktikan bahawa secara keseluruhan individu berminat dan menyukai peranti yang dihasilkan ini. Jadi dengan adanya peranti ini sedikit sebanyak membantu pengguna dengan meminimumkan jarak hubungan dekat antara individu dan memberi manfaat kepada manusia dalam mencegah penularan wabak COVID-19 ini.

Kata Kunci: Peranti Jarak Sosial, Jarak Sosial, COVID-19, Arduino Nano, Ultrasonik

1.0 PENGENALAN

Peranti Penjagaan Jarak Sosial ini direka khusus bagi memudahkan pengguna untuk berada di tempat awam tanpa rasa risau dari dijangkiti oleh virus COVID-19 kerana peranti ini mampu membantu memperingatkan setiap pengguna supaya sentiasa kekal berada pada jarak sosial yang selamat iaitu tidak kurang dari 1 meter. Ini berdasarkan analisis dan pengamatan, kebanyakan individu mulai alfa dan lalai serta menganggap bahawa wabak ini sudah tiada tetapi sebenarnya virus ini masih wujud disekeliling kita dan masih banyak jangkitan serta kematian disebabkan wabak ini. Peranti ini dibina dengan ciri rekabentuk yang berbeza, ringan, mesra pengguna dan mempunyai kepelbagaian penggunaannya (mudah dipakai, hanya perlu digantung pada leher atau boleh diletak di atas meja) yang sangat sesuai digunakan oleh setiap individu dalam komuniti, industri, pejabat, sekolah dan tempat awam. Peranti ini juga direkabentuk untuk membantu golongan kurang upaya (buta dan pekak) untuk mengekalkan jarak hubungan dekat mereka dengan kontak rapat. Peranti ini direkabentuk daripada gabungan dua penderia masukan yang menggunakan teknologi pantulan ultrasonik dan sinaran inframerah yang berfungsi secara serentak dengan mengukur jarak hubungan dekat antara individu melalui pengukuran masa pelepasan dan penerimaan gelombang yang dipantulkan dan juga mengesan gerakan dari perubahan tahap radiasi sinaran inframerah yang membolehkan penderia membezakan antara benda hidup (manusia) dengan benda pegun. Peranti ini beroperasi dengan menggunakan bateri bernilai antara 3.7V ~ 5V yang boleh dicas semula dan berkendali secara automatik apabila ianya dihidupkan. Pembaz dan L.E.D digunakan sebagai peranti keluaran yang memberi indikasi jika hubungan dekat antara individu kurang dari 1 meter. Peranti ini juga dilengkapi dengan O.L.E.D yang digunakan untuk memaparkan jarak antara individu (maksimum 4 meter – ukuran lalai), indikasi situasi dan bilangan kontak rapat.

2.0 OBJEKTIF

Peranti Penjagaan Jarak Sosial ini direkabentuk untuk memenuhi objektif seperti berikut:

- 2.1 Menghasilkan satu peranti yang boleh mengesan jarak hubungan dekat antara individu dan mengesan gerakan secara serentak.
- 2.2 Menghasilkan satu peranti yang memberi indikasi peringatan dalam bentuk bunyi dan indikasi cahaya kepada individu yang berada pada jarak hubungan dekat kurang dari 1-meter mengikut norma baharu.
- 2.3 Menghasilkan satu peranti yang boleh memaparkan jarak antara individu dan indikasi situasi secara serentak.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

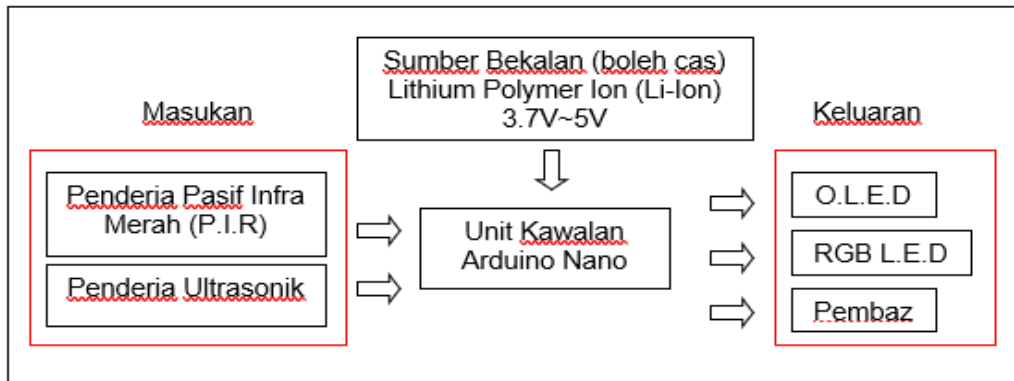
Pembangunan sistem Peranti Penjagaan Jarak Sosial yang dibina dibahagikan kepada tiga fasa utama iaitu reka bentuk perkakasan, reka bentuk perisian dan kerja-kerja pembangunan pengaturcaraan dalam mikropengawal serta kerja pemasangan projek. Pembangunan sistem yang digunakan ini bertujuan untuk mencapai setiap objektif yang ditetapkan dan menjawab pernyataan persoalan yang dikemukakan. Pembangunan sistem ini dimulakan dengan merekabentuk kerangka atau lakaran awal projek. Seterusnya proses merekabentuk dan mensimulasi litar dilaksanakan. Litar yang dibina dan disahkan bahawa ianya menghasilkan keluaran yang diperlukan akan digabungkan untuk membentuk satu sistem. Fasa pembangunan perisian juga dilaksanakan serentak dengan fasa pembangunan perkakasan. Pendekatan modul digunakan di mana program dibahagikan kepada beberapa modul dan setiap satunya diuji secara berasingan sebelum digabungkan untuk membentuk program kerja bagi menjadikan sebuah sistem yang berfungsi untuk Peranti Penjagaan Jarak Sosial yang

dibina ini. Setelah semua bahagian pembangunan perkakasan dan perisian telah berfungsi mengikut ketetapan yang diperlukan iaitu dengan memindahkan pengaturcaraan pada perkakasan, maka kerja-kerja penggabungan dan pemasangan projek dan pengujian kefungsiannya dilakukan untuk menjadikan sebuah Peranti Penjagaan Jarak Sosial yang boleh digunakan bagi mencapai objektif yang ditetapkan dan menyelesaikan pernyataan soalan yang ditimbulkan.

3.1 REKA BENTUK PERKAKASAN

3.1.1 RAJAH BLOK

Keseluruhan fungsi rajah blok berkaitan model ditunjukkan dalam Rajah 1.



Rajah 1: Rajah blok keseluruhan fungsi Peranti Penjagaan Jarak Sosial.

3.1.2 KOMPONEN

Setelah proses merekabentuk litar yang diperlukan oleh keseluruhan sistem bagi Peranti Penjagaan Jarak Sosial selesai. Pemilihan komponen yang sesuai dilakukan dengan teliti dan betul. Pemilihan ini penting disebabkan komponen yang dipilih hendak memenuhi setiap aspek seperti mana dalam skematik litar yang direka bentuk. Antara faktor yang dipertimbangkan adalah dari segi saiz, kadaran voltan dan arus, rupa bentuk serta kefungsiannya. Dengan berpanduan rajah blok pada Rajah 1 beberapa komponen yang digunakan dalam projek ini adalah seperti berikut:

3.1.2.1 ARDUINO UNO

Arduino Nano digunakan sebagai unit kawalan di dalam projek ini. Arduino Nano ialah papan mikropengawal berasaskan Atmega328P. Ia mempunyai set pin masukan/keluaran digital dan analog (yang boleh digunakan sebagai masukan penderia ultrasonik). Ianya dipilih kerana mempunyai pin digital yang mencukupi untuk disambungkan kepada peranti masukan dan keluaran serta bersaiz kecil yang sangat sesuai dengan reka bentuk kerangka projek. Selain itu, ianya boleh diprogramkan dengan mudah dengan menggunakan Arduino IDE melalui penyambungan kabel USB. Arduino Nano hanya memerlukan kuasa pengaktifan sebanyak 5V untuk beroperasi.

3.1.2.2 BATERI LITHIUM POLYMER ION

Bateri jenis Lithium Polymer Ion dipilih untuk menjadi sebagai bekalan kuasa di dalam projek ini kerana ianya boleh dicas semula dan bersaiz kecil di mana ianya sangat sesuai dengan rekabentuk yang ditetapkan dengan projek yang dibina ini. Ianya mempunyai nilai 3.7V, 200mAh yang mampu beroperasi hampir 6 jam bagi satu kitaran sebelum dicas semula.

3.1.2.3 PENDERIA ULTRASONIK

Penderia ultrasonik HC-SR04 dipilih sebagai salah satu peranti masukan yang digunakan untuk mengukur jarak antara individu. Ianya berfungsi berasaskan prinsip pantulan gelombang ultrasonik dan menukar isyarat gelombang yang dipantulkan kepada isyarat elektrik. Penderia ini boleh membaca jarak dari 2cm hingga 400cm (0.8 inci hingga 157 inci) dengan ketepatan

0.3cm yang menjadikan ianya mencukupi dan sesuai sebagai penderia untuk mengukur jarak 1-meter yang ditetapkan untuk projek ini bagi mengekalkan jarak sosial.

3.1.2.4 PENDERIA PASIF INFRA MERAH (P.I.R)

Penderia pasif infra merah (P.I.R) dipilih sebagai peranti masukan yang digunakan untuk mengesan pergerakan individu kontak rapat. Tujuan peranti ini digunakan juga untuk menyelesaikan masalah penderia ultrasonik untuk membezakan antara benda pegun dengan benda bergerak di mana dengan menggunakan teori ini maka Peranti Penjagaan Jarak Sosial yang dibangunkan ini boleh mengesan individu kontak rapat dengan lebih berkesan. Ianya berfungsi berasaskan prinsip perubahan tahap radiasi sinaran inframerah yang membolehkan penderia membezakan antara benda hidup (manusia) dengan benda pegun. Penderia ini boleh membaca jarak sehingga 700cm yang menjadikan ianya mencukupi dan sesuai sebagai peranti masukan.

3.1.2.5 PEMBAZ

Pembaz digunakan sebagai salah satu peranti keluaran yang akan memberikan isyarat dengan menghasilkan bunyi bip apabila isyarat elektrik diaruhkan kepadanya. Pembaz yang digunakan ini akan memaklumkan kepada individu yang menggunakan Peranti Penjagaan Jarak Sosial apabila terdapat kontak rapat yang berada pada jarak dekat iaitu kurang dari 1-meter.

3.1.2.6 DIOD PEMANCAR CAHAYA (RGB L.E.D)

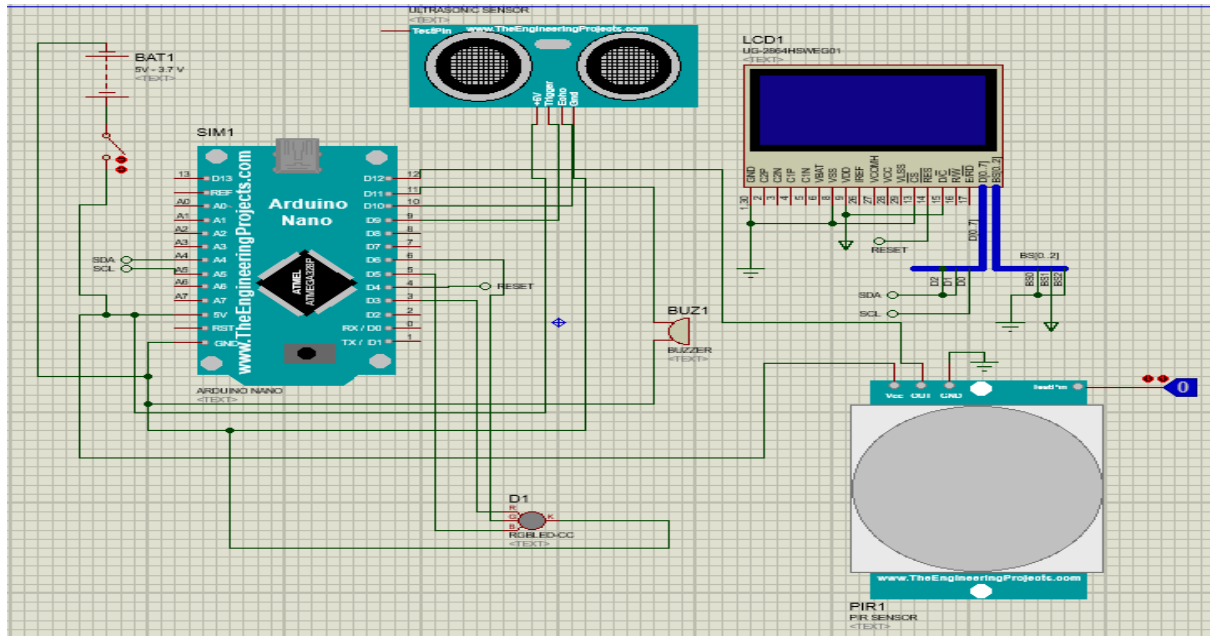
RGB L.E.D adalah diod memancar cahaya yang mempunyai tiga mod warna yang memancarkan cahaya untuk memberi indikasi situasi dan amaran kepada individu. RGB L.E.D digunakan kerana boleh menjimatkan ruang dalam rekabentuk projek ini dan boleh menghasilkan lampu merah, biru dan hijau untuk memberi petunjuk jarak dan indikasi situasi yang berbeza mengikut ketetapan aturcara yang telah dibangunkan.

3.1.2.7 SKRIN PAPARAN OLED

Skrin paparan OLED digunakan untuk memberi amaran secara visual dengan memaparkan situasi keadaan mengikut jarak yang dikesan oleh penderia. Selain itu, OLED juga digunakan untuk menunjukkan bilangan kontak rapat yang telah ditemui oleh individu yang menggunakan Peranti Penjagaan Jarak Sosial ini.

3.1.3 LITAR SKEMATIK

Rajah 2 yang ditunjukkan merupakan litar skematik yang digunakan untuk fungsikan Peranti Penjagaan Jarak Sosial. Litar skematik ini dihasilkan dengan menggunakan perisian Proteus.



Rajah 2: Litar skematik Peranti Penjagaan Jarak Sosial.

3.2 METODOLOGI PENJARAKAN SOSIAL

Metodologi penjarakan sosial dikhalayak ramai sebagaimana yang dijelaskan pada perwakilan bergambar seperti yang ditunjukkan dalam Rajah 3.



Rajah 3: Metodologi penjarakan sosial dikhalayak ramai.

3.3 REKA BENTUK PERISIAN ATAU PENGATURCARAAN

Reka bentuk perisian atau pengaturcaraan adalah satu set arahan yang mengarahkan bagi melaksanakan sesuatu tugas atau menyelesaikan masalah. Dalam reka bentuk perisian, struktur kawalan dihasilkan melalui algoritma supaya mudah untuk membentuk set arahan yang boleh mengawal dan fungsikan Peranti Penjagaan Jarak Sosial seperti yang diperlukan.

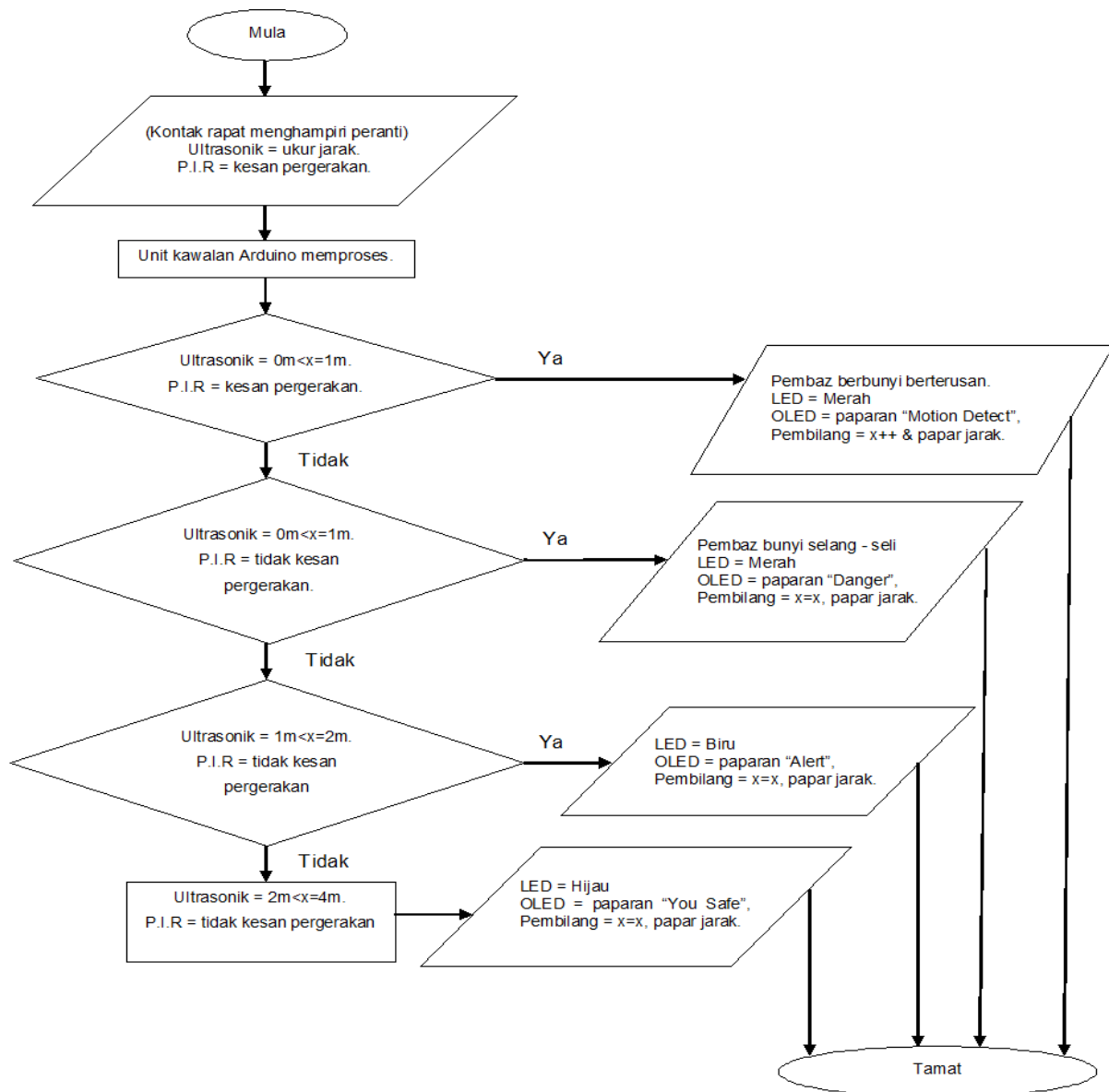
3.3.1 ALGORITMA KAWALAN

Jarak antara individu dengan kontak rapat diukur menggunakan penderia ultrasonik yang melibatkan prinsip pantulan ultrasonik dan bilangan kontak rapat yang bersemuka dengan individu yang menggunakan peranti ini boleh dibilang dengan menggunakan penderia pasif infra merah yang menggunakan prinsip radiasi sinaran infra merah. Set algoritma kedua-dua penderia ini akan menentukan sama ada jarak yang diukur adalah kurang dari 1-meter atau jarak di antara 1 meter hingga 2 meter ataupun jarak melebihi dari 2 meter. Selain itu, set algoritma kedua-dua penderia ini juga boleh menentukan bilangan kontak rapat yang

bersemuka dengan individu yang menggunakan peranti Penjagaan Jarak Sosial ini. Jika jarak kurang dari 1 meter, pembaz akan berbunyi bip yang panjang dan LED RGB akan memancarkan cahaya merah sebagai petunjuk jarak berisiko untuk dijangkiti serta paparan OLED akan memaparkan indikasi berisiko serta bilangan kontak rapat bersemuka akan dibilang. Jika jarak adalah di antara 1-meter hingga 2 meter, hanya LED RGB yang akan memancarkan cahaya berwarna biru sebagai petunjuk jarak berjaga-jaga dan OLED akan memaparkan indikasi berjaga-jaga tetapi bilangan kontak rapat tidak akan dibilang dan ditambah. Manakala jika jarak adalah melebihi dari 2 meter, hanya LED RGB sahaja yang memancarkan cahaya berwarna hijau dan OLED akan memaparkan indikasi selamat tetapi bilangan kontak rapat tidak akan dibilang dan ditambah. Akhir sekali jika jarak adalah kurang dari 1-meter tetapi penerima pasif infra merah tidak dapat mengesan pergerakan, pembaz akan berbunyi selang-seli dan LED RGB sahaja yang memancarkan cahaya berwarna merah tetapi pembilang tidak akan membilang atau menambah bilangan kontak rapat. Keseluruhan fungsi Peranti Penjagaan Jarak Sosial boleh dirujuk pada carta alir dalam Rajah 4.

3.3.2 CARTA ALIR

Carta alir keseluruhan fungsi Peranti Penjagaan Jarak Sosial ditunjukkan dalam Rajah 4.



Rajah 4: Carta alir keseluruhan fungsi Peranti Penjagaan Jarak Sosial.

3.3.3 PEMBANGUNAN PENGATURCARAAN DALAM MIKROPENGAWAL

Proses pembangunan pengaturcaraan dalam mikropengawal dilaksanakan setelah ketetapan kefungsi peranti telah memenuhi objektif yang ditentukan melalui penghasilan algoritma di dalam carta alir seperti yang ditunjukkan dalam Rajah 4. Proses pembangunan pengaturcaraan ini dimulakan dengan mengenal pasti fitur antara muka perisian pengaturcaraan yang digunakan dan Arduino IDE telah dipilih kerana mudah digunakan dan bersesuaian dengan papan mikropengawal yang digunakan serta ianya adalah jenis sumber terbuka yang mudah dimuat naik dari internet. Kemudian, proses membina pengaturcaraan berpandukan carta alir yang telah dibina dilaksanakan sehingga satu set kawalan berfungsi seperti mana yang diperlukan untuk memenuhi objektif pembinaan projek yang dilaksanakan. Antara sebahagian set kawalan pengaturcaraan untuk Peranti Penjagaan Jarak Sosial ini adalah seperti ditunjukkan dalam Rajah 5.

```
#include <Wire.h>
#include <Adafruit_GFX.h>
#include <Adafruit_SSD1306.h>

const int trigPin1=7;
const int echoPin1=8;
const int buzzer=11;
const int LED1=3;
const int LED2=5;
const int LED3=6;
const int OLED_RESET=4;
const int pirPin=12;
int pirStat=LOW;
int readPir = 0;
int counter = 0;

Adafruit_SSD1306 display(OLED_RESET);
void setup() {
  Serial.begin(9600);
  pinMode(trigPin1,OUTPUT);
  pinMode(echoPin1,INPUT);
  pinMode(buzzer,OUTPUT);
  pinMode(LED1,OUTPUT);
  pinMode(LED2,OUTPUT);
  pinMode(LED3,OUTPUT);
  pinMode(pirPin,INPUT);
  display.begin(SSD1306_SWITCHCAPVCC,0x3C);
  display.clearDisplay();
}
```

Rajah 5: Sebahagian set kawalan pengaturcaraan Peranti Penjagaan Jarak Sosial.

3.4 KERJA PEMASANGAN PROJEK

Kerja pemasangan projek dilaksanakan setelah pembangunan perkakasan dan perisian selesai dan hasil tersebut digabungkan untuk menghasilkan sebuah projek yang berfungsi secara keseluruhan dan mencapai matlamat objektif pelaksanaannya. Kerja-kerja pemasangan projek ini termasuklah kerja penyambungan, pengujian kefungsi dan ketahanan serta penganalisan dan penambahbaikan untuk menjadikan projek berfungsi dengan baik dan sempurna. Hasil akhir dan rupa bentuk sebenar Peranti Penjagaan Jarak Sosial adalah seperti yang ditunjukkan dalam Rajah 6.



Rajah 6: Rupa bentuk Peranti Penjagaan Jarak Sosial.

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

4.1 KEPUTUSAN

Secara keseluruhan peranti yang dihasilkan sesuai digunakan untuk mengukur jarak antara individu dengan kontak rapat dan memberi amaran tertentu mengikut algoritma yang telah diaturcarakan. Oleh itu norma penjarakan sosial juga dapat dipraktikkan dengan sewajarnya. Selain daripada itu, peranti yang dihasilkan juga sesuai untuk membilang kontak rapat yang bersemuka dengan individu yang menggunakan Peranti Penjagaan Jarak Sosial ini. Hasil dapatan dan ujian yang dilaksanakan, terbukti segala objektif yang ditentukan telah mencapai matlamatnya. Antara keputusan hasil daripada ujian yang dilaksanakan terhadap Peranti Penjagaan Jarak Sosial ini adalah seperti yang ditunjukkan dalam Rajah 7 dan Rajah 8.

Jarak dalam meter	0.5 meter	1meter	2 meter	3 meter	4 meter	5 meter
Boleh atau tidak boleh dikesan	Boleh dikesan	Boleh dikesan	Boleh dikesan	Boleh dikesan	Boleh dikesan	Tidak boleh dikesan

Rajah 7: Keputusan penderia ultrasonik mengukur jarak antara individu dengan kontak rapat.

Jarak dalam meter	0.5 meter	1meter	2 meter	3 meter	4 meter	5 meter
Pembaz berbunyi atau tidak	Berbunyi	Berbunyi	Tidak Berbunyi	Tidak Berbunyi	Tidak Berbunyi	Tidak Berbunyi

Rajah 8: Keputusan pembaz berbunyi atau tidak pada jarak tertentu.

4.2 PERBINCANGAN

Mengekalkan jarak sosial adalah strategi paling berkesan untuk mengelakkan COVID-19 daripada merebak. Akibatnya, Peranti Penjagaan Jarak Sosial yang dicipta ialah sistem pemantauan jarak sosial yang berkesan dan boleh digunakan di dalam dan di luar rumah, pejabat, sekolah untuk mengurangkan penyebaran penyakit berjangkit. COVID-19 ialah virus yang boleh ditemui di tempat awam. Selain daripada penyelesaian sedia ada, sistem yang dicadangkan boleh dipakai dan setiap individu yang menggunakan peranti ini akan kekal

berada dalam jarak yang selamat tanpa berhubung dengan orang lain yang boleh mengurangkan kadar penularan virus bukan sahaja COVID-19 tetapi juga yang lain. Peranti ini boleh dipakai dengan memasangkannya pada lanyard dan dipakai pada leher. Selain itu ianya juga boleh diletakkan di atas meja. Untuk menggunakan peranti ini bagi mengesan individu dan mengukur jarak antara individu dengan kontak rapat, ianya perlu dihidupkan terlebih dahulu dan seterusnya peranti akan mengesan kontak rapat dengan menggunakan peranti masukan. Selain dari itu, peranti ini dihasilkan berbeza dari segi rekabentuk, penderia yang digunakan, kod pengaturcaraan dan komponen keluaran yang menjamin keasliannya berbanding produk lain yang telah berada dipasaran. Kajian pemantauan terhadap pasaran yang dilakukan dan terbukti bahawa produk ini masih belum ada dipasaran tempatan. Melalui kajian, terdapat beberapa negara yang menghasilkan peranti seperti ini. Antara negara tersebut adalah seperti Italy, China, Jepun dan Amerika Syarikat. Kajian dan soal selidik kepada pengguna juga membuktikan bahawa secara keseluruhan pengguna bersetuju dan menyukai produk yang dihasilkan ini. Peranti yang dihasilkan dengan kos yang agak rendah ini boleh mengekang penularan wabak COVID-19 dari terus meragut nyawa individu. Jumlah kos penghasilan Peranti Penjagaan Jarak Sosial ini adalah seperti yang ditunjukkan dalam Jadual 1.

Jadual 1: Kos penghasilan Peranti Penjagaan Jarak Sosial.

Bil	Bahan	Kuantiti	Kos seunit (RM)	Jumlah (RM)
1	Arduino nano	1	22.90	22.90
2	Penderia Ultrasonik	1	3.20	3.20
3	Pembaz	1	2.50	2.50
4	Paparan OLED	1	19.00	19.00
5	Papan litar jalur (6x15cm)	1	1.60	1.60
6	Lipo Bateri 3.7V	1	8.00	8.00
7	Casing	1	2.40	2.40
8	PIR	1	3.80	3.80
9	LED 5mm Common Katod	1	1.00	1.00
Jumlah				64.40

5.0 KESIMPULAN

Jadi dengan adanya peranti ini sedikit sebanyak membantu pengguna dengan meminimumkan jarak hubungan dekat antara individu dan memberi manfaat kepada manusia dalam mencegah penularan wabak COVID-19 ini. Secara keseluruhannya, peranti dapat digunakan dengan tepat untuk mengesan individu dan mengukur jarak antara individu. Peranti akan segera maklumkan kepada individu yang menggunakan peranti ini apabila jaraknya kurang daripada 1-meter dengan kontak rapat.

iv-STEM KIT: STEM MAGIC BALLOON

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ABSTRACT

iV-STEM KIT: STEM MAGIC BALLOON is a high-impact product that was innovated to be used as a tool and teaching aid in the STEM field. This special product was created by a group of researchers from STEM volunteerism known as iV-STEM@VOLUNTEERS STEM because it was found that many primary school students are not interested in STEM-based subjects. Currently, the enrollment of students entering the Science stream has also not reached 60 percent. The iV-STEM KIT product that was created coincides with the current situation because this product can attract students' interest in subjects related to the STEM field. Not only that, this STEM KIT can make it easier for the school to prepare materials and carry out 'Hands-on Experience' activities with the students. This iV-STEM KIT product is produced using materials that are easily available around at a low cost. Parents can also save and only need to buy one unit of this iV-STEM KIT for one price without buying at a high cost for some necessary materials. This iV-STEM KIT has used a digitization method in the operation of using this STEM Kit. Bar codes have been provided to facilitate users to carry out this magic balloon activity. The users just need to scan the barcode and they will be able to see the video recording that has been prepared by the researchers on the official iV-STEM YouTube. This iV-STEM KIT is an innovative and creative teaching aid to increase the level of understanding of students in the STEM field because it is cheap and easy to do anywhere. This product has been commercialized to schools, parents and the public as a teaching aid for Science subjects in the STEM field.

Keywords: iV-STEM KIT, iV-STEM@VOLUNTEERS STEM, Hands- on Experience, teaching aids, STEM field.

1.0 INTRODUCTION

According to Kementerian Pendidikan Malaysia, numbers of students enrolling in Science, Technology, Engineering and Mathematics (STEM) decreases over time. The lack of exposure toward STEM subjects are known to be the main issue. Thus, a team of volunteers is needed to overcome this problem which uses descriptive statistical methods to evaluate the responds. The program that is run and STEM Kit that is produced has shown a positive impact and feedback in increasing the percentage enrolment in STEM subjects.

2.0 OBJECTIVE

STEM MAGIC BALLOON is a high-impact product that was innovated to be used as a tool and teaching aid in the STEM field. Besides, this product can attract students' interest in subjects related to the STEM field. Not only that, this STEM KIT can make it easier for the school to prepare materials and carry out 'Hands-on Experience' activities with the students.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

Students are given a synopsis of a prototype, an example of implemented activities by Volunteers STEM members as an initial guide. Observation skills and problem-solving skills good for each participant is required in completing each task by following the video provided on the Volunteers STEM YouTube channel. "Magic Balloon" is a high-impact product that is innovated to be used as a tool and teaching aids in the field of STEM. This Volunteers STEM Kit is produced using materials that are readily available around at a low cost. This is also one of an innovative and creative solution to increase the understanding of student in the field of STEM.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

All activities conducted online by the Volunteers STEM group with full use of the Volunteers STEM capsule module and Kit contributed to over 70% of the study findings from study respondents. The performance and feedbacks are shown in Figure 1.

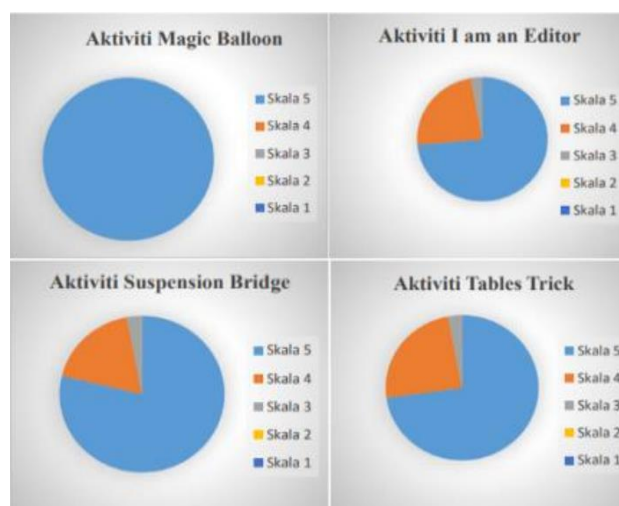


Figure 1: Performance and Feedbacks

Data analysis involves the process of cleaning data. Missing or incomplete data excluded in this analysis to avoid influencing the results as a whole. Thus, only 43 questionnaire forms out of 60 respondents analysed.

5.0 CONCLUSION

STEM is here to stay. Fun and playful, yet thoughtfully designed science experiment kits from Volunteers STEM members can help all of us teach the next generation about the incredible world and universe they live in. Most of the kids loved to play this kit, and it was a great hands-on way to learn.

3E MINI AQUAPONIC

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ABSTRACT

3E MINI AQUAPONIC is our project name which we want to introduce The Revolution for Digitalize Agriculture. The concept of this innovation is 3E which is Environmentally, Easy, and Empowering. Aquaponic is an agricultural technology that combines aquaculture which is activities of water animal husbandry with hydroponic activities which is plant cultivation without soil medium but by water medium like kale, spinach, and chili in an integrated system. The important element in aquaponics is fish, plant, and bacteria. All three elements will form a reciprocal cycle of beneficial or mutualistic symbiosis. Our country always faces a main problem which is water pollution which has caused serious problems in our country and harms the sustainability of our water resources. Besides, the other problem is excessive use in agriculture is the main cause of freshwater shortage and can increases pollution. The objective of this innovation is to overcome problems if water pollution occurs to maintain agriculture and irrigation and to introduce an aquaponic system. Besides, giving knowledge of the aquaponic process and its advantages. The advantages of aquaponic for the environment are water and nutrients are recycled in an economical closed-loop manner water, protects our rivers & lakes which is no harmful fertilizers run into the water, and soil conservation which it can grow six times more than traditional agriculture.

Keywords: Environmentally; Agricultural technology; Freshwater shortage; Aquaponic system; Harmful fertilizers

1.0 INTRODUCTION

Aquaponics is an agricultural technology that combines aquaculture with hydroponics activities in an integrated system. The important element in aquaponics is fish, plants, and bacteria will form a reciprocal cycle beneficial or mutualistic symbiosis.

2.0 OBJECTIVE

To overcome problems if water pollution occurs to maintain agriculture and irrigation. Besides, it also want to reduce water use in agriculture through the concept of the water cycle and as a teaching aid.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

Water pollution which has caused serious problems in our country and has a negative impact on the sustainability of our water resources. Excessive use in agriculture is the main cause of freshwater shortage and can increase pollution. Requirement by Johor State Government to be implemented at the school level. The concept for this project are combination aquaculture and hydroponic. The material for this project are aquaculture, hydroponic, wasted material.

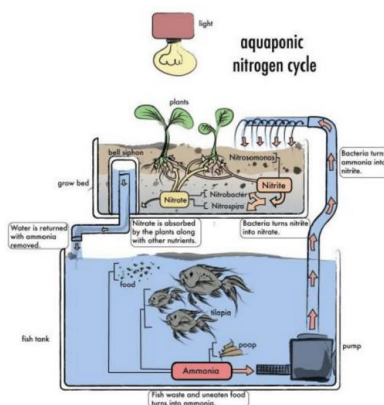


Figure 1: The process involved in Mini Aquaponic.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

Advantages of aquaponic techniques are the uses of 90% less water than traditional farming, can grow at any time of the year, in any weather even, anywhere on the planet. Besides, Aquaponics recycles water in the system can grow in seasons drought and in areas with little water.

Advantages of aquaponics for the environment are the water and nutrients are recycled in any economical closed-loop manner water. Besides, aquaponics can protects our rivers and lakes which is no harmful fertilizers run into water and the soil conservation which is it can grow six times more from traditional agriculture.

The novelty for this project are integrated vegetables and fish in one period, easy and cheap and agriculture in wherever.

5.0 CONCLUSION

The commercialization for this project are 3M Farmonic Modules and 3E Mini Aquaponic can be commercialized throughout Malaysia online or directly to the target group (community). Besides, by using 4P strategy which are product (3M Farmonic Module, 3E Mini Aquaponic), place (Housing Park, Apartment Community, Village, school, Surau community), price (Cheap) and promotion (Website, Facebook, Instagram, Target Group (Community), Teaching Center).

TYPOGRAPHY FOR BLIND SPOT SYNDROME PEOPLE

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ABSTRACT

This typography is created for people with blind spot syndrome and to help them. The problem statement for my invention is what are the effects this typographic design has on patients with blind spot syndrome. The goal of this study is to determine whether this typographic design can assist persons with blind spot syndrome in reading letters and numbers effectively. Furthermore, this goal is also to justify that persons with blind spot syndrome are not marginalised by people just because they cannot see well. For a more detailed explanation, this typeface is extremely useful to persons suffering from blind spot syndrome. This typeface features a geometric form with gaps or gaps in the letters and digits, as seen in the typography. This is due to the fact that the black dots in the blind spot patient's eyes can cover the empty area, allowing letters and numbers to be formed. They can see the letters and numbers being produced clearly. This could help the blind spot sufferers to see the letters and numbers with ease. Furthermore, the government may urge people with blind spot syndrome to be admitted into the workforce because they have no difficulty in term of physical and mental ability. In conclusion, I hope that this typeface design may aid individuals in need and people support each other so that the country does not suffer from unanticipated syndromes.

Keywords: Blind Spot syndrome, Typography, Black Dot

1.0 INTRODUCTION

This typography is created for people with blind spot syndrome and to help them.

2.0 OBJECTIVE

The goal of this study is to determine whether this typographic design can assist persons with blind spot syndrome in reading letters and numbers effectively. Furthermore, this goal is also to justify that persons with blind spot syndrome are not marginalised by people just because they cannot see well.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

For a more detailed explanation, this typeface is extremely useful to persons suffering from blind spot syndrome. This typeface features a geometric form with gaps or gaps in the letters and digits, as seen in the typography. This is due to the fact that the black dots in the blind

spot patient's eyes can cover the empty area, allowing letters and numbers to be formed. They can see the letters and numbers being produced clearly.

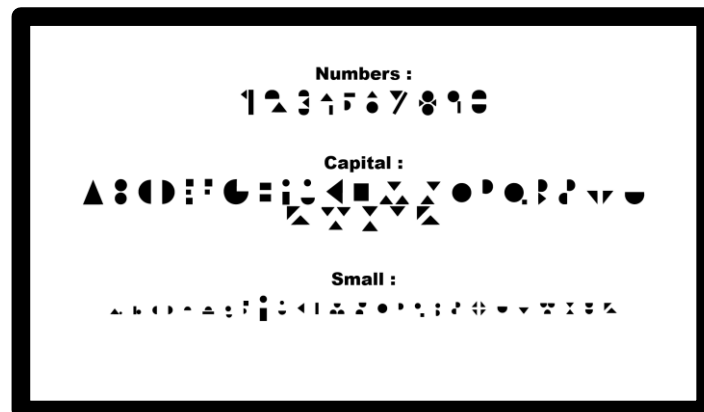


Figure 1

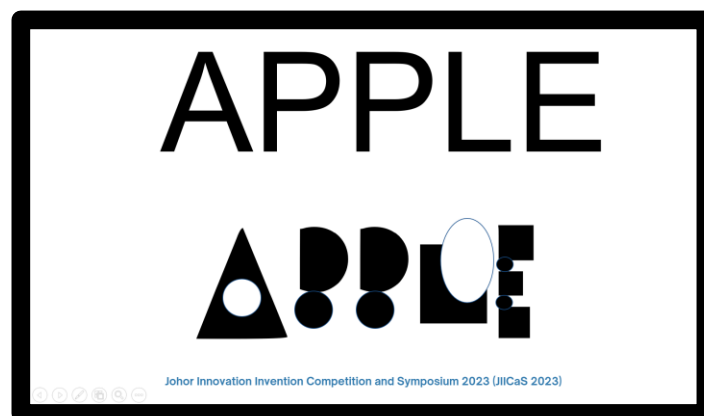


Figure 2

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

This could help the blind spot sufferers to see the letters and numbers with ease. Furthermore, the government may urge people with blind spot syndrome to be admitted into the workforce because they have no difficulty in term of physical and mental ability.

5.0 CONCLUSION

In conclusion, I hope that this typeface design may aid individuals in need and people support each other so that the country does not suffer from unanticipated syndromes.

MODEL PEMBANGUNAN INKLUSIF ASNAF MELALUI ZAKAT KEUSAHAWANAN DI TAMAN NEGARA LEDANG

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ABSTRAK

Zakat memainkan peranan penting dalam menolong orang miskin untuk memenuhi keperluan hidup dan meningkatkan taraf pendapatan asnaf ke arah yang lebih baik. Bagi asnaf fakir dan miskin progresif yang sihat dan mampu berdikari, suatu program khusus boleh di rangka dan direncanakan. Oleh itu, untuk mengeluarkan golongan ini daripada garis kemiskinan, aktiviti keusahawanan boleh dijadikan suatu pendekatan berimpak disamping memacu prestasi ekonomi sesebuah negara. Lazimnya hanya satu model pembangunan keusahawanan zakat digunapakai oleh setiap Majlis Agama Islam Negeri (MAIN) bagi semua latar belakang dan demografi asnaf. Sedangkan wujudnya jurang yang luas antara kawasan bandar dan luar bandar. Berbeza dengan di bandar, masyarakat luar bandar menghadapi cabaran ekonomi yang kurang dinamik, fasiliti terhad, penggunaan sumber dan daya tidak optimum dan sebagainya. Justeru, berasaskan kepada kelestarian prinsip filantropi Islam dalam memastikan kehidupan asnaf terjaga dan terbela, objektif kajian ini adalah untuk membangunkan suatu model keusahawanan asnaf yang inklusif dan khusus untuk dilaksanakan di kawasan luar bandar. Kajian berbentuk kualitatif ini dilaksanakan dengan menggunakan metode pengumpulan data melalui kaedah kepustakaan, dan temu bual responden. Data yang diperolehi dianalisis berasaskan metode induktif dan deduktif. Model yang dibangunkan ini berpotensi menjadi satu perintis dan panduan kepada seluruh agensi zakat di seluruh Malaysia.

Kata Kunci: Model, Pembangunan Asnaf, Keusahawanan, Taman Negara Ledang

1.0 PENGENALAN

Aktiviti keusahawanan adalah salah satu tiang utama yang mendorong pembangunan ekonomi komuniti tempatan. Institusi zakat menyediakan dana keusahawanan kepada asnaf melalui pengagihan bantuan zakat produktif, membolehkan usahawan asnaf menjalankan perniagaan mereka secara bebas dan memutuskan kitar kemiskinan, sama ada di kawasan bandar atau luar bandar. Walau bagaimanapun, menurut Rancangan Dasar Pembangunan Luar Bandar 2019, komuniti luar bandar menghadapi pelbagai cabaran, termasuk ekonomi luar bandar yang kurang dinamik, penggunaan sumber yang tidak cekap, dan kadar kemiskinan yang tinggi.

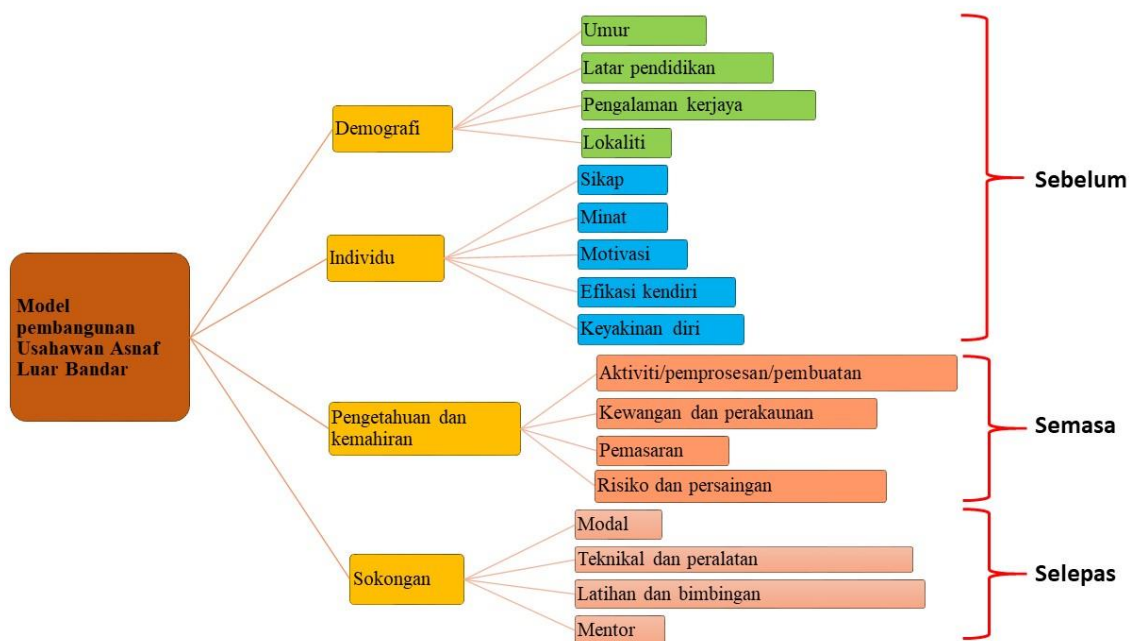
Usahawan asnaf juga termasuk dalam golongan yang berusaha untuk mengekalkan kestabilan ekonomi bagi diri mereka dan keluarga mereka dengan maksimumkan bantuan yang diberikan melalui zakat produktif. Selain itu, aktiviti keusahawanan dapat mencipta peluang pekerjaan dalam komuniti tempatan, serta pengagihan kekayaan yang adil dan saksama, selain daripada membangunkan ekosistem ekonomi yang lestari dan mampan

berdasarkan pembangunan aliran kewangan dalam masyarakat. Akibatnya, keusahawanan berkualiti sepatutnya membantu dalam mengubah masyarakat ke arah ekonomi dan masyarakat yang lebih baik dan lebih kompetitif. Ini turut memainkan peranan penting dalam pembangunan sosioekonomi global, termasuk di Malaysia, sebuah negara membangun.

2.0 OBJEKTIF

Walaupun terdapat banyak kajian mengenai keberkesanan zakat keusahawanan kepada usahawan asnaf, ia masih belum dapat mencapai matlamat bantuan zakat yang produktif sepenuhnya yang memutuskan kitar kemiskinan disebabkan oleh hadangan dan cabaran dalam mencapai dan mengekalkan matlamat pembangunan usahawan asnaf, terutamanya di kawasan luar bandar. Oleh itu, tujuan kajian ini adalah untuk mengenal pasti jenis program pembangunan keusahawanan zakat asnaf yang telah dilaksanakan oleh Majlis Agama Islam Johor (MAIJ) dan mengkaji faktor-faktor yang menyumbang kepada kejayaan program keusahawanan asnaf melalui temu bual dengan wakil-wakil MAIJ dan usahawan asnaf yang terlibat secara langsung dengan program yang dilaksanakan.

3.0 MODEL PEMBANGUNAN INKLUSIF ASNAF MELALUI ZAKAT KEUSAHAWANAN DI TAMAN NEGARA LEDANG



Model di atas adalah sebagai satu bentuk pendekatan yang bersifat inklusif kepada pembangunan asnaf melalui zakat keusahawanan khususnya di Taman Negara Ledang dengan melibatkan tiga (3) fasa utama iaitu sebelum, semasa dan selepas. Pembangunan usahawan asnaf luar bandar perlu melibatkan tiga (3) fasa berikut bagi memastikan asnaf yang dibantu melalui zakat keusahawanan mampu dilestarikan untuk jangka masa panjang. Justeru, dalam membangun usahawan asnaf luar bandar yang inklusif, empat (4) aspek yang perlu diteliti iaitu demografi asnaf, individu asnaf, pengetahuan dan kemahiran dan sokongan. Keempat-empat aspek yang dinyatakan dikelaskan pula kepada tiga (3) fasa utama.

Bagi fasa pertama iaitu sebelum, aspek demografi dan individu asnaf perlu dinilai sebagai aspek yang penting untuk penentuan agihan zakat keusahawanan kepada yang betul-betul berkeupayaan sebagai usahawan. Elemen umur, latar pendidikan, pengalaman dan kerjaya adalah perkara yang menjadi pengukuran dalam aspek demografi untuk menilai tahap kemampuan asnaf dalam dunia keusahawanan. Selain itu, bagi menilai tahap kebersediaan asnaf untuk menjadi usahawan luar bandar, elemen sikap, minat, motivasi, efikasi sendiri dan keyakinan pula adalah penting untuk dinilai oleh pihak MAIJ sebelum diberikan zakat keusahawanan. Fasa sebelum adalah fasa yang memerlukan pihak MAIJ meneliti dengan sebaiknya agar zakat yang diberikan tidak berlaku kerugian dan dapat digunakan secara optimum oleh asnaf yang betul-betul layak.

Seterusnya, pada fasa kedua iaitu fasa semasa adalah fasa di mana perlunya kerjasama dan keseimbangan di antara pihak MAIN dan asnaf untuk memperkukuh kemandirian usahawan asnaf luar bandar dari sudut pengetahuan dan kemahiran keusahawanan. Maka, pada fasa ini pemindahan ilmu dan kemahiran adalah satu keperluan untuk diberikan melibatkan ilmu berkaitan pembuatan, pemprosesan atau aktiviti yang bersesuaian dengan kemahiran usahawan yang dimiliki oleh asnaf yang mampu dan boleh diketengahkan. Selain itu ilmu berkaitan kewangan dan perakaunan juga adalah elemen yang sangat perlu diberikan penekanan agar aktiviti keusahawanan yang dijalankan dapat menjana keuntungan serta aliran tunai yang sistematik dan tersusun. Ilmu pemasaran juga perlu diterapkan kepada asnaf agar produk usahawan yang direka mampu untuk dikomersialkan sama ada di peringkat dalam negara mahupun luar negara sekiranya dapat dipasarkan secara maksimum. Akhirnya adalah berkaitan ilmu risiko dan persaingan keusahawanan yang turut menjadi cabaran kepada usahawan asnaf untuk sentiasa diberikan perhatian agar dapat dimitigasi dengan baik.

Tambahan daripada itu adalah melibatkan fasa terakhir dalam membangunkan usahawan asnaf luar bandar secara inklusif adalah fasa selepas. Maka aspek sokongan adalah satu *support system* yang sangat perlu kepada pembangunan usahawan asnaf luar bandar untuk kelestarian dan kemampuan asnaf itu sendiri sekaligus kepada pihak MAIJ. Elemen modal, teknikal dan peralatan, latihan dan bimbingan serta mentor adalah pelengkap kepada aspek sokongan pada fasa akhir ini dengan melibatkan banyak entiti luar untuk berkongsi kepakaran. Pembangunan usahawan asnaf inklusif adalah dinilai pada fasa selepas kerana ia melibatkan fasa kematangan keusahawanan kepada asnaf untuk mampu berdikari secara stabil dalam aktiviti perniagaan yang mampu menjadikan asnaf keluar dari kepompong kemiskinan. Oleh itu, secara rumusannya, aspek demografi, individu, pengetahuan dan kemahiran serta sokongan adalah penilaian utama kepada MAIJ untuk dilihat kepada asnaf dalam usaha membangunkan usahawan asnaf inklusif melalui zakat keusahawanan.

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Kajian ini sangat signifikan kepada:

1. Golongan Usahawan Asnaf Luar Bandar

Sektor Industri Kecil dan Sederhana (IKS) adalah penyumbang kepada pertumbuhan ekonomi pendapatan negara. Golongan usahawan asnaf merupakan salah satu daripada yang menjalankan kegiatan IKS. Namun, perkembangan usahawan terbantut apabila kesukaran mendapatkan bantuan khususnya di luar bandar. Oleh itu, kajian ini penting untuk dijalankan bagi memberi peluang kepada asnaf yang turut berada di luar bandar. Justeru, menjadi institusi zakat juga terlibat secara langsung dalam membantu mentransformasikan penerima asnaf kepada golongan pembayar zakat.

2. Majlis Agama Islam Negeri

Kajian ini akan dapat membantu Majlis Agama Islam Negeri dalam mengatur strategi untuk pembangunan usahawan asnaf dan merupakan projek jangka masa panjang. Selain itu, pihak

zakat juga dapat menyampaikan maklumat berkaitan perniagaan dengan meluas dengan golongan asnaf luar bandar. Bukan itu sahaja, pusat zakat juga dapat memastikan pengurusan pentadbiran sentiasa membantu dan bersedia untuk membantu menambah pendapatan asnaf menerusi bidang perniagaan.

3. Negara

Kajian ini mendokong usaha kerajaan dalam merealisasikan Dasar Keusahawanan Nasional 2030 seiring dengan Dasar Pembangunan Luar Bandar (DPLB) bertujuan untuk melahirkan masyarakat luar bandar yang sejahtera dalam pelbagai aspek kehidupan termasuk sosial ekonomi, budaya dan persekitaran tanpa mengira latar belakang bangsa, agama, status sosial, gender dan umur.

5.0 KESIMPULAN

Secara keseluruhannya, pembangunan usahawan asnaf perlu dirancang secara menyeluruh untuk memastikan keberkesannya dalam jangka masa panjang. Kajian ini mendapati bahawa program pembangunan asnaf yang dilaksanakan kini adalah hanya berorientasikan jangka pendek dan tidak mengendahkan asnaf luar bandar secara khusus. Sementara itu, keperluan usahawan asnaf luar bandar adalah berbeza sepenuhnya dari segi demografi, individu, sokongan, pengetahuan, dan kemahiran. Selain itu, institusi zakat umumnya dianggotai oleh individu dengan latar belakang agama yang mempunyai kebolehan terhadap aspek pengurusan dan perniagaan yang terhad. Oleh itu, institusi zakat perlu mendapatkan nasihat daripada pihak yang mempunyai kepakaran langsung dalam pembangunan keusahawanan.

GOOINO

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ABSTRACT

Gooino is a digital marketing mobile application (DMMA) that helps consumers to discover high-quality, locally produced goods and supports small-town entrepreneurs such as in Tellian, Mukah to market their goods digitally. Gooino aims to tackle many issues such as poor monthly income among Tellian entrepreneurs, difficulty in selling Mukah products across Sarawak and Malaysia, lack of exposure to Mukah's famous sago-based products with its advantages and nutrients, and communication barriers between non-Melanau Mukah speakers and Mukah people. The development of Gooino aims to assist Tellian entrepreneurs to earn extra income, promote local products widely not only in Sarawak, educate the public about the advantages and nutrients of sago-based products, and help the non-Melanau Mukah speakers to communicate with Tellian entrepreneurs. Gooino has a user-friendly interface that targets entrepreneurs as well as potential customers with features that allow entrepreneurs to register their businesses and update the information about their products while customers can communicate with the entrepreneurs directly for any inquiries. Three factors make Gooino a unique smartphone app: (1) Sarawak's first mobile app that promotes Mukah's distinctive tourist destinations and local items, (2) In partnership with CRAUN Research, this application will provide nutritional information for all Mukah entrepreneurs' products, notably those from Kampung Tellian, (3) This mobile app promotes the uniqueness of the Mukah Melanau Language, enabling customers to connect with local entrepreneurs and tourists who wish to visit Mukah but are worried about language barriers. Gooino will be released for free on the iOS and Android platforms. TVS, a Sarawak broadcaster, will also promote this application. This application registered its copyright (LY2021Q02670) and trademark (PSA20211058).

Keywords: digital marketing, mobile application, social entrepreneurship, Tellian entrepreneurs, location-based services.

1.0 INTRODUCTION

The emergence of the COVID-19 pandemic in early 2020 has sparked an uproar. The Malaysian government enacted the Movement Control Order (MCO) on March 18, 2020. Consequently, many local entrepreneurs especially in Tellian, Mukah could not carry out their business activities as usual. Most local entrepreneurs from the Tellian area do small business with a gross income of less than RM1500.

Therefore, Tellian entrepreneurs need to find suitable methods to continue their business activities despite the restrictions due to the movement control order. The method that can cater to the needs of entrepreneurs from the Tellian area is the use of digital marketing. The way entrepreneurs interact with their target market has been revolutionised by mobile applications, which provide them access to a substantial consumer base at their fingertips. Local business owners can leverage these platforms to expand their sales, visibility, and customer base. Correspondingly, they stand to benefit immensely from mobile applications for digital

marketing. The State of Sarawak's administration disclosed key initiatives and policy decisions to transform the State of Sarawak into a digital economy powerhouse during the first International ICT Infrastructure and Digital Economy Conference Sarawak (IDECS). Subsequently, this innovative product should be aligned with Sarawak's digital strategy which can significantly increase the state's economy, encourage innovation in business, and raise the standard of living for local business owners, particularly Tellian Entrepreneurs.

As one of the social entrepreneurship efforts, UiTM Sarawak Branch Mukah Campus would like to contribute to the nearest, surrounding community to reduce the financial burden borne and respond to the Sarawak state government's call to move together in further boosting the state's digital economy. Gooino was developed with the consideration of the imminent recession.

2.0 OBJECTIVES

This product was developed to achieve these objectives:

1. To promote local products widely not only in Sarawak.
2. To assist Tellian entrepreneurs in earning extra income.
3. To educate the public about the advantages and nutrients of sago-based products.
4. To help the non-Melanau Mukah speakers communicate with Tellian entrepreneurs.

3.0 METHODOLOGY

The workflow in developing Gooino was guided by the ADDIE model developed by Florida State University in 1975. By the time this extended abstract was written, the development progress of Gooino had reached the development stage (Stage 3 of the ADDIE model).

Stage 1: Analysis

Local entrepreneurs of Kampung Tellian were approached to analyze their needs and problems, especially those affected by COVID-19 through an entrepreneurial workshop. An entrepreneurial workshop called Program Pembangunan Produk EkoPelancongan & Pembangunan Mobile Apps (ProPPEMA) was conducted to: (1) develop ecotourism products for commercialisation, (2) provide basic knowledge and understanding to the entrepreneurial community about the functions and abilities to use mobile applications, (3) develop a Gooino mobile application that can be launched on various platforms such as iOS, Android, and Windows easily, and (4) produce rural entrepreneurs based on ecotourism.

During this time, a questionnaire (pre-test) was given to tap on their experience using existing mobile applications before using the Gooino application. The study sample involved 51 Tellian entrepreneurs. The justification for the selection of Tellian entrepreneurs is that the entrepreneurs are the target market that will utilise a mobile application still in the developing phase by UiTM Sarawak Branch, Mukah Campus. The instrument used was a survey with 5 Likert scales ranging from (1) strongly disagree to (5) strongly agree. The survey had four sections. Section A had seven items on the demographic profile. Section B had 13 items on experience in using the existing mobile applications. Section C had ten items on entrepreneurial knowledge, while Section D had ten on entrepreneurial skills. For this extended abstract, only findings from Section A and Section B will be reported to demonstrate how Gooino was developed based on the feedback received from Tellian entrepreneurs regarding their needs that are being met through the innovation of this Gooino application.



Figure 1: One of the workshops conducted in ProPPEMA which is a hands-on activity to take quality photos for the purpose of promoting the entrepreneur's products before uploading them on Gooino.

Stage 2: Design

Several decisions regarding the content of the application have been discussed in developing the application based on the needs that have been identified based on the Tellian entrepreneurs' feedback from the questionnaire.



Figure 2: A meeting was conducted with the collaborative partner of Gooino, CRAUN Research Sdn. Bhd.

Stage 3: Development

The Gooino application has been developed using the concept of No Coding/Low Coding where the application development process does not involve a complicated process and the content of the application can be easily changed according to current needs.

Gooino is scalable via links and does not require large storage space when installed on mobile devices.

Stage 4: Implementation

The next meeting/workshop with local entrepreneurs from Tellian Village will be organised to explain how to use Gooino.

This meeting will mark a pilot test for the use of Gooino.

Stage 5: Evaluation

After a period that will be set for local entrepreneurs to use this application, their experience using this application will be evaluated to continuously improve this application for the future.

At this stage, another questionnaire (post-test) will be given to find out their entrepreneurial experience after using the Gooino application.

4.0 RESULTS

51 Tellian entrepreneurs have responded to the pre-test questionnaire prior to using Gooino. The results from the pre-test distributed during the entrepreneurial workshop are reported below.

Table 1: Respondent's Gender

	Frequency	Percent
Male	16	31.4
Female	35	68.6
Total	51	100

Table 1 shows that most of Tellian entrepreneurs are female (68.6%) as compared to male entrepreneurs (31.4%).

Table 2: Respondent's Age

	Frequency	Percent
65 years old and above	1	2
55 years old and above	8	15.6
45 years old and above	11	21.6
35 years old and above	9	17.7
20 years old and above	18	35.3
19 years old and below	3	5.8
Not stated	1	2
Total	51	100

Table 2 shows that most of Tellian entrepreneurs are within the age of 20 to 35 years old (35.3%).

Table 3: Monthly Income

	Frequency	Percentage
RM500 and below	10	19.6
RM1000 and below	10	19.6
RM1500 and below	6	11.8
RM1501 - RM3000	10	19.6
More than RM3001	13	25.5
Not stated	2	3.9
Total	51	100

Table 3 reports the estimated monthly income earned by Tellian entrepreneurs prior using Gooino.

Table 4: Business Experience

	Frequency	Percentage
Yes	48	94.1
No	3	5.9
Total	51	100

Table 4 reveals that the majority (94.1%) of Tellian entrepreneurs have experience in business activities.

Table 5: Business Experience Period

	Frequency	Percentage
Less than 1 year	5	9.8
Less than 5 years	21	41.2
Less than 10 years	14	27.5
More than 10 years	5	9.8
More than 20 years	4	7.8
Not stated	2	3.9
Total	51	100

In relation to Table 4, Table 5 further indicates that most of Tellian entrepreneurs have business experience less than 5 years (41.2%).

Table 6: Types of existing mobile applications used.

	Frequency	Percentage
Facebook	2	3.9
Whatsapp	5	9.8
Others	1	2.0
Use 2 apps together	16	31.4
Use 3 apps together	6	11.8
Use 4 apps together	8	15.7
Use all types of apps	3	5.9
Not using any	10	19.6
Total	51	100

Before Gooino was introduced to the entrepreneurs, most of them used two applications together because they paired up Facebook and WhatsApp together (31.4%) as shown in Table 6.

Table 7: The level of dependency on existing mobile applications.

	Frequency	Percentage
Very low	8	15.7
Low	3	5.9
Moderate	14	27.5
High	12	23.5
Very high	14	27.5
Total	51	100

Table 7 shows that Tellian entrepreneurs have a moderate dependency to very high dependency on existing mobile applications. This finding gives relief to Gooino's developers as the Tellian entrepreneurs do not have digital resistance against mobile applications and thus it will be easier to promote the use of Gooino to them.

Table 8: Respondent's interest in using Gooino.

	Frequency	Percentage
Yes	43	84.3
No	8	15.7
Total	51	100

Table 8 shows that the Tellian entrepreneurs revealed their interest with the introduction of Gooino.

Table 9: Respondent's interest to pay if Gooino places subscription fees.

	Frequency	Percentage
Yes	23	45.1
No	28	54.9
Total	51	100

Despite their interest in Table 9, most Tellian entrepreneurs are reluctant if they were to pay any subscription fee when using Gooino. These entrepreneurs might be less inclined to pay for a subscription when they can get the same capability from other existing mobile applications without paying anything.

Table 10: Weaknesses to be improved from existing mobile applications.

Themes	Feedback
The weaknesses of existing mobile applications	• Limited features on WhatsApp to conduct online transaction (Entrepreneur 8). • A lot of competition (Entrepreneur 13). • Existing mobile applications such as Facebook cannot accept payments made by buyers (Entrepreneur 15). • There are not many bank options for online banking (Entrepreneur 18). • Many challenges in terms of brand, transportation is quite expensive, and underservice takes a long time (Entrepreneur 20). • My account got hacked and scammer issue (Entrepreneur 25). • User interface (UI) is very important (Entrepreneur 31). • Complex, not user-friendly (Entrepreneur 45).
The weaknesses of mobile application users	• I am less skilled (Entrepreneur 21). • To attract the attention of customers because they don't know how to promote sales items carefully (Entrepreneur 27). • Don't know how to promote sale items properly (Entrepreneur 29). • Require a lot of creativity (Entrepreneur 37).

The weaknesses of internet service

- The internet line factor needs to be upgraded (Entrepreneur 24).
- Internet power usage that needs to be upgraded (Entrepreneur 36).
- Internet access problem (Entrepreneur 38).
- Internet connection should be fast (Entrepreneur 43)

Identifying weaknesses in the existing mobile applications is needed as this will relate to performance expectancy. The entrepreneurs will have a solid intention to use Gooino if they:

- believe that using this new application would enhance their income (perceived usefulness),
- achieve valued outcomes such as their business performance and increased income (extrinsic motivation),
- enhance their business performance by using the new application (job-fit),
- perceive that using the new application is better than using the existing mobile applications (relative advantage),
- meet their outcome expectations in terms of boosting sales and increasing income by using this new application.

Based on the individual responses given by the entrepreneurs, their responses signify individual acceptance of existing mobile applications, which provide prescriptive guidance to the developers of Gooino to include and exclude certain features in this innovative application. The responses from the entrepreneurs are essential in ensuring that the developers can further develop Gooino which can suit the specific needs of the Tellian entrepreneurs.

5.0 DESCRIPTION OF INNOVATION

After undergoing Stages 1, 2, and 3 of the ADDIE model, a prototype of Gooino was produced. Gooino's features, functionality, usefulness, and practicality are shown as follows.

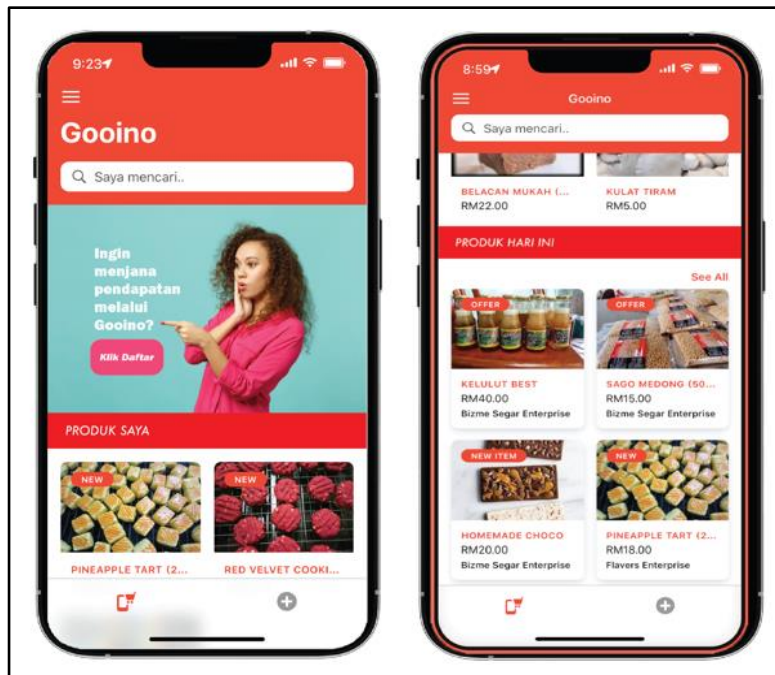


Figure 3: The user interface of Gooino.

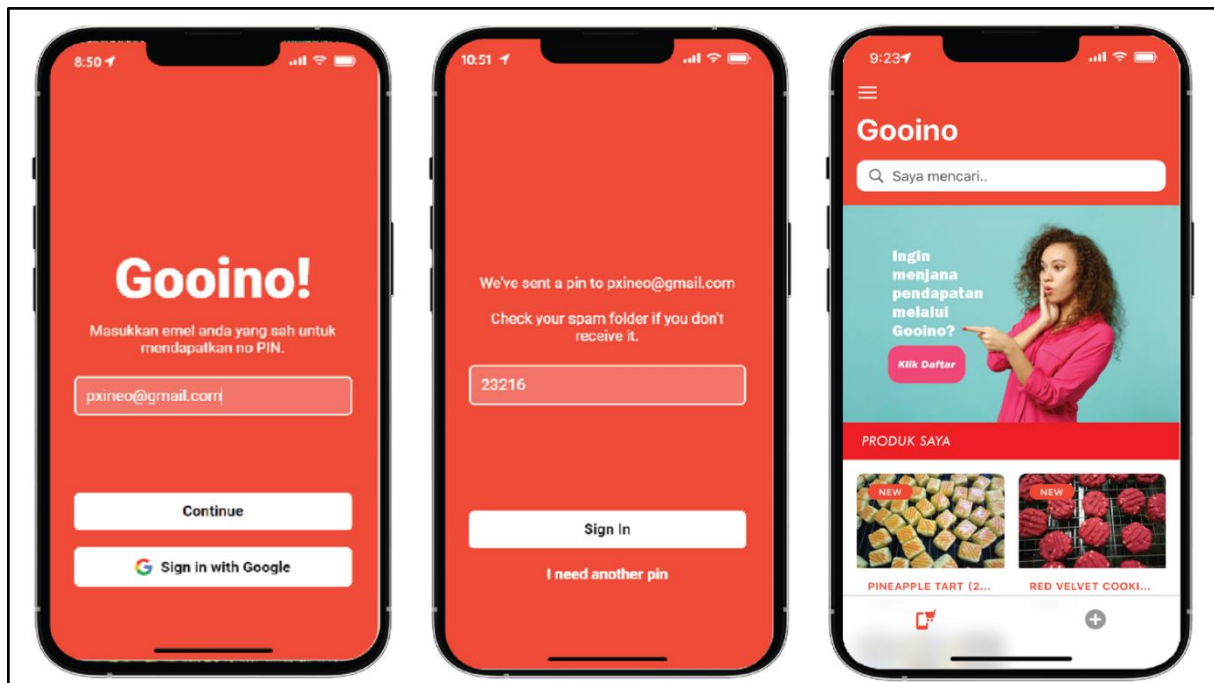


Figure 4: The entrepreneurs must complete a simple registration before they are able to use the application.

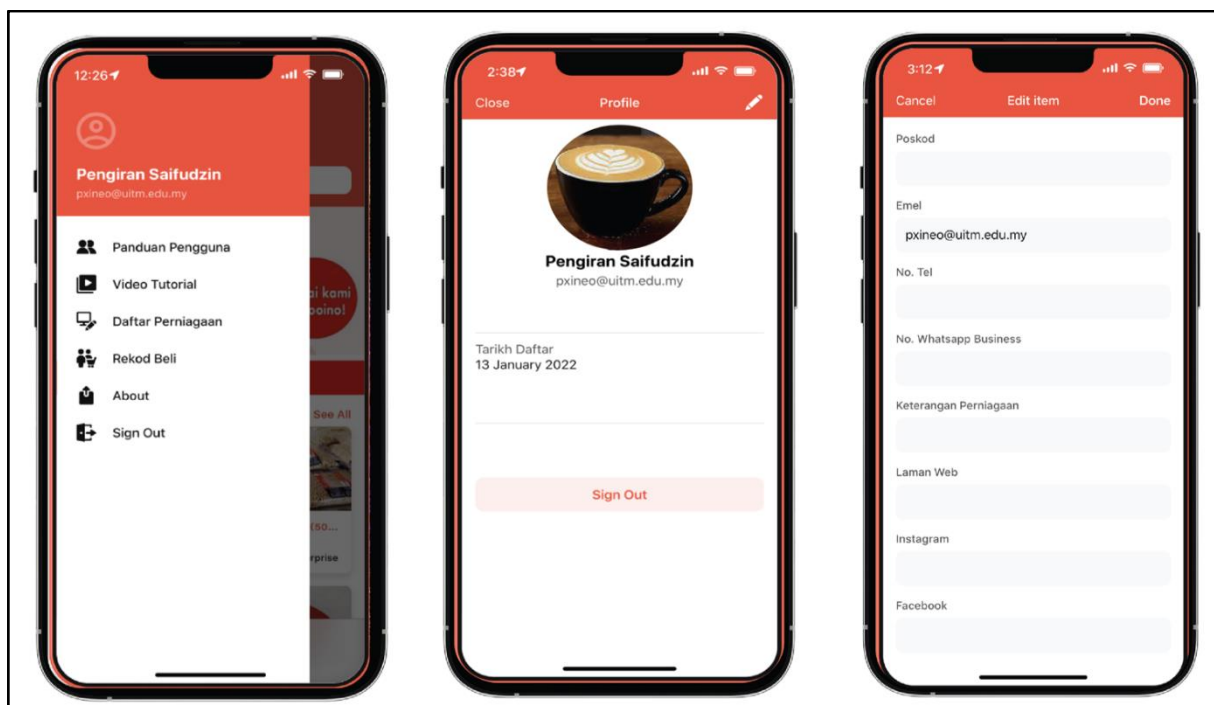


Figure 5: The entrepreneurs can update their profiles by providing their details so that they can be contacted easily by potential customers.

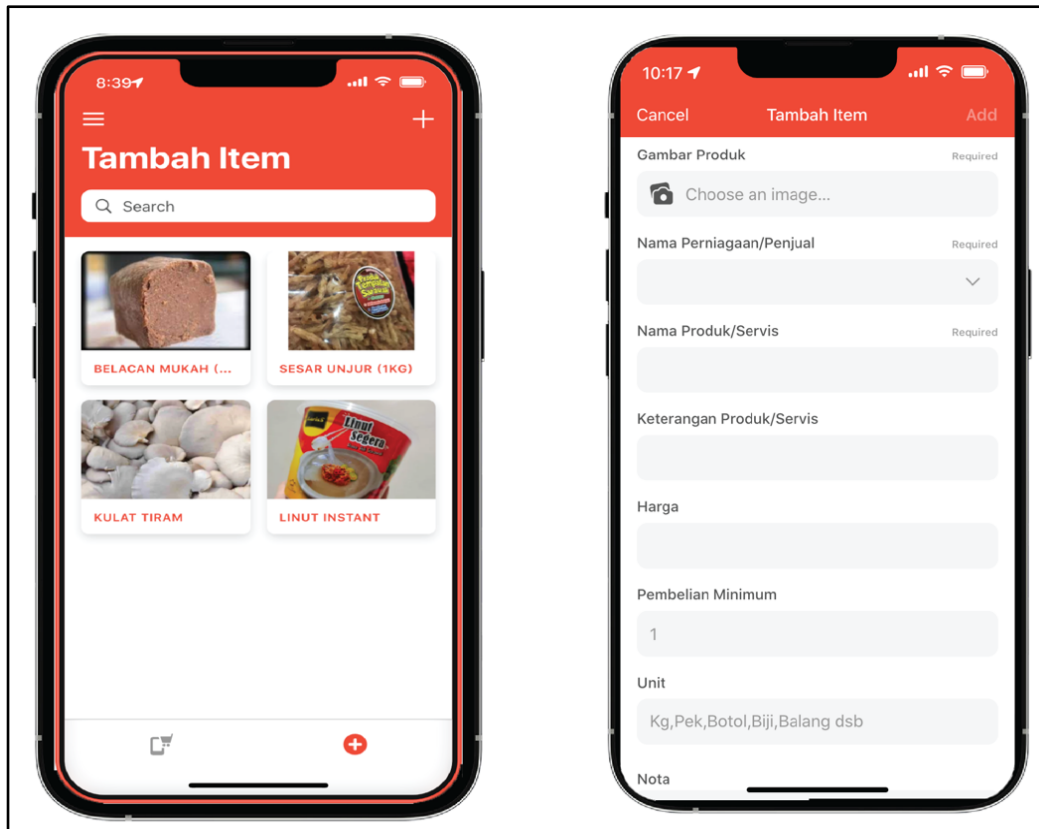


Figure 6: The entrepreneurs can inform the customers about their products by providing the information and the availability in stocks.

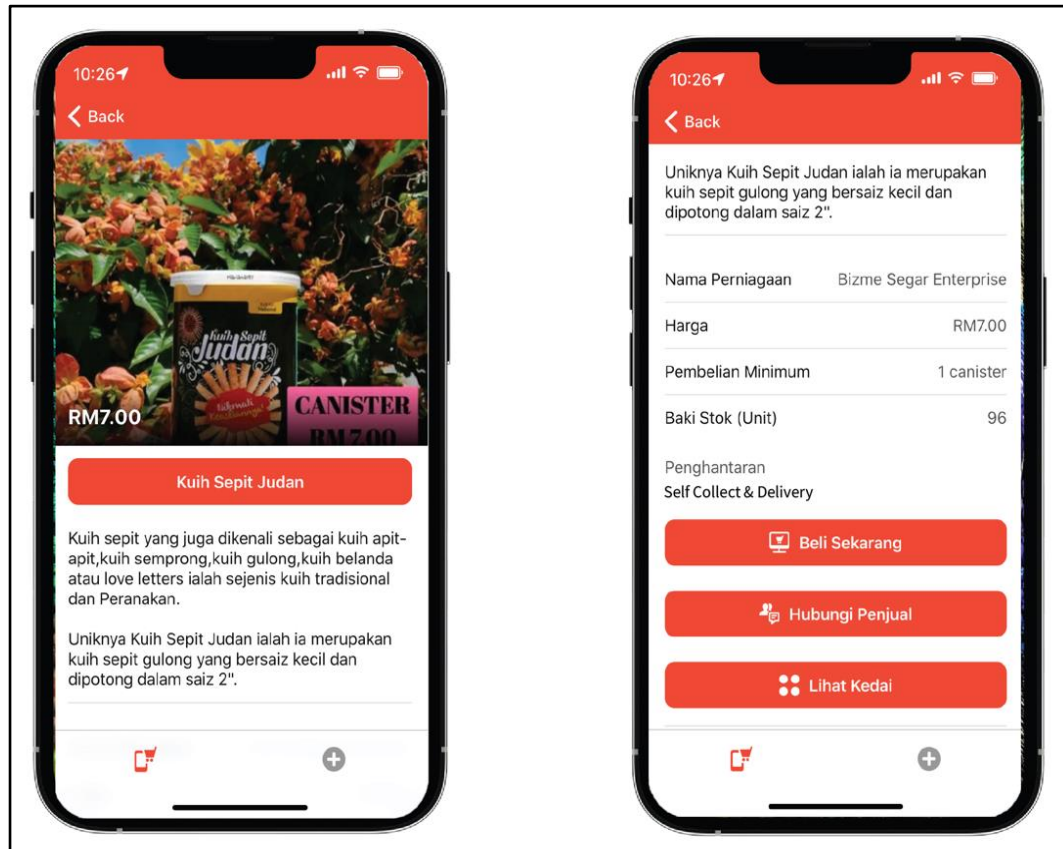


Figure 7: The sample of product description.

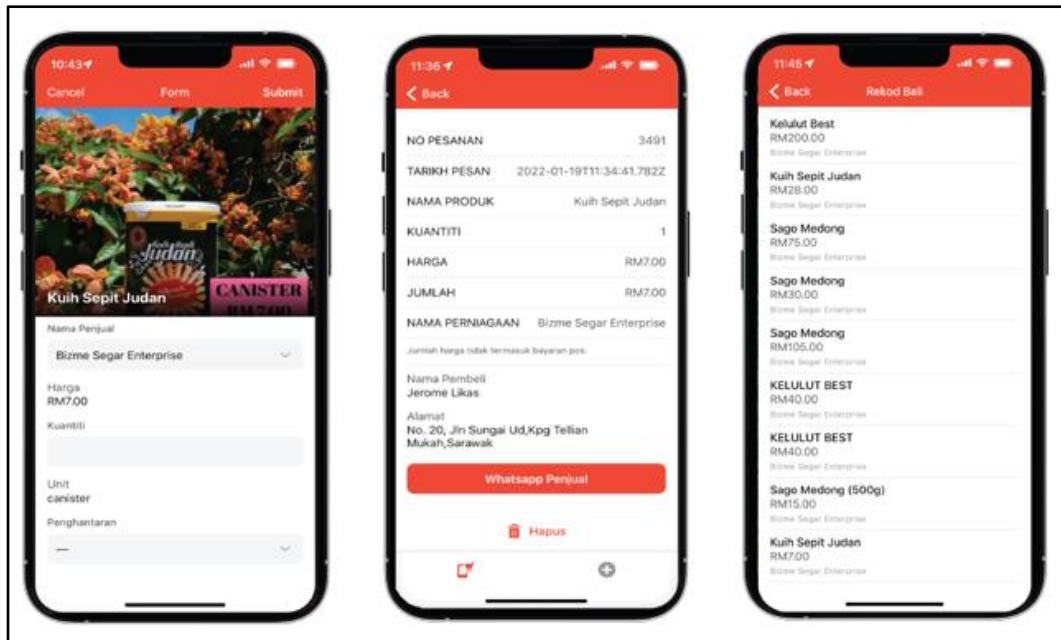


Figure 8: A demonstration of business transaction that took place on Gooino.

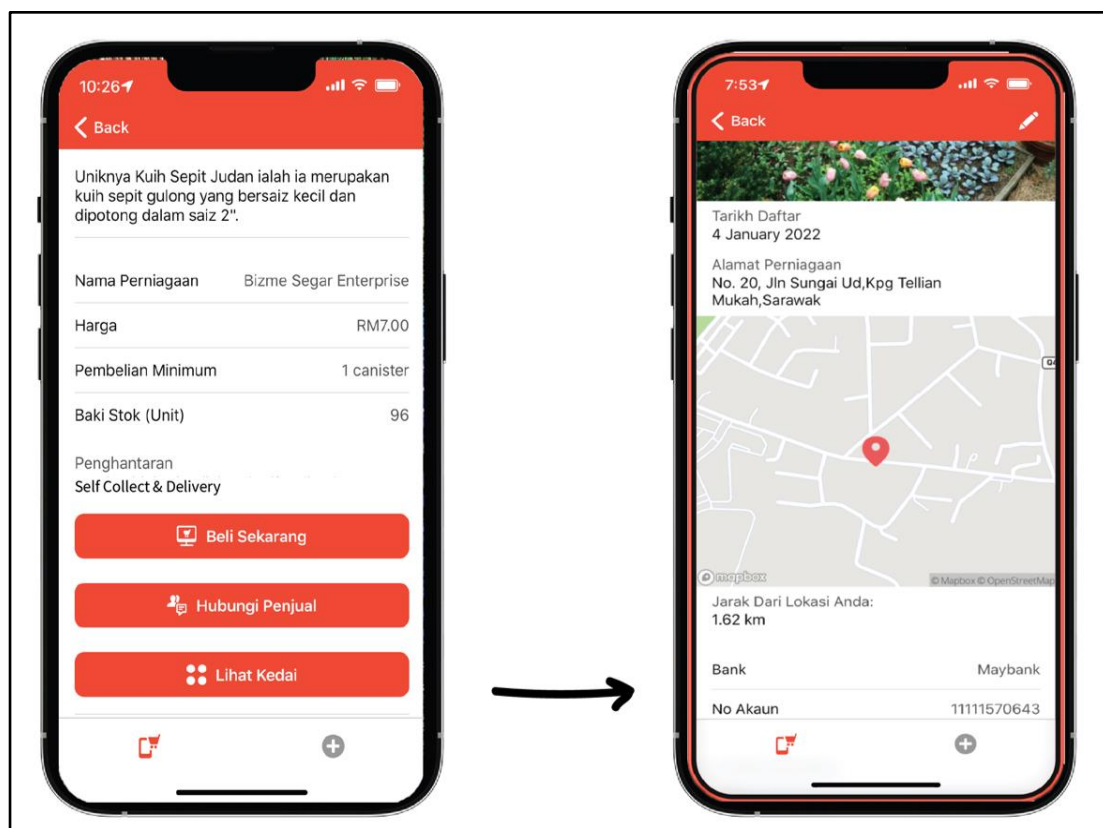


Figure 9: The customers can get the information about the store that sells local products.

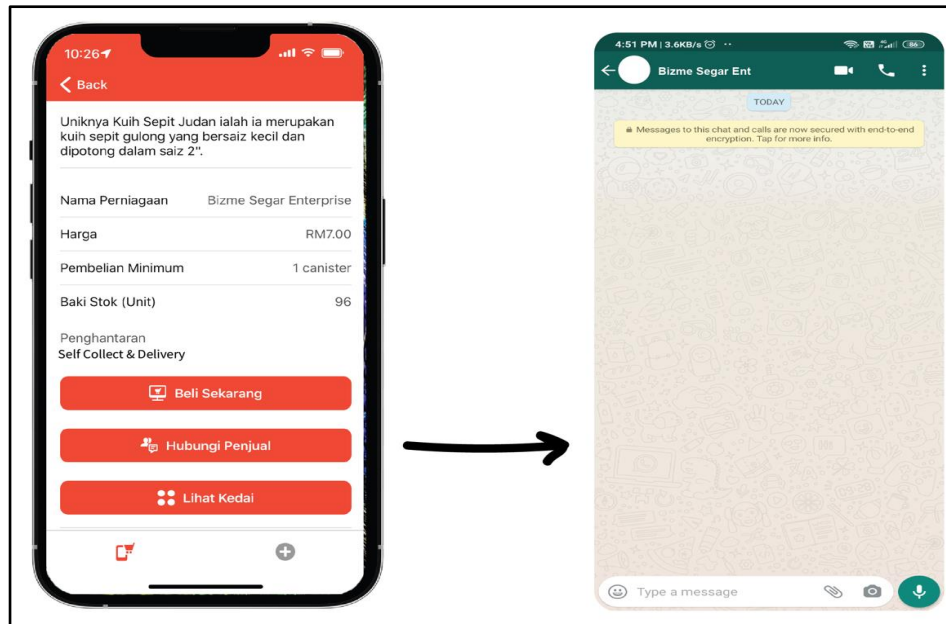


Figure 10: The customers can contact the entrepreneurs directly if they are interested to purchase the local products.

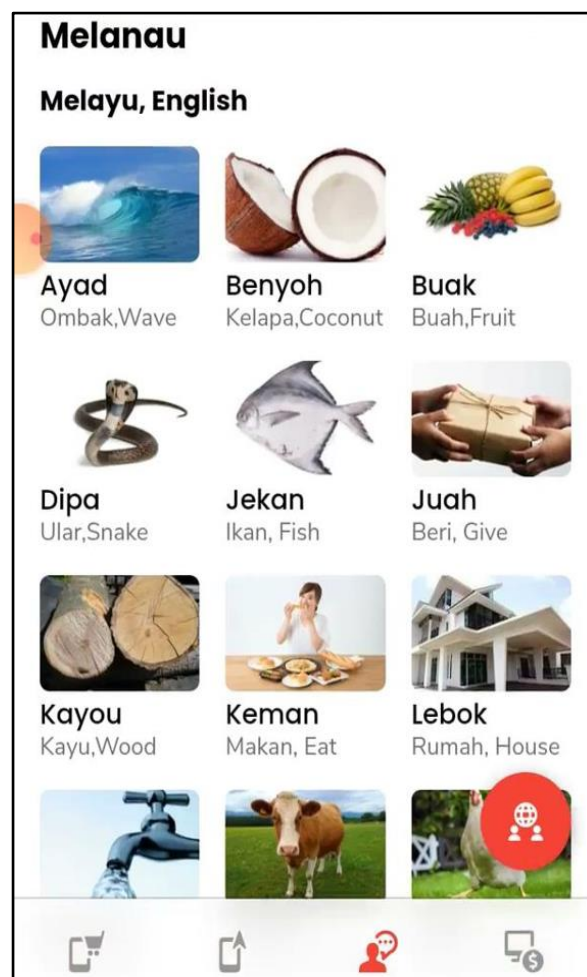


Figure 11: This application allows the non-Melanau Mukah language speakers to communicate with the local entrepreneurs.

6.0 CONCLUSION

The development of Gooino as demonstrated from Figure 3 until Figure 11 has indicated that the requests and issues raised by the Tellian entrepreneurs from the pre-test questionnaire have been addressed by considering their needs. Gooino is developed with the understanding that Gooino application should be user-friendly, it should include online payment facilities from various banks, it should be able to be operated despite unstable internet connection and it should prioritise the security of users' data. The development of Gooino is also a continuous collaborative effort between the university and Tellian entrepreneurs as they need proper teaching and guidance in using Gooino effectively. Honing creativity in marketing requires time and expertise before the implementation of Gooino can be maximised to boost the economy among the Tellian entrepreneurs. If the use of Gooino among Tellian entrepreneurs has proven successful, this effort will be extended to other entrepreneurs throughout Mukah before Gooino can reach other entrepreneurs in Sarawak. So, the plan to expand the use of Gooino will involve TVS, a Sarawak-based broadcaster, to promote this application. Gooino will also be released for free on the iOS and Android platforms in the future. This application has been registered for its copyright (LY2021Q02670) and trademark (PSA20211058).

PORTABLE WIRING BOX

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ABSTRAK

Proses melakukan pendawaian elektrik di *wiring bay* merupakan salah satu aktiviti amali di dalam kursus SPB 31203 (Sistem Elektrik Bangunan) bagi program Sijil Penyelenggaraan Bangunan. Pelaksanaan pendawaian elektrik juga merupakan salah satu skop kerja yang sangat penting dalam industri penyelenggaraan bangunan. Kerja-kerja pendawaian elektrik perlu disiapkan pada masa yang pantas tetapi cermat supaya kos pendawaian dan bahan dapat dimaksimumkan penggunaannya. Oleh itu, *Portable Wiring Box* di bangunkan untuk memudahkan pengguna agar kerja-kerja yang dilakukan dapat dibuat dengan lebih kemas dan selamat. Seterusnya, tujuan *Portable Wiring Box* ini dibuat untuk mengurangkan masalah-masalah di bengkel seperti peralatan dan wayar yang berselerak semasa proses pendawaian di *wiring bay*. Antara kelebihan produk ini ialah pengguna produk dapat menjimatkan tenaga, mengurangkan masalah wayar berselerak dan mengurangkan risiko kemalangan di dalam bengkel. Hasil daripada pengujian yang telah dijalankan dan maklum balas dari soal selidik yang telah diedarkan, produk ini berjaya memenuhi fungsi dan menjimatkan masa yang diperlukan dalam kerja pendawaian di dalam bengkel elektrik. Keseluruhannya projek ini berjaya mencapai objektif yang telah ditetapkan. Projek ini bakal mendatangkan banyak manfaat kepada pelbagai pihak sekiranya berjaya dibangunkan terutama pendawaian di bengkel dan pusat latihan. Projek ini juga mempunyai potensi untuk dikomersialkan dan dimajukan pada masa akan datang serta boleh ditambahbaik dari segi rekaan dan pemilihan bahan..

Kata Kunci: *Portable*, elektrik, *wiring*, bengkel.

1.0 PENGENALAN

Portable wiring box berfungsi untuk mengangkut barang-barang dan peralatan yang biasa diperlukan untuk membuat perkerjaan elektrik di bengkel elektrik. *Portable wiring box* cukup kuat dan kukuh untuk mengangkut barang dan peralatan elektrik. Selain itu, produk ini sangat mudah digunakan untuk mengangkut barang-barang elektrik tanpa harus mengeluarkan tenaga yang banyak untuk memindahkan barang-barang dan peralatan elektrik di bengkel.

Masalah yang sering berlaku di bengkel elektrik setelah adanya pengguna menggunakan alat dan bahan yang berada di dalam bengkel contohnya, seperti wayar berselerak peralatan yang tidak tersusun dengan kemas, dan sebagainya. Oleh sedemikian, pengguna sukar untuk membawa peralatan sekiranya tiada peralatan untuk dibawa di dalam bengkel elektrik sahaja. Terhasilnya *portable wiring box* ini dapat memberikan bengkel elektrik sentiasa berada dalam keadaan kemas dan teratur sekiranya pengguna menggunakan peralatan dan bahan dengan meletakkanya semula di dalam *portable wiring box* yang telah sedia ada.

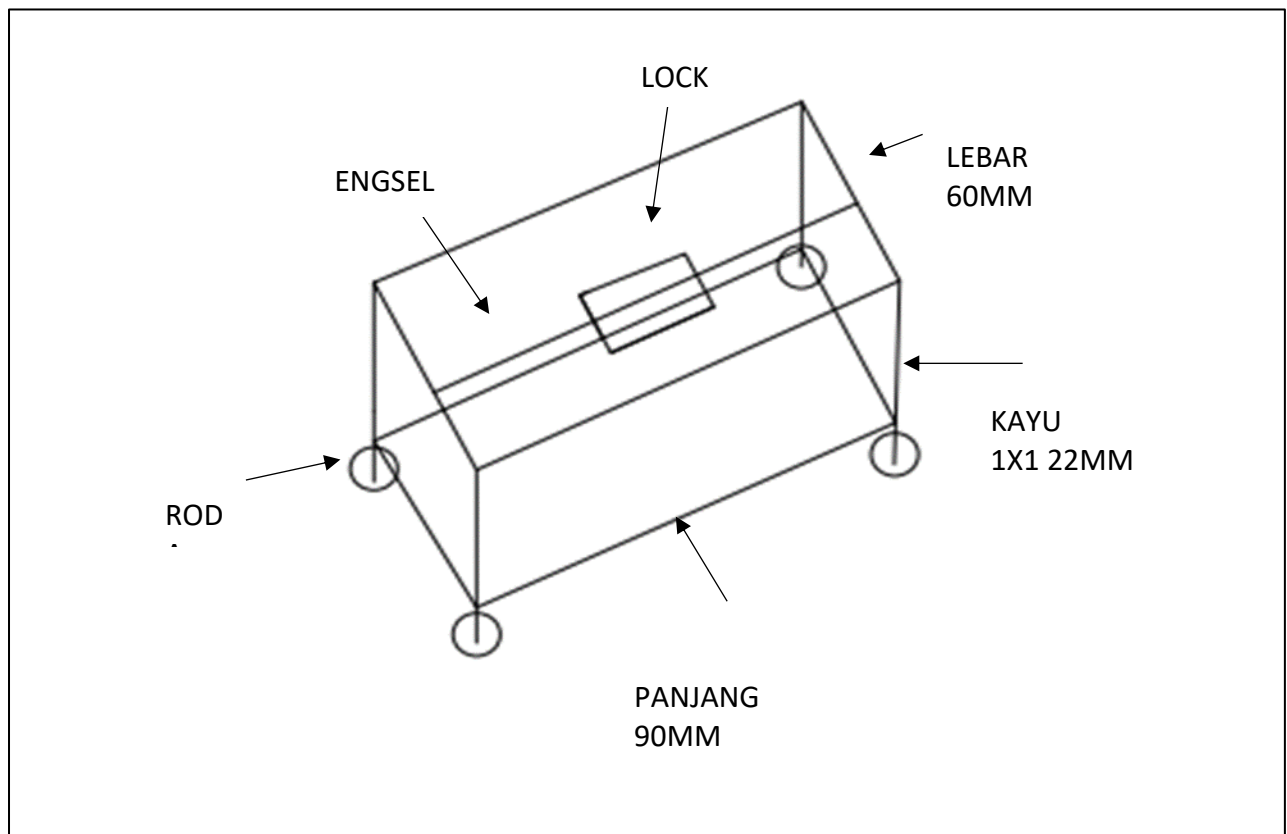
2.0 OBJEKTIF

Objektif membangunkan projek ini adalah seperti berikut;

- i. Mengubah suai box dengan menambah wayar dalam *portable box* untuk memudahkan kerja-kerja di dalam bengkel elektrik.
- ii. Merekabentuk projek *portable wiring box* untuk memudahkan kerja-kerja elektrik.
- iii. Menghasilkan produk *portable wiring box* dengan kemas dan rapi agar dapat digunakan dengan lebih lama.
- iv. Memudahkan pengguna untuk melakukan pekerjaan elektrik di bengkel elektrik.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Semua ahli kumpulan telah melakukan sesi sumbang saran untuk memilih tajuk projek yang akan dilaksanakan. Cadangan produk untuk projek ini telah dilakar untuk mendapatkan saiz prototaip yang akan dibangunkan. Seterusnya, lakaran produk dilukis menggunakan perisian AutoCad versi 2022.



Rajah 1: Hasil lakaran produk menggunakan perisian AutoCad versi 2022

Pelaksanaan projek terdapat banyak langkah yang perlu dijalankan contohnya menebuk lubang untuk mengikat roda, memotong kayu dan lain lain lagi. Berikut ialah proses kerja membuat produk bersertakan gambar yang telah diambil.



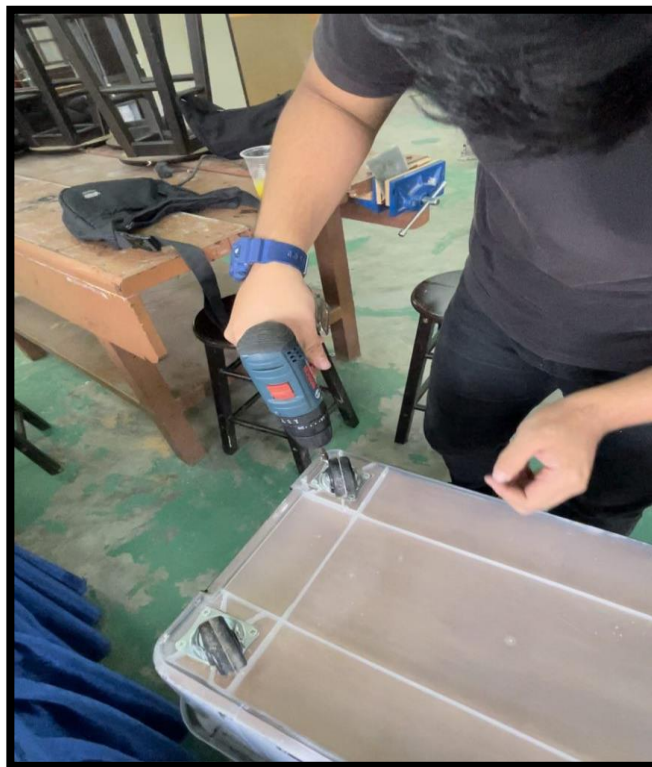
Rajah 2: Menebuk lubang pada bahagian bawah



Rajah 3: Memotong plywood untuk di jadi kan tapak.



Rajah 4: Menebuk playwood untuk membuat tempat roler wayar.



Rajah 5 Mengikat skru roda.



Rajah 6: Membuat roler wayar



Rajah 7: Mengecat projek yang telah siap

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Pelbagai impak dan hasil yang dapat diperolehi dengan terhasilnya inovasi ini. Kegunaan projek ini ialah bertujuan untuk memudahkan pengguna di bengkel elektrik untuk membuang kerja-kerja wiring dengan mudah. Selain itu, ia juga dapat menyimpan peralatan dan bahan dengan kemas agar barang tidak berselerak di merata-rata bengkel yang tidak akan mengakibatkan berlakunya kehilangan dan kececuaian. Dengan adanya portable wiring box ini, pengguna akan lebih mudah membuat kerja-kerja di bengkel elektrik

Soal selidik diberikan kepada kalangan pelajar dan pensyarah Sijil Penyelenggaraan Bangunan (SPB) bagi melihat maklum balas berkaitan projek ini. Seramai 41 orang responden terdiri daripada 75% lelaki dan 25% perempuan telah menjawab soal selidik yang diberikan. Dapatan yang diterima disimpulkan di dalam Jadual1 di bawah

Jadual 1: Hasil dapatan daripada soal selidik

Bil	Dapatan	Ya (%)	Tidak (%)
1	Produk ini mudah untuk digunakan	97.6	2.4
2	Produk ini dapat menjimatkan wayar	92.7	7.3
3	Produk ini menjimatkan masa untuk membuat kerja elektrik	97.6	2.4
4	Produk ini dapat mengurangkan wayar berselerak	95.2	4.8
5	Produk ini tidak pernah dilihat di mana mana	85.4	14.6

5.0 KESIMPULAN

Keseluruhannya inovasi ini berjaya mencapai objektif yang telah ditetapkan oleh kumpulan. Projek ini bakal mendatangkan banyak manfaat kepada pelbagai pihak sekiranya berjaya dibangunkan. Projek ini juga mempunyai potensi untuk dikomersialkan dan dimajukan pada masa akan datang. Pengalaman yang berharga dapat diambil semasa menghasilkan produk seperti semangat berpasukan untuk menghasilkan suatu produk dan perlu menggunakan perisian AutoCad untuk membuat reka bentuk yang lebih efektif. Kesimpulannya, kita perlu merancang dengan lebih terperinci untuk menghasilkan sesebuah projek yang kita ingin lakukan supaya ianya mendatangkan hasil yang cantik dan berfungsi dengan baik

VOBcal: VARIANT OF BRACKETING METHOD CALCULATOR

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ABSTRACT

A variety of real-world problems can be in the form of root findings or non-linear equations. The solution to such non-linear problems can be obtained either analytically or numerically. However, analytical methods are quite complicated and difficult to be conducted. Although the numerical method offers fast and less time-consuming solutions, it requires initial guesses and repetitive calculations. Thus, there is a need to simplify all the processes to enhance the efficiency and reduce human error. Generally, there are a lot of existing and available mathematical software that can be used to solve non-linear problems. However, some consumers are always concerned about the cost of the license. Therefore, the use of a graphical user interface, which can provide a user-friendly method of entering parameters and presenting results, is one approach to solve this. The VOBcal, also known as the Variant of Bracketing method calculator, is a standalone application developed using MATLAB App Designer that uses bracketing methods to determine the root of a function. The interface of VOBcal contains five different variants of bracketing methods which are Bisection, Modified Bisection Algorithm, Trisection, and Regula Falsi programmed together with MATLAB built-in function named fzero. VOBcal can be used as a mathematical tool for research and development (R&D) purposes as well as providing effective learning and educational support for academics and researchers.

Keywords: Bracketing method, root finding problem, MATLAB-GUI, non-linear

1.0 INTRODUCTION

Finding the zero-values or roots of equations is important for many real-world fields including engineering, economics, physics, chemistry, and biology. The root findings problem could be solved directly by solving $f(x) = 0$ through factorization. However, factorization method or other analytical methods work well for linear functions, but not for nonlinear ones. Nonlinear functions are more complex and often require numerical methods to approximate their roots. Although numerical methods offer fast and less time-consuming solutions, they require initial guesses and repetitive calculations. Therefore, there is a need to simplify all the processes to enhance efficiency and reduce human error. One approach to solve this is by using a graphical user interface (GUI), which can provide a user-friendly method of entering parameters and presenting results. While there is many existing mathematical software available that can be

used to solve non-linear problems, some consumers are always concerned about the cost of the license.

There is different numerical algorithm for root-findings, and they can be classified into two main categories: bracketing methods and open methods. Bracketing methods are based on the idea of enclosing a root within an interval and then reducing the size of the interval until the root is approximated within desired accuracy. Open methods, on the other hand, are based on the idea of generating a sequence of points that converge to a root, without necessarily having an initial interval that contains the root. Both types of methods have advantages and disadvantages, depending on the properties of the function and the desired accuracy. However, open methods do not always converge but it is known to give faster solutions.

For this reason, our project will focus on bracketing methods namely Bisection, Modified Bisection Algorithm, Trisection, and Regula Falsi to solve non-linear functions.

2.0 OBJECTIVE

The objectives for this project are as follows:

- i. To develop a standalone application to approximate the root of functions using some variants of bracketing methods.
- ii. To provide a user-friendly means of inputting parameters and displaying results.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The VOBcal is an acronym for the Variant of Bracketing method calculator. It is a standalone application developed using MATLAB App Designer to calculate the root of a function by utilizing bracketing methods. MATLAB apps designer is a tool to create GUIs for the MATLAB applications and have a packaging and sharing option that enable to export the app as a standalone executable or a web app. The interface of VOBcal contains five different variants of bracketing methods which are Bisection, Modified Bisection Algorithm (Tanakan, 2013), Trisection, and Regula Falsi programmed together with MATLAB built-in function named fzero. Figure 1 below shows the complete interface for VOBcal.

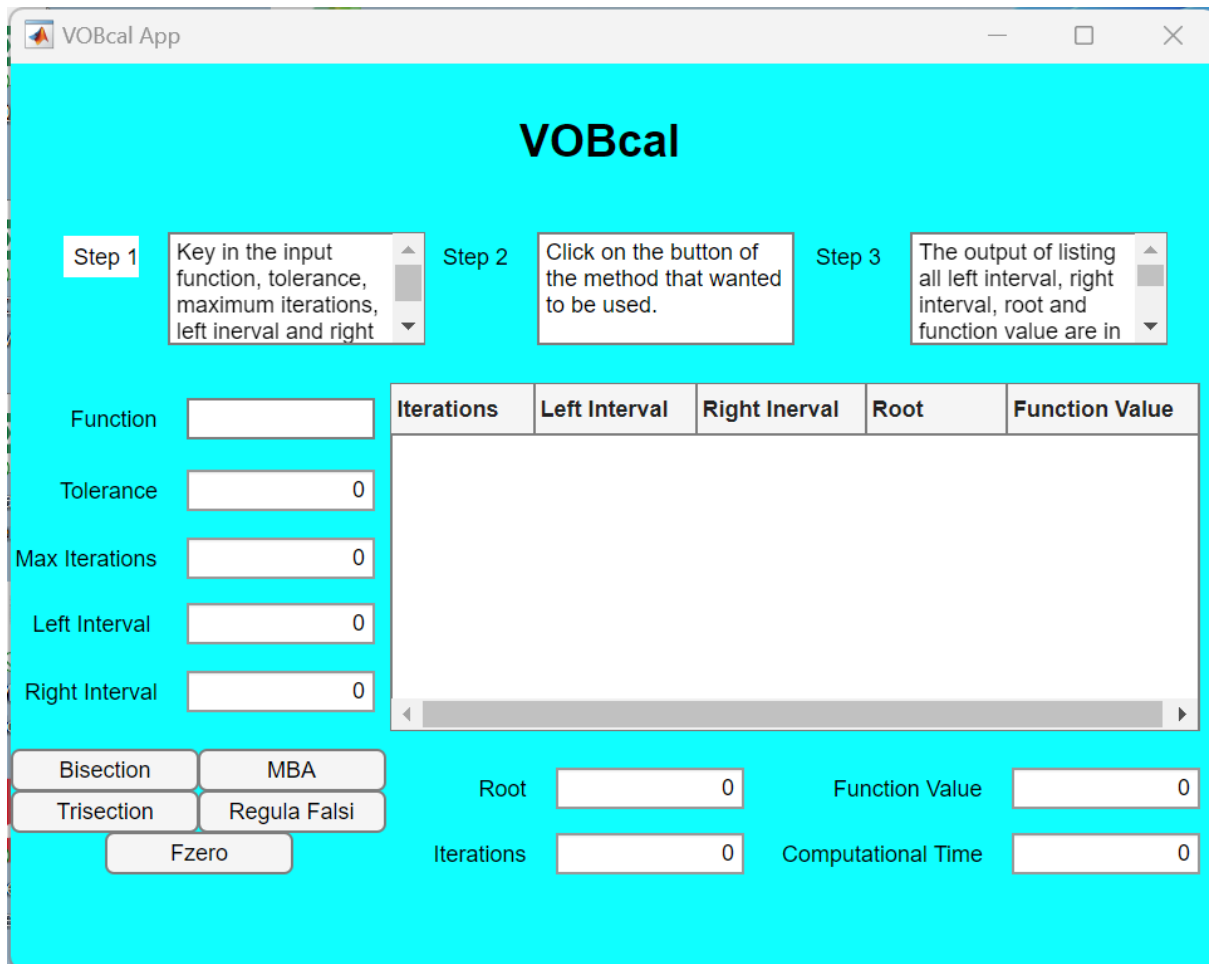


Figure 1: VOBcal interface

In order to use VOBcal apps, it is necessary to adhere to the following procedural instructions (as briefly provided in the VOBcal interface):

- i. Input the function, and other necessary parameters including the tolerance value, maximum number of iterations, left interval, and right interval.
- ii. Select one of the available methods, such as bisection, modified bisection method (MBA), trisection, regular Falsi or the fzero function which is the built-in MATLAB solver.
- iii. The results can be observed in a tabular format, displaying the iterations, left and right intervals, values of x (root), $f(x)$ for each individual step. Additionally, the total iteration, calculation time, the final value of variable x and the corresponding function value at the last iteration can be observed.

As a simulation, we will solve $f(x) = 7\sin(2\pi x)^2$ in the interval $[1,2]$, using Trisection method and example of results as shown in Figure 2.

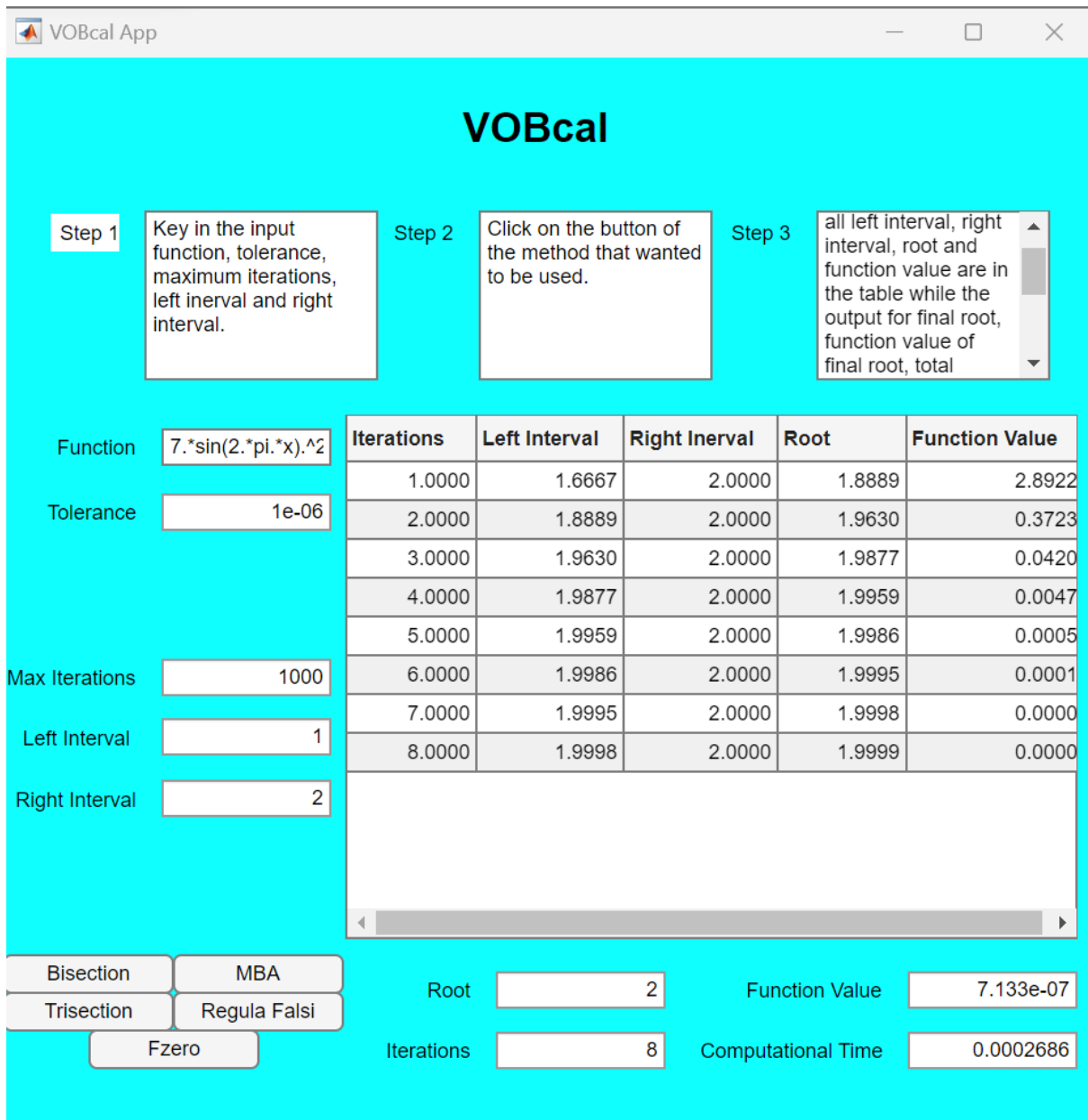


Figure 2: Example of results display using Trisection method

Table 1: Sample of results by using VOBcal

Method	Root,x	$f(x)$	Iteration	Time (s)
Bisection	1.5	9.448486630769701e-31	1	0.0000067
MBA	- 8.3986547829064e	5.249999999999991	1000	0.0029398
Trisection	1.9999491947365746	7.133048501372907e-7	8	0.0003407
Regula Falsi	0.6666666666666667	5.250000000000003	1000	0.0022683
fzero	Fail to solve	-	-	-

If the user is dissatisfied with the outcome obtained using the Trisection approach, they have the option to select alternative ways. Table 1 presents a comprehensive summary of the

results produced from all accessible methods in VOBcal. In this particular instance, the fzero method was unsuccessful in finding a solution. Similarly, both the MBA and trisection methods might be deemed unsuccessful as they hit the maximum number of iterations and the function value diverged from zero. The Bisection method is considered the most favourable approach due to its ability to provide a solution within a single iteration and yield a solution that is closest to zero. Hence, the user will be able to select the preferred solution by considering either the end function value that approaches zero, or the way that requires the fewest iterations or calculation time.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The simplest way among root finding method to solve nonlinear equation is by using Bisection Method. Bisection Method had been evolved through year to counter the flaws of the conventional Bisection Method. This method can be even simpler if using a solver in programming language. MATLAB has a feature to create GUI. The algorithms created in MATLAB run in the background and do their jobs, but MATLAB also places a strong focus on human contact, which is why it also gives us access to a graphical user interface (GUI) that can be used to build an intuitive front-end interface for our algorithm. The purpose of this project is to create a solver to solve nonlinear equation using Bisection Method and its variance using MATLAB GUI. With this, it can avoid human error so the answer will be more precise and can be used easily for many collaborations.

Furthermore, MATLAB has a flexible software structure which comprise of libraries, models, and programs that enable developer to integrate different model components in one package conveniently (Nasiruzzaman, 2010). In addition, MATLAB can expand or upgrade the developed application quickly and also provides good environment in creating or improving the GUI. That is why the creation of the VOBcal is best developed using MATLAB. The VOBcal itself does not require user to spend a lot of time in learning how to use the application. This is because the instruction and manual guide is already designed to appear on the GUI so that the first-time user can follow the instruction step by step. The position of input text fields and buttons are also arranged accordingly and systematically so that user can do the input and run the calculation with ease and quickly.

After the VOBcal has been deployed as a standalone application, a survey has been conducted for pilot-testing on the usability of VOBcal. As a result, few alterations were suggested for the improvement of the next development cycle such as the choice of colour for the interface and the position of the text field for the user to key in the necessary inputs. Therefore, developers for VOBcal will continue to enhance the graphical appearance and its usability in future development phase cycle. Thus, it will leads for future innovation plan for upgrading more features in VOBcal and other calculator apps.

5.0 CONCLUSION

VOBcal provides more intuitive and user-friendly interfaces so that the user can easily input data, run calculation and capture the results whilst reducing human errors and learning time. Therefore, developing standalone apps for solving nonlinear problems using bracketing methods in MATLAB app Designer is a powerful tool that can save time, guarantee accuracy for calculation and ease of use. Hence, VOBcal can be used as mathematical tool for many areas and purposes in solving nonlinear problems.

Acknowledgement

This project was funded by a grant from the Ministry of Higher Education of Malaysia (FRGS/1/2019/STG06/UITM/02/3).

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**A STUDY ON ASSESSING ONLINE GAMING ADDICTION AMONG STUDENTS:
A CASE STUDY AT UiTM SEGAMAT, JOHOR**

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ABSTRACT

The obsessive mental health condition of online gaming addiction can have major life-altering effects. An online game addict typically plays for more than 10 hours a day, sometimes well into the night, many of them due to sleep deprivation. When gaming consumes a student's life, it will have an impact on them by making them unmotivated and unable to concentrate in class. Online games may distract and interfere with crucial responses to some activities in real life, such as academic performance, health, and social life. Therefore, a study was conducted at Universiti Teknologi MARA (UiTM) Segamat Campus, Johor in order to determine the main effects of playing online games among students and how frequently they spend their time playing online games. Primary data is collected by distributing questionnaires to the respondents. Convenience sampling was used, and a total of 50 students were involved in this study. Findings revealed that 32% of students agreed that playing online games has the worst effect on their eye health, and only 4% of respondents agreed that online gaming additions can make students put off studying until the last minute. Moreover, the majority of students spend 1 to 2 hours playing online games per day. This study also showed that they started to play online games when they were 11 to 15 years old. As for future work, it is suggested that a similar study be done by increasing the sample size and adding other types of dimensions related to online gaming addiction.

Keywords: Online games, students, addiction

1.0 INTRODUCTION

Online gaming addiction is a compulsive mental health issue that can have serious consequences in one's life. It is normal for an online game addict to spend more than 10 hours a day gaming, sometimes late at night, and many of them suffer from sleep deprivation. Addiction to internet gaming has a negative impact on students. When a student's life is consumed by gaming and the boundary between purposeful and compulsive use is crossed, it can have detrimental effects. Students will lack motivation and lose focus in lessons. Online games may distract us and interfere with crucial responses to our activities in real life, such as academic performance, health, and social life. This can have a huge detrimental impact on our lives, particularly those of students. Playing online games can improve one's mood and reduce depression. Since their lives are so chaotic, many people want to relax by playing online games. Students in particular have a lot of work to accomplish, including assignments and tests, so they use their free time to play online games as a break. Additionally, students can meet distant new friends by playing internet games. They can socialise and spend time with their new friends. While online gaming has numerous benefits, it is always accompanied by drawbacks. This harm happens because of something excessive. Online gaming has

developed into one of the most addictive internet pastimes to date, according to recent studies. Many people prefer to play online video games as a hobby. The majority of them think that playing video games online is a beneficial activity. Being a professional gamer today might provide the highest salary. As people learn about it, they develop an addiction to spending time in front of video games. This causes the majority of students to become more addicted to playing online games, and it may distract and interfere with crucial responses to some activities in real life, such as academic performance, health, and social life. When gaming consumes a student's life, it will have an impact on them by making them unmotivated and unable to concentrate in class. Therefore, this study is conducted to determine the main effects of playing online games among students and how frequently they spend their time playing online games.

2.0 OBJECTIVES

The following are the objectives of the study:

1. To determine the main effects of playing online games among students.
2. To identify the duration of time spent playing online games among students.
3. To determine the starting age at which students start getting involved in playing online games.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

This is a quantitative study that explores online gaming addiction among students' at Universiti Teknologi MARA (UiTM) Segamat Branch, Johor. A minimum sample size of 50 respondents was appropriate for this study because Roscoe (1975) and Sekaran (2016) established the general rule that respondents in a survey should be greater than 30 and fewer than 500. The survey is conducted using convenience sampling, which is one of the non-probability sampling techniques. This technique was used since it involves selecting participants who are easily accessible and readily available.

An online questionnaire was chosen as the data collection method. This method is one of the cheapest and fastest ways to reach respondents because responses are processed automatically and the results are accessible at any time. The data was collected using Google Forms. The questionnaire has been shared via social media sites such as Instagram, Telegram, and WhatsApp. The questionnaire consists of two sections. Section A refers to the demographic profiles of respondents, such as age and gender. Meanwhile, Section B consists of four items related to general questions on online gaming addiction.

A descriptive analysis was applied in this study. Several analysis techniques, including cross-tabulations and frequency or percentage tables, are used to describe the profile and characteristics of the respondents. Meanwhile, graphs like pie charts and bar charts, as well as measures of central tendency such as mean, median, and mode, are used to analyse the question related to online gaming addiction among students.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The following table examines the characteristics of the respondents, which comprise age and gender. Table 1 shows that the majority of the respondents (80%) in this study were female, while only 20% were male. The respondents consist mainly of students who are in the age group of 18 to 20 years old, which is 82%, while the lowest percentage is 4% from the age group of 24 to 26 years old.

Table 1: Demographic Profile of The Respondents

Variables	Frequency	Percentage (%)
Gender		
Male	10	20
Female	40	80
Age (in years old)		
18 – 20	41	82
21 – 23	7	14
24 – 26	2	4

From Figure 1, about 74% of the students chose their smartphone as their device for playing online games. Another 20% of students chose laptops as their gadget when they were playing online games. While only 6% of students were playing online games using a tablet.

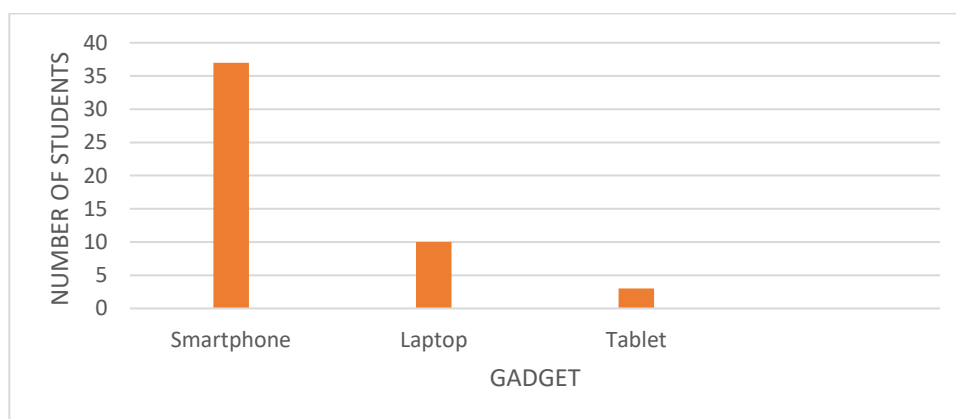


Figure 1: Type of Gadget That Respondents Use the Most

According to Figure 2, around 32% of respondents voted for negative effects on eye health as a result of playing online games. Release stress was the second highest of the respondents' votes, with 22%. Only 4% of respondents agreed that online gaming additions can make students put off studying until the last minute.

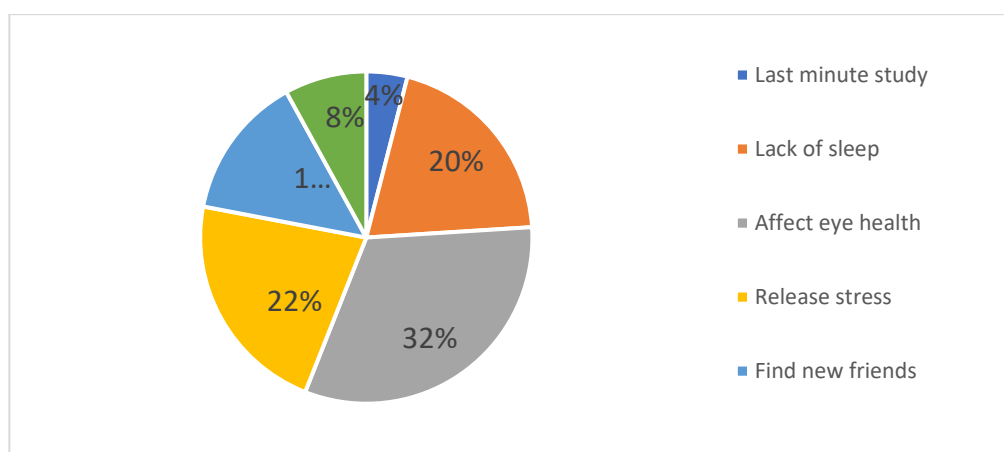


Figure 2: Effect of Playing Online Games

Table 2: The Age at Which Respondents Start Playing Online Games

Age (in years old)	Frequency	Percentage (%)
1 – 5	6	12
6 – 10	6	12
11 – 15	26	52
16 – 20	12	24

Table 2 demonstrates that the majority of students start to play online games when they are between 11 and 15 years old. Furthermore, based on Figure 3, we can see that the maximum duration of the student playing online games in a day is 1 to 2 hours.

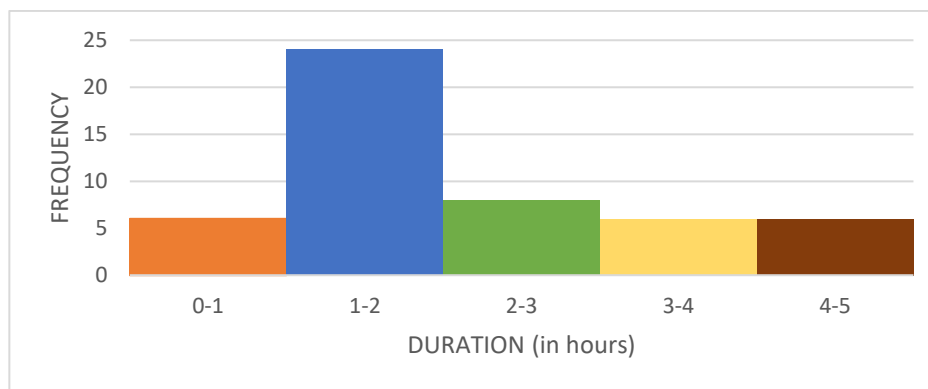


Figure 3: Duration of Students Playing Online Games in a Day

5.0 CONCLUSION

From the findings, we can conclude that half of students were involved in playing online games when they were in high school, while the rest got into online games when they were in primary school. The majority of them spend 1 to 2 hours playing online games. Most students claimed that online game addiction would affect eye health, as it was the most popular one. Therefore, the students need to know how to manage their time between studying and playing online games. The students must set a certain time for playing online games and can get assistance from others that can help them finish tasks faster and with less strain. As for future work, it is suggested that a similar study be done by increasing the sample size and adding other types of dimensions related to online gaming addiction.

SMART DUSTBIN

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ABSTRAK

Internet of things adalah system peranti pengkomputeran yang saling berkaitan, mesin mekanikal dan digital, objek, haiwan atau orang yang disediakan dengan pengenalan unik dan keupayaan untuk memindahkan data melalui rangkaian tanpa memerlukan manusia atau manusia-interaksi komputer. Kita berada di era dimana tugas dan system bergabung dengan teknologi Internet of Things untuk menyediakan system yang lebih lengkap, cekap dan dapat melaksanakan tugas dengan pantas. Projek ini disediakan untuk menghasilkan tong sampah pintar atau Smart Dustbin yang berasaskan Internet of Things (IoT). Idea hasilnya tong sampah pintar ini timbul apabila system pengendali pengurusan sampah tidak mempunyai system pengendalian sampah yang khusus. Kebiasaannya mereka menguruskan sampah secara berjadual dan tidak mengambilkira keadaan tong sampah yang sudah penuh atau melimpah. Secara asasnya, Smart Dustbin yang berasaskan IoT menggunakan Arduino Board sebagai microcontroller atau kerangka utama. Sensor ultrasonic pula digunakan di luar dan dalam Smart Dustbin dimana untuk diluar digunakan bagi mengesan jarak objek pengguna dan penutup tong sampah akan terbuka. Manakala di dalam tong sampah pula sensor ultrasonic berperanan mengesan aras tong sampah jika sudah penuh dan penggera akan berbunyi memberi amaran bagi mengelakkan sampah melimpah. Sejajar dengan pembangunan negara yang kini di era 4IR, penggunaan teknologi IoT semakin meluas dan secara tidak langsung system ini dapat menyumbang ke arah alam sekitar yang lebih sihat dan bersih serta mengubah persepsi Masyarakat yang menganggap teknologi memberi keburukan lebih dari kebaikan.

Kata Kunci: Smart Dustbin, Internet of Things, Arduino, Sensor Ultrasonic.

1.0 PENGENALAN

Internet pelbagai Benda adalah masa depan teknologi yang dapat menjadikan kehidupan kita lebih efisien. IoT adalah sesuatu fenomena yang sedang berlaku dengan menghubungkan di antara peranti internet dan manusia. IoT ialah singkatan daripada Internet of Things. Dalam Bahasa Malaysia, ianya dipanggil Internet Pelbagai Benda (IPB) atau Internet Pelbagai perkara. IoT merupakan jaringan alatan fizikal yang dilengkapi sensor atau penggerak, perisian dan teknologi lain yang bertujuan untuk menyambungkan dan bertukar data dengan peranti lain atau sistem melalui Internet. IoT berfungsi dengan sesuatu objek yang dilengkapi dengan satu mikropengawal yang boleh disambungkan melalui Internet. Objek tersebut juga mempunyai sensor atau penggerak untuk mengambil data ataupun menggerakkan sesuatu seperti suis geganti dan motor. Objek tersebut akan disambungkan ke platform IoT melalui Internet. Platform tersebut mengambil data daripada pelbagai objek (jika terdapat lebih daripada satu objek) dan menganalisa data yang diperolehi. Data tersebut boleh dilihat oleh pemilik melalui telefon pintar atau aplikasi web.

Teknologi IoT dalam dunia 4IR di mana peranan dan tugas manusia itu bergabung dengan fungsi internet pelbagai perkara menjadikan sistem kerja yang lebih cekap dan pantas. Dalam kita mengejar teknologi, kita semua perlu sedar cabaran alam sekitar yang dihadapi negara membangun dan maju yang membimbangkan. Udara tercemar, sisa industri di salurkan ke sungai, kekurangan air minuman, sumber tenaga kotor dan pencemaran bau busuk disebabkan sampah. Dengan menggunakan teknologi IoT dapat membantu mengurangkan atau menyelesaikan cabaran tersebut.

2.0 OBJEKTIF

Produk inovasi ini bertujuan memperkenalkan tong sampah pintar yang dapat beroperasi secara automatik. Secara umumnya, objektif produk inovasi ini adalah menyelesaikan masalah pengguna menggunakan tong sampah tanpa perlu menyentuh. Ini bagi menjamin kebersihan pengguna dan inisiatif memudahkan pengguna untuk mesra membuang sampah.

Selain itu, produk inovasi ini juga membantu kepada pengendali pengurusan sampah untuk peka akan tong sampah yang sudah penuh untuk segera di uruskan sebelum sampah melimpah. Secara tidak langsung dapat menyelesaikan masalah punca-punca kotoran di sekitar dan luar tong sampah akibat sampah yang melimpah.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Smart Dustbin dibangunkan dengan pembangunan sistem yang menggunakan beberapa komponen utama iaitu Arduino Uno, servomotor dan sensor ultrasonik. Setiap komponen tersebut memberi peranan yang penting dalam mencapai objektif. Platform utama iaitu Arduino Uno di programkan daripada komputer dengan menggunakan Python language. Peranti servomotor dan ultrasonik dipasang menggunakan litar ringkas dan mudah di papan utama Arduino Uno. Library bagi peranti tersebut akan dimuat naik dengan kod yang direka pada papan utama. Secara tidak langsung, papan utama iaitu Arduino Uno akan memberi arahan kepada peranti yang bersambung dengannya mengikut program yang ditetapkan.

Programming yang ditetapkan adalah dengan menetapkan servomotor akan bergerak apabila pada jarak 15cm sensor ultrasonik diluar penutup tong sampah mengesan objek. Pergerakan servomotor adalah dalam putaran arah jam untuk 360 darjah x 15 pusingan untuk membuka tong sampah. Jika tiada objek di kesan sensor dalam tempoh 10 saat, servomotor akan berpusing lawan arah jam untuk menutup tong sampah. Sensor ultrasonik di dalam tong sampah pula mengesan jika sampah sudah sampai dilimit yang ditetapkan dan menghantar signal kepada buzzer untuk berbunyi.

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Secara keseluruhannya produk inovasi ini telah mencapai objektif dan membantu pengguna menggunakannya. Implikasi smart dustbin digunakan, tiada lagi sampah-sampah kecil seperti kertas atau plastik di bawah meja atau lantai memandangkan pengguna mudah untuk membuang sampah. Begitu juga kepada pekerja pembersihan lebih peka untuk mengutip dan mengumpul sampah dengan segera sebelum penggera buzzer berbunyi. Cadangan penambahbaikan produk inovasi Smart Dustbin ialah dengan tambahan fungsi iaitu menggunakan peranti ESP8266 untuk capaian internet WIFI dengan paparan notifikasi di aplikasi telefon pintar. Melalui peranti ESP8266 data yang direkod daripada tindakbalas sensor ultrasonik di smart dustbin akan di hantar ke pangkalan data. Papan utama akan menganalisa data untuk membuat keputusan memberi notifikasi melalui aplikasi. Dengan cadangan penambahbaikan ini akan memudahkan pengendali sampah menguruskan sampah melalui aplikasi telefon pintar.

5.0 KESIMPULAN

Secara kesimpulannya, semua ahli dapat meneroka ilmu yang baru dalam menghasilkan produk inovasi ini. Smart Dustbin telah dihasilkan dan beberapa cadangan penambahbaikan fungsi akan dibuat bagi memastikan peranan Smart Dustbin lebih pintar dan mesra pengguna. Diharapkan dengan produk Smart Dustbin ini dapat membantu pengguna diluar sana dan pengurusan sampah negara dapat dikendalikan dengan baik. Pada masa yang sama juga, pihak pengurusan sampah dapat menguruskan tong sampah dengan lebih efisien dan sistematik serta dapat menjimatkan kos tenaga kerja dan bahan api.

DEVELOPMENT OF AN IMPROVED CAMPING FIRE PIT

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ABSTRACT

The camping fire pit is an important piece of equipment for camping activity especially at night because the main usage is to light a fire that can warm the body. However, there are lots of campers who burn their fuel, such as charcoal and wood, on the ground, which will cause harm to the environment. Hence, this study is to design a portable and foldable camping fire pit that can be packed and transported easily using a mechanical engineering design process. The modeling for this product will be developed using SolidWorks software. In addition, this product is specially designed with a suitable shape, is easy to install, and hence can be carried anywhere. This fire pit also has a feature with a container that can return the fuel used. At the end of the study, this product will present a convenient and useful functionality that will help users with camping activities. At the same time, it is also environmentally friendly.

Keywords: Camping fire pit, SolidWork software, Mechanical Engineering Design Process.

1.0 INTRODUCTION

Nowadays, outdoor activities such as picnics and camping have become popular, especially among teenagers and families. Camping has many benefits for everyone, old or young, and families can enjoy it outdoors or indoors. For example, camping can help us build and strengthen relationships. In addition, camping can give a better sleep quality because the only alarm clocks are the sun and birds chirping. Therefore, it is important to have proper and essential camping gear and accessories for a comfortable and safe experience while doing the activities. One of the essential camping gear for campers is a fire pit. This fire pit is important since it is often used as a bonfire to warm the body at night, and it can be an outdoor pest control that repels flying insects such as mosquitoes and bugs. But at the same time, camping fire pit can bring bad effect to environment [1].

2.0 OBJECTIVE

The objective of this project is to design an improved camping fire pit using a mechanical engineering design process and SolidWorks software.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

This method includes a systematic approach to the engineering design process.

3.1 Flowchart of The Design Process

This flow chart can be used to define and analyse a process, build a step-by-step picture of it, and then standardize or improve it.

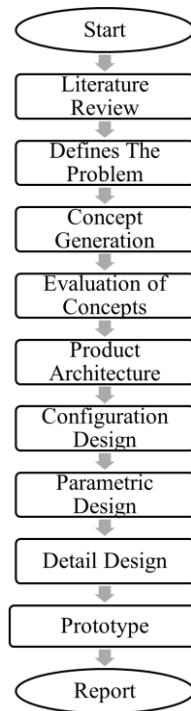


Figure 1: Flowchart of The Design Process

3.2 Concept Generation

Morphological tables can be used to analyse various methods and combinations of obtaining functionality and to visually represent the functionality that a product must have. The Morphological Table for this study is shown in Table 1.

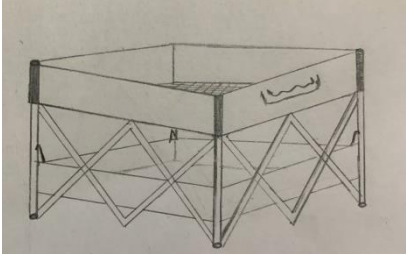
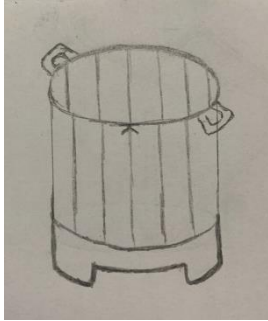
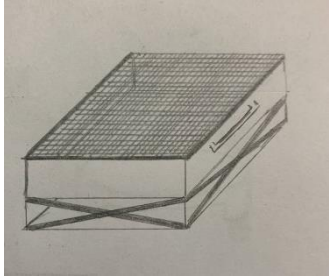
Table 1: Morphological Table for an Improved Camping Fire Pit

Sub-function	Option-solution
Handle	A1 U-shaped handle
	A2 Finger-shaped handle
	A3 Straight handle
Type of Stand Base	B1 Stainless steel collapsible frame base
	B2 Round base
	B3 Square base
Types of Grill Net	C1 Stainless steel fire net
	C2 Circle fire net
	C3 Square fire net
Body Windshield	D1 Portable pieces windshield
	D2 Circle windshield
	D3 Square windshield
Storage box	E1 Square box

The combination of option-solution for the final three (3) concepts is shown in Table 4. The first concept, the camping fire pit, easy to install and portable. For the second and third concept

is not portable and beyond the space. The first concept has a storage box, so it is easy to store excess fuel while the second and third concepts do not have a storage box.

Table 2: Generation of Concept for an Improved Camping Fire Pit

Concept	1	2	3
	A1 + B2 + C1 + D1 + E1	A2 + B2 + C2 + D2	A3 + B3 + C3 + D3
Selected Option-Solution			
Figure			

3.3 Concept Selection

Pugh table is a method for comparing various options and identifying the best one because it aids in decision-making, it is also known as a decision-making matrix or decision-matrix process. The Pugh Table for this study is shown in Table 3.

Table 3: Pugh Table of an Improved Camping Fire Pit

Criteria	Weight	Datum	Concept 1	Concept 2	Concept 3
Cheap	4	0	+	+	+
Weight	5	0	+	+	+
Ergonomic	4	0	+	0	+
Safety	5	0	0	0	-
Reliability	5	0	+	0	0
Performance	4	0	0	-	-
Appearance	3	0	+	0	0
		+	21	9	13
		-	0	4	9
		Total	21	5	4

Based on this Pugh Table, concept 1 is selected because it has advantages in terms of reliability, performance and appearance when compare to others concepts and excel well in terms of cost, weight, ergonomic when compared to reference product.

3.4 Detail Design

Figure 2 shows the assembly drawings of the fire pit concept 1. The design model was developed using SolidWorks software.

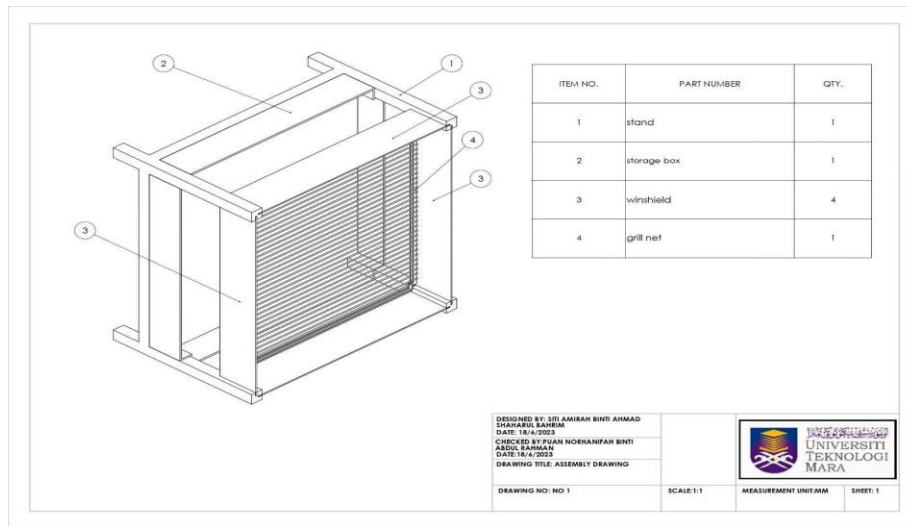


Figure 2: Assembly Drawing of Camping Fire Pit

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

There are several advantages of this camping fire pit product, especially in the first concept. This fire pit can make it easier for users to light a fire. In addition, this camping fire pit also has a special place for excess fuel that has been used, therefore it can save the cost of fuel consumption.

5.0 CONCLUSION

In conclusion, Concept 1 has been selected as the preferred choice, meeting the criteria of reliability, performance, and appearance compared to other concepts. Furthermore, it excels in terms of cost, weight, and ergonomics when compared to the reference product. This confirms that Concept 1 is the most suitable option for designing an improved camping fire pit, successfully achieving the project's objectives.

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**ECO-ENZYME:
FERMENTED ORGANIC WASTE AS MULTIPURPOSE CLEANER**

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ABSTRACT

Majority of bleaching agents contain hydrogen peroxide and are based on chemical detergency process. The excessive uses of chemical substance in daily routine such as detergent and chemical pesticide may lead to worse. In Malaysia, solid waste management is also a big environmental issue. Urban people consumption patterns have shifted, resulting in an overabundance of municipal solid garbage. Eco-enzyme is a magic liquid resulted from fermentation of organic kitchen wastes, such as fruit peels and leftover vegetable that have not been cooked and are not rotten, together with sugar and clean water. Eco-enzyme is very easy and simple to produce, but the benefits of eco enzyme are numerous. The benefits of this eco-enzyme are as DIY multipurpose cleaner using kitchen waste, as an air purifier, and also as plant fertilizer and pesticide. It is non-toxic, non-irritating, non-flammable, and typically safe to human. The enzymes are derived from living organisms and harmless to human. By making eco-enzyme, it is one of the solution to manage most of our wastes, reduce landfill burden, and reduce the production of synthetic wastes from the packaging of manufactured household products. This natural fermentation waste is suitable to be marketed, especially in the cleaning industry. The significance of the usage of fermented organic wastes are to replace commercial product that may contain chemical which are harmful to the environment.

Keywords: Enzyme, Fermentation, Organic Waste.

1.0 INTRODUCTION

Rapid population today has led to the increasing daily life cost. The usage of commercialized cleaning products made with chemicals also is polluting the river and the surrounding ecosystems. Thus the idea of creating a DIY cleaning substance by using only organic waste was conceived. For that purpose, fermentation of waste organic compounds to produce alcohol as our primary cleaning agents have been done. The significance of the usage of fermented organic wastes are to replace commercial products that may contain chemical which are harmful to the environment. Moreover, they help to upcycle food wastes and they are environmental friendly. Every time using the cleaning products made with chemicals, we are actually polluting the underground water, rivers and the surrounding eco-system. Conventional cleaning products contain phosphate, nitrates, ammonia, chlorine and many other harmful chemicals. The accumulated effects of these chemicals that are released from every households contaminates the environment [1].

This eco enzyme is produced by the fermentation of kitchen scraps (fruit and vegetable waste only) with water and brown sugar. When activated, enzymes attack or digest the amino and fatty acids that bond the films of dirt together. They also emulsify them so they can be completely removed from the surface. Put another way, enzymes are chemical catalysts that accelerate the natural biodegrading, or breaking down, of organic substrate, which comprises most soils. Enzymes dissolve and break down protein and organic matter, diminishing odors caused by staining agents such as urine, feces, vomit, pet odors, spoiled foods and mildew. Enzymes are derived from living organisms and are harmless to humans, animals, marine life and general ecology. They are non-toxic, non-irritating, non-gaseous, non-flammable, non-pathogenic and typically safe to use. Since an enzyme that breaks down proteins (protease) will not react on fats or oils, and effective enzymatic cleaning system must contain enough different classes and types of enzymes to assure proper catalytic reaction. In concentrated form, this greatly speed up the natural “dust to dust” process [2].

The garbage enzyme is a fermentation product based on vegetable-based kitchen waste such as fruit peels and vegetable trimmings, water and brown sugar. Methods for production of the garbage enzyme have been studied [3]. Sugar is used frequently as a substrate in fermentation processes; in the production of lactic acid, polyhydroxybutyrate, ethanol, pullulan, xanthan gum, and molasses has been widely used as a substrate in fermentation processes. The proponents of the garbage enzyme describe it as a complex organic substance of protein chains, mineral salts and juvenile hormones, and also claim that it functions to decompose, transform as well as catalyze reactions. It is also claimed that the garbage enzyme functions differently in different concentrations [4], [5].

2.0 OBJECTIVE

The aims of the study are to create the fermentation of fruit peel, vegetable wastes, and rice water as cleaning products, and also to compare the effectiveness of fruit peel, vegetable wastes, and the rice water to clean oily surfaces. The product has applications as a natural fertilizer and pesticide and an additive to animal feed. Not only then is it a way of using up old food waste, it takes the place of several harmful chemicals.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The methodology includes the preparation of three types of fermentation, which are fermentation of fruit peels, vegetable wastes, and rice water, analyzing in cleaning the oily surface, and determination of oil absorbed by oil absorbent paper.

3.1 The fermentation of fruit peels and vegetable wastes

500 g fruit peels collected such as orange, lemon and markisa fruit were put into the 1.5 liter plastic bottle, labelled as ‘Fruit Peels’. One liter of water was poured into the bottle and 5 spoons of sugar were added into the bottle. The bottle was stirred and shaken to mix the water with the fruit peels. 500 g vegetable wastes such as onion, cucumber, cabbage and other green vegetables were collected and were put into the 1.5 liter plastic bottle, labelled as ‘Vegetable Wastes’. One liter of water was poured into the bottle mixed with 5 spoons of sugar. The bottle was stirred and shaken to mix the water with the vegetable wastes. In a duration of two months, those fermentations were kept in a dark cool place with good ventilation.

3.2 The fermentation of rice water

One liter of the rice water was poured into the 1.5 liter plastic bottle, labelled as ‘Rice Water’. Five spoons of sugar were added into the bottle and stirred. The fermentation was kept in a dark cool place with good ventilation for two months.

3.3 Determination of Oil Absorbed using Oil Absorbent Paper

A layer of oil was poured onto the polystyrene plate. The plate was rinsed for the first time with water. The oil left on the plate was then washed by using the fermented fruit peels. The plate again was rinsed with water for the second time and was left until it dried. Then, 9×5cm oil absorbent paper was used to wipe out all of oil remains on the plate. The area of oil absorbed by the oil absorbent then been measured using the paper grid with the measurement of 1cm² × 1cm² as shown in Figure 1. The steps were repeated three times. The processes were replicated using fermented vegetable waste, rice water and tap water as in control group. The data collected then analyzed to obtain the average results.

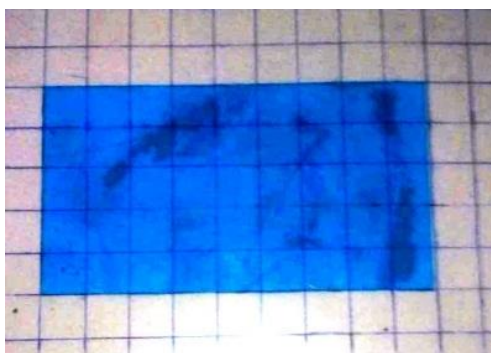


Figure 1: The area of oil absorbed on the oil absorbent paper was measured using the paper grid

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The result reveals fermented fruit peels as the best oil cleaning agent due to the contents composed of highest level of sorbitol and xylitol compared to other fermented organic wastes. These act as the energy source for yeast to transform the sugar into alcohols and carbon dioxide. Then, the alcohols were used to clean the oil by getting in between the long fatty acid chains. This situation was the key point in liquefying the grease because the long fatty chains that were packed together will make the grease to solidify and hard to clean on any surface.

4.1 Area of oil absorbed on oil absorbent

Based on Figure 2, the result shows that the fermented fruit peel was most effective in cleaning oily surface with only 19.3cm² area of oil absorbent affected by the oil, followed by fermented rice water with 28.3cm², fermented vegetable wastes with 30.7cm² and the least effective is tap water which the absorbent was fully covered with oil (45cm²).

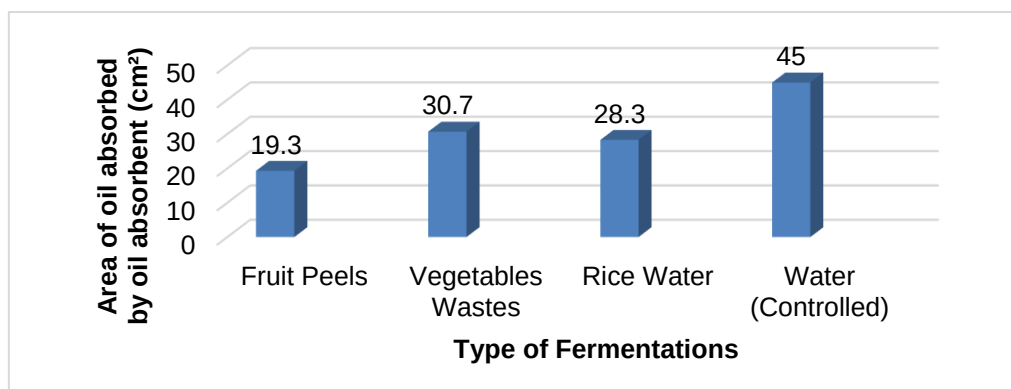


Figure 2: Type of Fermentations against Area of Oil absorbed by Oil Absorbent

4.2 Fourier Transform Infrared Spectroscopy analysis

A Fourier Transform Infrared Spectroscopy which also known as FTIR Analysis or FTIR Spectroscopy was done to identify the chemicals present in the fermentation. Based on the FTIR analysis done, it appeared that each of the organic waste fermentations consist of almost the same chemicals with the same shape of the peak obtained in the spectroscopy. The chemicals are polyacrylamide, carboxyl modified-low carboxyl content, streptomycin sulphate, nitromethane, naringin, guanidine thiocyanate, DL-6,8-thioctic acidamide, kappa-carrageenan, anthranilic acid amide and pectin ex apples.

4.3 Fermentation and sugar added

The main reason on adding sugar to the fermentations was to produce more alcohol products in each of the fermentations in order to make the fermentations more effective in cleaning the oily surface. The products between the fermentations and the added sugar were organic acids, gases, or alcohol as yeasts feed on sugars and starches. They turn the added sugar into energy and release alcohol and carbon dioxide (CO₂) as a result. The produced CO₂ then bubbled up through the liquid and dissipated into the air making it fizzy while alcohol remained in the liquid improved the effectiveness of the organic waste fermentations in cleaning oily surface due to their effective cleaning and disinfecting properties and fast drying rates.

5.0 CONCLUSION

From the results obtained, it can be concluded that the fermented fruit peels is the best organic product in cleaning oily surface area followed by the fermented rice water and the fermented vegetable wastes as the fermented fruit peels produces much more alcohol compared to other fermented samples. It can be known that the alcohols have polar and non-polar parts. The non-polar part will dissolve in the oil, hence the oil can be eliminated. When rinse with water, the polar part will dissolve in the water, so it can wash away the oil.

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ODEcal: Ordinary Differential Equation calculator by using MATLAB-GUI

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ABSTRACT

The ODEcal is an acronym for the Ordinary Differential Equations calculator. It is a standalone application developed using MATLAB App Designer to solve initial value problems of Differential Equations (ODEs) numerically. Initial value problems (IVPs) of ODEs are ubiquitous in science and engineering, as they model the behaviour of various phenomena over time. Solving IVPs of ODEs analytically can be challenging or impossible, especially for nonlinear or high-order systems. Therefore, numerical methods are often employed to approximate the solutions using discrete steps. This study creates an ODEcal for solving IVPs of ODEs, which is an application that implement various numerical algorithms and provide graphical and interactive features to help users explore and visualize the solutions. The interface of ODEcal in this study contains several methods comprising Euler, modified Euler, Runge Kutta of order four, and some MATLAB built-in function of ode113, ode45, ode23t, ode23s, ode15s, ode23tb and ode23.

Keywords: Ordinary differential equation, Euler method, ODE calculator, MATLAB-GUI

1.0 INTRODUCTION

Numerical methods play a pivotal role in the realm of science and engineering by providing effective solutions to complex mathematical problems, particularly when it comes to solving ordinary differential equations (ODEs). Ordinary differential equations are mathematical models that describe the behavior of dynamic systems, from the motion of celestial bodies to the flow of fluids and the behavior of electrical circuits. These equations are prevalent in various scientific disciplines, and their solutions offer valuable insights into the behavior of physical phenomena.

However, ODEs often resist closed-form analytical solutions, especially for intricate, nonlinear systems. When ODE problems with complex geometries is not possible to be solved, numerical methods is the alternative method find the approximate answer (Villegas et al., 2023). As a result, numerical methods emerge as indispensable tools, offering an innovative approach to approximating solutions when traditional analytical methods fall short. This is particularly essential when dealing with real-world problems where precision, accuracy, and efficiency is paramount.

While analytical solutions exist for some ODEs, many real-world problems are too complex to be cracked open by traditional pen-and-paper methods. Previous research on solving ODE mostly are developed using a high-level programming language such as FORTRAN, C++, PASCAL or BASIC. This require good programming skill in writing a program from first principles and it is not an easy task. This is where MATLAB steps in, offering a versatile and powerful platform for numerically solving ODE problems with low cost.

2.0 OBJECTIVES

The objectives for this project are as follows:

1. To develop a standalone application in solving initial value problems of ordinary differential equations by using MATLAB-GUI.
2. To provide graphical and interactive features to help users explore and visualize the solutions.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The ODEcal is an acronym for the Ordinary Differential Equation calculator. It is a standalone application developed using MATLAB App Designer to numerically solve the initial value problem (IVP) of first order differential equation (ODE). MATLAB apps designer is a tool to create GUIs for the MATLAB applications and have a packaging and sharing option that enable to export the app as a standalone executable or a web app. The interface of ODEcal contains ten different methods which are Euler (Runge-Kutta order 1), Heun (Runge-Kutta order 2), Runge Kutta order 4, programmed together with MATLAB built-in functions named ode113, ode45, ode23, ode23t, ode23tb, ode23s, ode15s. Figure 1 below shows the complete interface for ODEcal.

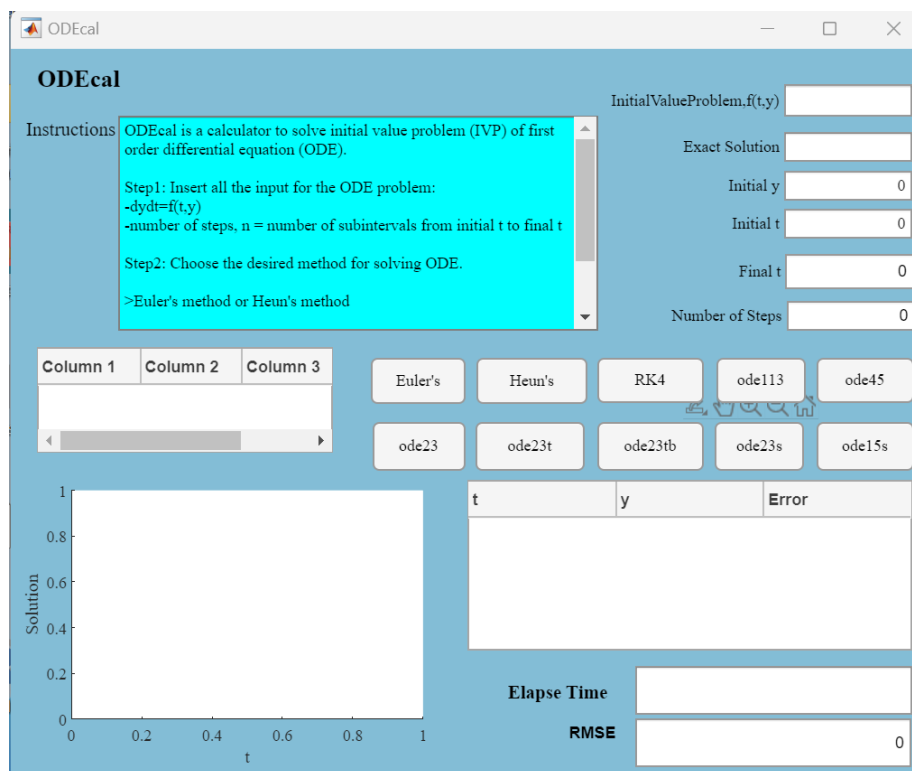


Figure 1: ODEcal interface

In order to use ODEcal apps, it is necessary to adhere to the following procedural instructions (as briefly provided in the ODEcal interface):

- iv. Input the IVP of ODE function , the exact solution and other necessary parameters including the initial independent and dependent variables, the final value of independent variable, and the number of steps.
- v. Select one of the available methods, such as Euler (Runge-Kutta order 1), Heun (Runge-Kutta order 2), Runge Kutta order 4, programmed together with MATLAB built-in functions named ode113, ode45, ode23, ode23t, ode23tb, ode23s, ode15s.
- vi. The results can be observed in a graph comparing the exact and approximated solution together with a tabular format, displaying the independent value, t, dependent value, y and their corresponding error. Additionally, the calculation time and the root mean square error (RMSE) value can be observed.

As a simulation, we will solve $\frac{dy}{dt} = f(t, y) = e^{2t} - 2y$ with exact solution $y = e^{2t} + \frac{11}{4}e^{-2t}$, in the interval $[0,1]$ with initial value $y(0)=3$. The method selected are Euler (15 number of steps) and ode113 where example of results as shown in Figure 2 and 3, respectively.

$$\exp(2*x)/4+(11/4)*\exp(-2*x)$$

$$\exp(2*t)-2*y$$

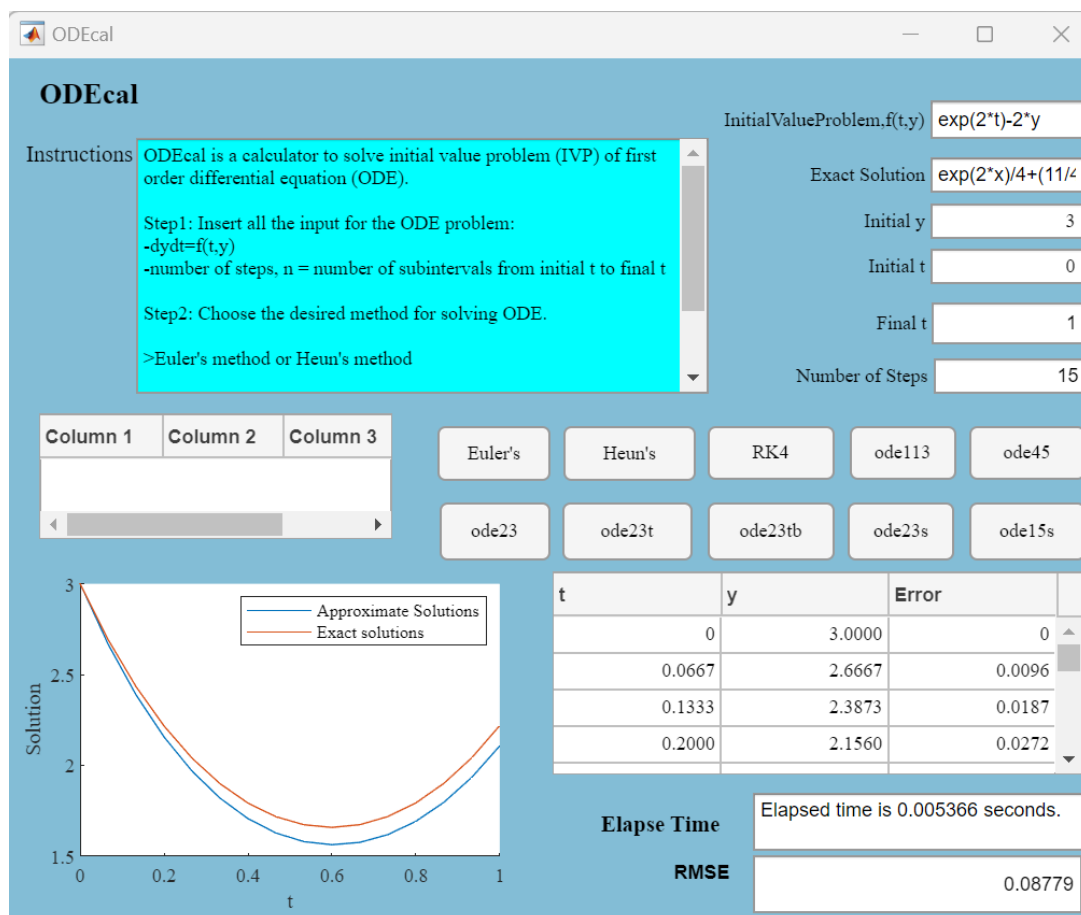


Figure 2: Example of results display using Euler method

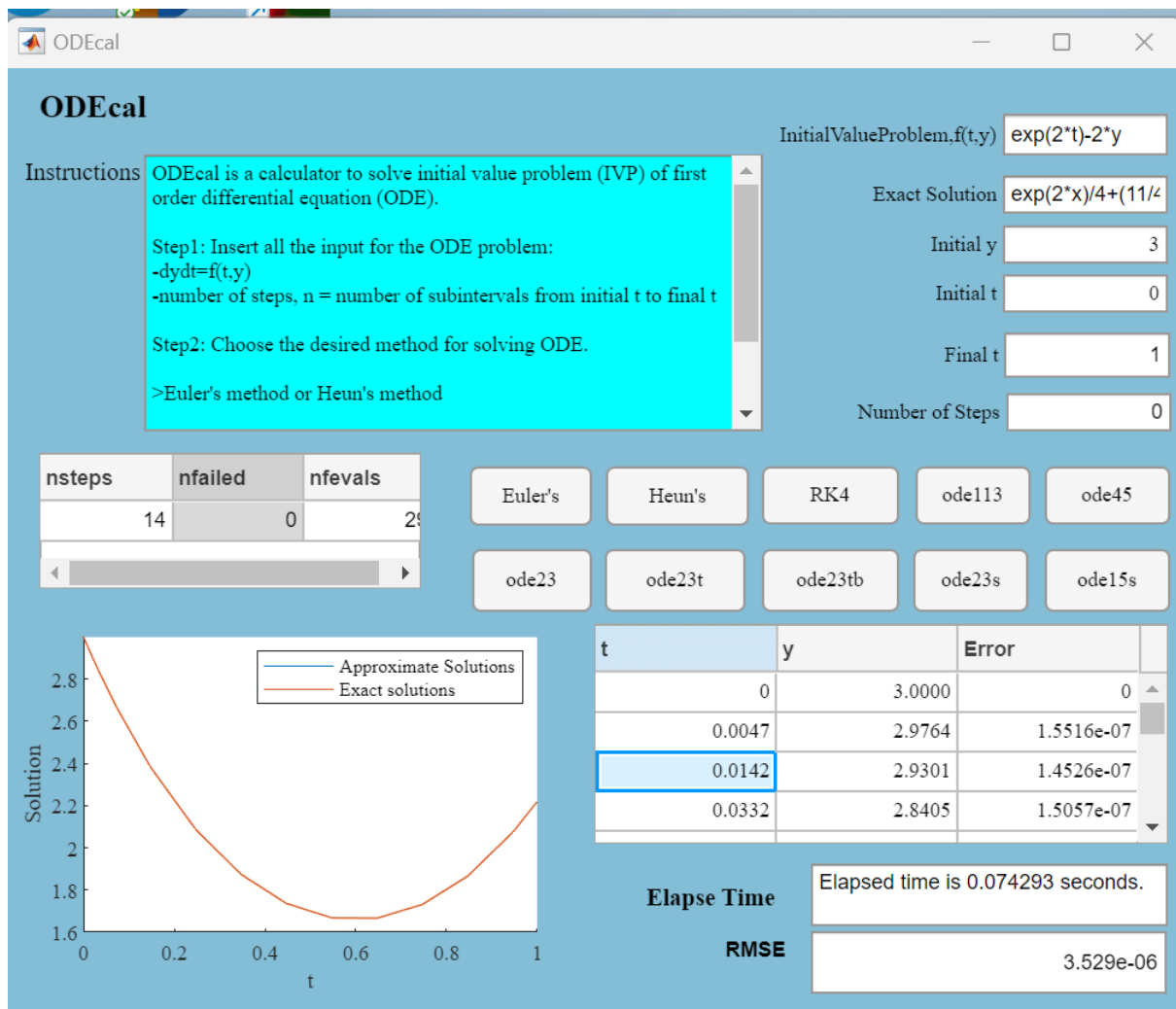


Figure 3: Example of results display using ode113 method

Table 1: Sample of results by using ODEcal

Method	Time (s)	RMSE
Euler	0.005366	0.08779
Heun	0.004406	1.16100
RK4	0.005555	4.695e-06
Ode113	0.074293	3.529e-06
Ode45	0.082410	1.418e-07
Ode23	0.021221	0.00044
Ode23t	0.091759	0.00074
Ode23tb	0.032185	0.00071
Ode23s	0.048521	0.003077
Ode15s	0.050959	0.001548

ODEcal offers various methods to solve ordinary differential equations. Depending on the problem, some methods may perform better than others in terms of accuracy and speed. Table 1 shows the results of applying different methods to a sample problem, using the root mean square error (RMSE) and the computation time as the evaluation criteria.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The best method for this problem is ode45, which has the lowest RMSE. Heun method is the fastest, but it also has the highest RMSE. Hence, the user will be able to select the preferred solution by considering either the RMSE value that approaches zero, or the way that requires the fewest subintervals or calculation time.

MATLAB provides a wide range of numerical methods and solvers to tackle various types of ODEs based on IVPs. Users can select the most suitable solver based on the problem's characteristics, such as stiffness, nonlinearity, or discontinuities. MATLAB's intuitive and interactive environment makes it accessible to users with varying levels of programming expertise. Its scripting language allows for easy coding and experimentation, while the graphical user interface (GUI) simplifies tasks for those less familiar with coding. Users can customize and extend MATLAB's functionality through user-defined functions and scripts. This flexibility allows for the implementation of specialized numerical techniques or the integration of external software and data sources.

MATLAB excels in data visualization, enabling users to create informative plots, animations, and graphs to visualize the behavior of ODE solutions. This feature aids in the interpretation and presentation of results.

5.0 CONCLUSION

ODEcal is an efficient with user-friendly interface solver that help users solve ODE problem numerically whilst reducing human error. ODEcal is a standalone apps developed by using MATLAB that gives user a variety method to solve ODE based on users' preferences such as small value of RMSE, fewest subintervals or calculation time. Hence, ODEcal is an indispensable tool for professionals and students alike for solving ordinary differential equations in diverse scientific and engineering applications.

Acknowledge

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2 IN 1 IV-STEM FRENCH FRIES MACHINE

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ABSTRACT

Knife and potato peeler are typically used by people to peel and cut the potatoes. People still use this manual method because it gives no cost and no use of electricity. This manual method consumes time and energy of human manpower that can lead to the risk of injuries. Therefore, this project aims to overcome the issue rise with analysis, design and fabrication 2 in 1 French fries machine. This machine consists of two processes which are peeler and cutter. Next, 2 in 1 French fries machine is a semi-automatic machine that is able to peel two kilogram potatoes per process and cut the potatoes to the French fries' size and shape. The peeler machine uses the abrasive technique to peel the potato skin. The potato skin peels off when the disc rotates and it collides with the cylinder drum wall. The cutter machine uses the electric linear actuator to push the potato to the cutting blade. The fabrication of this machine mostly uses the stainless steel material. Other than that, simple machine material like motor and shaft used to rotate the disc on the peeler machine. Last but not least, this product has the potential to grow and be commercialized as it gives an alternative way to the user during the peeling and cutting process.

Keywords: potato peeler, cutter machine, French fries

1.0 INTRODUCTION

Nowadays, the process of peeling and cutting potatoes requires time consuming and human manpower. The manual method like using potato peeler and knife for cutting is too dangerous and risk of injuries to the operator. Aim of this project are to analysis, design and fabrication 2 in 1 French fries machine. This machine is semi-automatic machine are able to peel and cut the potatoes to French fries' size and shape. The peeler machine uses an abrasive technique and cutter machine uses a pusher to push the potato to the cutting blade. With the development of this machine, it will reduce time consuming, human manpower and risk of injuries during the process of peeling and cutting potatoes.

2.0 OBJECTIVES

1. To reduce human manpower, because no more energy is used to peel and cut the potatoes
2. To make the same size and shape of the French fries

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

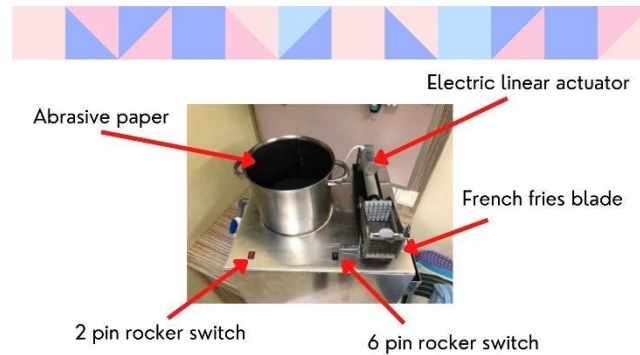


Figure 1: 2 in 1 IV-STEM French Fries Machine

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The novelty of this product is worth to buy. Next, the advantages are no more human manpower and energy to peel and cut the potatoes. Other than that, this machine also can reduce the time to peel and cut the potatoes.

5.0 CONCLUSION

The focus of this research was to develop a 2 in 1 French fries machine that consist of the peeler and cutter process. The finished product is working as per expected which the rotating disc and potato skin will peel when collided with the waterproof abrasive paper. After that, the linear actuator's cylinder will extend and push the potato to French fries' blade.

MYCUTI

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ABSTRAK

MYCUTI merupakan aplikasi yang dibangunkan dengan menggunakan teknologi sumber terbuka bagi memenuhi keperluan pelajar yang memerlukan platform bagi membuat permohonan cuti atau kebenaran tidak menghadiri kelas. Melalui amalan yang dilaksanakan sebelum ini pelajar perlu untuk menghantar borang secara manual kepada penasihat akademik telah menimbulkan masalah seperti keperluan untuk mencetak borang tersebut, memohon kebenaran melalui penasihat akademik dan menunggu kelulusan daripada timbalan pengarah akademik yang akan mengambil masa dan kelulusan tersebut tidak dapat diketahui oleh pelajar dalam masa yang singkat. Oleh itu, objektif bagi aplikasi yang dibangunkan ini adalah bagi memberi kemudahan kepada pelajar untuk membuat permohonan dengan menggunakan aplikasi yang boleh dimuat turun ke dalam peranti mobil pelajar. Pelajar akan mengisi maklumat melalui borang di dalam aplikasi ini dan menghantar permohonan tersebut kepada penasihat akademik. Kelulusan daripada penasihat akademik dan timbalan pengarah akademik juga boleh diperolehi dalam tempoh 24 jam dan pelajar tidak perlu mencetak borang secara fizikal. Impak kepada penggunaan aplikasi ini akan menyokong kepada teknologi hijau yang dapat mengurangkan penggunaan kertas secara fizikal. Di samping itu juga, ianya menyokong teknologi 4 IR yang mana membenarkan pelajar dan pihak pengurusan kolej mengadaptasi teknologi di dalam keperluan seharian dan juga menjimatkan masa pelajar. Aplikasi yang dimuat turun ke dalam peranti mobil adalah dilihat lebih mudah untuk di akses dan mempunyai potensi untuk dikomersialkan sebagai salah satu aplikasi yang boleh digunakan oleh pelajar di institusi lain juga.

Kata Kunci: Aplikasi Mobil, Teknologi Sumber terbuka, Teknologi Hijau, Pengurusan cuti

1.0 PENGENALAN

Aplikasi MYCUTI merupakan satu inisiatif yang dibangunkan bagi membolehkan pelajar di Kolej Komuniti Hulu Langat untuk menghantar permohonan cuti atau pelepasan kuliah melalui aplikasi di telefon mudah alih sahaja. Aplikasi ini membolehkan permohonan di hantar kepada penasihat akademik untuk disokong. Permohonan yang telah di sokong ini seterusnya akan di hantar kepada timbalan pengarah akademik bagi kelulusan. Aplikasi yang dibangunkan ini tidak akan menggunakan sebarang kertas kerana setiap permohonan dan kelulusan tersebut hanya akan berlaku di atas talian sahaja.

Penggunaan kertas bagi menghantar permohonan cuti oleh pelajar telah menimbulkan beberapa masalah seperti pembaziran kertas yang dicetak, permohonan hilang sebelum sampai kepada timbalan pengarah akademik, kerosakan borang yang telah dicetak dan juga

pelajar yang tidak mempunyai kemudahan pencetak untuk mencetak borang cuti. Melalui aplikasi yang dibangunkan ini, permohonan cuti pelajar dapat diuruskan dengan lebih cekap cepat dan efisien.

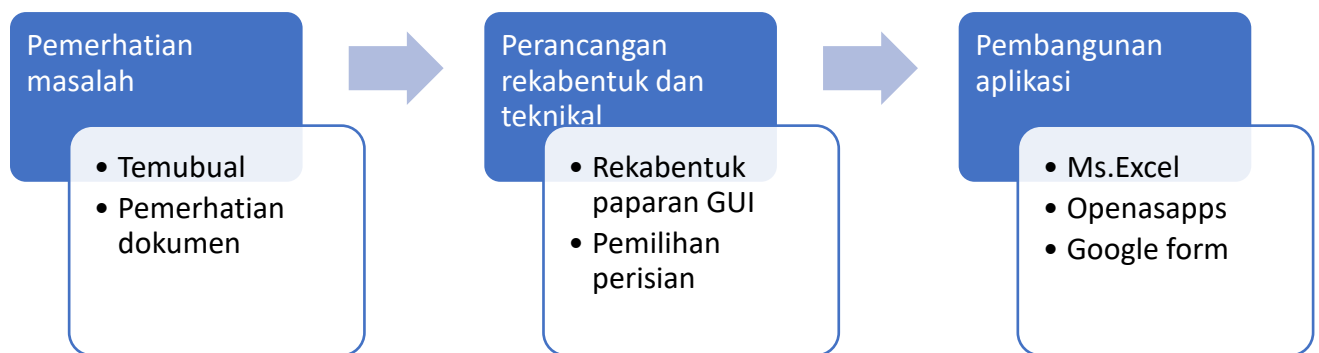
2.0 OBJEKTIF

Objektif bagi pembangunan aplikasi ini adalah :

1. Membantu mengurangkan penggunaan kertas dalam menyokong ke arah kelestarian alam.
2. Membantu pengguna untuk menguruskan permohonan cuti mereka dengan lebih cekap dan pantas berbanding penggunaan proses manual.
3. Membantu pihak pengurusan untuk menguruskan data pelajar dengan lebih sistematik tanpa perlu mengisi data secara manual dan membantu untuk membuat analisis data.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Aplikasi ini telah dibangunkan dengan menggunakan tiga perisian iaitu Microsoft Excel, Openasapps dan Google Form. Aplikasi ini seterusnya boleh digunapakai samada di dalam telefon mudah alih atau menggunakan pelayar internet (*browser*). Pembangunan aplikasi ini dibangunkan dengan melalui langkah seperti mengenalpasti masalah yang berlaku semasa proses permohonan secara manual dilaksanakan. Seterusnya rekabentuk aplikasi dibangunkan hasil daripada pemerhatian masalah tadi dan perancangan teknikal dibuat agar aplikasi ini dapat dihasilkan dengan lebih lancar dan mudah. Perancangan teknikal ini telah melibatkan proses pemilihan perisian yang akan digunakan, rekabentuk borang tersebut yang sepatutnya memudahkan pengguna dan tidak mengelirukan pengguna. Melalui proses rekabentuk dan perancangan teknikal ini, fasa pembangunan telah dapat dilaksanakan dengan lebih tersusun dan siap di dalam tempoh perancangan yang sepatutnya. Setiap proses yang berlaku ini boleh diringkaskan seperti di dalam gambarajah di bawah:



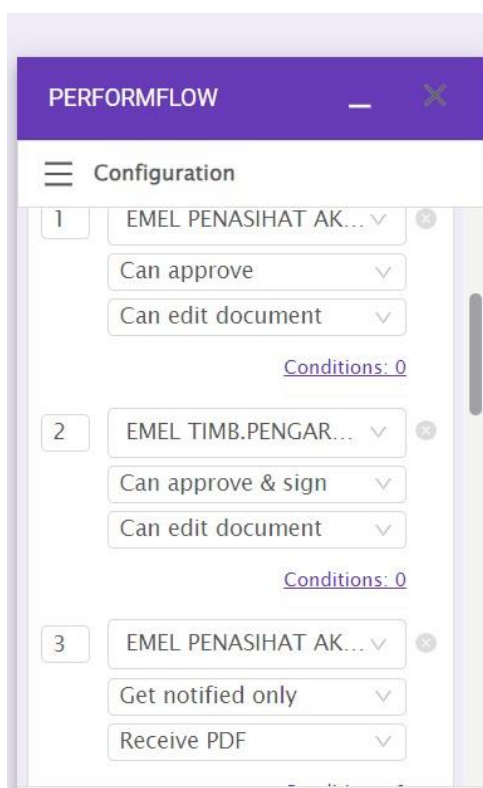
Rajah 1: Proses aliran pembangunan aplikasi MYCUTI

Setiap perisian yang digunakan ini mempunyai fungsi yang berbeza dan proses aliran adalah bermula dengan pembinaan dokumen borang cuti di dalam *Microsoft Excel*. Borang ini perlu dibuat dengan dengan format yang sama seperti yang telah terkandung di dalam manual kualiti Kolej Komuniti Hulu Langat. Data pelajar seterusnya akan dimasukkan ke dalam helaian (*sheet*) yang berlainan. Perisian *Openasapps* digunakan sebagai platform bagi mengintegrasikan paparan grafik pengguna (*Graphical User Interface*) agar menjadi satu paparan yang mesra pengguna dan bersesuaian dengan susun atur di dalam telefon bimbit. Manakala perisian Google Form menjadi platform yang digunakan untuk memproses

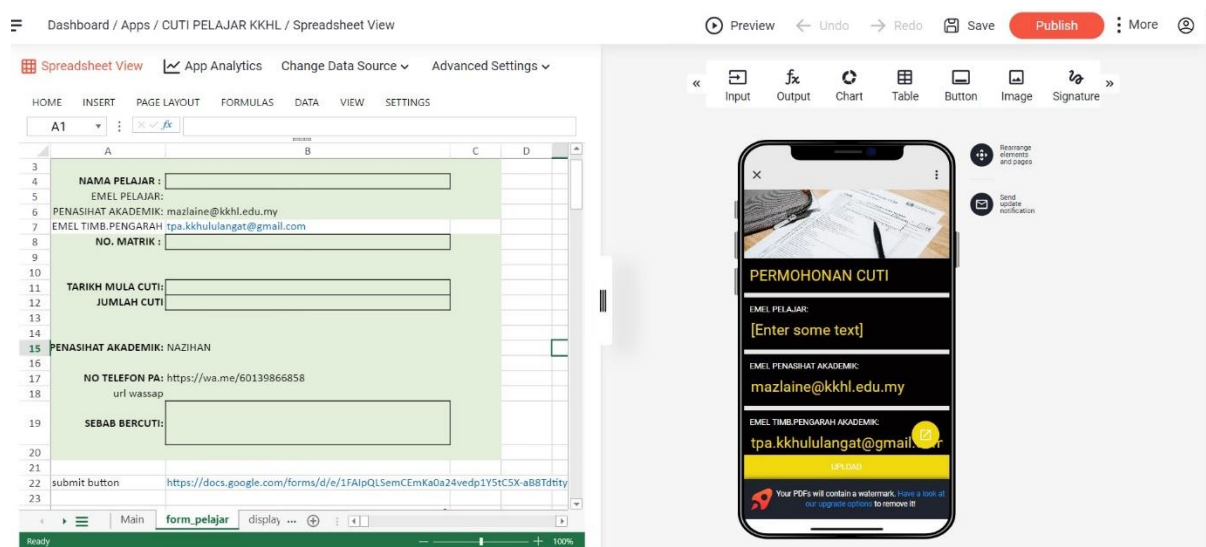
permohonan tersebut melalui penggunaan *Perform Flow Process* agar notifikasi permohonan dan kelulusan dapat diterima melalui emel yang telah didaftarkan. Jadual 1 di bawah memperincikan fungsi setiap perisian yang digunakan semasa pembangunan aplikasi ini dibuat.

Fungsi Perisian	
Microsoft Excel	Sheet 1: Menyimpan sumber data iaitu maklumat nama dan no matrik pelajar Sheet 2: Memaparkan borang cuti mengikut <i>templat</i> di dalam manual kualiti kolej.
Openasapps	Platform bagi mengintegrasikan data di dalam <i>excel</i> agar paparan dalam bentuk aplikasi mobil dapat dilihat dan digunakan oleh pengguna.
Google Form	Data yang telah di isi akan dihantar ke dalam <i>google form</i> dan diproses menggunakan <i>add-in performflow</i> bagi menghantar notifikasi permohonan kepada penasihat akademik dan timbalan pengarah akademik.

Jadual 1 : Fungsi perisian



Gambar 1 : *PerformFlow* yang digunakan di dalam *google form*

Gambar 2 : Penggunaan perisian *OpenasApp* bersama dengan *Ms.Excel*

Proses pembangunan aplikasi ini telah mengambil masa selama 3 minggu. Ringkasan pembangunan ini diperincikan seperti di dalam carta perbatuan di bawah.

Pelaksanaan	Minggu 1	Minggu 2	Minggu 3
- Pemerhatian - Reka bentuk antara muka			
- Pemilihan perisian dan perincian teknikal - Pembangunan aplikasi			
- Pengujian - Pelaksanaan			

Jadual 2 : Carta perbatuan pembangunan aplikasi

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Impak di dalam pembangunan aplikasi ini boleh dilihat secara langsung ataupun tidak langsung. Kecekapan pengurusan di peringkat kolej dapat dipertingkatkan apabila data cuti pelajar dapat direkodkan dengan lebih tepat dan juga teratur selain ianya juga tidak lagi perlu dimasukkan secara manual oleh pensyarah. Penjimatan wang dan masa juga memberikan kesan baik terhadap pelajar dan juga pihak pengurusan. Pelajar hanya perlu membuat permohonan cuti melalui telefon bimbit. Pelajar ataupun pihak pengurusan juga tidak perlu mencetak dan mengeluarkan kos bagi mendapatkan salinan fizikal bagi borang tersebut. Melalui pemerhatian terhadap pengujian yang telah dilaksanakan, rekod pengurusan cuti pelajar menjadi lebih mudah untuk disemak dan diuruskan oleh penasihat akademik. Namun begitu beberapa pembaharuan ataupun penambahbaikan boleh dilaksanakan pada masa hadapan seperti menambah borang bagi pelajar yang mempunyai MC dan kepelbagaian platform yang digunakan. Buat masa sekarang perisian ini adalah terhad kepada pengguna *android* sahaja. Manakala beberapa fungsi tambahan juga boleh diwujudkan bagi memudahkan pensyarah untuk membuat semakan seperti cuti pelajar yang telah dihantar, diluluskan atau masih dalam proses menunggu kelulusan.

5.0 KESIMPULAN

Projek ini merupakan salah satu inisiatif yang boleh diambil sebagai salah satu langkah ke arah penggunaan teknologi hijau di kolej. Melalui sokongan pelajar dan juga pihak pengurusan, perisian ini dapat memberikan impak yang tinggi kepada semua yang berada di kolej. Diharapkan pada masa hadapan, penambahbaikan dan pembaharuan dapat dilaksanakan terhadap aplikasi ini bagi memberi lebih nilai tambah dan memberikan manfaat yang optimum kepada pelajar khususnya dan pihak pengurusan kolej amnya.

MOLD MAKING FOR COMPOSITE TENSILE TEST

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ABSTRACT

This innovation mostly on simple shape composite mold, with one-piece molds made from nylon plastic. During this mold fabrication, consideration given to use the recyclable materials but yet provides durability. High flow rates of thermoplastic or thermoset resin are considered as the main medium to be cured in the mold along with the fibres. These high flow rates may interfere with the casting process and result in a non-uniform cast layer thickness along the part. Therefore, the mold or die design is an important part and is closely related to possible problems of the heat treatments and dimensional accuracy. Regions with abrupt variation in the cross-section and sharp corners are points that can lead to cracks or warpage during heating and mainly during quenching. Rough machining marks can act as notch and cause fracture of the mold or die during the heat treatment. The initial idea was innovate using CAD program to simulate the exact dimension following the ASTM D3039 (Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials). The most common specimen for ASTM D3039 is a constant rectangular cross section. These molds are machined using CNC, laser cutting and grinding. This mold or die may act as an educational aid apparatus in preparing samples of composites for tensile test.

Keywords: mold, resin, machining, composite.

1.0 INTRODUCTION

Plastic waste is a major environmental problem. Every year, millions of tons of plastic end up in landfills and oceans, where it can take hundreds of years to decompose. The mold is used to create the shape of the final product. There are many different types of molds that can be used, depending on the desired shape and size of the product. The first step in mold making is to create a prototype of the desired product. This can be done by hand or using computer-aided design (CAD) software. Once the prototype is created, it can be used to make a mold. There are many different materials that can be used to make molds, including silicone, urethane, and epoxy. The choice of material will depend on the desired properties of the mold, such as its durability and flexibility. The resin is poured into the mold, where it cools and hardens. The finished product is then removed from the mold. Mold making for single fiber is a complex process, but it is a promising way to reduce plastic waste and create sustainable items. The benefits of using recycled plastic waste to create single-fiber sample, such as reducing pollution and conserving natural resources. The different types of molds that can be used to create single-fiber samples. The steps involved in the mold making process, from creating a prototype to injecting the molten resin into the mold. There is limited mold in market for mold based on ASTM D3039. Mold must be in perfect shape according to ASTM standard.

2.0 OBJECTIVE

The objective for this innovation is specific, measurable, achievable, relevant, and time-bound. It is specific because it clearly states what will be done (design and fabricate a mold, prepare specimens, and identify mechanical characteristics). It is measurable because it specifies the ASTM standard that will be used (ASTM D3039). It is achievable because the tasks involved are within the skills and resources of the person or team who will be doing the work. It is relevant because it is directly related to the goal of understanding the mechanical characteristics of single fibre sample preparations. And it is time-bound because it specifies that the work will be completed in a specific timeframe.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

In the realm of advanced manufacturing, the process begins with the meticulous creation of a preliminary design, or mold draft, utilizing cutting-edge Computer-Aided Design (CAD) software like Catia. This digital blueprint serves as the foundation for the subsequent stages. The CAD drawing is then seamlessly translated into actionable instructions for a CNC (Computer Numerical Control) machine, which meticulously carves the mold with unparalleled precision. The resultant mold is characterized by an open cavity, a critical feature in the production of high-performance materials.

Within this mold, an intricate dance of materials takes place. First, the fibers are thoughtfully positioned, securely anchored in place to maximize their stiffness. To forge a resilient composite, a precisely measured blend of resin and hardener is then introduced. In a testament to the artistry of craftsmanship, the composite is laid by hand, layer by layer, in a method known as "manually hand lay-up." This labor-intensive process imbues the composite with unique qualities.

The heart of this innovation lies in the integration of single rattan fibers within the polymer matrix, creating a remarkably strong and lightweight material. To ascertain its mechanical prowess, rigorous testing is conducted, following the stringent ASTM D3039 standard. These tests reveal the composite's tensile properties, ensuring that it meets or exceeds industry benchmarks for strength and durability. In the convergence of cutting-edge technology and traditional craftsmanship, this methodology yields a material of exceptional performance, poised to redefine the boundaries of composite engineering.



Figure 1: Single fibre mold made from plastic after machining by CNC



Figure 2: Compound used made of resin and hardener



Figure 3: Pouring process of compound into cavity



Figure 4: Compound hardened at surrounding temperature



Figure 5: Sample for composite is ready for tensile testing

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

Mold making for single fiber presents a promising paradigm shift in composite material manufacturing. Its advantages are evident, from the significant reduction in material waste to the enhanced precision that ensures impeccable accuracy in the final product. This precision extends to the realization of the full potential of the fiber's properties, endowing the resulting parts with superior strength, stiffness, and overall performance. Moreover, the versatility of this technique empowers designers with unparalleled flexibility, allowing them to cater to specific performance and aesthetic demands. Beyond the tangible benefits, the environmental impact is substantially reduced, a vital consideration in today's eco-conscious manufacturing landscape. Higher product quality, reduced rejects, and the potential for entirely new product developments underscore the transformative potential of mold making for single fiber. Its novelty lies in its continual evolution, with ongoing research exploring innovative materials and techniques. This technology is steadily infiltrating diverse sectors, from aerospace to medical devices, and as costs decrease, its accessibility to manufacturers widens. In summary, mold making for single fiber is poised to reshape composite material manufacturing, offering a myriad of advantages, substantial impacts, and exciting opportunities for innovation.

5.0 CONCLUSION

In conclusion, the primary objective of this work was to design and manufacture a mold suitable for tensile tests using various materials, including nylon plastic or acrylic plastic. Through our experiments and analyses, several key conclusions have been drawn, shedding light on the significance and potential applications of this research. Firstly, the utilization of CAD software in conjunction with Computer-Aided Manufacturing (CAM) techniques has proven to be an effective means of optimizing mold design and production. This process not only enhances the precision and efficiency of the mold fabrication but also streamlines the entire production workflow. Secondly, the fabrication of molds using both nylon plastic has proven to be versatile, accommodating different curing functions. This adaptability allows for the creation of a wide range of composite specimens tailored to specific testing requirements, expanding the applicability of the mold design. Furthermore, it is noteworthy that the specimens produced in this study adhere to the ASTM D3039 standards, ensuring the reliability and compatibility of the obtained results with established industry benchmarks. This standardization adds credibility to the research findings and facilitates comparisons with other studies in the field. Lastly, a compelling conclusion emerges from the comparison between this innovative mold design and previous applications. It is evident that this product has the potential to significantly increase the production of samples, thereby enhancing the efficiency of testing processes. Moreover, the economic advantages associated with the manufacturing cost further underscore the practicality and feasibility of implementing this mold in industrial and research settings. In summary, this work represents a valuable contribution to the field of material testing and mold design. The incorporation of CAD/CAM techniques, the adaptability of mold materials, adherence to established standards, and the cost-effectiveness of the product collectively affirm its potential to revolutionize the way composite specimens are prepared and tested. This research sets a promising foundation for future advancements in the field, offering innovative solutions for improved sample production and cost efficiency.

SITESPECTRUM: A MULTI-CRITERIA DECISION SUPPORT SYSTEM FOR REAL ESTATE SITE EVALUATION USING AHP

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ABSTRACT

Prior to the development of certain real estate projects, developers will search for a quality site that is suitable for their proposed project. This project is aimed at developing an assessment model that can identify the quality level of a development site, and therefore assists in decision making process. Through a combination of literature review, expert opinions, and statistical analysis, the research develops a framework for prioritizing these components based on their relative importance. To develop the assessment model, firstly, a list of factors that contribute to the quality of site were identified from the literatures. Secondly, the factors were arranged in the hierarchy form suitable for AHP analysis. Thirdly, the final hierarchy was developed and validated by two (2) real estate experts. The AHP analysis will prioritize the factors that contribute to the site quality, subsequently developing the assessment model that can be used to measure the site quality in index form. The final AHP model consists of three (3) levels; Criteria level 1 (three (3) components, Sub-criteria level 2 (eleven (11) components) and Factors level 3 (thirty-eight (38) components). The findings of this study provide valuable insights for real estate developers, investors, and policymakers in making informed decisions regarding site selection and development.

Keywords: Real Estate Development, Analytic Hierarchy Process (AHP), Physical and Locational Quality.

1.0 INTRODUCTION

In the field of real estate development, choosing the best location is a key factor in determining project success. A development site's potential for successful and sustainable development is largely influenced by its physical and geographic characteristics. Since these aspects directly affect market demand, feasibility, and overall project viability, developers and investors carefully assess a variety of criteria that contribute to a site's physical and geographic qualities. Making educated judgements and maximising the worth and potential of a development site require an understanding of and evaluation of these elements.

A site's physical and geographic characteristics work together to influence its marketability and desirability. Real estate stakeholders can analyse and choose development sites that are in line with their goals, maximise return on investment, and improve the built environment by comprehending these factors and how they affect site quality. Therefore, SITESpectrum assists in making a viable decision in determining the quality of the site for residential real estate development.

2.0 OBJECTIVES

The principal objectives of this innovation idea are as follows; -

1. To identify the key features that contribute to the quality of a site for residential development.
2. To develop a multi-criteria decision support system for real estate site evaluation, namely the SITESpectrum system.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

Our vision is to develop a user-friendly, yet powerful decision support system that considers a diverse range of criteria and helps stakeholders make informed, objective choices. By harnessing the power of Analytics Hierarchy Process (AHP), this system could provide a robust solution that balances quantitative and qualitative factors in the site evaluation process.

The process of developing the SITESpectrum model started from identifying the factors from literatures and arranging the factors in Hierarchical Structure. It consists of Goal, Criteria Level 1, Sub-criteria Level 2, and Factors Level 3. The final hierarchy mode was further validated by two experts. Figure 1 below shows the final hierarchical model for SITESpectrum system.

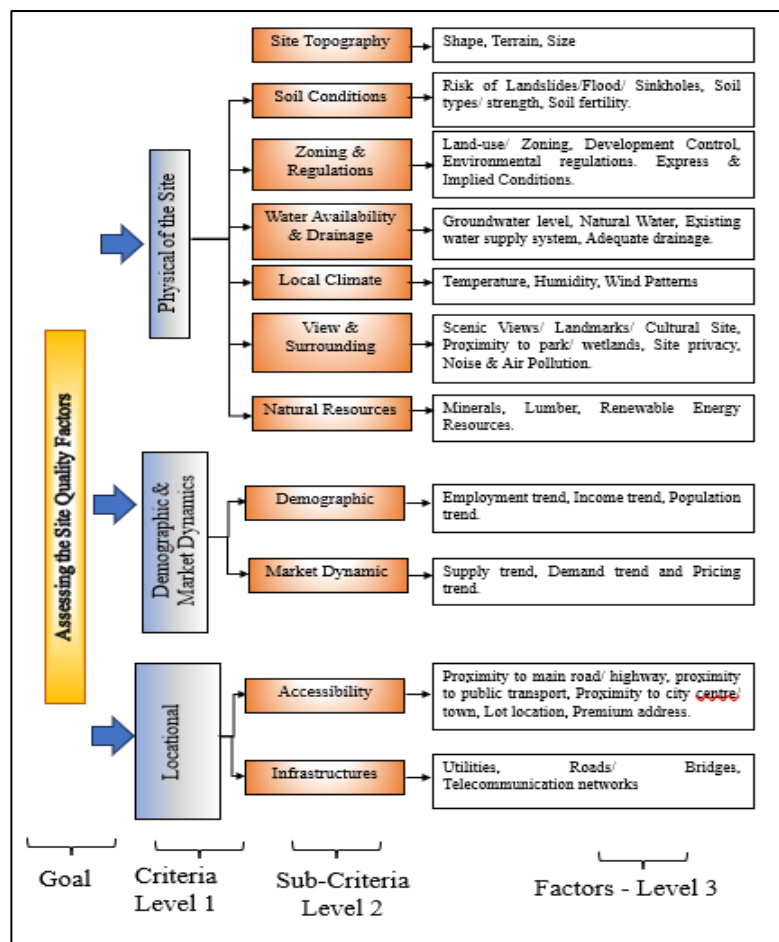


Figure 1. SITESpectrum Hierarchical Model

Second step focuses on obtaining the data from ten (10) expert panels in real estate development using AHP structured pair-wise comparison questionnaire survey. The panels are required to key-in their preferences in the Expert Choice Software.

In final step, the data is analysed to obtain the weights for each factor, that can be used to develop the Site Evaluation Index (SEI). This index summarises the relative importance and performance of all site evaluation factors. Higher SEI denotes high quality development site and vice versa. Figure 2 below depicts the initial Global Weight results for the development of the SITESpectrum system.

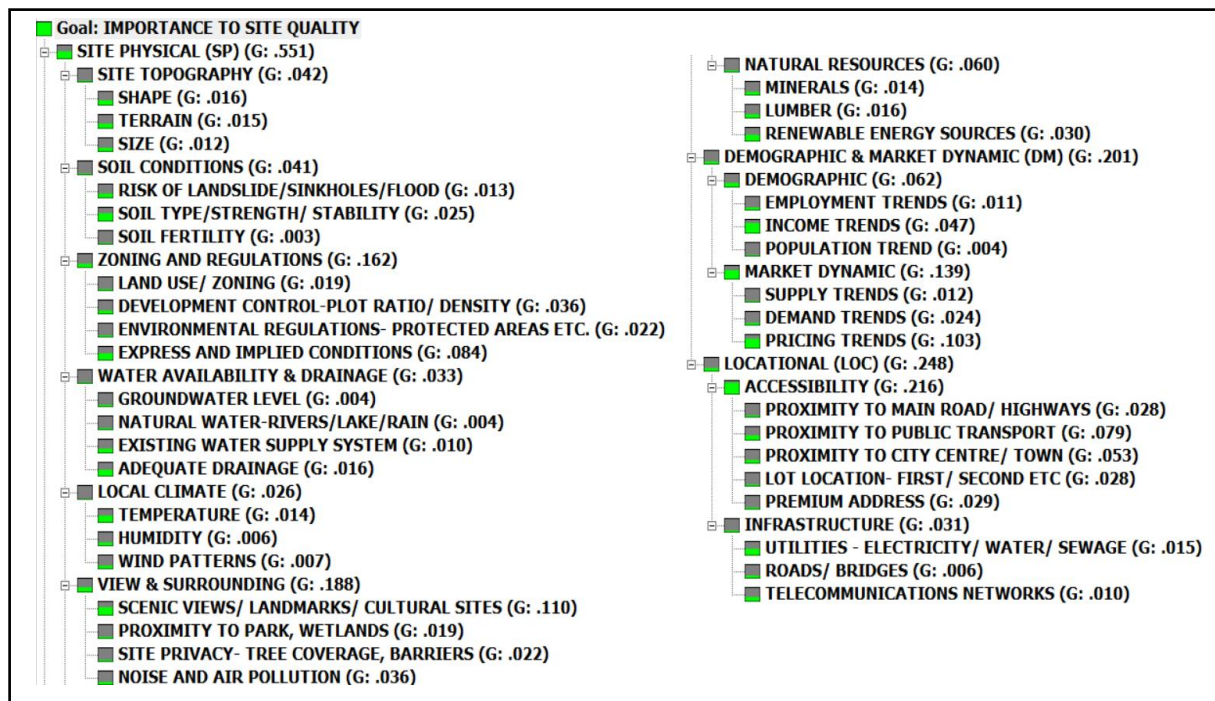


Figure 2: Initial Global Weight Results for SITESpectrum

4.0 ADVANTAGES

SITESpectrum brings advantages to user in the context of; -

- i. **Improved Decision-Making:** SITESpectrum helps users make more informed, objective site selection decisions, reducing the risk of costly mistakes.
- ii. **Time and Cost Saving;** SITESpectrum streamlines the process, enabling faster evaluations and optimising resource allocation.
- iii. **Sustainability and Environmental Focus;** The system's consideration of environmental factors encourages the selection of sites with lower ecological impact, contributing to sustainable development practices.

5.0 CONCLUSIONS

SITESpectrum represents a paradigm shifts in real estate site evaluation. By leveraging the power of AHP, this decision support system offers a data driven, comprehensive, and user-friendly approach to selecting the most suitable residential development sites. With SITESpectrum, we envision a future where real estate projects are strategically planned, environmentally conscious and economically successful.

CAROCHITIN POWDER

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ABSTRAK

Serbuk perasa digunakan dalam pelbagai jenis sajian bertujuan menambah rasa makanan agar menjadi lebih lazat. *Carochitin Powder* adalah inovasi serbuk perasa yang dihasilkan menggunakan gabungan bahan sisa sampingan udang, lobak merah serta campuran bahan lain tanpa penggunaan sebarang pewarna, perasa dan MSG. Idea penghasilan produk ini tercetus hasil penelitian terhadap kebanyakan restoran dan kilang memproses isi udang yang tidak menggunakan sepenuhnya sisa sampingan udang. Sisa sampingan udang terdiri daripada kepala, kulit sehingga ekornya mengandungi **25%-40% protein, 15%-20% kitin dan 45%-50% kalsium karbonat**. Kitin mengandungi kitosan yang merupakan agen penstabil lemak dan dapat membantu menurunkan berat badan serta mengurangkan kolesterol di dalam darah. Selain itu, kitosan juga digunakan sebagai agen penstabil rasa dalam sesuatu produk. Lobak merah pula mengandungi vitamin A dan B yang baik untuk kesihatan mata. Sisa sampingan udang dan lobak merah melalui proses pengeringan menggunakan oven pada suhu 60°C selama 5 jam. Kemudian ia dikisar menggunakan mesin pengisar sehingga terhasil dalam bentuk serbuk. Bahan-bahan ini dicampur dengan ramuan lain seperti bawang merah, bawang putih dan garam bagi menambahkan kesedapan. *Carochitin Powder* boleh digunakan sebagai penambah rasa dalam aneka makanan bergoreng, sup, keropok udang dan lain-lain bagi menggantikan rasa udang sebenar dalam masakan. Kajian uji rasa yang dijalankan menunjukkan penerimaan keseluruhan terhadap *Carochitin Powder* adalah tinggi iaitu 90%. Kos penghasilan yang murah kerana menggunakan bahan sampingan udang tetapi mempunyai manfaat yang banyak diharapkan dapat menjadikan *Carochitin Powder* sebagai produk pilihan dalam menambahkan kelazatan sesuatu sajian.

Kata Kunci: kitosan, kitin, sisa sampingan udang, lobak merah

1.0 PENGENALAN

Lambakan kulit udang daripada kilang memproses isi udang serta pembuangan sisa udang selepas santapan telah mencetuskan idea dalam penghasilan *Carochitin Powder*. *Carochitin Powder* merupakan satu produk inovasi serbuk perasa makanan berasaskan sisa udang yang terdiri daripada kepala kulit dan ekor yang telah diproses. Ramuan lain juga digunakan untuk menghasilkan *Carochitin Powder* seperti lobak, bawang merah, bawang putih dan sedikit garam. Produk ini menggunakan 100% bahan semulajadi tanpa penggunaan *monosodium glutamate* (MSG). *Carochitin Powder* sesuai digunakan sebagai serbuk perasa dan perencah dalam aneka masakan. Khasiat yang terdapat dalam produk ini memudahkan pengguna dalam proses penyediaan makanan disamping memberikan manfaat kesihatan kepada pengguna.

2.0 OBJEKTIF

Objektif penghasilan *Carochitin Powder* adalah untuk :

1. Memvariasikan produk berasaskan akuakultur produk menggunakan sisa sampingan udang kepada produk yang berkhasiat dan boleh dimakan.
2. Menyediakan serbuk perasa bebas bahan pewarna, pengawet dan perasa untuk kegunaan semua peringkat umur.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Charochitin Powder dihasilkan dengan hanya menggunakan sisa udang sebagai bahan utama. Bahan-bahan yang digunakan dalam penghasilan *Carochitin Powder* adalah sisa udang, lobak, bawang merah dan bawang putih. Kesemua bahan-bahan ini mempunyai khasiat yang tersendiri. Penghasilan *Carochitin Powder* tanpa penambahan MSG. Gabungan bahan-bahan ini menjadikan *Carochitin Powder* sebagai salah satu produk makanan yang lebih sihat berbanding serbuk perasa yang terdapat di pasaran. Proses penghasilan *Carochitin Powder* merangkumi proses penyediaan bahan mentah, pengeringan bahan, penggaulan bahan dan pembungkusan. Sisa udang, lobak, bawang merah dan bawang putih dikeringkan menggunakan oven 60°C selama 5 jam. Kesemua bahan ini dikisar menggunakan mesin pengisar sehingga terhasil dalam bentuk serbuk. Kesemua bahan ditapis menggunakan mesin penapis dan dibungkus menggunakan bekas yang sesuai bagi menjamin kebersihan dan jangka hayat produk.



Rajah 1: *Carochitin Powder* yang dihasilkan

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Carochitin Powder mempunyai pelbagai khasiat di samping rasanya yang enak, warna yang menarik dan kos penghasilan yang murah. Bahkan produk ini sebagai alternatif dalam penyediaan makanan yang mudah, cepat dan sedap. Justeru itu *Carochitin Powder* membantu memudahkan dan mempercepatkan proses penyediaan makanan kerana ia boleh digunakan sebagai bahan perasa dalam sos, aneka sup, snek, kuih-muih, produk otoshimi dan surimi serta produk makanan bergoreng disamping menambahkan rasa udang sebenar di dalam masakan mereka. Penghasilan inovasi produk *Carochitin Powder* juga diharapkan dapat membantu dalam memberikan impak “zero waste” dimana penggunaan sepenuhnya udang tanpa sebarang pembaziran dan mengelakkan daripada pencemaran alam sekitar. Disamping itu, produk ini juga mampu membantu merancakkan industri akuakultur terutamanya industri ternakan udang.

5.0 KESIMPULAN

Sisa sampingan udang yang diproses kepada serbuk perasa ini diharapkan menjadi alternatif dalam pemilihan bahan masakan yang berkhasiat. Sekaligus penggunaan sisa sampingan ini dapat membantu dalam menjaga kelestarian alam sekitar.

DESIGN AND FABRICATION OF AUTOMATIC FLOUR FILTER AND SEPARATOR

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ABSTRACT

The process of filtering flour to finish often leads to energy and time consuming, especially for large scale business. The flour filters sieve traditionally used are made of wood, plastic, and metal, which are susceptible to corrosion and contamination over time. The traditional flour filter sieve used in household is however small, and thus can strain up to certain amount of flour. The flour filter machine available in the market howbeit, is technically bulky, non-portable, and expensive. The aim of this project is to design and fabricate a medium-sized, portable, and affordable flour filter machine that can sift the flour for home appliances as well as small scale business purposes. The proposed automatic flour filter and separator machine is equipped with an AC motor that powers the conveyor which is responsible to move the filter repeatedly in linear direction. The sifted flour will go into a funnel equipped on the lower part of the filter. This machine is useful for the home appliances, small and even large-scale business that uses flour as a main ingredient. The machine is portable, considerable lightweight, and is designed to reduce the energy and the time consumed in filtering the flour.

Keywords: automatic flour filter, flour separator

1.0 INTRODUCTION

In baking, flour is often sifted through a fine mesh or flour sifter to remove lumps and aerate it. The available flour filter machine in the market howbeit, is found to be too colossal, non-portable, and pricey for household uses and small-scale business. This leads to the use of the small traditional filter sieve, which is energy consuming and limited to only small amount of flour that can be filtered out at a time.

2.0 OBJECTIVE

It is thus the aim of this study to design and fabricate a. automatic flour filter machine that offers an affordable price for household use, portable, whilst reduce the time and energy used in filtering the flour.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

This project was selected to assist small and medium-sized industries after a thorough research and background studies from the problem statement arise. A design was developed by using SolidWorks which is illustrated in Figure 1. Suitable materials and mechanical components were assembled, and the design idea was fabricated. Finally, a product testing was performed to determine the durability of the material of the final product which is illustrated in Figure 2.

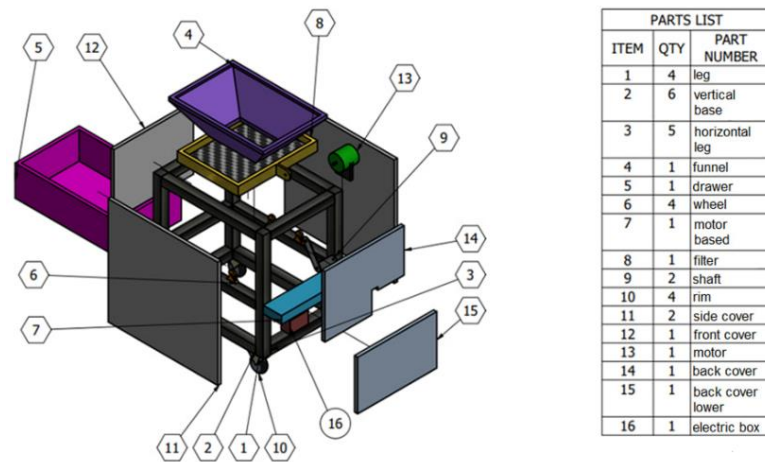


Figure 1: Design of the proposed Flour Filter and Separator using SolidWorks.

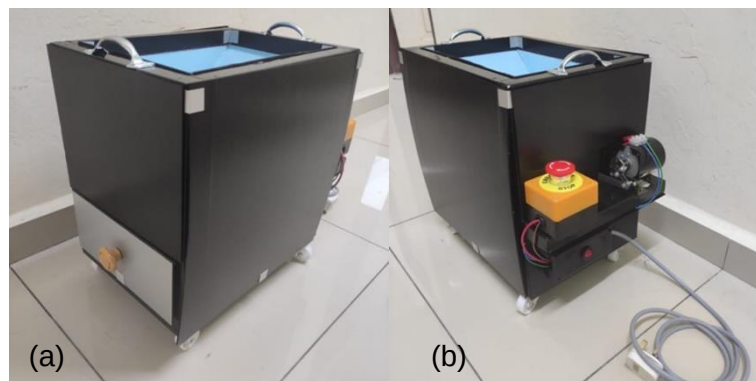


Figure 2: (a) Front view of the final product and (b) Rear view of the final product.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The proposed automatic flour filter machine will be able to help not only household, but small and medium-sized industrial confectionery makers to further increase their productivity while being able to provide satisfaction to their customers. By using this machine, it can save time and reduce the workload as the machine is designed to work automatically with the aid of AC motor which moves the filter sieves linearly and repeatedly. An emergency stop switch is also equipped with the machine, to stop the machinery quickly when there is a risk of injury, or the workflow requires stopping. To date, no machine has been designed and available in the market to help in reducing the workloads and time consuming in filtering flour.

5.0 CONCLUSION

Overall, from the evaluation and product test carried out on this flour filter and separator machine, the objective of this project has been achieved which is to produce a flour filter with a suitable design for small business owners or housewives. This has helped consumers, especially businessmen and housewives, to produce a variety of confectionery for them to do business and or even use at home.

DESIGN AND FABRICATION OF MECHANICAL TOOL FOR PLANTING BED PREPARATION

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ABSTRACT

In line with Sustainable Development Goal 2 (Zero Hunger), one of the activities is to achieve food security through sustainable agriculture. To get a healthy and strong plants, a proper plant bed preparation is required. Where soil is the primary source of water and nutrients for plant. As for now, the bed preparation by small farmers is mostly done by traditional method which led to several health problems such as back pain and time consuming. Therefore, the aim of this project is to design and fabricate the mechanical tool for planting bed preparation. As compared with the existing product the major concern is regarding the cost. Instead of using motorized powered, this product introduced mechanical mechanism to move. It is expected that the users can construct the plant bed in standing position to push the cart and able to complete the process in large area within a short time. According to the analysis during testing, it is shown that the time taken is reduced from 270 seconds to 40 seconds to complete one plant bed with 1.5m length. It is about 85% time reduction. As a result, using this product save a lot of time and it might help in avoiding back pain to the farmers. In conclusion, this product may give a big impact to the farmers and encourage them to plant more vegetables to sustain food supply and at the end, creating a world free of hunger.

Keywords: agriculture tool, food security, sustainable agriculture, plant bed.

1.0 INTRODUCTION

Planting bed is an area of soil or ground that is specially prepared for growing plants. It is typically raised or define in some way to separate it from the surrounding landscape. Planting beds can vary in size and shape, and they are often used in gardens and landscaping to create a controlled environment for cultivating flowers and vegetables. The main reason of having planting bed is that these beds are usually enriched with compost or other soil amendments that will provide a fertile growing medium for plants. Unfortunately, farmers mostly prepared the planting bed manually. They use a hoe to create the planting bed. These could lead back pain to the farmers. They need to bend over their body, make their body posture not comfortable while making the planting bed. Therefore, in order to overcome this problem, this project is introduced. Instead of bend over the body, the farmers just need to push the cart to create the planting bed. This mechanical tool is expected can reduce time and reduce back pain as well.

2.0 OBJECTIVE

The main objectives of this project are to design and fabricate the mechanical tool that can be used to prepare a planting bed. It is expected to overcome the back pain issue among the farmers as well as to reduce the duration of preparing the planting bed.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

This project was conducted by a few phases. Starting with idea generation, design selection, design using software, and lastly fabrication. The method used for idea generation is using Morphological chart, then Pugh chart for design selection and Solidwork software for detail design. Based on the design, it is then fabricated. The product consist of a few parts, which are frame, blade and arm. The frame is the major part of the product that hold all the parts together. Next, the blade is used to push the soil and make it separate to both right and left side make the soil raised up as a planting bed. Lastly, the arms is act as a handle for the product to be manoeuvre by the farmers. The detail parts and specification of the product are shown in Figure 1 below:

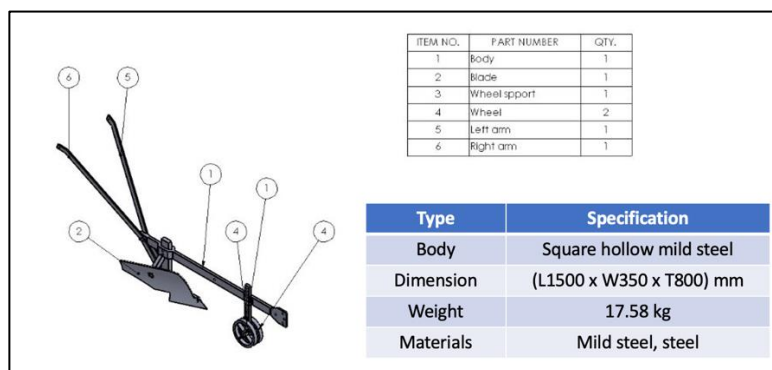


Figure 1: Parts and specification of the product

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

This product has been tested and it is found that by using this mechanical tool to prepare the planting bed, the farmers can reduce about 85% of the duration. Refer Table 1 for detail time record. With the time reduction, it is believed that it will also can reduce back pain since the worker are not required to bend their body anymore as they only need to push the product.

Table 1: Time comparison before and after using the product

Number of plant bed per row	Time (s)	
	Before	After
1	270	40
2	400	55
3	520	75
4	640	95

5.0 CONCLUSION

Overall, it can be concluded that both objectives has been achieved. The product is successfully fabricated and function well and proven that it can reduce time and change the posture of preparing planting bed which also helps in reduce back pain to the farmers.

SAKANA ROLL

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ABSTRAK

Sakana Roll adalah satu produk inovasi makanan yang berasaskan ikan keli dan mengambil idea daripada produk satar ikan. Kebiasaannya satar ikan menggunakan daun pisang untuk membungkus dan menggunakan isi ikan laut namun, Sakana Roll adalah produk yang menggunakan isi ikan keli serta sayur bayam kemudian dibungkus menggunakan kulit popia. Nama inovasi diinspirasi dari bahasa Jepun iaitu 'Sakana' bermaksud ikan. Penggunaan ikan keli dan sayur bayam dipilih disebabkan oleh khasiat yang sangat tinggi dan mudah didapati. Oleh itu pengguna dapat menerima manfaat protein dan serat secara langsung apabila memakan Sakana Roll ini. Kajian tahap penerimaan Sakana Roll dalam kalangan warga Kolej Komuniti Bera telah dilaksanakan dan hasil penilaian menunjukkan, penerimaan keseluruhan responden terhadap Sakana Roll adalah 80% Sangat Suka dan 20% pada tahap Suka. Penghasilan Sakana Roll dapat mempelbagaikan produk berasaskan ikan keli serta bayam di pasaran. Pengguna yang sukakan kuih popia juga mempunyai banyak pilihan kerana Sakana Roll juga boleh dinikmati seperti kuih popia yang sedia ada di pasaran iaitu boleh dimakan begitu sahaja atau dicicah bersama sos. Sakana Roll dapat membantu memenuhi keperluan nutrisi makanan untuk semua golongan masyarakat terutamanya kanak-kanak yang tidak gemar mengambil sayur-sayuran dan ikan.

Kata Kunci: Sakana Roll, ikan keli, popia

1.0 PENGENALAN

Penghasilan Sakana Roll dilihat selari dengan perkembangan permintaan ikan keli yang semakin meningkat. Menurut laporan dari Jabatan Perikanan Malaysia, pengeluaran ikan keli meningkat dari tahun 2019 sehingga 2021 iaitu dari 28,464.03 tan metrik kepada 31,957.80 tan metrik, ini menunjukkan penduduk Malaysia semakin menggemari ikan keli seterusnya permintaan terhadapnya sentiasa ada. Pengguna kini boleh menikmati ikan keli dengan pelbagai cara. Keadaan ini memberikan ruang terhadap bidang masakan untuk terus berkembang mengikut kehendak selera para penggemarnya. Dengan pelbagai jenis bahan adunan, maka dapat menghasilkan pelbagai jenis makanan berasaskan ikan yang berbeza rupa sehingga menjadi makanan yang lazat dan seimbang. Penggunaan sayur bayam dalam penghasilan Sakana Roll pula dapat menambahkan lagi khasiat produk inovasi ini. Produk inovasi ini boleh dijual dalam bentuk sejuk beku atau terus di makan setelah digoreng sekaligus mampu memberi saingan kepada produk berasaskan ikan yang sedia ada di pasaran.

2.0 OBJEKTIF

Objektif penghasilan Sakana Roll adalah untuk menarik minat masyarakat untuk makan ikan air tawar, membantu pengusaha akuakultur mempelbagaikan produk berasaskan ikan dan sayur serta membantu memenuhi keperluan nutrisi makanan untuk semua golongan masyarakat terutamanya kanak-kanak yang tidak gemar mengambil sayur-sayuran dan ikan.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Sakana Roll adalah produk yang menggunakan isi ikan keli serta sayur bayam hijau kemudian dibungkus menggunakan kulit popia. Kulit popia dipilih kerana teksturnya yang rangup apabila digoreng dan ramai penggemarnya. Produk yang menggunakan kulit popia juga sesuai disejuk beku kan dan ini salah satu faktor Sakana Roll menggunakannya. Sakana Roll mengandungi isi ikan keli dan sayur bayam hijau yang menjadikannya lebih bernutrisi. Umum mengetahui sayur bayam mengandungi pelbagai khasiat apabila dimakan mentah atau dimasak. Bayam mengandungi vitamin B6, riboflavin, folat, niasin yang sangat baik, serat makanan larut, asid lemak omega 3 dan mineral. Proses penghasilan Sakana Roll adalah merangkumi proses pengasingan isi ikan keli, penggaulan bahan dan pembungkusan. Ikan keli dibersihkan dengan menggunakan air limau bagi menghilangkan bau hanyir. Seterusnya direbus dengan asam keping dan garam kasar. Setelah sejuk, isi ikan diasingkan dari tulang dengan teliti bagi mendapatkan 100% isinya sahaja. Bahan-bahan lain seperti bawang merah, bawang putih, cili padi, kelapa parut turut disediakan. Serbuk bayam hijau digunakan dalam inovasi ini kerana dapat menjimatkan masa penyediaan Sakana Roll. Setelah semua bahan disediakan, proses penggaulan kesemua bahan dilakukan dengan menggunakan food processor. Setelah inti siap disediakan, proses menggulung Sakana Roll dilakukan dengan menggunakan kulit popia.



Rajah 1: Sakana Roll yang siap digoreng

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Sakana Roll merupakan idea inovasi yang asli, tiada lagi produk dipasaran yang menggunakan isi ikan keli dan bayam sebagai makanan ringan. Sakana Roll dapat mempelbagaikan produk berasaskan ikan air tawar. Selain itu, bahan yang digunakan mudah didapati & cara penghasilan yang senang, murah dan cepat. Masyarakat yang kurang gemar makan ikan dan sayur akan dapat pelbagai khasiat yang terhasil dari produk ini.

5.0 KESIMPULAN

Sakana Roll mempunyai peluang dan potensi untuk dipasarkan kerana ia merupakan produk ringkas yang boleh dinikmati setiap hari sama ada sebagai sarapan, minum pagi atau minum petang. Produk ini boleh dijual sebagai produk sejuk beku atau dijual yang siap digoreng. Tambahan pula, produk inovasi ini mempunyai rasa yang sedap, bau yang harum dan kos penghasilan yang murah. Bahan yang digunakan mudah didapati dan cara penghasilannya adalah senang, murah dan cepat. Penghasilan Sakana Roll dapat mempelbagaikan produk berasaskan ikan keli serta bayam di pasaran. Pengguna yang sukakan kuih popia juga mempunyai banyak pilihan kerana Sakana Roll juga boleh dinikmati seperti kuih popia yang sedia ada di pasaran iaitu boleh dimakan begitu sahaja atau dicicah bersama sos. Sakana Roll dapat membantu memenuhi keperluan nutrisi makanan untuk semua golongan masyarakat terutamanya kanak-kanak yang tidak gemar mengambil sayur-sayuran dan ikan. Di samping itu juga, produk ini dapat menarik minat orang ramai untuk makan ikan air tawar terutamanya ikan keli.

RAGUM PAIP KUPRUM MINI

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ABSTRAK

Ragum Paip Kuprum Mini ini telah direka khas untuk kegunaan di dalam bengkel penyaman udara bagi memudahkan proses pengajaran dan pemudahcaraan (Pdpc). Ragum Paip Kuprum Mini ini digunakan bagi memudahkan kerja pematrian iaitu kerja *silfosing* dan *brazing*. Fungsi utama Ragum Paip Kuprum Mini ini ialah untuk memegang atau mengapit paip kuprum yang bersaiz, khususnya, $\frac{1}{4}$ ", $\frac{3}{8}$ " dan $\frac{1}{2}$ ". Selain boleh mengapit paip kuprum pelbagai saiz dengan kemas dan kuat, kerja-kerja mengapit paip kuprum juga dapat dilakukan secara pantas dan cekap. Saiznya yang kecil menyebabkan ia tidak memerlukan ruang yang besar untuk menjalankan kerja pematrian serta tidak memerlukan ruang yang besar pula untuk menyimpannya. Dengan adanya Ragum Paip Kuprum mini, dengan kapasiti pelajar sedia ada, ruang dan bilangan meja yang terhad, kerja-kerja pematrian masih dapat dijalankan dalam keadaan selesa. Banyak masa dapat diijamatkan apabila pelajar dapat mengendalikan alat ini dengan cepat dan mudah serta tidak lagi perlu menunggu giliran yang lama seperti sebelum ini. Kesimpulannya, Ragum Paip Kuprum Mini ini merupakan rekaan yang sangat "smart" kerana ia sangat praktikal digunakan dari aspek rekabentuk, cara pengendalian, penyimpanan, penjimatan ruang, masa dan tenaga. Selain membantu memudahkan kerja pelajar dan pensyarah dalam bengkel PdP, ia juga mempunyai potensi yang cerah untuk dikomersialkan.

Kata Kunci: Inovasi PdPc¹, *Ragum Paip Kuprum*², Kolej Komuniti bandar Penawar³, *Silfosing*⁴, *brazing*⁵.

1.0 PENGENALAN

Projek penyelenggaraan bangunan merupakan kursus yang wajib bagi pelajar semester akhir Program Sijil Penyelenggaraan Bangunan di Kolej Komuniti Bandar Penawar. Projek ini mempunyai 4 mata nilai kredit. Kursus ini ditawarkan untuk memenuhi hasrat pelajar untuk meningkatkan impian dan kemahiran dalam penyelenggaraan bangunan.

2.0 OBJEKTIF

Objektif projek ini dibangunkan adalah seperti berikut:

- 2.1 mengatasi masalah kekurangan peralatan ketika proses pengajaran dan pembelajaran.
- 2.2 memastikan ia mudah alih dan tidak memerlukan ruang simpanan yang besar.
- 2.3 Menjimatkan masa kerja amali *silfosing* di kalangan pelajar

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

3.1 SKOP PROJEK

- 3.1.1 Skop projek inovasi ini adalah untuk mengapit paip kuprum yang mempunyai pelbagai saiz iaitu $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ " dan lain-lain. Dengan menggunakan produk inovasi ini kerja amali *silfosing* dapat dilaksanakan dengan lebih mudah dan cepat.

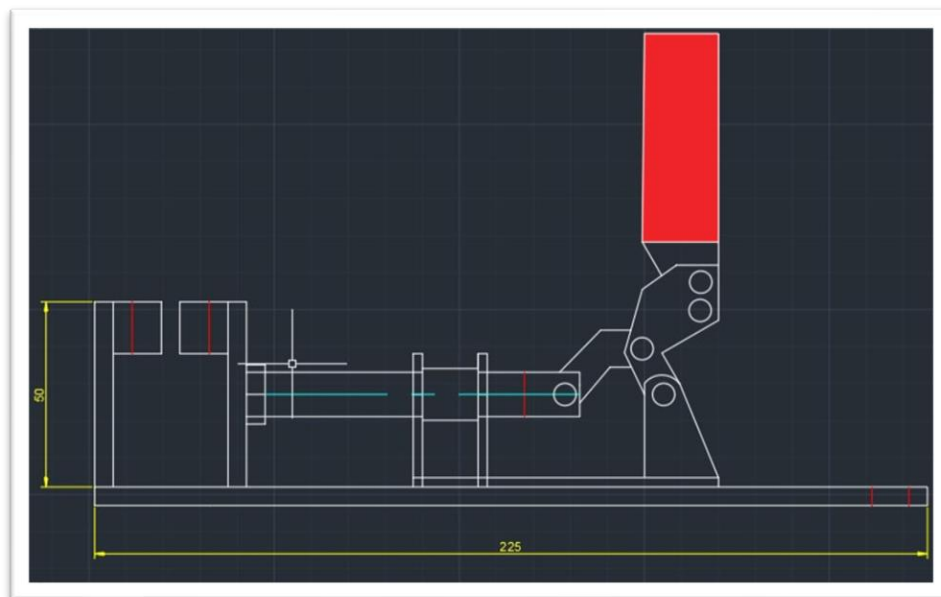
3.2 KAEDAH PELAKSANAAN / PROSES PELAKSANAAN PROJEK

3.2.1 Pemilihan tajuk

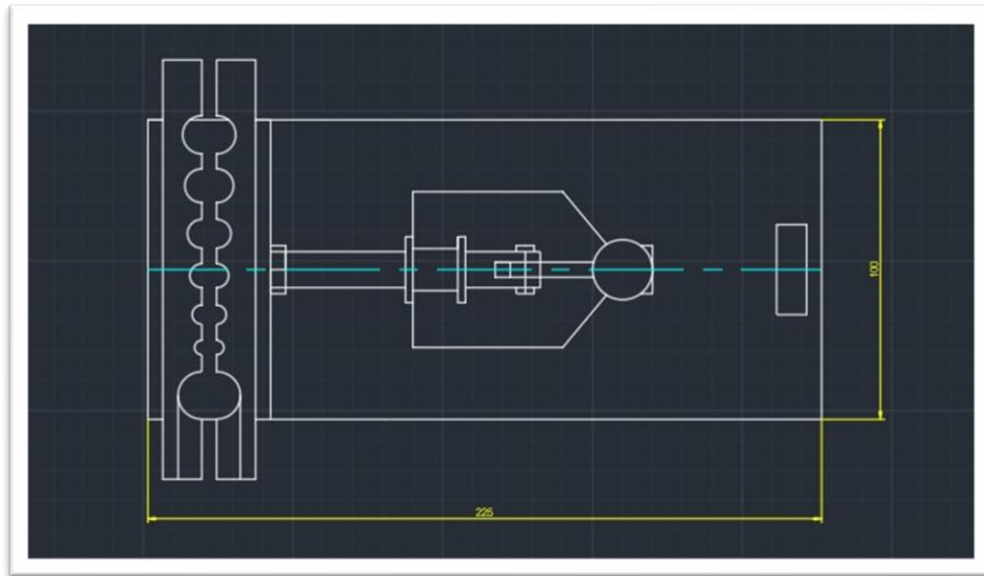
Satu sesi sumbangsaran di kalangan ahli kumpulan telah dilakukan untuk memilih tajuk projek yang akan dilaksanakan. Idea projek yang dipilih telah dikemukakan kepada penyelia projek untuk diktirafkan.

3.2.2 Proses Reka Bentuk

Proses seterusnya ialah melakar gambar rajah projek bagi mendapatkan saiz prototaip yang bakal dibangunkan. Lakaran projek ini seterusnya dilukis menggunakan perisian komputer, AUTOCAD (rujuk Rajah 1 dan Rajah 2)



Rajah 1: Pandangan sisi Ragum Paip Kuprum Mini



Rajah 2: Pandangan atas Ragum Paip Kuprum Mini

3.2.3 Proses pembinaan produk

Proses pembinaan produk melalui beberapa langkah iaitu:

Langkah 1: Proses penyediaan bahan dan peralatan.

Bahan logam dari jenis *mild steel plate* dan peralatan pengukuran dan pemotongan yang sesuai disediakan. (Rajah 3)

Langkah 2: Proses penandaan dan pengukuran bahan logam. (Rajah 4)

Langkah 3: Proses pemotongan dan kemasan logam.

Proses memotong besi bersaiz 5mm dan berskala 23cm, manakala pada bahagian tapak atas berskala 15cm. (Rajah 5)

Langkah 4: Proses penetapan dan kimpalan logam.

Kedudukan logam ditetapkan pada kedudukan yang betul dan tepat, seterusnya dikimpal menggunakan mesin kimpalan MIG. (Rajah 6)

Langkah 5: Proses ujilari.

Melakukan uji lari bagi projek tersebut dengan menggunakan paip kuprum bersaiz 1½", 3⁄8" dan 1¼". Ini bertujuan memastikan produk inovasi dalam keadaan baik dan boleh digunakan. (Rajah 7)

Langkah 6: Proses kemasan dan catan. (Rajah 8)

Berikut adalah gambar rajah proses/langkah kerja yang dijalankan serta carta alir proses pembinaan produk.



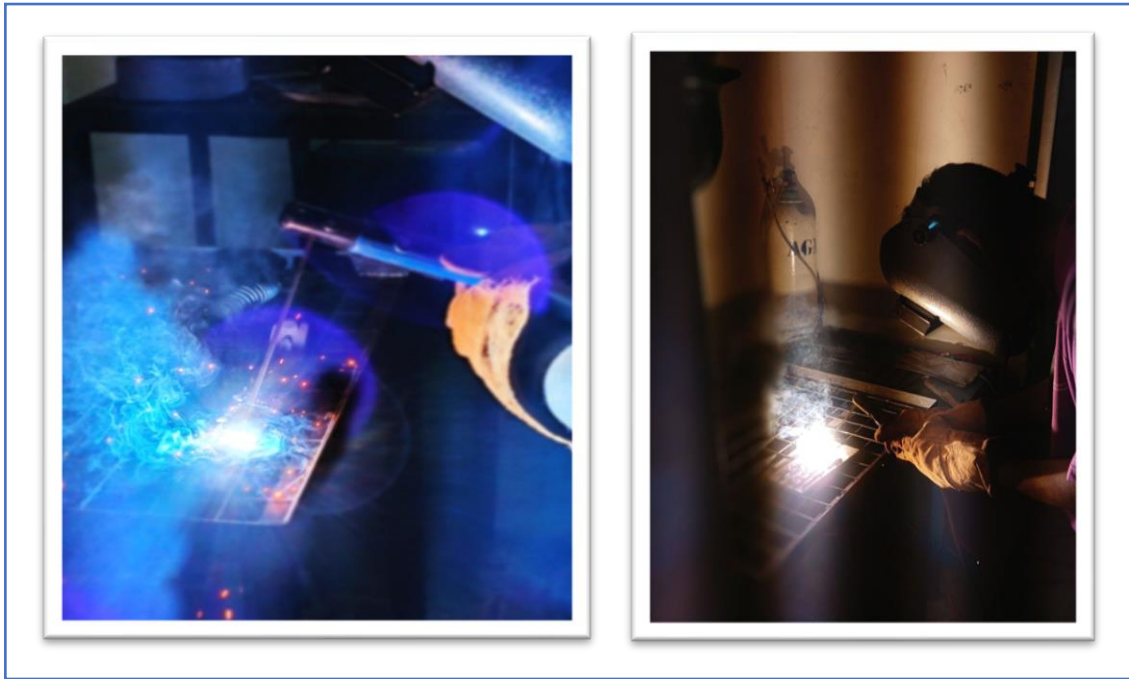
Rajah 3: Proses penyediaan bahan dan peralatan.



Rajah 4: Proses penandaan dan pengukuran bahan logam



Rajah 5 : Proses pemotongan dan kemasan logam.



Rajah 6 : Proses penetapan dan kimpalan logam.



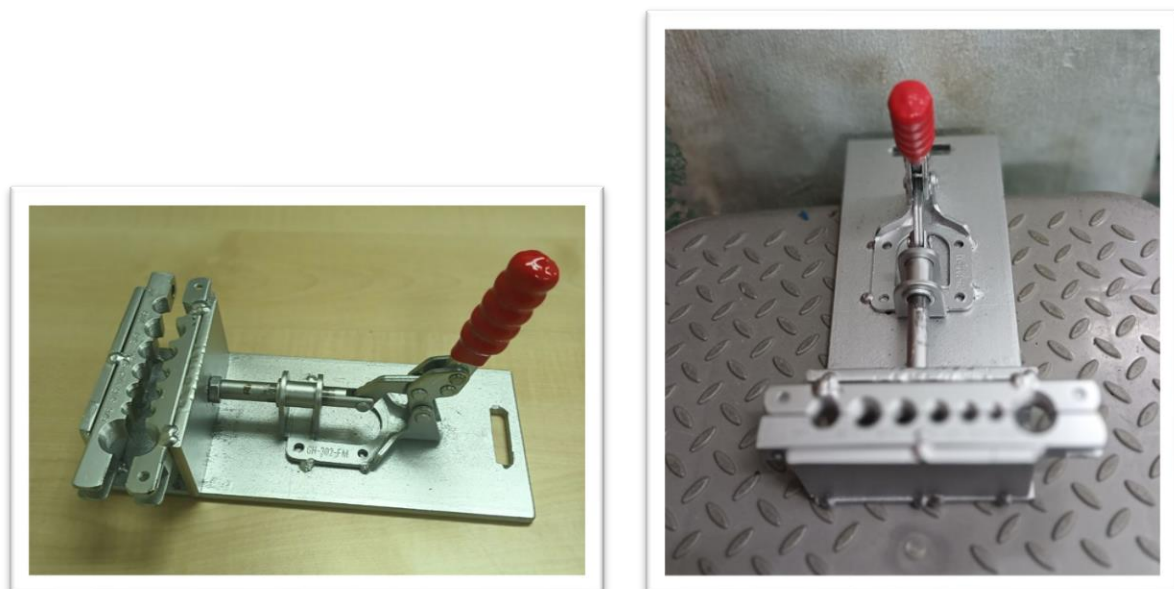
Rajah 7 : Proses ujilari- Ujian kebolegunaan produk.



Rajah 8 : Ujian kepantasan dan kecekapan pengendalian

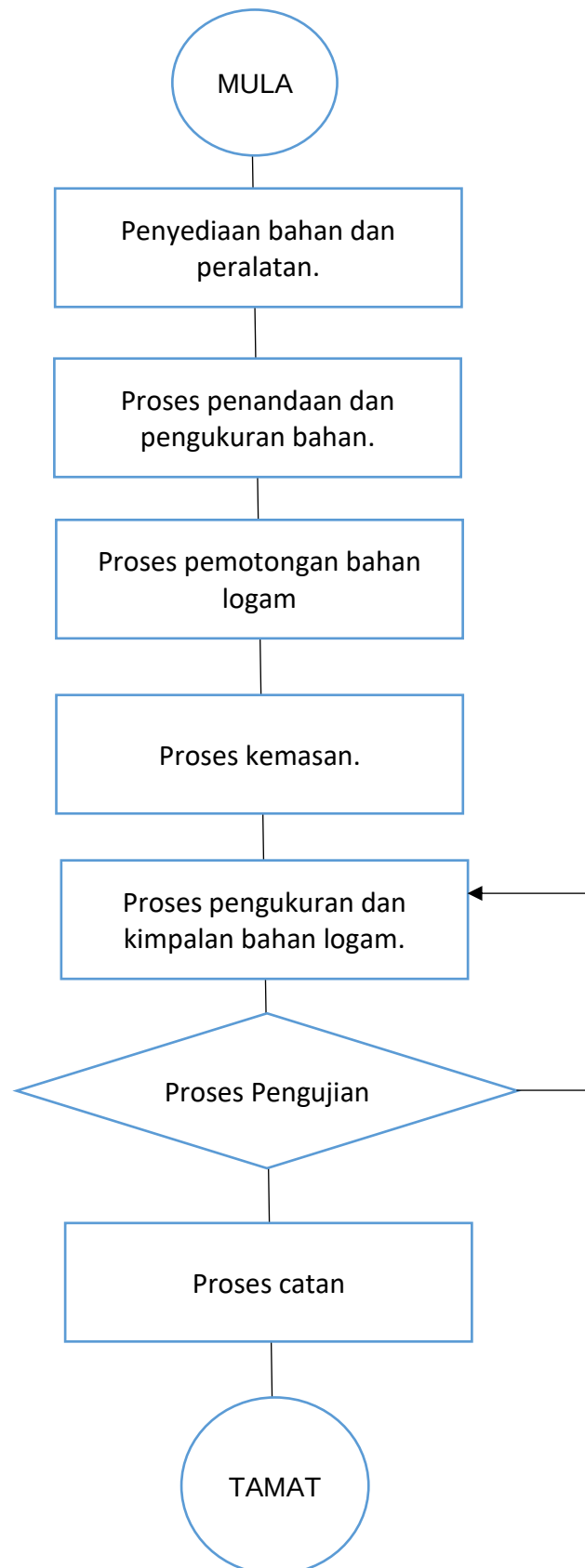


Rajah 9: Proses kemasan dan catan



Rajah 10 : Ragum Paip Kuprum Mini yang telah siap

CARTA ALIR PROSES PEMBINAAN PRODUK



3.3 DAPATAN PROJEK/ KAJIAN

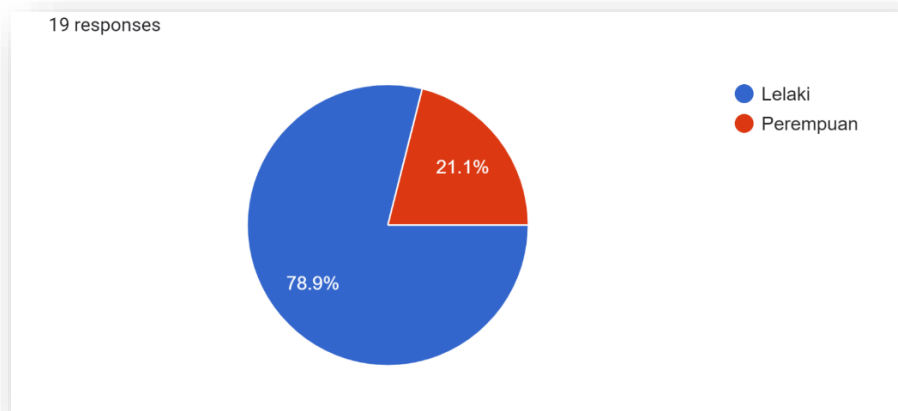
3.3.1 Bagi mengenal pasti persepsi pengguna terhadap potensi produk ini, satu kajian ringkas berbentuk tinjauan telah dijalankan dengan menggunakan soal selidik sebagai instrumen. Dalam penyediaan borang kaji selidik ini, pembinaan item-item soalan dibahagikan kepada tiga bahagian iaitu bahagian Bahagian A, maklumat demografi, Bahagian B, ialah maklum balas responden terhadap reka bentuk produk serta Bahagian C ialah berkaitan kebolegunaan dan keberkesanan produk. Maklum balas responden pada bahagian A dan B diukur dengan menggunakan 4 pilihan skala likert:

- i. sangat tidak setuju\tidak pernah\sangat tidak minat
- ii. tidak setuju\tidak berminat
- iii. setuju\berminat
- iv. sangat setuju\pernah/sangat berminat

Berikut adalah hasil dapatan dari tinjauan yang dijalankan.

Bahagian A : Demografi

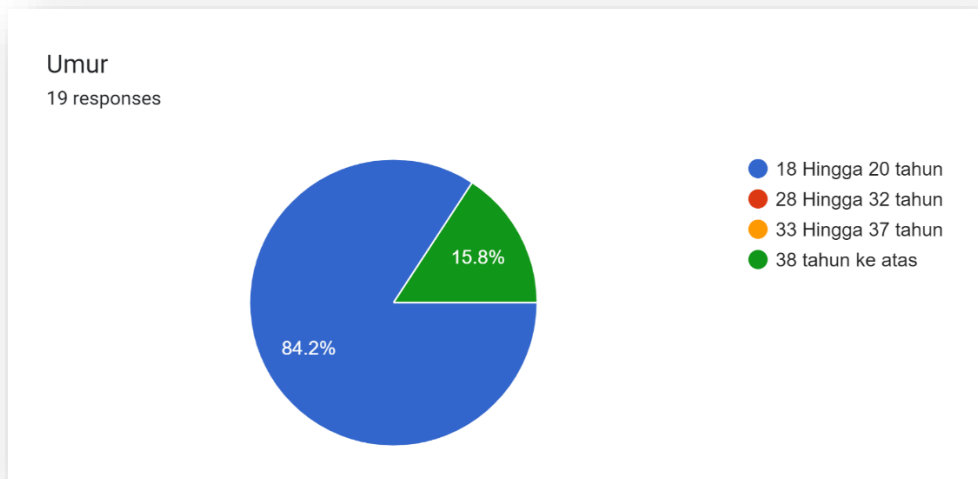
Rajah 11 menunjukkan latar belakang responden berdasarkan jantina responden.



Rajah 11: Peratus responden mengikut jantina.

- Sebanyak 78.9% responden adalah lelaki manakala selebihnya, 21.1% adalah perempuan.

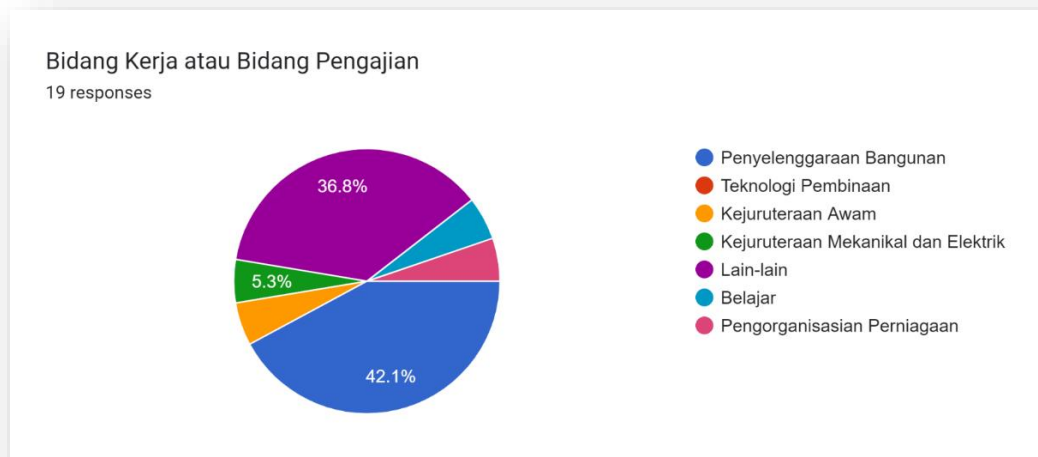
Rajah 12 menunjukkan peratus responden berdasarkan umur.



Rajah 12 : Peratus responden mengikut umur

Berdasarkan carta pai di atas sebanyak 84.2% responden berumur 18 hingga 20 tahun dan merupakan majoriti responden. Sebanyak 15.8% responden berumur 38 tahun ke atas. Sementara itu, tiada responden yang berumur antara 28 hingga 37 tahun yang terlibat dalam kajian ini.

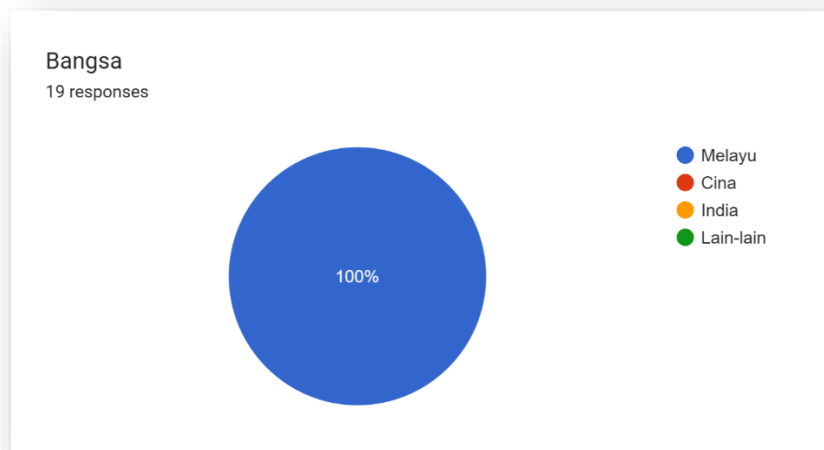
Rajah 13 menunjukkan bilangan responden mengikut bidang kerja atau pengajian.



Rajah 13: Peratus responden mengikut bidang kerja atau bidang pengajian.

Berdasarkan rajah 13 di atas, sebanyak 42.1% responden adalah dari bidang penyelenggaraan bangunan, 5.3% dari bidang kejuruteraan awam, 5.3% dari bidang kejuruteraan mekanikal dan elektrik dan sebanyak 5.3% juga dari bidang pengoperasian perniagaan. Selebihnya, sebanyak 36.8% adalah dari lain-lain pengajian.

Rajah 14 menunjukkan peratus responden mengikut kaum.

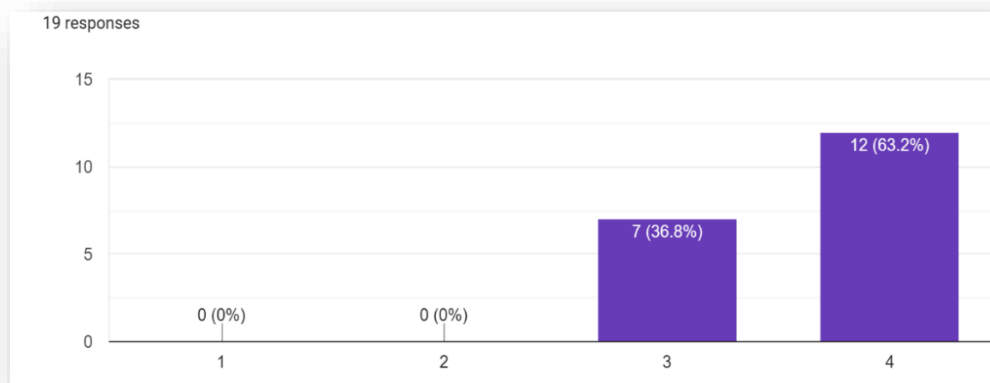


Rajah 14 : Peratus responden mengikut kaum

Berdasarkan rajah 14 di atas, hanya kaum Melayu terlibat di dalam kajian ini.

Bahagian B : Reka bentuk Produk

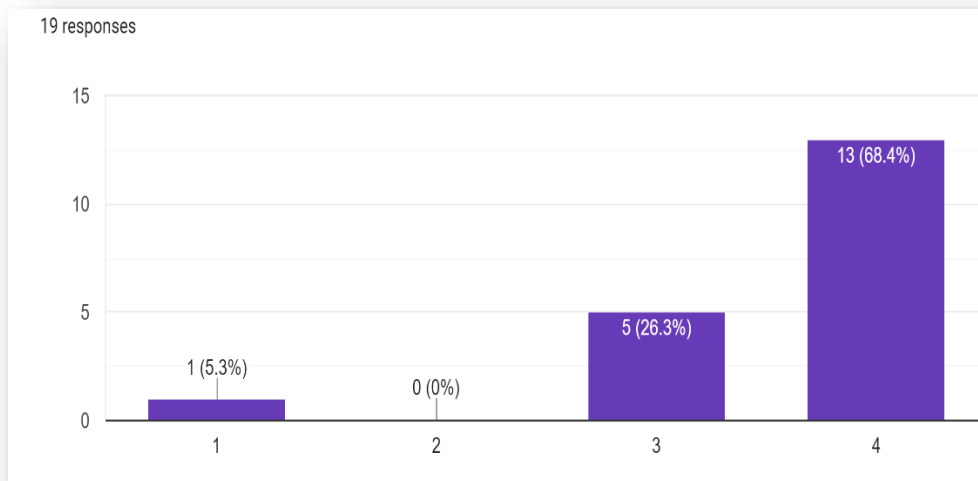
Rajah 15 di bawah menunjukkan maklum balas responden terhadap reka bentuk Ragum Paip Kuprum Mini.



Rajah 15 : Graf maklum balas terhadap reka bentuk produk

Berdasarkan graf di atas, 63.2% responden sangat suka dan meminati reka bentuk Ragum paip kuprum Mini dan 36.8% lagi suka dan minat terhadap reka bentuk produk. Secara keseluruhannya semua responden suka dan minat terhadap reka bentuk produk.

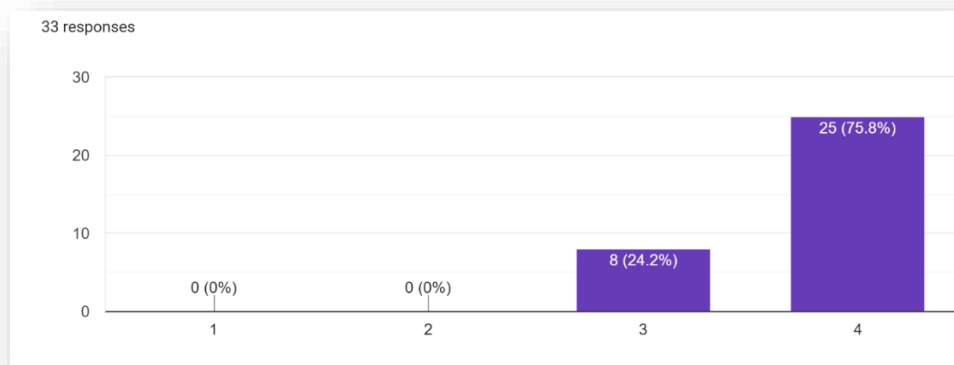
Rajah 16 menunjukkan maklum balas responden terhadap fleksibiliti produk.



Rajah 16 : Peratus maklum balas responden terhadap fleksibiliti produk.

Seramai 13 orang, iaitu 68.4% responden sangat bersetuju bahawa produk ini fleksibel untuk digunakan dan 26% juga bersetuju terhadap fleksibiliti produk ini. Walaubagaimanapun, terdapat juga seorang (5.3%) yang sangat tidak bersetuju dengan flisibiliti produk ini.

Rajah 17 menunjukkan maklum balas responden terhadap keunikan Ragum Paip Kuprum Mini.

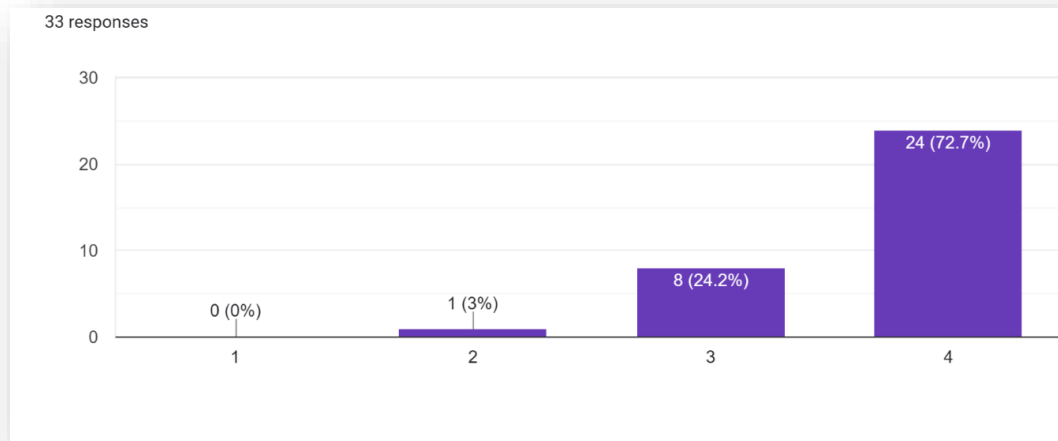


Rajah 17 :Peratus maklum balas responden terhadap keunikan Ragum Paip Kuprum Mini.

Kesemua responden bersetuju bahawa Ragum Paip Kuprum Mini adalah unik dengan 24.2% bersetuju, dan sebanyak 75.8% sangat bersetuju.

Bahagian C : Kebaikan dan Keberkesanan Produk.

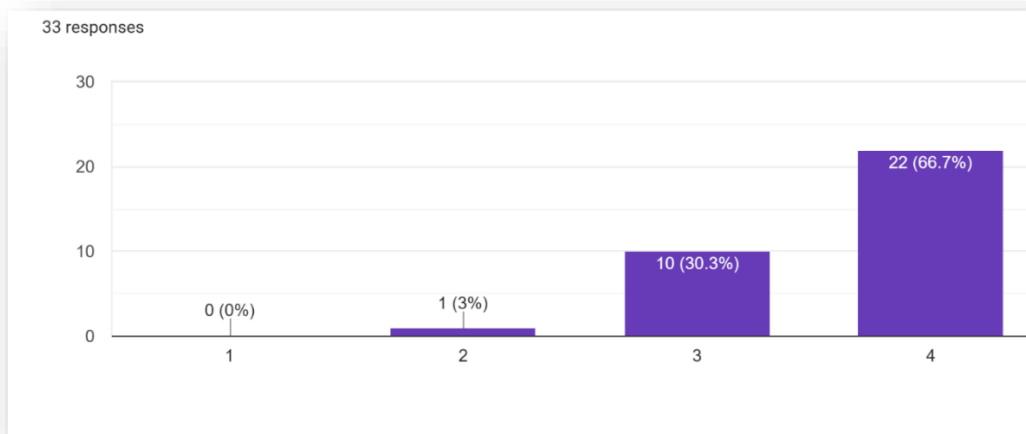
Rajah 18 menunjukkan peratus responden terhadap kebaikan produk.



Rajah 18: Peratus responden terhadap kebaikan produk.

Berdasarkan carta di atas, seramai 24 orang daripada 33 orang sangat bersetuju Ragum Paip Kuprum Mini mempunyai kebaikan. Hanya seorang, iaitu 3 % kurang bersetuju terdapat kebaikan pada produk ini dan selebihnya 8 orang, iaitu 24.2% bersetuju terhadap kebaikan yang terdapat pada produk.

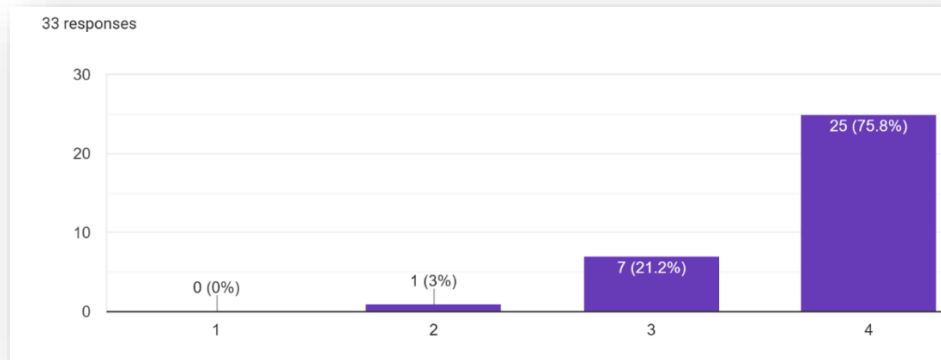
Rajah 19 menunjukkan maklum balas responden terhadap kelebihan produk dalam mengelakkan kerosakan pada paip kuprum.



Rajah 19: Peratus maklum balas terhadap kelebihan produk mengelakkan kerosakan pada paip kuprum.

Berdasarkan rajah 19 di atas, seorang, iaitu sebanyak 3% responden kurang bersetuju, 10 orang (30.3%) bersetuju dan selebihnya, majoriti, 22 orang iaitu 66.7% sangat bersetuju bahawa produk ini dapat mengelakkan kerosakan pada paip kuprum. yang kurang setuju yang menjawab bagi produk ini yang dapat mengelakkan kerosakan kepada paip kuprum.

Rajah 20 menunjukkan peratus dan bilangan responden yang bersetuju bahawa penggunaan Ragum paip Kuprum Mini ini dapat mengurangkan penggunaan tenaga manusia.



Rajah 20: Peratus maklum balas responden terhadap kelebihan Ragum Paip Kuprum Mini mengurangkan penggunaan tenaga manusia.

Berdasarkan carta di atas, seramai 25 orang responden (75.8%) sangat bersetuju produk ini dapat mengurangkan penggunaan tenaga manusia, 7 orang (21.2%) bersetuju dan hanya seorang (3%) kurang setuju.

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Terdapat beberapa kebaikan dan impak yang dapat diperolehi daripada pembangunan produk inovasi ini. Antara kebaikan yang sangat ketara ialah fleksibiliti alat ini. Ia bersifat mudah alih dan boleh digunakan di mana-mana sahaja kerana saiznya yang kecil. Ia juga mudah dikendalikan, bahkan masa yang diambil untuk mengendalikannya juga sangat singkat berbanding kaedah konvensional.

Hal ini semestinya memberi impak yang besar dalam proses pengajaran dan pembelajaran di mana pelajar tidak lagi perlu menunggu lama untuk mendapat giliran menggunakan peralatan ketika melaksanakan sesuatu projek. Selain itu, Impak yang besar juga didapati daripada produk inovasi ini ialah ruang penyimpanan yang kecil sahaja diperlukan untuk tujuan penyimpanan peralatan.

Dari tinjauan produk-produk di pasaran, belum terdapat produk yang serupa ini di pasaran. Ini merupakan inovasi baharu dalam dunia pendidikan yang mampu memberi impak besar dalam pendidikan terutama bidang penyelenggaraan penyaman udara. Selain itu, produk ini juga boleh dikomersialkan dan mampu bersaing di pasaran terbuka.

5.0 KESIMPULAN

Produk inovasi ini mempunyai banyak kebaikan dan kelebihan khususnya dalam kerja silfosing bagi kursus penyelenggaraan bangunan dalam subjek penyaman udara. Hal ini boleh dilihat dari hasil dapatan tinjauan yang dibuat. Kelebihan dan kebaikan yang ketara didapati daripada produk inovasi ini ialah fleksibiliti produk ini sendiri, iaitu ia mudah digunakan atau dikendalikan dan boleh digunakan di mana-mana sahaja (tidak terhad di meja bengkel sahaja). Selain itu, ia juga menjimatkan masa dan tenaga dalam mengendalikannya. Sudah pastilah hal ini memberi impak yang besar dalam proses pengajaran dan pembelajaran.

Proses pengajaran dan pembelajaran menjadi lebih lancar. Di samping itu juga, kebaikan produk ini ialah mengurangkan atau mengelakkan sama sekali risiko kerosakan pada paip kuprum. Ini sekaligus dapat menjimatkan kos dan melancarkan proses pengajaran dan pembelajaran. Produk inivasi ini sangat berpotensi untuk dikomersialkan dan diguna pakai sebagai alatan di dalam bengkel-bengkel pengajaran penyelenggaraan penyaman udara di semua institusi kemahiran di Malaysia.

MODEL R.O.S.S - LALUAN PERKEMBANGAN KERJAYA PELAJAR TVET

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ABSTRAK

Perkembangan kerjaya merupakan satu proses yang memerlukan bimbingan dan tidak boleh dibiarkan berkembang tanpa sebarang pedoman terutama bagi individu yang berprestasi sederhana. Justeru Laluan Perkembangan Kerjaya sangat kritikal kepada pelajar teknikal dan vokasional (TVET) demi masa depan kerjaya mereka. Seramai 15 orang responden yang terdiri daripada lulusan TVET yang telah berjaya dalam karier mereka dan mempunyai pendapatan tinggi telah dilibatkan dalam pembinaan model ROSS ini. Inovasi ini dibangunkan menggunakan Teknik Delphi dan dijalankan sebanyak dua pusingan bagi mendapat kesepakatan dalam pembentukan profil, indikator dan faktor kritikal perkembangan kerjaya lulusan TVET ini. Analisis Fuzzy Delphi telah digunakan bagi menentukan tahap kesepakatan yang tinggi dalam kalangan panel pakar. Analisis Fuzzy Delphi menggunakan Pernomboran Segi tiga Fuzzy dan proses Defuzzification yang melibatkan penggunaan nilai threshold (d) dan konsensus kaedah Delphi Tradisional (KD). Dapatan kajian telah menemui enam (6) tema utama dan dua puluh lima (25) sub tema daripada 15 profil perkembangan kerjaya individu yang dihasilkan, tujuh puluh enam (76) indikator dan seratus tiga puluh (130) faktor kritikal perkembangan kerjaya pelajar kolej komuniti. Dapatan ini menjadi asas kepada kerangka Laluan Perkembangan Kerjaya pelajar TVET di mana ia telah dibincang dan disahkan oleh pakar-pakar melalui kaedah Focus Group Discussion (FGD). Hasilnya, sebuah model Laluan Perkembangan Kerjaya berdasarkan profil-profil perkembangan kerjaya alumni cemerlang TVET telah berjaya dihasilkan dan dinamakan Model ROSS.

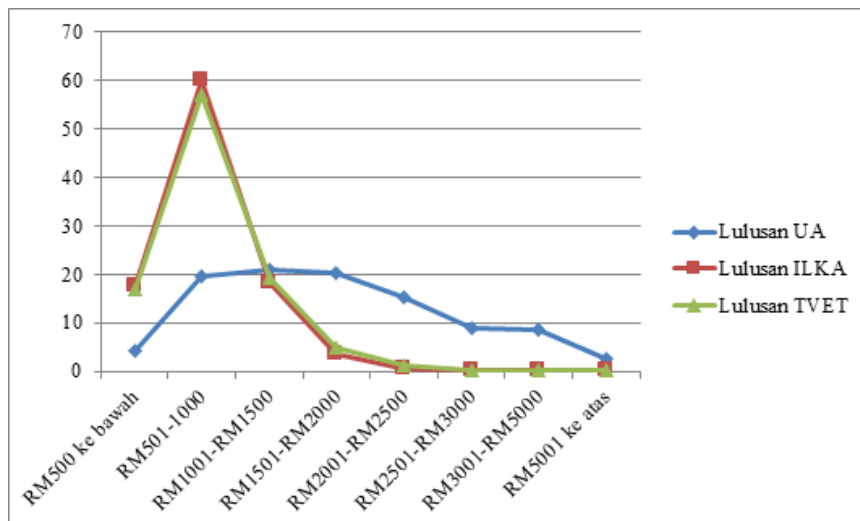
Kata Kunci: laluan kerjaya, profil, delphi.

1.0 PENGENALAN

Impian mendapatkan pendapatan yang tinggi dalam kerjaya adalah nilai dalam kerjaya yang menjadi harapan kebanyakan manusia tidak kira sama ada mereka adalah pekerja biasa, pegawai atau pun pihak atasan. Ini kerana mereka merasakan pendapatan tinggi adalah jaminan masa depan kerjaya mereka dalam menghadapi globalisasi dunia masa kini (Ishak dan Zulkifly 2010). Keutamaan nilai berpendapatan tinggi dalam kerjaya disokong kajian Dynan et al (2004) dan Shapiro (1977) yang mendapati tahap pendapatan dalam kerjaya merupakan idaman setiap orang dan tidak mengenal bangsa atau warna kulit.

Bagi lulusan di institusi pengajian tinggi yang memiliki kelebihan dari segi IQ dan tahap pencapaian akademik, mempunyai kemampuan yang lebih untuk mendapatkan pekerjaan berpendapatan tinggi (Rahmah et al 2011). Ini berlainan dengan lulusan daripada Institusi Latihan Kemahiran Awam seperti TVET yang kebanyakannya mempunyai latar belakang akademik yang sederhana. Walaupun begitu mereka tetap mempunyai potensi untuk mempunyai pekerjaan yang baik sekiranya dibantu untuk merancang kerjaya masa depan mereka (Syed Mohamad 2010). Jasmi (2013) dalam kajiannya mengenai keberkesanan modul merancang kerjaya dalam kurikulum TVET telah membuktikan pengalaman pembelajaran berasaskan kerjaya dalam kurikulum formal mampu meningkatkan kesedaran kerjaya di kalangan pelajar TVET.

Keupayaan untuk menghasilkan lulusan yang mampu untuk menjana pendapatan tinggi masih lagi diragui berdasarkan jadual 1.3 yang menunjukkan jurang yang jauh antara lulusan UA, ILKA dan TVET. Kajian Pengesanan Graduan TVET semenjak tahun 2004 sehingga tahun 2010 menunjukkan secara purata 0.2% sahaja yang mampu memperoleh pendapatan melebihi RM5000 berbanding 5.0% oleh lulusan IPTA (JPKK 2011). Manakala lebih daripada 35% lulusan TVET mempunyai pendapatan di bawah RM1000 setiap bulan. Ini tidak banyak bezanya dengan mereka yang memasuki pasaran pekerjaan tanpa sebarang kelulusan dan kemahiran.



Rajah 1 : Pendapatan lulusan UA, ILKA dan TVET tahun 2011
Sumber : Kementerian Pengajian Tinggi Malaysia (2012)

2.0 OBJEKTIF

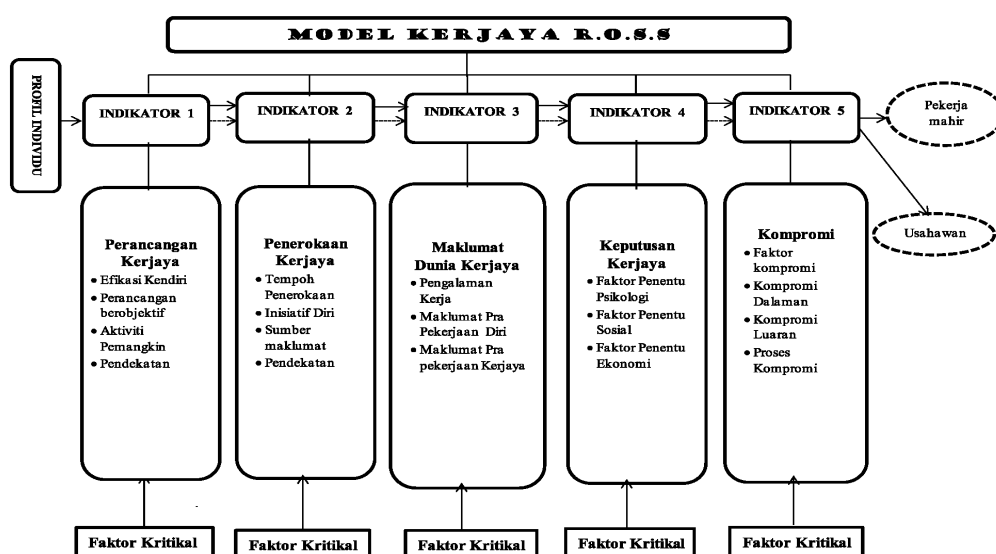
1. Mengenalpasti profil perkembangan kerjaya lulusan TVET.
2. Memahami indikator perkembangan kerjaya lulusan TVET.
3. Meneroka faktor kritikal perkembangan kerjaya lulusan TVET.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Model ROSS ini dibina berasaskan hasil (outcome) iaitu profil lulusan TVET yang berjaya bagi membentuk model perkembangan kerjaya untuk pelajar TVET. Kerangka asas model ini menggunakan struktur Career Development Inventory (CDI) oleh Thomson dan Lindeman (1981) yang berasaskan Teori Perkembangan Kerjaya Super (1957;1983). Ini kerana CDI ini dianggap sesuai sebagai rujukan bagi perkembangan kerjaya untuk pelajar-pelajar peringkat kolej yang kebanyakannya adalah remaja berusia antara 18-21 tahun (Mohd Sani 2011; Niles 2001; Sharf 2013). Ia digabungkan pula dengan teori Aspirasi Kerjaya Gotfredson yang

menyatakan aspek kompromi dapat membantu pelajar TVET mencari alternatif sekiranya mereka menghadapi masalah dalam membuat keputusan kerjaya kerana halangan atau kekangan tertentu. Teori ini mampu memberikan jalan keluar yang terbaik dalam isu-isu pemilihan kerjaya (Creed & Hughes 2012).

Inovasi model kerjaya ini dijadikan panduan dalam PdP yang berkaitan kerjaya seperti dalam subjek Kemahiran Insaniah. Melalui model ini para pelajar TVET didedahkan dengan aspek penerokaan dan perancangan kerjaya bagi menyiapkan pelajar dalam menghadapi kerjaya masa depan. Model ini juga boleh digunakan untuk pelajar dan bakal pelajar melihat hala tuju pekerjaan dalam program yang mereka ingin sertai. Ia juga boleh menjadi panduan kepada kurikulum kerjaya untuk membantu perkembangan kerjaya pelajar TVET. Model ini juga diharap dapat membantu pihak TVET untuk mendepani cabaran dan isu yang membayangi lulusan TVET dalam pasaran pekerjaan melalui kurikulum berkaitan kerjaya sama ada secara formal atau tidak formal. Ini kerana kurikulum yang seimbang antara kepentingan akademik, keperluan kemahiran, kehendak industri dan pengetahuan kerjaya merupakan ciri-ciri kurikulum berkesan yang diperlukan oleh negara untuk menghadapi cabaran globalisasi (Abdul Rahim 2007; Wonacot 2000). Justeru, laluan kerjaya yang dibangunkan ini dapat memperlihatkan bagaimana kurikulum boleh diintergrasikan dengan aspek kerjaya sama ada secara formal atau tidak formal sepanjang pengajian di TVET.



Rajah 2 : MODEL R.O.S.S - LALUAN PERKEMBANGAN KERJAYA PELAJAR TVET

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Merancang kerjaya sewajarnya tidak dijadikan sebagai satu perkara asing dalam masyarakat kita bahkan perlu dibudayakan secara sistematik melalui proses-proses sosialisasi yang sedia ada dalam masyarakat kita. Dengan ini, ia akan menjana satu dimensi baru bagi golongan remaja di negara kita dan diharap dapat membentuk jati diri bagi menghadapi cabaran masa depan yang lebih dinamik. Laluan perkembangan kerjaya dan kurikulum yang bermutu merupakan dua elemen penting yang terlibat secara langsung dalam menentukan keupayaan seseorang pelajar untuk merancang kerjaya masa depannya. Ia membolehkan seseorang pelajar melihat masa depan dengan lebih fokus dan bermatlamat (Syed Mohamad 2010). Elemen-elemen ini dilihat dapat memberi sedikit sebanyak sumbangan terhadap pembangunan modal insan seseorang pelajar. Kajian ini amat penting untuk membangunkan satu pelan laluan kerjaya bagi pelajar TVET meningkatkan tahap pencapaian akademik, perancangan

kerjaya dan kebolehpasaran mereka selepas tamat pengajian nanti. Ia boleh digunakan sebagai strategi untuk meningkatkan kematangan kerjaya pelajar dalam menghadapi pasaran pekerjaan yang cukup mencabar (Mohamed Fadzil et al 2008). Menurut Mohd Sani (2011) dan Mohd Safarin et al (2008) pelajar yang kurang kematangan kerjaya akan menghadapi masalah untuk memilih pekerjaan, mencari alternatif untuk kerjaya dan kurang bermotivasi untuk berkerjaya.

Laluan perkembangan kerjaya dibangunkan berdasarkan profil lulusan TVET yang telah berjaya dan membolehkan pelajar atau bakal pelajar TVET mendapatkan panduan untuk berjaya seperti mereka. Ia membantu merancang masa depan pelajar bermula pada hari pertama mereka menjejak kaki ke TVET. Ini menepati pandangan Bandura (1977) yang mengatakan satu pembelajaran berlaku dengan memerhati orang lain melakukan sesuatu atau menjadikan seseorang sebagai model tingkah laku. Ini bererti persekitaran dan juga orang-orang yang signifikan akan mempengaruhi tingkah laku. Ia sejajar dengan konsep Future-Oriented Curriculum Planning yang memfokuskan pengajian pada hari ini mampu memenuhi keperluan masa akan datang (Longstreet dan Shane 1993; Saedah 2001). Oleh sebab para pelajar tidak mampu menjangka apa akan berlaku pada masa depan, maka mereka perlu mempersiapkan diri untuk menghadapi masa depan (Saedah dan Asra 2007). Pelajar-pelajar yang telah disiapkan dirinya untuk menghadapi cabaran masa depan akan mampu untuk bertahan di dalam pasaran pekerjaan yang cukup mencabar (Amla 2010).

5.0 KESIMPULAN

Secara umumnya, pembangunan model ini amat membantu pihak pengurusan TVET dalam merealisasikan pendidikan terbaik bertaraf dunia untuk pelajar-pelajar TVET bagi menjayakan negara Malaysia sebagai negara maju dan berpendapatan tinggi. Memandangkan kajian ini menghadapi beberapa batasan, maka beberapa cadangan telah diajukan seperti mana berikut:

- a. Dalam peringkat analisis dan membangunkan model laluan perkembangan kerjaya yang melibatkan kajian teknik Delphi, saiz penglibatan peserta kajian adalah terhad seramai 15 orang sahaja. Justeru itu, dicadangkan agar kajian lanjutan sewajarnya memperluaskan saiz penglibatan peserta kajian kerana semakin ramai individu pakar yang terlibat, semakin kurang ralatnya dan tinggi kebolehpercayaan dapatan kajian.
- b. Pembangunan kerangka laluan perkembangan kerjaya boleh dipertingkatkan lagi dengan menjadikannya sebuah model lengkap yang boleh diukur kekuatan pertalian setiap item yang disenaraikan. Ini kerana kerangka ini hanya pada peringkat cadangan pelaksanaan sahaja, justeru pengkaji boleh memanjangkannya untuk menjadikannya sebuah model perkembangan kerjaya khusus untuk pelajar TVET. Selanjutnya proses penilaian terhadap model boleh dilakukan dengan menggunakan kajian tinjauan yang menggunakan instrumen soal selidik ke atas pelajar TVET yang menggunakan model yang dicadangkan tadi.

Kesimpulannya, pihak pengurusan TVET disarankan mengambil langkah untuk menggunakan Model ROSS ini sebagai panduan dalam penggubalan kurikulum pengajian di TVET. Ini kerana kurikulum yang diintegrasikan dengan aspek kerjaya akan membolehkan pelajar mendapat bimbingan yang diperlukan dalam perkembangan kerjaya mengikut peringkat umur. Pelajar akan mendapat bantuan untuk merancang, meneroka dan membuat keputusan kerjaya atau pun melakukan kompromi jika menghadapi kekangan dalam membuat keputusan kerjaya. Manakala penekanan kepada aspek kerohanian akan membolehkan pelajar akan lebih fokus dan beriltizam dengan apa yang diusahakan bagi membolehkan perancangan kerjaya dapat direalisasikan. Kesemua dapatan kajian ini diharap berupaya untuk menyumbang kepada khazanah ilmu menerusi pengenalan implikasi dapatan kajian terhadap dasar dan TVET.

CALCAMPUS: BOARD GAME

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ABSTRACT

Welcome to "Calcampus: Board Game," where the world of mathematics and the excitement of Monopoly collide! In this unique board game, players will experience the thrilling world of calculus while strategizing their way to victory. After day and night brainstorming the major problem for students who hates Calculus let alone to open the book. We found that the problem is learning Calculus to them is no fun complicated. Through our research, many students rather playing games than doing practice. So, we came up with solution to help students study and practice calculus while having fun. Who doesn't like Monopoly? Everyone loves Monopoly, it's like a tradition game to play alongside your friends, family and relatives. The objective is to make students thrill to learn and practice Calculus through our Invention. Our invention maintains the rules in Monopoly with a slight change to fit our objective. Every question they answered will be rewarded with money. Isn't it thrilling? Knowledge that will reward you with money. Buy, sell, and trade properties, solve equations to earn rewards, and leverage your mathematical skills to outwit opponents. Are you ready to integrate fun and learning in a game like no other? Let the journey through the world of Calcampus begin!

Keywords: Calculus, Calcampus: Board Game

INTRODUCTION

Othman, Khalid and Mahat (2018) stated difficulty in understanding mathematical subjects such as Calculus is one of the biggest challenges that university students must overcome. Studies conducted by Ozerem (2012) have shown that students often make mistakes by having ignorant attitude and rush in solving mathematical problems. Therefore, a new tool to assist teaching and learning activities needs to be introduced to address problems involving Calculus subjects and to reduce gap in classroom student's achievement. According to (Ahmad et.al., 2016) an alternative learning approach is by implementing a Peer-to-Peer Learning Strategy in which learning is conducted in groups and students can discuss Calculus issues informally outside lecturing classes. With these strategies in place, it can encourage students to share knowledge with each other and increase students' self-confidence to help those who are weak in Calculus. In addition, lecturers should also play their role and initiatives to create different environments in teaching and learning activities primarily related to Calculus subject by introducing mathematical game. This is agreed by (Brezovszky et al., 2019) where they indicate that the game of mathematic concept is beneficial in improving many types of arithmetic abilities and knowledge, and at the same time it can provide teachers with an useful and adaptable tool to support their regular classroom activity. (Tokac et al., 2019) also emphasized that mathematical games are an effective instructional strategy for teaching mathematics as compared with traditional classroom instructional methods. With this approach, Che in and Ahmad (2018) stated indirectly it will provide advantages to students

and lecturers and will have a positive impact on overall performance of teaching in the classroom. Therefore, to enhance the students' potential in Calculus subject, Calcampus was introduced to help students identifying their weaknesses in the subtopics they have studied besides providing a solution for students to gain a deeper understanding and obtain better results in the examination.

OBJECTIVES

This product was introduced to achieve the following objectives:

- a) Giving more attention to targeted students on Calculus subject.
- b) Strengthening the understanding of subject studied by providing tips, formulas and questions.
- c) Developing students' self-confidence in facing tests and examinations by providing relevant questions based on the subtopics studied.

PRODUCT DESCRIPTION

Calcampus is an innovation product aimed to help students in Calculus I subject. It is a game with topic Limits questions and is played between facilitators who are students who scored excellent marks in Test 1 and students who scored low marks. The topic on limits is included in Calculus 1 for Engineering Students who taking course code MAT183. This topic will be completed within weeks in accordance with lesson planned. With the innovation of Calcampus, it can enhance students' level of understanding and knowledge of calculus subjects.

ADVANTAGE

This product provides several benefits to students as follows:

- a) Students are more confident in solving mathematical problems
- b) Students will be able to remember mathematics formula easier
- c) Students will be able to increase their knowledge and be more motivated in learning Calculus
- d) Students will be easier to understand and learn Calculus subject as compared to traditional methods.

CONCLUSION

Calcampus is a mathematics game based on Calculus questions. Study found that mathematics game is very much influential in students daily life activities in general. Lecturers who teach Calculus course must play an important role in ensuring that students who do not perform to benefit themselves using this game for their learning. The concept of learning Calculus using Calcampus can help students to understand Calculus courses easier.

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HIVE KELULUT (HK)

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ABSTRAK

Kelulut ialah lebah tidak bersengat yang menghasilkan madu sama seperti lebah madu. Lebah kelulut boleh didapati di kawasan hutan, kebun dan pokok-pokok di sekitar kediaman manusia. Kelulut menyimpan madu di dalam kantung-kantung kecil yang dilapisi propolis dan propolis ini duduk di dalam batang-batang pokok dengan madu yang penuh di kantungnya. Madu kelulut rasanya masam sedikit berbanding madu lebah dan dianggap agen pendebungaan untuk spesis buah, bunga, sayur serta tanaman lain. Hive kelulut (HK) yang direkabentuk seperti kotak bertingkat dan berbumbung A bentuk bumbung rumah, diharapkan mampu menjadi pengganti habitat asal lebah kelulut di pokok. Ilham untuk membina HK teretus bagi menyelesaikan permasalahan penempatan pokok-pokok yang didiami lebah kelulut, serta meminimalkan risiko ekosistem alam dari terjejas. Objektif inovasi yang dilaksanakan adalah dengan merekabentuk sarang buatan kelulut dari kayu pallet terpakai, ringan dan mudah diselenggara, yang turut berfungsi sebagai pengganti sarang pembiakan asal kelulut di dalam pokok. Penggunaan HK dijangka mampu menggandakan koloni kelulut, apabila kelulut yang hidup membiak dengan jayanya sekiranya tiada ancaman. Keunikan inovasi HK ini adalah dari bahan binaan utamanya yang dibina dari kayu pallet terpakai. Impak dari pembinaan HK ini mewujudkan koloni kelulut yang kuat selain merangsang pembiakan kelulut yang boleh menghasilkan madu yang banyak dan berkualiti serta mampu dikomersialkan produknya secara meluas. Kesimpulannya, gabungan komponen-komponen kayu pallet ini diharapkan dapat menghasilkan satu sarang kelulut yang sangat efektif, melalui tettingkat yang boleh ditambah atau ditukarganti mengikut situasi perkembangan kelulut serta menjadi sarang baru kelulut yang selamat pada setiap ruang komponen (rak tettingkat) yang boleh memudahkan kerja pengalihan koloni kelulut pada bila-bila masa yang sesuai.

Kata Kunci: Lebah kelulut, Hive kelulut, Kayu pallet, Penggandaan koloni

1.0 PENGENALAN

Kelulut ialah lebah tidak bersengat yang menghasilkan madu sama seperti lebah madu. Lebah kelulut boleh didapati di kawasan hutan, kebun dan pokok-pokok di sekitar kediaman manusia. Kelulut menyimpan madu di dalam kantung-kantung kecil yang dilapisi propolis dan propolis ini duduk di dalam batang-batang pokok dengan madu yang penuh di kantungnya. Madu kelulut rasanya masam sedikit berbanding madu lebah dan dianggap agen pendebungaan untuk spesis buah, bunga, sayur serta tanaman lain. Kelulut (Sting/ess Bee) merupakan serangga kecil yang bersarang di rongga kosong batang dan pokok, kaviti dalam tanah atau rekahan batu serta mudah dikesan melalui kehadiran corong laluan keluar masuk. Habitat asal kelulut ialah di negara-negara tropika dan subtropika seperti Malaysia, Indonesia, Thailand, Australia, Peru, Venezuela, Brazil, Filipina, India dan Brunei. Lebih daripada 500 spesis kelulut (Michener, 2013) telah dikenalpasti di serata dunia. Di Malaysia sebanyak 35 spesis telah

diinventorikan di Muzium Serangga MARDI (MARDI, 2016). Hasil utama pemeliharaan kelulut adalah madu, roti lebah dan propolis. Produk mentah ini boleh diproses untuk menghasilkan produk hiliran seperti sabun madu, sabun propolis, pelembab bibir, syampu madu, syampu propolis, pelembut tangan madu, pelembut tangan propolis dan lain-lain. Jabatan Pertanian Malaysia, 2022, menyatakan bahawa kriteria penting dalam pemilihan tapak bagi pemeliharaan kelulut ialah:

- a. Kawasan yang mempunyai sumber keperluan kelulut seperti resin, nektar, debunga, air dan lain-lain.
- b. Kawasan yang mempunyai naungan atau teduhan seperti pokok-pokok besar dan binaan manusia yang bertindak sebagai teduhan bagi log kelulut dan kawalan suhu dalam sarang kelulut;
- c. Kawasan terasing dari kawasan penggunaan racun seperti kawasan sawah padi, kebun-kebun sayur dan kebun buah-buahan yang menggunakan racun terutama racun serangga;
- d. Kawasan yang bersih dan jauh dari pencemaran najis ternakan dan sisa buangan pertanian yang lain;
- e. Kawasan yang bebas dari tiupan angin kencang, banjir dan binatang liar.

2.0 OBJEKTIF

Hive kelulut (HK) dibangunkan untuk mencapai objektif berikut:

- a. Merekabentuk sarang buatan kelulut dari kayu pallet terpakai yang boleh berfungsi sebagai pengganti sarang pembiakan asal kelulut di dalam pokok.

3.0 PENERANGAN TENTANG INOVASI / METODOLOGI

Hive kelulut (HK) yang direkabentuk seperti kotak bertingkat dan berbumbung A bentuk bumbung rumah, diharapkan mampu menjadi pengganti habitat asal lebah kelulut di pokok. Ilham untuk membina HK tercetus bagi menyelesaikan permasalahan penebangan pokok-pokok yang didiami lebah kelulut, serta meminimalkan risiko ekosistem alam dari terjejas. Rajah 1 hingga Rajah 5 menunjukkan proses penghasilan produk hive kelulut dihasilkan.



Rajah 1 : Gambaran Hive Kelulut secara lukisan 3D



Rajah 2 : kayu pallet asal sebelum dibelah (foto sebelah kiri) dan kerja belahan plywood untuk penutup sarang Hive Kelulut (foto kanan)



Rajah 3 : Bahagian ruang atas HK dari kayu pallet terpakai terhasil



Rajah 4 : Bahagian ruang penanti kelulut terhasil



Rajah 3 : Hive Kelulut dari kayu pallet terpakai terhasil sepenuhnya seperti gambaran 3D yang dirangka di awal rekabentuk

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Impak inovasi Hive Kelulut (HK) yang dilaksanakan adalah dengan merekabentuk sarang buatan kelulut dari kayu pallet terpakai yang banyak dibuang dan dimanfaatkan sepenuhnya dengan penghasilan satu produk baru bagi habitat kelulut. Produk HK yang dihasilkan ini bersifat ringan dan mudah diselenggara, sekaligus berfungsi sebagai pengganti sarang pembiakan asal kelulut di dalam pokok. Penggunaan HK dijangka mampu menggandakan koloni kelulut, apabila kelulut yang hidup membiak dengan jayanya sekiranya tiada ancaman. Keunikan inovasi HK ini adalah dari bahan binaan utamanya yang dibina dari kayu pallet terpakai. Impak dari pembinaan HK ini mewujudkan koloni kelulut yang kuat selain merangsang pembiakan kelulut yang boleh menghasilkan madu yang banyak dan berkualiti serta mampu dikomersialkan produknya secara meluas

5.0 KESIMPULAN

Kesimpulannya, gabungan komponen-komponen kayu pallet ini diharapkan dapat menghasilkan satu sarang kelulut yang sangat efektif, melalui tetingkat yang boleh ditambah atau ditukarganti mengikut situasi perkembangan kelulut serta menjadi sarang baru kelulut yang selamat pada setiap ruang komponen (rak tetingkat) yang boleh memudahkan kerja pengalihan koloni kelulut pada bila-bila masa yang sesuai.

IOT BASED SMART GADGET FOR EYES PROTECTION

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ABSTRACT

Gadget has become a part of our daily lives. Excessive usage of gadgets for a long time along with unhealthy habits will lead to health problems such as Myopia. Using gadget at a close distance is one of the most common unhealthy habits among gadget users especially children. This project called "Eyes protection" is made to fix the unhealthy habit of using gadget at a close distance with the aim of reducing the risk of eyesight problems amongst children nowadays. This device operates by measuring the distance between the user and the gadget screen using an ultrasonic sensor which will trigger the buzzer, vibration motor and notify the parents if their children use the gadget at a distance less than 30cm. This device has the potential to significantly decrease eyesight problems among children. Other than that, an additional feature of monitoring the distance data over a period of time via the Blynk application can assist the parents to monitor their children's behaviour and habits when using electronic gadgets such as laptops.

Keywords: eyesight problem, ultrasonic sensor, NodeMCU, Blynk.

1.0 INTRODUCTION

High-end technology has a tremendous impact on people's lives in this digital age. The contemporary period is home to a wide variety of technological advancements. Periodically, new products are released onto the market. Electronic devices, like desktop computers, laptops, tablets, and mobile phones, are examples of some of today's most well-liked and often used technology. As is evident today, many individuals of all ages used to spend a significant amount of time staring closely at the screens of their gadgets, especially youngsters. Children that engage in this habit are developing vision issues at an early age. As a result, the goal of the project "IoT Based Smart Gadget for Eyes Protection" is to develop a tool that will inform users when they are using their gadgets at a dangerous distance. Instilling a healthy habit that enables people to use their technology in a healthier way will assist to correct the bad behaviour of staring at the screen too closely.

2.0 OBJECTIVE

The objective of the project is to develop a prototype that offers eye protection against gadget exposure and enables monitoring of children's behaviour while using gadgets through a monitoring platform integrated with the Blynk application.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The control system of this prototype utilises NodeMCU as the microcontroller, an ultrasonic sensor as the input device, and a buzzer and vibration motors as the output components. Figure 1 shows the programming flowchart and the processes of the system. The system was initialised upon the user's commencement of device usage. The distance between the person

and the device was detected by the ultrasonic sensor. The distance measurements obtained from the ultrasonic sensor will be transmitted to the Blynk platform for storage. The system subsequently verifies if the computed distance between the user and their device is below 50 cm or not. In the event that the distance measures below 50 cm, the activation of both the buzzer and the vibration motors is initiated. Nonetheless, if the distance exceeds 50 cm, both the buzzer and the vibration motors will remain deactivated. The data collected by Blynk will be utilised for the purpose of monitoring.

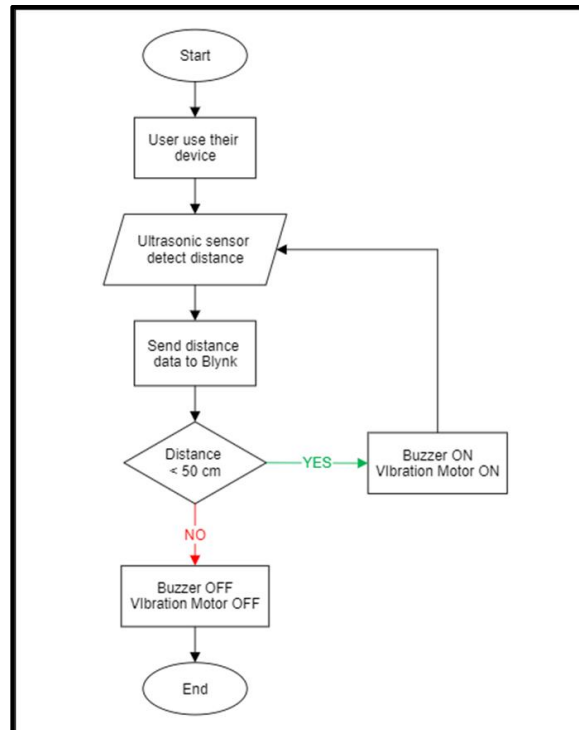


Figure 1: Flowchart of the system.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

This commercial innovation offers a method to mitigate visual impairments, particularly among children. The health issue associated with exposure to gadgets has emerged as a significant concern in contemporary times. This product also possesses the potential for commercialization, as it can be integrated into personal computers in the future.

5.0 CONCLUSION

In conclusion, an IoT-based smart gadget for eyes protection has been developed and it can help children break the habit of using gadgets at harmful distances. This technology could greatly improve children's eyesight. Due of its deafness function, this item can be utilised by many people. Most eyes-to-screen distance monitoring systems just employ buzzers, but with a vibration motor, those with weak hearing can be warned. Finally, the Blynk app's distance data feature helps parents monitor their children's laptop use. In conclusion, this endeavour can benefit our community.

Rogue Access Point Detection and Tracking System Using Trilateration Algorithm

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ABSTRACT

In the current digital era, network security is an essential concern, especially in the growing usage of wireless networks. Network security is vulnerable to rogue access points, and unauthorized wireless access points lead to security threats. The rapid growth of wireless technology has led to an increased demand for wireless networks in numerous sectors, including educational institutions. However, the widespread use of wireless networks has also introduced new security challenges, particularly the threat of rogue access points (RAPs). A rogue access point is an unauthorized wireless access point that has been installed on a network without the knowledge or approval of the network administrator. This project aims to evaluate and implement the most effective method for detecting RAPs in tertiary institutions. Besides, that the project introduces a robust method called trilateration algorithm. Therefore, the proposed trilateration algorithm if implemented will detect and reduce the risk of unauthorized network access in tertiary institutions and save the danger of financial loss. In addition, a preliminary study will be conducted to identify potential network security vulnerabilities and a literature review will be carried out to analyze the latest research on rogue access points to compare with our proposed trilateration algorithm. On this basis, the concept of mitigating the threat of rogue access point attacks using the proposed approach may be considered when designing a framework to mitigate the rogue access point in tertiary institutions.

Keywords: Wireless Networks, Network Security, Rogue Access Points (RAPs), Trilateration Algorithm.

1.0 INTRODUCTION

In the modern digital age, wireless network communication has become an indispensable and important part of human society as it has revolutionized the way humans connect and communicate. As wireless connectivity has brought us the convenience and flexibility of browsing the internet from anywhere at any time, it also brought forth a critical security concern which is the emergence of rogue access points where unauthorized individuals perform within the network without any authorization, making more potential entry points for performing various malicious activities. In the academic environment, like many other public spaces RAPs can be set up easily by both insiders and outsiders. Once the RAP is successfully installed, it can initiate an attack on the network it targeted which will cause security breaches including

compromising data confidentiality, stealing network resources, and even sniffing out the packet through the network using Man-in-the-Middle (MITM and DoS attacks [1][2], where this attack performs a sniffing attack in between the servers and clients to gain unauthorized access to sensitive data.

2.0 OBJECTIVE

The first objective of this project includes the development of a new dedicated Rogue Access Point Detection and Tracking System specifically designed to detect the RAP effectively and efficiently within the tertiary institution network environment. The second objective of this project is to design a system that is expected to perform two main features which are precise detection of the RAP by scanning the network around the campus. After it has successfully detected the RAP, it will be able to track the movement or location of the RAP in real time. Lastly, to improve the security of the network around the campus of the tertiary institution in terms of preventing potential security breaches and ensuring the confidentiality and integrity of sensitive data.

3.0 DESCRIPTION OF INNOVATION / METHODOLOGY

In this section, the proposed methodology was divided into two sections. These are hardware and software. The details of the explanation of the methodology are described below.

3.1 Hardware

The hardware involved in this project is a laptop and wireless USB adapter. The laptop in this project plays a crucial role, as most of the research and development are using a laptop to perform their experiments. The specification of the implementation of the project is identified in Table 1.1. while the Wireless USB adapter specification is also shown in Table 1.2. The overall features of the USB adapter are described in Table 1.3.

Table 1.1 Laptop Specifications

Description	Specifications
Model	S340-14IWL Laptop (Ideapad) - Type 81N7
Processor	Intel(R) Core (TM) i5-8265U CPU @ 1.60GHz, 1800 Mhz, 4 Core(s), 8 Logical Processor(s)
Operating System	Microsoft Windows 11 Home Single Language
Graphic	Intel(R) UHD Graphics 620
Memory	8GB
Storage	Window SSD 236GB

Table 1.2 Wireless USB Adapter Specifications

Description	Specifications
Interface	USB 2.0
Button	WPS button
Dimensions (W x D x H)	3.7 x 1.0 x 0.4 in. (93.5 x 26 x 11mm)
Antenna Type	Detachable Omni Directional (RP-SMA)
Antenna Gain	4dBi

Table 3.3 Wireless features of wireless USB adapter

Description	Specifications
Wireless Standards	IEEE 802.11n, IEEE 802.11g, IEEE 802.11b
Frequency	2.400-2.4835GHz
Signal Rate	11n: Up to 150Mbps(dynamic) 11g: Up to 54Mbps(dynamic) 11b: Up to 11Mbps(dynamic)
Reception Sensitivity	130M: -68dBm@10% PER 108M: -68dBm@10% PER 54M: -68dBm@10% PER 11M: -85dBm@8% PER 6M: -88dBm@10% PER 1M: -90dBm@8% PER
Transmit Power	<20dBm
Wireless Modes	Ad-Hoc / Infrastructure mode
Wireless Security	Support 64/128 bit WEP, WPA-PSK/WPA2-PSK
Modulation Technology	DBPSK, DQPSK, CCK, OFDM, 16-QAM, 64-QAM

3.2 Software

In this project, several tools are integrated into the research and development: Oracle VM Virtual Box, Kali-Linux virtual machine, and Python programming language. Oracle VM virtual machine as a platform running the virtual machine within an isolated environment to eliminate the physical host. Thus, it allows the utilization of virtual machines like Kali-Linux to perform penetration testing. Moreover, Kali-Linux can be a robust cybersecurity-oriented system, offering extensive features and capabilities for ethical hacking and research activities. Thus, using Kali Linux as the operating system will enhance the performance and overall environment. While the Python programming language facilitates the development of the system's algorithm components. Section 1.1 describes the proposed framework of the RAP Detection and Tracking System.

3.3 Proposed Framework of RAP Detection and Tracking System

In this project, the proposed RAP Detection and Tracking System is illustrated to describe the details of the proposed project. Figure 1.1 illustrates the framework.

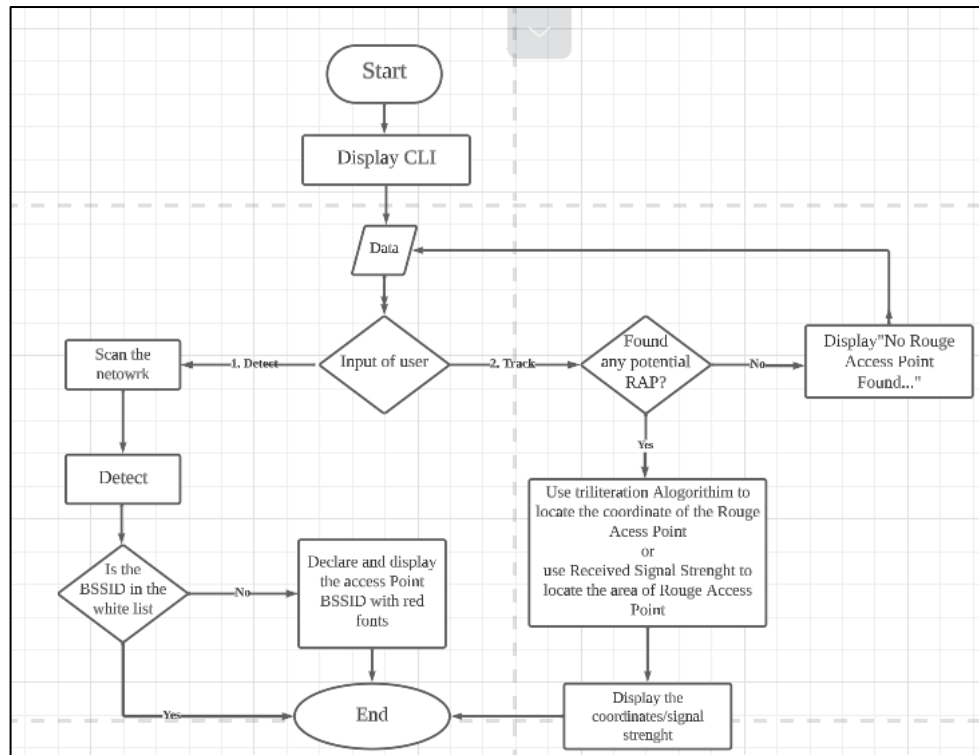


Figure 1.1: Flow chart of the RAP Detection and Tracking System

Figure 1.1 shows the project's flow chart of the RAP Detection and Tracking System. At the beginning of the system, it will display CLI to the users, and users will choose the functions they want to use for the detection, tracking, and exit. If the user chooses detection, it will indicate the surroundings available for the network to determine any potential Rogue Access Point. Whereas if yes, it will display the potential Rouge access point with red font and display BSSID, SSID, and other relevant information, while if no it will show no Rouge Access Point found. Therefore, if the user chooses to track, it will proceed to a condition where it checks whether the system has found any potential RAPs. If found, then it will use a trilateration algorithm to locate the coordinate of the RAP and further receive a signal strength to locate the area of the RAP to the user. Thus, Figure 1.2 displays the use of a case diagram.

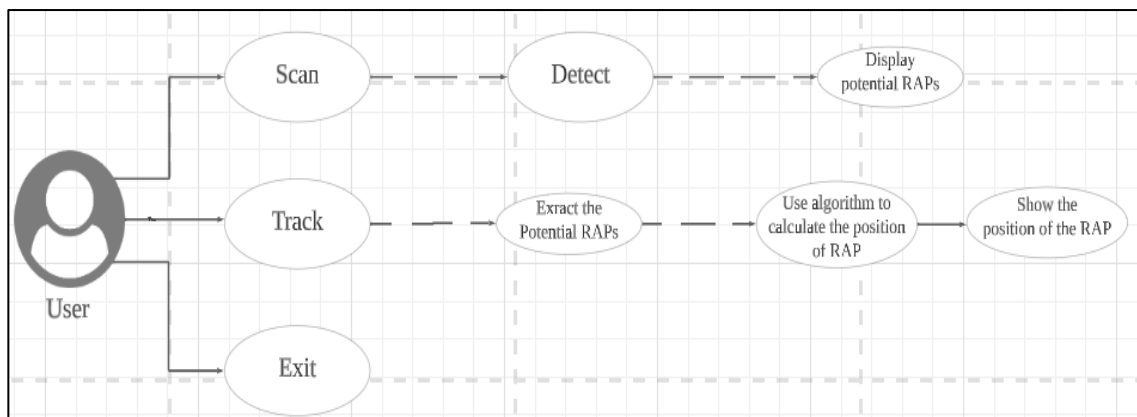


Figure 1.2: Use Case Diagram

Figure 1.2 shows a Use Case Diagram to indicate the function of the system provided on how it goes, and the result that will be shown to the users. In this case, the system has two main

functions. These are detection and tracking which will serve the function of displaying information to the user. While, if the user wants to end the session the system also allows it.

4.0 ADVANTAGE / IMPACT / RESULTS / NOVELTY

In this section, the advantages, impact, result, and novelty of the project will be described as enhancing security, incident response, reducing the risk of security incidents, enhancing IT management, mitigating unauthorized access points within the organization, IoT device detection, enhanced reporting, and visualization, wireless intrusion prevention and continues monitoring.

5.0 CONCLUSION

In conclusion, the novel features and methodologies describe how RAP Detection and Tracking Systems have evolved in tackling cybersecurity threats and the increasing complexity of modern networks. In addition, if the method is implemented will provide organizations with more robust tools and strategies to proactively identify and mitigate the risks associated with rogue access points.

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CONCRETE STAMP ROLLER

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ABSTRAK

Concrete stamp roller merupakan alatan bantuan bagi membentuk konkrit secara berpola, bertekstur dan timbul untuk menyerupai batu bata serta seumpamanya. Banyak produk sedia dipasaran berkaitan *concrete stamp* adalah jenis pencetak dari keluli atau getah. Pengendalian alatan ini memerlukan ketelitian dan kemahiran bagi memastikan corak yang dibentuk mempunyai hubungan antaranya. Cabaran penggunaan *concrete stamp* jenis cetak ialah postur badan yang lama untuk mencangkung. Objektif produk inovasi ini dihasilkan adalah untuk meringankan beban pekerja *concrete stamp*, menjimatkan masa menyiapkan kerja-kerja kemasan permukaan lantai serta memberikan suasana ceria bagi kawasan pejalan kaki (*walking pedestrian*). Produk ini terdiri daripada pemegang dan *roller* yang berpola, bertekstur dan timbul. *Roller* ini terdiri daripada keluli diluar, konkrit atau pemberat berada didalam keluli dan struktur berpola dibahagian luar keluli berbentuk silinder. *Concrete Stamp Roller* akan digunakan di atas permukaan konkrit basah bagi menghasilkan bentuk berpola seperti batu bata di permukaan lantai konkrit. Satu kajian keberhasilan produk telah dijalankan kepada pelajar dan pensyarah Kolej Komuniti Bandar Penawar, mendapati bahawa 71.4% responden bersetuju produk ini memudahkan pekerja-pekerja *concrete stamp*. 82.1% responden bersetuju alat ini menjimatkan tenaga pekerja. Jika produk ini dikomersialkan dan boleh dibeli, responden yang bersetuju ialah 60.7%. Kebaikan *concrete stamp roller* ini alat yang senang dibawa kemana sahaja dengan ruang kerja yang pelbagai. Ia merupakan alternatif yang lebih murah daripada menggunakan *concrete stamp* secara manual dan pantas masa menyiapkan. Alat ini senang dikendalikan serta ergonomik dengan tubuh badan semasa kerja-kerja operasinya. *Concrete stamp roller* dapat memudahkan pengendalian oleh pekerja-pekerja *stamp roller*, masa menyiapkan kemasan permukaan lantai yang singkat serta menjamin kualiti kemasan.

Kata Kunci: *concrete stamp*, kemasan permukaan lantai

1.0 PENGENALAN

Sektor pembinaan merupakan salah satu peneraju utama dalam mentransformasikan ekonomi Malaysia. Kemajuan sektor pembinaan ini dapat diperhatikan melalui kerancangan projek-projek infrastruktur yang sedang berkembang pesat merangkumi pelbagai pembinaan seperti rumah kediaman, rumah kedai, pejabat, industri perkilangan, prasarana dan lain-lain lagi.

Dalam pembinaan rumah kediaman, pelbagai teknologi telah digunakan bagi memudahkan proses pembinaan yang cepat dan efisien. Kerja-kerja akhir dalam pembinaan atau dikenali sebagai kemasan bangunan adalah proses penting bagi penampakkan bangunan kediaman mempunyai nilai estetika.

Beberapa usaha melalui inovasi kerja-kerja dalam kemasan bangunan dilakukan supaya dan memastikan kerja-kerja penyiapan bangunan dilakukan pada masa yang ditetapkan, disamping memastikan kualiti produk akhir dan masa seiring.

2.0 OBJEKTIF

Objektif produk inovasi ini dihasilkan adalah untuk

- i. meringankan beban pekerja *concrete stamp*,
- ii. menjimatkan masa menyiapkan kerja-kerja kemasan permukaan lantai
- iii. memberikan suasana ceria bagi kawasan pejalan kaki (*walking pedestrian*)

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Produk inovasi ini merupakan satu usaha dan alternatif kepada pekerja melaksanakan kerja-kerja *stamping* keatas permukaan konkrit bagi membentuk corak kemasan yang dikehendaki. *Concrete stamp roller* merupakan alatan bantuan bagi membentuk konkrit secara berpola, bertekstur dan timbul untuk menyerupai batu bata serta seumpamanya. Banyak produk sedia dipasaran berkaitan *concrete stamp* adalah jenis pencetak dari keluli atau getah. Pengendalian alatan ini memerlukan ketelitian dan kemahiran bagi memastikan corak yang dibentuk mempunyai hubungan antaranya. Cabaran penggunaan *concrete stamp* jenis cetak ialah postur badan yang lama untuk mencangkung.

Produk ini terdiri daripada pemegang dan *roller* yang berpola, bertekstur dan timbul. *Roller* ini terdiri daripada keluli diluar, konkrit atau pemberat berada didalam keluli dan struktur berpola dibahagian luar keluli berbentuk silinder. *Concrete Stamp Roller* akan digunakan di atas permukaan konkrit basah bagi menghasilkan bentuk berpola seperti batu bata di permukaan lantai konkrit.



Rajah 1: Produk Inovasi *Concrete stamp roller*



Rajah 2: Hasil Penggunaan Produk Inovasi *Concrete stamp roller*

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Satu kajian keberhasilan produk telah dijalankan kepada pelajar dan pensyarah Kolej Komuniti Bandar Penawar, mendapati bahawa 71.4% responden bersetuju produk ini memudahkan pekerja-pekerja *concrete stamp*. 82.1% responden bersetuju alat ini menjimatkan tenaga pekerja. Jika produk ini dikomersialkan dan boleh dibeli, responden yang bersetuju ialah 60.7%.

Kebaikan *concrete stamp roller* ini alat yang senang dibawa kemana sahaja dengan ruang kerja yang pelbagai. Ia merupakan alternatif yang lebih murah daripada menggunakan *concrete stamp* secara manual dan pantas masa menyiapkan.

Alat ini senang dikendalikan serta ergonomik dengan tubuh badan semasa kerja-kerja operasinya. *Concrete stamp roller* dapat memudahkan pengendalian oleh pekerja-pekerja *stamp roller*, masa penyiapan kemasan permukaan lantai yang singkat serta menjamin kualiti kemasan.

5.0 KESIMPULAN

Kesimpulan yang boleh diperolehi daripada projek inovasi ialah *concrete stamp roller* dapat memudahkan pekerja membuat kemasan tapak pejalan kaki dan juga kemasan yang seumpama dengannya. *Concrete stamp roller* juga dapat menjimatkan masa dan tenaga

pekerja. Selain itu, *concrete stamp roller* tidak memudaratkan pekerja daripada sakit belakang dan dapat digunakan bagi semua peringkat umur.

Projek inovasi *concrete stamp roller* untuk kemasan pejalan kaki boleh dipasarkan dipasaran dan semua pekerja dapat menerima kegunaan *concrete stamp roller* dengan efektif. Mengikut responden dan juga keberkesanan produk yang diinovasikan setelah diuji, ini dapat menunjukkan bahawa produk ini dapat digunakan dengan baik dan mampu untuk memudahkan kerja kerja mengelek atau *roller* bagi membuat bentuk di tapak pejalan kaki. Berdasarkan soal selidik juga menunjukkan majoriti responden berpuas hati dengan menunjukkan keterujaan dan dapat meyakinkan bahawa produk inovasi ini boleh memudahkan pengguna seperti pelajar di Kolej Komuniti mahupun pekerja binaan di tapak bina.

TABLETOP BELT SANDER MACHINE

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ABSTRACT

Carpentry activities often necessitate the use of a belt sander machine to expedite the shaping and finishing of products. However, conventional belt sander machines' high cost proves impractical for smaller-scale projects, creating a barrier to accessibility. To address this issue, the project's objective is to develop a tabletop belt sander machine, tailored for finishing on a smaller scale.

The innovation involves integrating a disc sander machine with the belt sander, resulting in a versatile single tool that combines two essential processes. The machine's frame, constructed from mild steel, houses a dual shaft 12 V motor, enabling it to function as both a belt and disc sander. Moreover, equipped with a speed controller, users can conveniently adjust the belt and disc rotation speeds to meet specific requirements. The tabletop belt sander machine is affordable for users with smaller carpentry projects, providing a practical alternative to costly and oversized equipment. The compact design ensures efficient space utilization while maintaining a reasonable operating speed suitable for diverse tasks.

In conclusion, the potential impact of this innovation extends to enhancing accessibility and productivity in the carpentry industry, offering a cost-efficient and practical solution for shaping and finishing wood and materials on a smaller scale. The compact, versatile, and budget-friendly nature of this machine opens new opportunities for diverse woodworking projects.

Keywords: Belt sander, Disc Sander, Small-scale, Carpentry.

1.0 INTRODUCTION

Tabletop belt sander machines are commonly used in woodworking and metalworking industries for sanding, smoothing, and shaping various materials. These machines are valued for their efficiency in removing stock material quickly and achieving a smooth finish. However, the performance and usability of tabletop belt sanders can vary significantly across different models and brands. This variation often leads to challenges for users, including inconsistent sanding results, difficulty in maintaining accurate angles and dimensions, and concerns about safety. Moreover, as technology advances and user expectations evolve, there is a growing need to address these issues and design tabletop belt sander machines that are more precise, user-friendly, and efficient.

The existing tabletop belt sander machines in the market exhibit several limitations and deficiencies that hinder their overall effectiveness. These issues include inconsistent sanding results, difficulties in achieving precise angles and dimensions, and safety concerns due to inadequate safety features. Additionally, many of these machines may not incorporate the latest technological advancements, such as automated controls and dust collection systems, which can improve both the quality of work and the user experience. Therefore, there is a pressing need to conduct a comprehensive study and research effort to identify the key

challenges and areas for improvement in tabletop belt sander machines. By addressing these issues, we aim to develop innovative solutions and design improvements that will enhance the performance, accuracy, and safety of these machines, ultimately benefiting users in woodworking, metalworking, and related industries.

2.0 OBJECTIVE

The primary goals of this project include designing a cost-effective mini belt sander machine for small tools and creating a versatile machine capable of both sanding and finishing processes, resulting in a smooth surface.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

A functional tabletop belt sander machine had been successfully constructed from mild steel and equipped with belt and disc sander for an efficient woodworking process. Figure 1 shows the photo of the fabricated product and Table 1 summarizes the final product specifications.

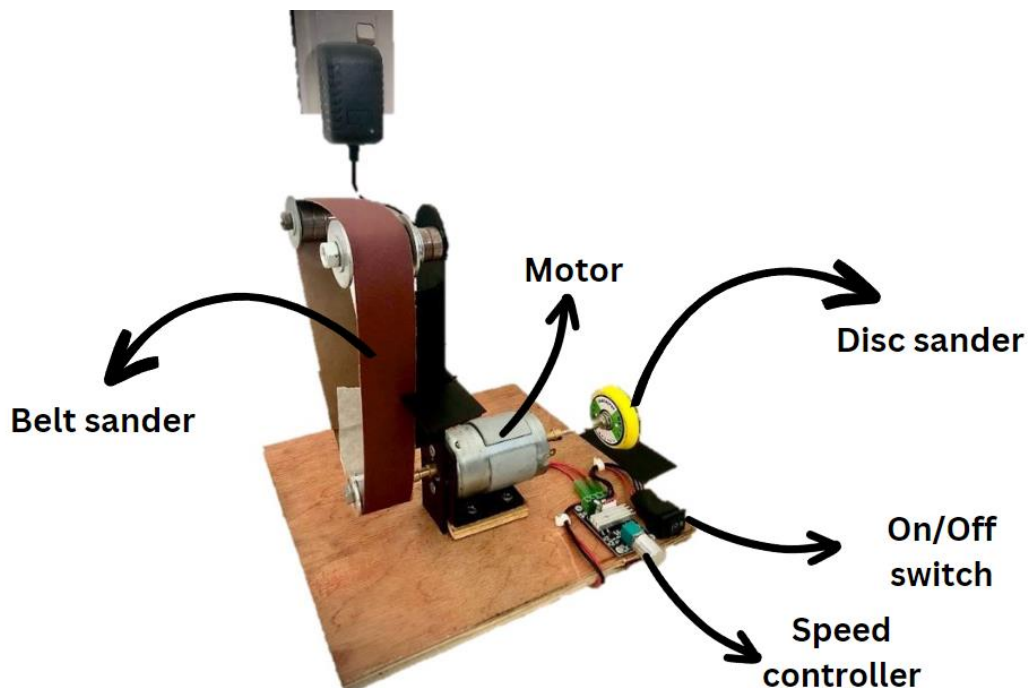


Figure 1: The isometric view of the fabricated Tabletop Belt Sander Machine

Table 1: Tabletop Belt Sander Machine specifications

No	Components	Specifications
1	Body Frame Materials	Mild Steel, Plywood
2	Weight	2.5 kg
3	Length	280 mm
4	Width	250 mm
5	Height	230 mm
6	Voltage	12V
7	Torque	0.305 Nm

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The tabletop belt sander machine offers several advantages. Firstly, it is easy to handle due to its speed controller, allowing users to adjust the speed as needed for different materials, simplifying the sanding, and finishing processes. Secondly, it is cost-effectiveness thus making it an attractive option for potential buyers. Thirdly, maintenance is minimal, primarily requiring the replacement of the worn-out belt or disc sander. Lastly, it enhances productivity as it combines both sanding and finishing processes, providing a smoother surface, and it offers flexibility in its applications, accommodating various materials and allowing precise speed control for small and delicate tasks.

5.0 CONCLUSION

In conclusion, the development of the tabletop belt sander machine represents a significant innovation in the field of carpentry equipment. This project addresses the challenge of accessibility and cost-effectiveness by creating a versatile tool that combines the functions of a belt sander and a disc sander in a single, affordable unit. The integration of a dual shaft 12 V motor and a speed controller adds flexibility to the machine, allowing users to tailor its performance to specific tasks. This compact and efficient design not only saves space but also caters to the needs of smaller-scale carpentry projects, offering a practical and cost-efficient alternative to larger, more expensive equipment. In doing so, it opens new opportunities for carpenters and woodworkers, making the finishing and shaping processes more accessible and efficient.

SP PVC BOX

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ABSTRAK

Kebocoran paip air sememangnya mendatangkan masalah dan kerugian kepada pengguna. Sesebuah rumah boleh kehilangan air sehingga 20,000 galen (75,708 liter) setiap tahun melalui kebocoran secara langsung atau tidak langsung. Sebilangan besar kebocoran ini berasal dari pelbagai punca termasuk masalah kebocoran pada kepala paip. Di bangunan perumahan domestik kebanyakan kepala paip air dipasang dengan penyambung paip dan paip agihan dalaman yang dibina didalam dinding. Masalah kebocoran perpaipan sering berlaku pada penyambungan paip dan kepala paip tersebut. Sekiranya perkara ini berlaku, kerja – kerja memecahkan dinding perlu dilakukan untuk membaiki kebocoran yang terjadi. Hal ini akan menyebabkan penggunaan banyak peralatan dan meningkatkan jumlah tenaga manusia untuk membaiki kepala paip tersebut. Justeru, situasi ini menyukarkan kerja penyelenggaraan perpaipan dilaksanakan dan akhirnya kawasan kerja bersepah selepas konkrit - konkrit tersebut dipecahkan. SP PVC Box merupakan satu produk yang dicipta untuk mengatasi masalah kerja - kerja penyelenggaraan kepala paip air bagi perpaipan yang tertanam didalam dinding. Projek inovasi ini tercetus daripada konsep pemasangan soket pendawaian elektrik. Rekabentuk soket ini direkacipta dengan kedudukan paip agihan berada didalam soket tersebut dan kepala paip diluar kotak soket. Pemasangan SP PVC Box boleh dibuat semasa dalam fasa pembinaan bangunan atau selepas kerja – kerja pemecahan pertama kali dinding dilakukan bagi memudahkan penyelenggaraan pada masa akan datang. Melalui ujilari yang telah dilaksanakan mendapati bahawa penggunaan produk ini memudahkan kerja - kerja penyelenggaraan perpaipan, mengurangkan penggunaan tenaga, menjimatkan masa dan meminimalkan kawasan kerja yang bersepah selepas kerja – kerja penyelenggaraan perpaipan dijalankan. Secara keseluruhannya, responden memberi maklumbalas yang positif terhadap rekabentuk, fungsi dan bersetuju bahawa produk ini berpotensi untuk dikomersilkan.

Kata Kunci: Penyelenggaraan, Kepala Paip, Perpaipan Didalam Dinding.

1.0 PENGENALAN

Secara amnya kebanyakan paip agihan bangunan pada sistem perpaipan domestik dibina didalam dinding. Kepala paip air keluar akan dipasang bersambungan dengan paip agihan tersebut untuk membekalkan bekalan air bersih kepada pengguna (Azman et. al, 2020, Lutfiah Natrah 2021, Nora et. al, 2019). Berdasarkan Akta Industri Perkhidmatan Air 2006, sekiranya kebocoran berlaku pada paip air dalaman, kerja – kerja penyelenggaraan perpaipan tersebut adalah dibawah tugas dan tanggungjawab pengguna sendiri.

Kebocoran paip air sememangnya mendatangkan masalah dan kerugian kepada pengguna. Sesebuah rumah boleh kehilangan air sehingga 20,000 galen (75,708 liter) setiap

tahun melalui kebocoran secara langsung atau tidak langsung (Mohammad Asyraf Khalib, 2021). Sebilangan besar kebocoran ini berasal dari pelbagai punca termasuk masalah kebocoran pada kepala paip. Masalah kebocoran perpaipan seringkali berlaku pada penyambungan paip dan kepala paip tersebut. Kebocoran ini menyebabkan air mengalir secara berterusan, secara tidak langsung meningkatkan penggunaan air, sekaligus menyumbang kepada peningkatan bil air yang tinggi.

Sekiranya masalah ini berlaku, kerja – kerja memecahkan dinding perlu dilakukan untuk memperbaiki kepala paip air keluar tersebut. Justeru, situasi ini menyukarkan kerja penyelenggaraan dilaksanakan. Selain itu, hal ini akan menyebabkan penggunaan banyak peralatan dan meningkatkan jumlah tenaga manusia untuk memperbaiki paip tersebut. Akhirnya langkah kerja menyelenggara menjadi terlalu banyak dan kawasan kerja berseparah selepas konkrit - konkrit tersebut dipecahkan.

2.0 OBJEKTIF

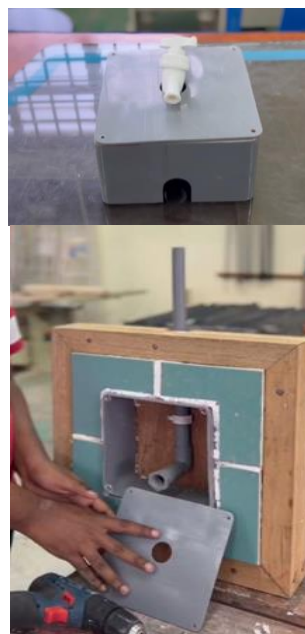
Objektif membangunkan projek ini adalah seperti berikut;

- a) Menghasilkan alat untuk memudahkan kerja - kerja penyelenggaraan perpaipan.
- b) Merekabentuk alat untuk mengelakkan kerja - kerja menebuk dinding konkrit bagi perpaipan yang dibina didalam dinding.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Produk ini merupakan soket yang perlu dipasang didalam dinding. Rekabentuk soket ini direkacipta dengan kedudukan paip agihan berada didalam soket tersebut manakala kepala paip diluar kotak soket. Pemasangan SP PVC BOX boleh dibuat semasa dalam fasa pembinaan bangunan tersebut atau selepas kerja – kerja pemecahan dinding dilakukan bagi memudahkan penyelenggaraan pada masa akan datang.

Rekabentuk projek ini tercetus daripada konsep pemasangan soket dalam pendawaian elektrik. Diperingkat fasa rekabentuk, perisian autoCAD digunakan untuk membuat lakaran produk yang akan dihasilkan. Manakala bagi peringkat penghasilan pula, produk ini hanya menggunakan paip PVC sahaja sebagai bahan utama. Selain itu penggunaan skru juga digunakan untuk melengkapkan penggunaan projek ini.



Rajah 1 : Produk inovasi

Proses uji lari (*test run*) turut dilaksanakan bagi melihat kefungsian dan keberkesanan projek ini. Seramai 1 orang pensyarah pakar dan 3 orang pelajar yang telah mengambil kursus perpaipan (selaku pengguna) dijemput untuk sesi uji lari produk yang dihasilkan.



Rajah 2 : Proses uji lari bersama pensyarah pakar



Rajah 3 : Proses uji lari bersama 3 orang pengguna

Berdasarkan uji lari yang dilaksanakan mendapati pemasangan SP PVC Box sebagai soket pada paip agihan memberi ruang kawasan yang cukup bagi kerja – kerja penyelenggaraan perpaipan dilaksanakan sekiranya kebocoran berlaku. Sehubungan itu, kerja - kerja menebuk dinding konkrit dapat mengelakkan dan langkah - langkah kerja penyelenggaraan paip dapat dikurangkan. Lanjutan itu penggunaan tenaga dapat dikurangkan serta penjimatan masa berlaku. Kawasan kerja berseparah selepas kerja – kerja penyelenggaraan juga dapat diminimalkan.

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

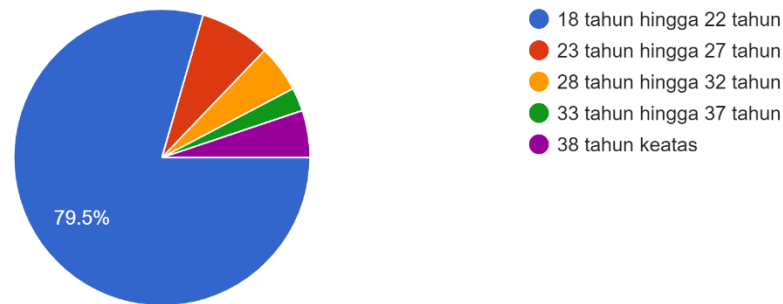
Bagi mengenalpasti persepsi pengguna terhadap potensi produk ini, satu kajian ringkas berbentuk tinjauan telah dijalankan dengan menguna pakai soal selidik sebagai instrumen kajian. Maklumbalas produk ini diukur dengan menggunakan 4 skala likert iaitu :

- 1 = Sangat tidak setuju
- 2 = Tidak setuju
- 3 = Setuju
- 4 = Sangat setuju

Seramai 39 orang responden telah memberi maklumbalas produk yang dihasilkan Berdasarkan analisis soal selidik pada Rajah 4, 79.5% responden dalam kajian ini berumur 18 tahun hingga 22 tahun.

Umur

39 responses

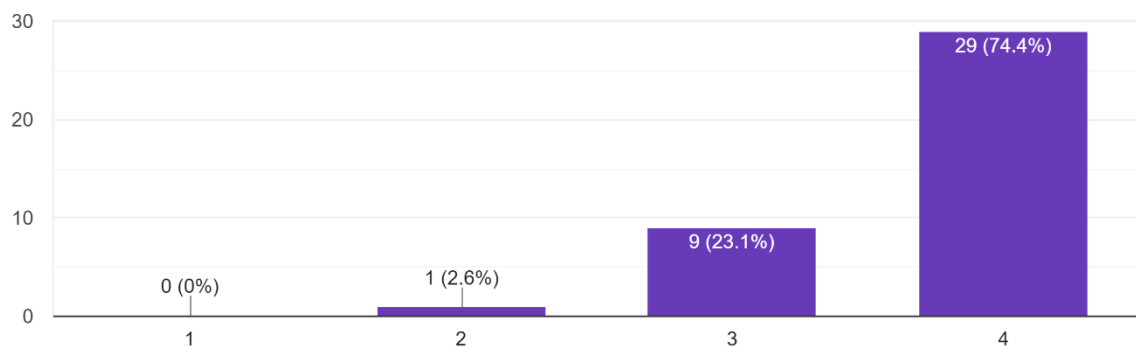


Rajah 4 : Pecahan peratus umur responden

Majoriti responden juga bersetuju dengan jumlah peratusan sebanyak 74.4% bahawa penggunaan produk ini memudahkan mengurangkan penggunaan tenaga serta menjimatkan masa sekiranya kebocoran paip berlaku. Rajah 5 menunjukkan analisis kelebihan penggunaan produk tersebut.

4) Sekiranya saya memasang produk ini, saya dapat mengurangkan penggunaan tenaga serta menjimatkan masa sekiranya kebocoran paip berlaku

39 responses

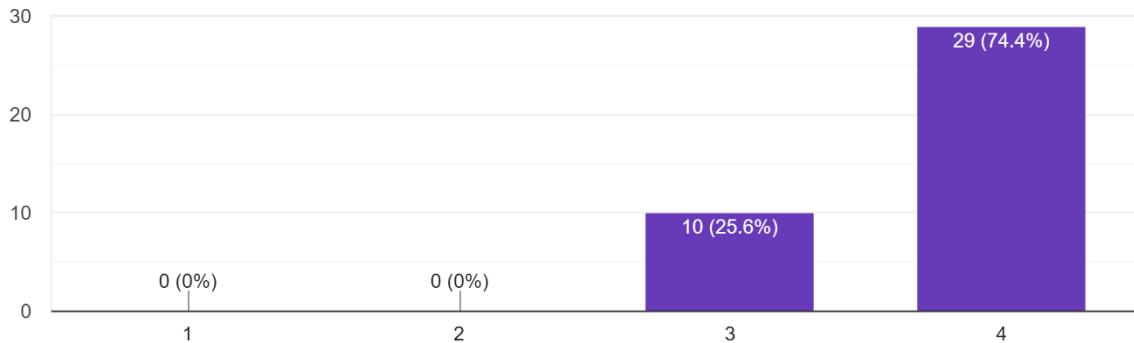


Rajah 5 : Kelebihan penggunaan produk.

Berdasarkan analisis, sebanyak 74.4% responden dalam Rajah 6 menyatakan bahawa penggunaan produk ini dapat mengurangkan langkah – langkah kerja penyelenggaraan perpaipan sekiranya kebocoran berlaku.

5) Sekiranya saya memasang produk ini, saya dapat mengurangkan langkah - langkah kerja penyelenggaraan paip sekiranya kebocoran paip berlaku

39 responses

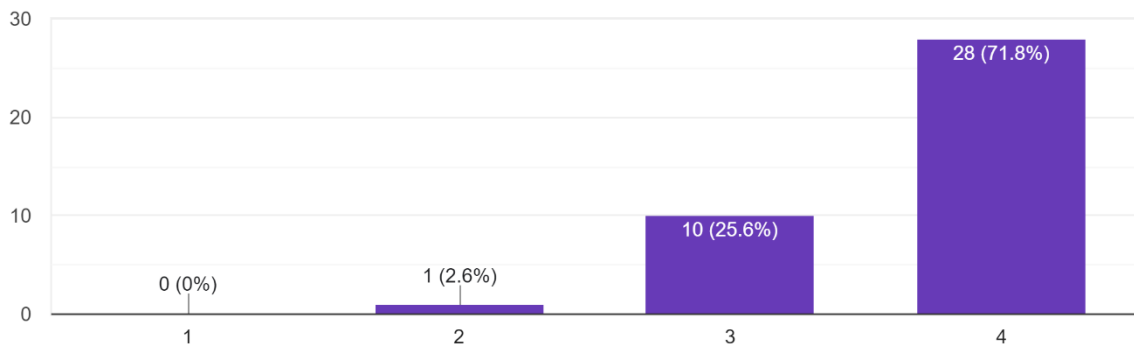


Rajah 6 : Kelebihan penggunaan produk.

Sebanyak 71.8% responden dalam kajian ini bersetuju produk yang dibangunkan ini berpotensi untuk dikomersilkan. Analisis peratusan potensi komersilan ini ditunjukkan didalam Rajah 7.

6) Produk ini berpotensi untuk dikomersilkan

39 responses



Rajah 7 : Potensi komersilan produk.

Bagi maklumbalas penambahbaikan rekabentuk secara keseluruhannya responden menyatakan produk ini sangat berguna, bagus, menarik dan kreatif. Selain itu, bagi penambahbaikan mengenai fungsi produk pula responden memberi maklumbalas bahawa produk ini praktikal dan boleh berfungsi dengan baik.

5.0 KESIMPULAN

Secara kesimpulannya, penghasilan produk ini berjaya mencapai objektif penghasilan projek yang ingin dicapai. Produk ini mendatangkan banyak manfaat kepada pelbagai pihak terutamanya dalam kerja – kerja penyelenggaraan perpaipan. Produk ini juga mempunyai potensi untuk dikomersialkan dan dimajukan pada masa akan datang.

6.0 RUJUKAN

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SAMBAL BILIS ROSEL (SBR)

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ABSTRAK

Kolej Komuniti Bandar Penawar (KKBP), merupakan salah sebuah institusi pendidikan awam yang terletak di Bandar Penawar, Kota Tinggi, Johor. Memiliki tanah yang luas membolehkan pelbagai tumbuhan ditanam dalam kampus KKBP. Penanaman rosel dan cili padi jenis sentil di kebun kampus KKBP disebabkan kaedah penanaman dan penjagaannya yang lebih mudah untuk diuruskan serta tempoh pembiakan rosel dan cili padi yang singkat sekitar lima (5) bulan, sudah boleh dituai hasil. Rosel ditanam menggunakan kaedah tradisional dan cili padi menggunakan kaedah sistem fertigasi. Namun apabila terdapat lambakan buah rosel dan cili padi yang banyak, timbul pelbagai ilham dan pandangan untuk mengkomersialkan produk berunsurkan rosel dan cili padi ini. Sambal bilis rosel (SBR) merupakan produk yang terhasil dari permasalahan ini. SBR merupakan gabungan produk makanan yang berasaskan rosel dan cili padi, yang dibungkus dalam satu pek aluminium yang mesra dibawa kemana-mana. Bagi menjaga kualiti produk, pembungkusannya adalah dengan menggunakan kaedah retort. Sambal bilis rosel dicipta untuk memudahkan pengguna makan dan minum tanpa perlu bersusah payah di dapur, sebaliknya dengan satu pek ini akan terhasil makanan yang boleh disediakan dengan tempoh masa yang cepat. Impak dari penghasilan produk sambal bilis rosel ini, diharapkan impian untuk membawa KKBP menjadi salah sebuah institusi pendidikan yang dapat mengeluarkan produk makanan menggunakan sumber hasil kebun sendiri, menjadi satu kenyataan satu hari nanti. Usahasama berterusan dengan Jabatan Pertanian, Lembaga Pemasaran Pertanian Persekutuan (FAMA), Lembaga Kemajuan Johor Tenggara (KEJORA) dan pelbagai lagi pihak yang berkepentingan, diharapkan dapat menjadi pemangkin buat KKBP membantu negara melalui cabaran persekitaran pertanian intensiti tinggi bandar. Kajian penerimaan SBR turut dijalankan untuk meninjau tahap penerimaan responden terhadap produk SBR. Instrumen soalselidik menggunakan skala hedonik telah diedarkan kepada 105 orang responden. Data dianalisis secara deskriptif dengan menggunakan perisian Excel 2016. Analisis menunjukkan bahawa SBR diterima pada tahap baik oleh responden dengan nilai min 3.83. Kesimpulannya, SBR ini diterima secara optimistik oleh responden.

Kata Kunci: sambal bilis rosel, pek aluminium, kaedah penanaman, kaedah retort, skala hedonik.

1.0 PENGENALAN

Ilham untuk menanam pokok rosel dan cili padi sentil tercetus kerana kaedah penanaman dan penjagaannya yang mudah diuruskan. Selain itu, tempoh pembiakan pokok cili padi sentil dan pokok Rosel sehingga mengeluarkan hasil adalah lebih singkat berbanding dengan tanaman lain, iaitu sekitar 5 bulan, sudah boleh dituai hasilnya. Namun apabila terdapat lambakan cili padi sentil dan buah Rosel yang banyak, dan kesukaran untuk memasarkan buahnya pada pengguna tempatan, maka timbul pelbagai ilham dan pandangan bagaimana untuk mengkomersialkan produk berunsurkan rosel ini.

Penanaman, pemprosesan dan pengedaran hasil tanaman dalam kebun kampus sehingga membawa kepada pembangunan produk Sambal Bilis Rosel dilaksanakan secara berperingkat bagi memenuhi kehendak pelanggan dan pemegang taruh (keutamaan pada pelajar KKBP dan penduduk setempat).

Kehadiran penyakit Covid-19, yang menggemparkan satu dunia pada awal tahun 2020, sehingga membawa kepada pelbagai penemuan rawatan, turut mencetuskan ilham pada kami untuk menjadikan tanaman roselle sebagai salah satu tanaman yang boleh membantu meningkatkan imunisasi tubuh badan manusia, tanpa memerlukan kos perubatan yang tinggi. Menurut kajian, roselle mempunyai khasiat yang tinggi sebagai herba semulajadi yang membekalkan kandungan Vitamin C yang tinggi iaitu setiap 100gm roselle mengandungi 280mg Vitamin C. Ia juga mengandungi pelbagai Vitamin yang merangkumi Vitamin B1, B2 dan Vitamin D. Dalam roselle itu sendiri mengandungi hampir 486gm kalsium dan juga Magnesium, Beta-Carotene, Omega 3 serta bersifat antioksidan dengan kandungan Vitamin C serta serat yang tinggi di dalamnya. Ia juga mengandungi serat, zat besi serta asid amino yang diperlukan tubuh. (sumber:<https://denyutnadi.com/2020/03/03/roselle-tumbuhan-sejuta-khasiat/>).

2.0 OBJEKTIF

Produk sambal bilis roselle (SBR) dibangunkan untuk mencapai objektif berikut:

- a) Untuk meminimalkan pembuangan hasil kebun kampus KKBP
- b) Untuk mempelbagaikan pilihan produk makanan daripada buah roselle dan memanjangkan tempoh masa boleh makan sambal bilis roselle

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Proses pembangunan produk sambal bilis roselle (SBR) bermula dengan penanaman cili padi jenis sentil dari tahun 2017 melalui pelaksanaan projek fertigasi. Pada tahun 2019 – 2021, KKBP meneruskan proses penanaman pokok-pokok cili padi dan roselle di kebun kampus KKBP dan menjelang tahun 2022, pembangunan produk sambal bilis roselle (SBR) berjaya dihasilkan.

Sambal bilis roselle (SBR) dibangunkan dengan menggunakan teknologi retort bagi memastikan ia kekal segar sehingga lebih setahun, tanpa sebarang penggunaan bahan pengawet. Ciri-ciri inovasi yang ada pada produk SBR adalah keunikan rasanya yang terhasil dari buah roselle. Rajah 3 menunjukkan penghasilan SBR dari cili padi dan buah roselle yang ditanam sendiri di kebun kampus KKBP, yang digabungkan dengan bahan-bahan sampingan seperti minyak sawit, lada kering, ikan bilis, bawang kecil, bawang putih, buah tomato, gula merah, gula pasir dan garam semasa penghasilannya.



Rajah 3.1: Penghasilan SBR di atas kualiti

Kesemua bahan-bahan ini dimasak dengan nisbah tertentu dan diisi terus ke dalam pouch aluminium, botol kaca atau botol *polypropylene* (PP) sepertimana yang ditunjukkan pada Rajah 3.2 Pembungkusan dilakukan dalam situasi sambal masing panas-panas lagi, bagi mengelakkan penyerapan kuman di sekeliling udara ke dalam SBR.



Rajah 3.2: Proses memasukkan SBR secara manual

SBR yang telah siap dibungkus akan di *sealed* dengan menggunakan mesin *sealer* seperti yang ditunjukkan pada Rajah 3.3 dan disteril menggunakan mesin kukus elektrik atau mesin retort pada suhu 116 – 121 darjah celcius dengan tekanan 15 psi. Proses pensterilan ini wajib dilakukan di dalam bekas kukus elektronik atau mesin retort pada tempoh masa 20 minit bagi setiap pusingan kerja mensteril. Kukus elektrik boleh digunakan sebagai pengganti mesin retort, sekiranya tiada, sepertimana yang ditunjukkan pada Rajah 3.4, iaitu penyusunan SBR dalam botol kaca untuk pelaksanaan proses kerja pensterilan SBR.



Rajah 3.3: Mesin Sealer



Rajah 3.4: Kukus elektrik yang digunakan bagi menggantikan penggunaan mesin retort untuk mensteril SBR

Mesin retort seperti yang ditunjukkan pada Rajah 3.5 boleh digunakan untuk kerja pensterilan produk makanan dalam skala kecil. Kebiasaannya pengusaha makanan dalam industri kecil sederhana (IKS) wajib memiliki mesin ini, bagi mengawal mutu produk mereka dengan lebih terjamin. Pemilihan bahan mentah yang baik juga turut membantu penghasilan produk makanan yang berkualiti.



Rajah 3.5: Mesin Retort

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Produk sambal bilis rosol (SBR) dibangunkan dengan menggunakan resepi tersendiri dan didaftarkan hak keaslian penciptaannya dibawah Akta Hak Cipta 1987 dengan no pemberitahuan CRLY2022J0277.

Sambal bilis rosol (SBR) adalah inovasi dalam makanan yang ditambah baik mengikut selera tempatan dan boleh dijadikan sebagai pelengkap hidangan. Individu yang gemar dengan aktiviti luar seperti pengembara atau tentera yang bekerja di hutan amat sesuai memilih SBR sebagai menu makanan mereka, ia kerana bungkusannya yang kecil, mudah dibawa kemana-mana. SBR dalam pek kecil (100 gm) boleh dimakan seramai 5 orang dan paket besar (500gm) boleh dimakan 25 orang sekurang-kurangnya. SBR adalah produk makanan pilihan bagi mereka yang tidak mempunyai komitmen masa untuk memasak, malahan juga sesuai untuk dijadikan pek makanan wajib di dapur, kerana ia berkonsepkan makanan sedia dimakan (ready to eat food) jadi ia mudah disediakan. Produk SBR memberi manfaat yang sangat banyak dan menyumbang impak kepada pengkomersialan hasil pertanian, antaranya ialah :

- i) Hasil pertanian yang tidak laku dijual tidak dilupuskan dengan pembuangan
- ii) Menggalakan para pekebun menghasilkan produk makanan dari sumber pertanian
- iii) Menjana sumber pendapatan tambahan selain dari hasil pertanian itu sendiri

5.0 KESIMPULAN

Kesimpulannya, produk sambal bilis rosol (sbr) berjaya diperkenalkan identitinya dari hasil kebun kampus ke produk makanan. Kerjasama berterusan dari pelbagai agensi kerajaan sangat membantu pembangunan sbr. Semuga sbr dapat dikomersialkan dengan lebih meluas dan boleh dijadikan sebagai pelengkap hidangan yang amat diperlukan oleh masyarakat Malaysia hari ini. Rekabentuknya dalam pek retort yang berkeupayaan menjamin kualiti & ketahanan sambal bilis rosol, serta kandungannya yang ringan dan kecil, membolehkan sbr mudah dibawa kemana-mana serta boleh menjimatkan masa memasak khususnya kepada mereka yang berkerjaya, gemar melancong dan beraktiviti luar.

**MYJOHORGREEN2U: MINI LANSKAP AIR TERJUN
(FIQS FOUNTAINFALL LANDSCAPE)**

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ABSTRAK

Air merupakan satu sumber yang amat penting dan mempunyai pelbagai kegunaan dalam kehidupan sehari-hari. Myjohorgreen2u: Mini Lanskap Air Terjun (*Fiqs Fountainfall Landscape*) adalah produk hasil inovasi dan rekacipta yang menggabungkan konsep reka bentuk mekanikal, elektrik dan penggunaan sumber air sebagai medium utama dalam pembangunan produk. Idea bagi penghasilan produk ini diterbitkan sebagai mini landskap hiasan yang ringkas, murah dan mudah alih yang mampu menceriakan suasana walaupun di dalam ruangan yang kecil. Penghasilan idea produk ini berikutan dengan isu alam sekitar dan kesihatan mental yang hangat diperbincangkan di semua peringkat samada di sekolah, institusi pendidikan dan masyarakat. Persekitaran alam sekitar, tempat kerja dan bebanan tugas yang banyak seringkali menjadi masalah kepada isu kesihatan mental. Justeru, produk inovasi yang dihasilkan menggunakan beberapa bahan kitar semula seperti polisterin dan menggabungkan elemen mekanikal juga elektrik daripada bunyian titisan air serta tanaman hiasan flora. Menerusi penghasilan produk ini, ia mampu dijadikan landskap hiasan dalam ruangan kecil seperti atas meja atau sudut bilik dan mampu mengurangkan tekanan kerja dan menenangkan fikiran. Produk ini mempunyai potensi komersial dan boleh dipasarkan kepada semua individu khususnya para penggemar penghias landskap mahupun suri rumah yang mementingkan keceriaan dan ketenangan dalam suasana rumah dan juga di pejabat. Diharapkan inovasi produk ini dapat memberi manfaat sebagai pelengkap hiasan landskap, menceriakan suasana persekitaran, memberikan ketenangan minda serta meningkatkan keboleh baharuan penggunaan bahan kitar semula di tempat kerja mahupun di rumah.

Kata Kunci: landskap hiasan, mudah alih, mekanikal, kitar semula.

1.0 PENGENALAN

Myjohorgreen2u: Mini Lanskap Air Terjun (*Fiqs Fountainfall Landscape*) merupakan mini landskap hiasan dalaman yang ringkas dan boleh mudah alih yang mampu menceriakan suasana walaupun di dalam ruangan yang kecil. Produk ini menggabungkan konsep reka bentuk mekanikal, elektrik dan penggunaan sumber air sebagai medium utama dalam pembangunan inovasi produk. Ia mampu dijadikan landskap hiasan dalam ruangan kecil seperti atas meja atau sudut bilik dan mampu mengurangkan tekanan kerja dan menenangkan fikiran seterusnya memberi kesan terapeutik kepada pengguna produk.

2.0 OBJEKTIF

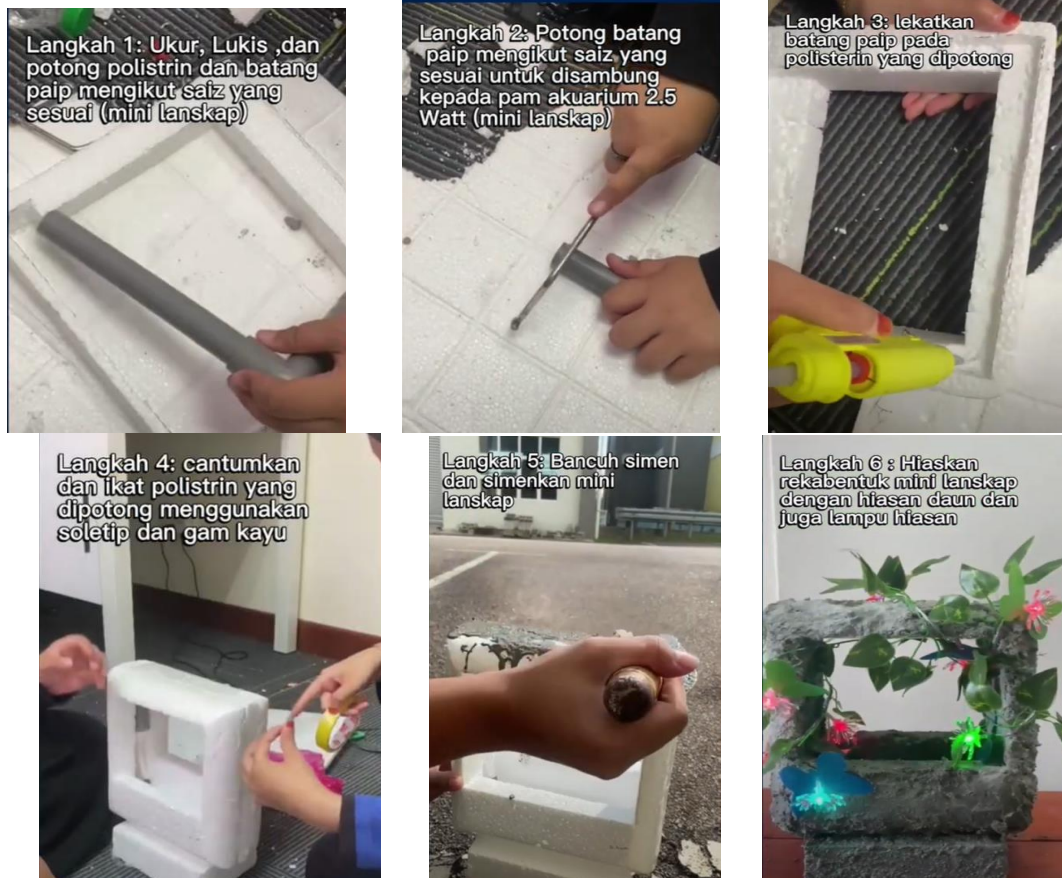
Objektif mini lanskap ini direka adalah seperti berikut:

- 2.1 Untuk mewujudkan persekitaran yang sihat.
- 2.2 Untuk mewujudkan kesedaran alam sekitar dalam kalangan pelajar dan masyarakat.
- 2.3 Untuk meningkatkan tahap praktikal pengurusan sisa pepejal/ sampah.
- 2.4 Untuk mereka bentuk landskap menggunakan bahan-bahan kitar semula

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Inovasi ini dimulakan dengan mengenalpasti masalah yang berlaku dan apakah inovasi yang boleh dicipta daripada permasalahan ini. Untuk projek inovasi MyJohorgreen2u: Mini Lanskap Air Terjun (Figs Fountainfall Landscape) ini, permasalahan yang dapat dikenal pasti adalah sikap sambil lewa pada barangan terpakai, pembuangan sampah yang melampau dan masyarakat tidak mengitar semula bahan-bahan terpakai. Berdasarkan masalah ini, kami mendapat idea untuk mencipta sebuah inovasi dengan menggunakan bahan terpakai dan idea tersebut adalah untuk menghasilkan suatu hiasan yang boleh memberikan manfaat dan kesan terapi kepada pengguna dan alam sekitar. Setelah mendapat idea, bermulalah projek penghasilan mini air terjun dengan menggunakan bahan-bahan sedia ada dan terpakai. Seterusnya, setelah projek mini air terjun ini selesai, kami menjalankan soal selidik dalam kalangan staf dan pelajar UiTM Pasir Gudang untuk mendapatkan maklum balas tentang sebelum dan selepas penggunaan mini air terjun ini.

Langkah-langkah pembangunan prototaip lanskap air terjun adalah seperti rajah 1 di bawah.



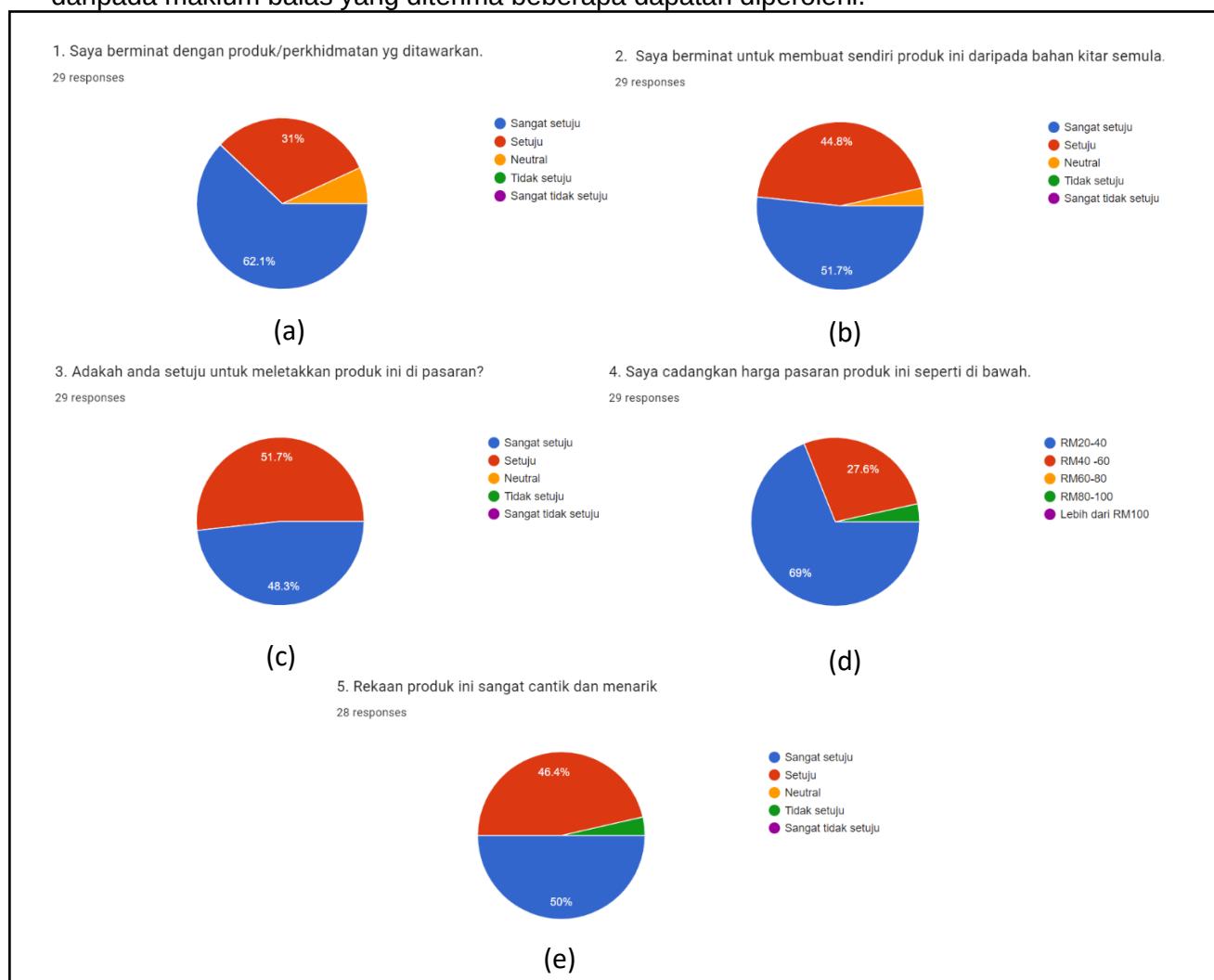
Langkah 7: masukkan pam akuarium dan air dalam bekas di bahagian tengah. Pasang suis dan air beserta lampu hiasan akan berfungsi secara serentak.



Rajah 1: Langkah-langkah 1-7 bagi pembangunan prototaip Myjohorgreen2u: Mini Lanskap Air Terjun (Figs Fountainfall Landscape)

4.0 MAKLUM BALAS PENGGUNA

Kajian pilot telah dijalankan terhadap produk yang dihasilkan. Soalan kaji selidik produk telah dikemukakan kepada pengguna dalam kalangan pelajar UiTM Pasir Gudang. Seramai 29 pelajar telah memberi maklumbalas terhadap produk. Data dianalisa secara deskriptif dan daripada maklum balas yang diterima beberapa dapatan diperolehi.



Rajah 2 : Graf carta pai maklumbalas pengguna terhadap produk yang dibangunkan.

Berdasarkan Rajah 2 di atas, terdapat 5 buah carta pai yang menunjukkan lima item soal selidik yang diberikan kepada responden. Item-item tersebut adalah minat terhadap produk atau perkhidmatan yang ditawarkan, minat membuat sendiri produk daripada bahan kitar semula, bersetuju meletakkan produk di pasaran, cadangan harga dan rekabentuk produk yang menarik dilabelkan pada rajah masing-masing daripada (a) sehingga (e). Terdapat 4 item diukur menggunakan skala likert iaitu bermula daripada sangat tidak setuju (1) sehingga sangat setuju (5). Item tersebut adalah (a), (b), (c) dan (e). Manakala item (d) diukur secara skala ordinal iaitu melibatkan harga pasaran yang sesuai bermula daripada skala RM20-RM40 sehingga lebih RM100. Daripada maklumbalas tersebut, majoriti responden bersetuju bahawa mereka berminat dengan produk atau perkhidmatan yang ditawarkan, berminat untuk membuat sendiri produk ini daripada bahan kitar semula, bersetuju supaya produk ini diletakkan di pasaran. Di samping itu, majoriti responden turut bersetuju untuk meletakkan harga produk ini dengan harga yang paling murah dan munasabah iaitu dengan anggaran RM20-RM40. seramai 8 orang responden bersetuju dengan harga RM40-RM60 dan hanya seorang sahaja yang mencadangkan harga yang paling tinggi iaitu untuk RM80-RM100. Hampir keseluruhan responden iaitu seramai 27 orang bersetuju bahawa produk ini sangat cantik dan menarik manakala seorang responden tidak bersetuju dengan kenyataan tersebut. Oleh yang demikian, berdasarkan maklumbalas yang diterima, produk ini mempunyai potensi dan permintaan yang baik di pasaran. Ia perlu juga ditambahbaik untuk menarik hati pengguna.

4.1 KEBAIKAN PRODUK

Secara umumnya produk ini memberikan impak yang positif dalam meningkatkan kesejahteraan persekitaran, fizikal dan mental. Berikut adalah antara manfaat yang diperolehi menerusi pembangunan produk ini antaranya.

- 4.1 Mewujudkan persekitaran yang sihat dalam kalangan masyarakat.
- 4.2 Memberikan kesedaran sendiri dalam kalangan masyarakat.
- 4.3 Menyediakan platform untuk meningkatkan kemahiran interpersonal dan intrapersonal serta kemahiran semula dalam kalangan pelajar dan masyarakat.
- 4.4 Reka bentuk landskap boleh menjadi model dan inspirasi kepada orang lain.

5.0 KESIMPULAN

Secara kesimpulannya, projek Myjohorgreen2u: Mini Lanskap Air Terjun (*Figs Fountainfall Landscape*) merupakan sebuah inovasi mini landskap hiasan dalaman yang ringkas dan mudah alih yang mampu menceriakan suasana walaupun di dalam ruangan yang kecil. Produk ini mampu dijadikan landskap hiasan untuk diletakkan di atas meja atau sudut bilik dan ia mampu mengurangkan tekanan kerja serta memberi kesan terapeutik kepada pengguna kerana bunyi yang dihasilkan adalah seolah-olah air terjun yang mengalir. Harapan kami agar dapat mewujudkan persekitaran yang sihat dan bersih serta memberikan kesedaran sendiri dalam kalangan pelajar dan masyarakat untuk mengitar semula barangan terpakai kerana banyak faedah yang boleh diperolehi selain daripada menghasilkan produk inovasi.

WECARE ELDERLY HOME MANAGEMENT SYSTEM

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ABSTRACT

The influence of today's hectic lifestyle has led many young people to opt for old folk home services for their elderly parents, where their parents can receive expert healthcare from trained professionals. Therefore, it becomes imperative to establish a comprehensive management system within this old folk centre to ensure the efficiency of task management such as digitalizing the record-keeping of the old folk residents while nowadays task management still relies on paper documentation. Other than that, this system also will automatically generate the medication schedule for each of the residents, whereas prior, the caretaker has to keep track of the medication schedule conventionally by checking the resident's files manually to update the medication schedule. To improve this proposed system, it provides a communication platform between elderly relatives with the caretaker. The relatives can receive daily updates and send messages to the caretaker directly. Based on the user acceptance testing conducted, 83% of the respondents were satisfied with the system requirements, design consistency, and application navigation. Thus, this proposed mobile application has the potential to be implemented in the elderly care centre or similar care centre that provides similar services.

Keywords: Management Systems, Old Folk, Care Centre, Mobile Applications, Healthcare.

1.0 INTRODUCTION

Nowadays, with the development of digitization, industries are using digital systems to optimize their workflows. However, the elderly home currently lacks a proper management system that can help them optimize their daily workflow by generating a daily activities schedule. This is important for reducing the chaos associated with managing daily activities in the elderly home. Without a schedule provided to the caretaker, they must rely on their own memory and paperwork to remember all the activities that need to be done during the day. Without a schedule, productivity is expected to be lower because they can't plan and prepare for the activities. Furthermore, the elderly residents staying in the elderly home, usually need to take some form of medication regularly. Without a proper management system, it is difficult for the caretaker to keep track of the medication timing and inventory for elderly individuals. Without a management system installed in the elderly home, the caretaker must rely on paperwork to keep track of medication usage. Additionally, for elderly individuals who need to take their medication on time, it is very dangerous if the caretaker forgets to prepare the medication or forgets to restock it.

Moreover, there is a lack of a proper communication medium between the caretaker and the elderly's relatives. Currently, when the caretaker needs to contact the elderly's relatives, they

must find the contact number in the paperwork and contact them using a third-party application like WhatsApp or Messenger. This process is tedious, and sometimes relatives might miss important and urgent messages because they are at work.

The proposed system, the WeCare Elderly Home Management System, is aimed at providing an efficient process for managing medication inventory, generating daily activity schedules, and serving as a communication medium between the caregiver and the elderly's relatives. The system offers a more systematic approach to managing the medication for the elderly. The medication inventory is linked to the elderly's profile, providing a clear indication to the caregiver when it is running low. The system can also generate a daily activity schedule for the caregiver to prepare for the day. This feature helps the caregiver easily track medication usage and daily activities. Furthermore, for the elderly's relatives, this system can serve as a communication medium. Elderly relatives are given an account that allows them to log in to the system, enabling direct communication with the caregiver. By logging into the proposed system, elderly relatives can access the message box provided in the system to contact the caregiver directly, without the need for third-party software. This enhances privacy, as medication reports are only sent via the proposed system. Additionally, the system allows relatives to receive status updates and reports from the caregiver, keeping them informed about the elderly individual's well-being.

2.0 OBJECTIVE

The primary aim is to design a system capable of alleviating the workload associated with tracking the medication intake and managing the medication inventory of elderly individuals. This would not only reduce the administrative burden on caregivers but also ensure the timely and accurate provision of medications to elderly residents. Another crucial objective is to enhance overall work efficiency by implementing a systematic approach to managing various aspects of the elderly's home. This includes streamlining processes, optimizing resource allocation, and providing a more organized framework for caregiving tasks, ultimately leading to improved quality of care. Lastly, the proposed system will undergo rigorous testing and validation to ensure that its new design can effectively enhance the work processes within the elderly's home. Through this validation process, any potential issues or areas for improvement will be identified and addressed, with the goal of optimizing the care and well-being of the elderly residents.

3.0 METHODOLOGY

This proposed system has been developed according to the waterfall model. With the process model, the development of the proposed system is divided into three stages, each serving a distinct objective as mentioned in the previous section. The methodology starts with Stage One: Communication and Planning, followed by Stage Two: Design and Development and Testing, and the last stage is Stage Three: User Acceptance Testing and Deployment. The flow of this methodology is illustrated in Figure 1.

To achieve the objective in Stage One, the first step should involve communication with the caretakers working in the elderly home to gain a comprehensive understanding of the current workflow's challenges. Observing the existing workflow in the elderly home can also facilitate the seamless integration of the digital system without increasing the caretakers' workload. Once the problems have been identified, the second step is to create a requirement document and present it to the stakeholders. This document allows both parties to discuss and differentiate between functional and non-functional requirements for the system. Once the requirement document is finalized, the stakeholders can sign an agreement to safeguard the interests of both parties.

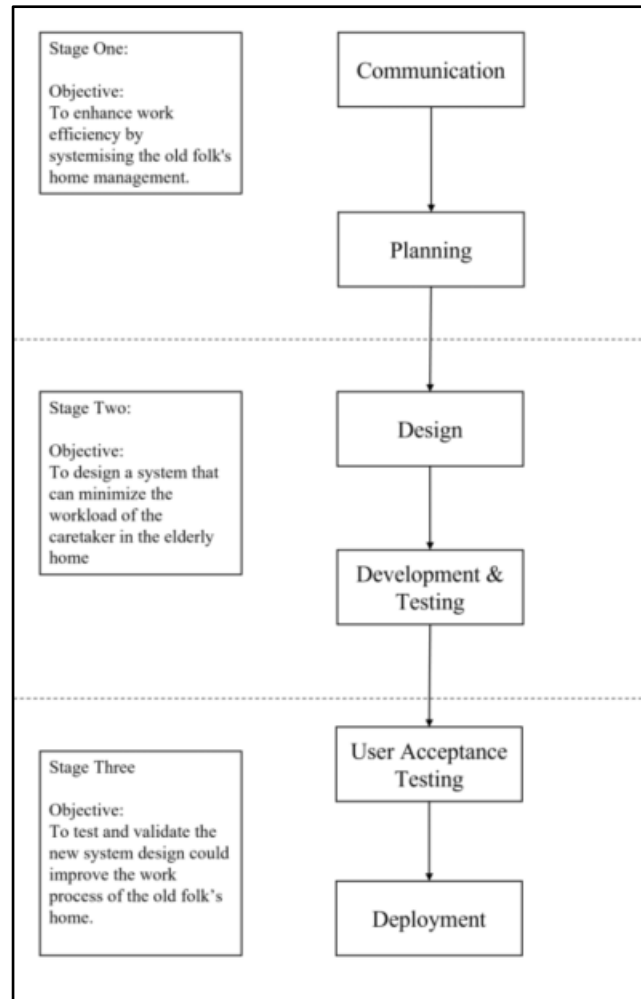


Figure 1: Project Framework.

Subsequently, the planning phase should commence. The first task is to generate a schedule or Gantt Chart, which should encompass all identified tasks. Additionally, tasks requiring resources such as hardware, manpower, and specific skills should be identified and allocated. The Gantt chart should also specify milestones and project deadlines to monitor the current development progress. The second step in the planning phase is to prepare a comprehensive risk management plan. This plan should include strategies to identify, assess, and mitigate potential risks throughout the project's lifecycle. By proactively addressing risks, the project can proceed with greater confidence and efficiency.

In Stage Two, the objective is to design a system that can enhance work efficiency. Therefore, the first step is to create a user-friendly interface. A well-designed interface can minimize the learning effort required by caretakers and increase the speed at which they can perform functions when all functions are logically placed. The second step involves preparing various diagrams, including use case diagrams, use case descriptions, activity diagrams, sequence diagrams, state transition diagrams, class diagrams, entity-relationship diagrams, and data flow diagrams. These diagrams collectively aid in understanding how to develop the system effectively. Following this, the next step is to develop the system based on the interface design and the diagrams created in the previous step. Functions and the interface should be coded one by one, and after coding is complete, an inspection or code walkthrough should be performed to ensure there are no errors. Subsequently, the integration of all functions and the interface into a cohesive system is necessary. After integration, an integration testing phase should be conducted to ensure the smooth operation and functionality of the complete system.

In the last stage of the project, the focus is on the deployment of the system. The first step in the deployment process is to test-run the system in the user environment. When it is running in the user environment, stakeholders should observe and compare the workflow and workload of the current implementation. Developers also need to gather feedback from the caretakers to validate whether the system improves the work processes of the elderly home. If the stakeholders approve the system, then it can be deployed in the real-world environment.

4.0 RESULT

User Acceptance Testing, or UAT for short, is also known as end-user testing, where the actual users of the system are involved. It is one of the final phases in the software development life cycle, during which the system is implemented in a real-world environment or the user environment to validate its functionality. The purpose of UAT is to confirm that the system meets the user's requirements and to assess its performance in the user environment. User Acceptance Testing aims to gather opinions from the actual users of the Elderly Home Management system to test whether the developed system meets their expectations. Additionally, by implementing User Acceptance Testing, future improvements can be derived from user feedback. This testing process involves presenting the developed system to the users and allowing them to experience the actual system.

In the section below, it will show the result of the user acceptance testing. In this user acceptance testing a group of 35 users was asked to answer four questions after experiencing the system the question would cover three different categories which are heuristics, content, and navigation. In addition, the result was represented using a graph, in the x-axis the rating which 1-5 is from strongly disagree to strongly agree.

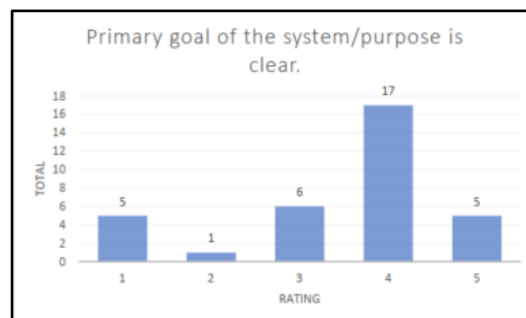


Figure 2: User Rating for Primary Goal of the System.

Figure 2 shows the results of the first question regarding whether the primary goal of the system is clear or not. Five users strongly agreed with the statement, while, on the other hand, five people strongly disagreed with it. However, overall, 62% of users agreed that the system meets its primary goal. This result indicates that the system has successfully achieved its primary goal, which is to manage medication timing for the caretaker, allowing them to accomplish this task with minimal effort as the schedule is generated automatically.

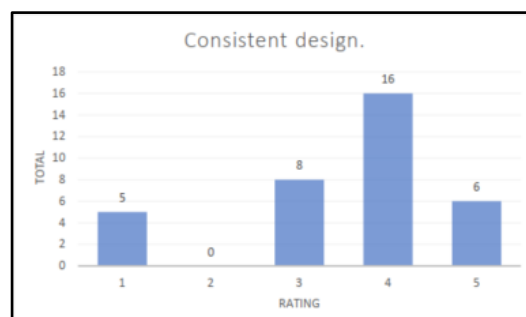


Figure 3: User Rating for Design Consistency.

Figure 3 displays the results of the second question concerning the consistency of the system's design. The results show that the majority of users agree with this question; however, there are still five users who strongly disagree. Overall, a total of 63% of users agree that this system was built with a consistent design, characterized by the use of a single primary color, green, throughout the entire system interface. This result also suggests that the system's design is optimized for mobile interfaces, as users feel comfortable using the interface design on their mobile phones.

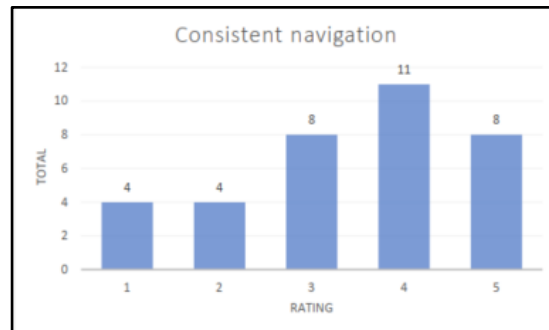


Figure 4: User Rating for Consistent Navigation

Lastly, Figure 4 displays the results of the last question concerning the navigation of the system. The results show that users are generally satisfied with the system's navigation. However, a total of eight users disagreed with the navigation. In total, 54% of users agree that the navigation is consistent. This result indicates that the system was built with a clear navigation path for users to browse through the system, and the navigation includes clear indicators to inform users of the expected outcomes when they click buttons.

5.0 CONCLUSION

In a nutshell, this proposed system's functional requirements have been successfully developed and implemented in the current system. However, there are still some aspects of the developed system that could be further improved to better serve its users. To enhance the effectiveness of the proposed system, several key areas for improvement have been identified. Firstly, host the Laravel backend online using a hosting provider like Heroku or Microsoft Azure, ensuring seamless access and reliability for our users. Secondly, recognize the importance of gaining deeper insights into the real-life scenarios of elderly homes. To achieve this, extensive field studies should be performed to gather first-hand information about the specific needs and functionalities required in such environments. Lastly, as part of the commitment to user experience, implement a WebSocket function within the message box. This feature will enable users to receive instant message notifications, enhancing communication and interaction within the system. These strategic enhancements will further elevate the performance and usability of the proposed system in catering to the unique requirements of elderly care homes.

SPHEROIDAL FIRST ORDER POLARIZATION TENSOR CALCULATOR (SFOPT)

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ABSTRACT

Polarization Tensor (PT) has been applied in various applications involving metal detection, electrical imaging, and the study of electrosensing fish. In these applications, PT is able to capture significant information, such as material, shape, and orientation about the related objects. Previous studies have shown that most objects can be related to ellipsoid. However, this project aims to focus on spheroids, which are prolate and oblate spheroids, such that they are two different types of ellipsoids. This project intends to invent a standalone application, namely the Spheroidal First Order Polarization Tensor Calculator (SFOPT). SFOPT will provide quick access to calculate the first order PT for a spheroid when the researcher enters required information, such as its semi axes and conductivity. Additionally, the size (also known as semi axes) of the spheroid can be determined from the given first order PT by fixing the conductivity of the spheroid. The application will act as a reference for the researcher to determine the first order PT of a spheroid and to obtain the size of the spheroid from a given first order PT.

Keywords: first order polarization tensor, spheroid, semi axes, conductivity

1.0 INTRODUCTION

Polarization Tensor (PT) has been implemented in numerous applications, including biomedical engineering to enhance electrical imaging, security scanning for metal detection, landmine detection, and the investigation of electrosensing fish. In these applications, PT is used to capture important information about the object, such as its material, shape, and orientation. The study from [1] shows that the PT for most of the objects can be represented as the PT of an ellipsoid. Considering the previous invention, the Ellipsoidal First Order Polarization Tensor (EFOPT) Calculator, there are some limitations to the calculator, such as the fact that it is not user-friendly to non-Matlab users and that the functions of the calculator are limited to determine the first order PT only. There is no specific application to determine the size of the object, particularly when the object is a spheroid, in the literature. Therefore, a standalone application called Spheroidal First Order Polarization Tensor Calculator (SFOPT) is invented to provide easy access to calculate the first order Polarization Tensor for spheroid as well as obtaining the size of the spheroid based on the given first order Polarization Tensor. Since spheroids are one type of ellipsoid (ellipsoid with two equal semi-axes), it is significant to study the PT for a spheroid, and this application will include a prolate and an oblate spheroid.

2.0 OBJECTIVES

The main purpose of inventing this application is to provide a standalone calculator to calculate the first order PT for a spheroid and determine the size of the spheroid based on the first order Polarization Tensor. Furthermore, SFOPT provides a quick access application for researchers by only inserting the required information. Additionally, the invention of SFOPT can be used as a reference for other researchers in order to determine the first order PT for a spheroid and the size of the spheroid based on the first order Polarization Tensor.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The application is first developed using MATLAB software, and then it is converted into a standalone application (see Figure 1). This application can be used to calculate the first order PT for a spheroid and the size of the spheroid from the given first order PT without even writing the code. Figure 2 shows the interface of the Spheroidal First Order Polarization Tensor (SFOPT) Calculator. Any researcher can simply insert the required information regarding the spheroid, such as the value of its semi axes, represented as a and b , together with the conductivity, to obtain its first order PT. In order to calculate the size of the spheroid, the information required is the given first order PT in the form of M_{11} and M_{22} , as well as the conductivity, k , of the spheroid, which can be fixed according to findings from [3]. Examples of inserting all required information to calculate the first order PT of the spheroid and the size of the spheroid can be found in Figure 3 and Figure 4 respectively.

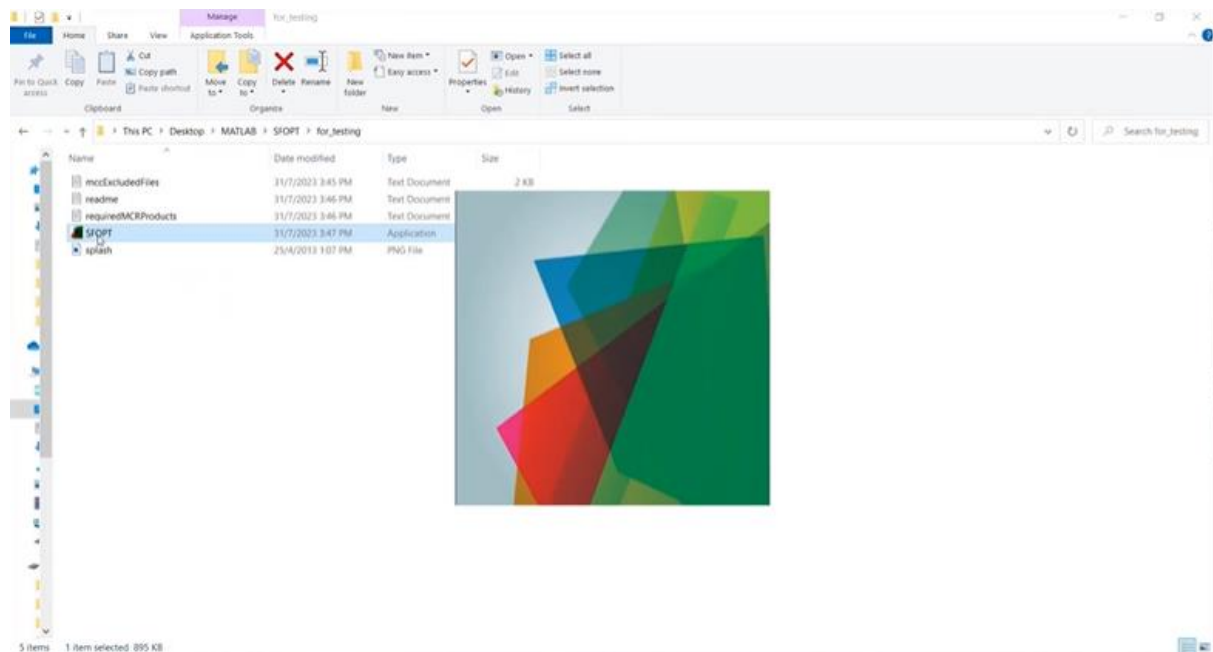


Figure 1: The standalone application of Spheroidal First Order Polarization Tensor (SFOPT) Calculator

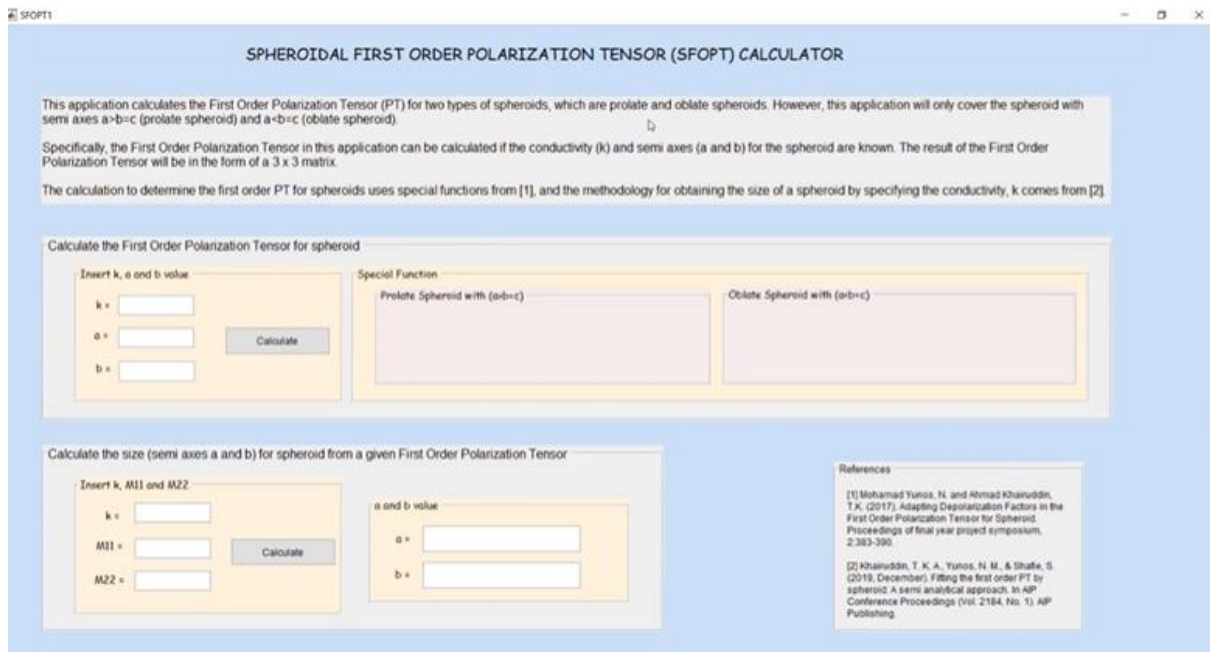


Figure 2: The interface of Spheroidal First Order Polarization Tensor (SFOPT) Calculator

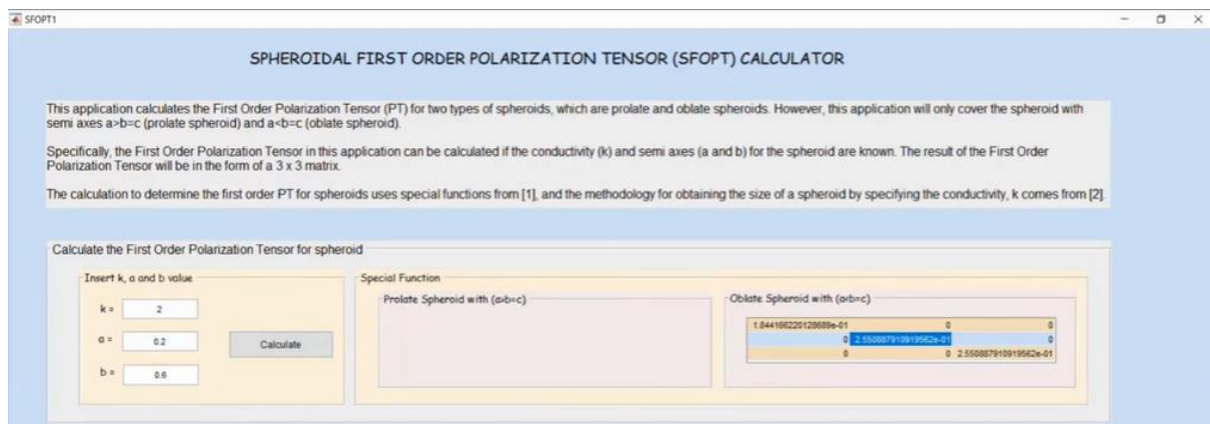


Figure 3: The semi axes of the spheroid with $a=0.2$, $b=0.6$, and $k=2$. The first order PT is calculated using special function formula for spheroid

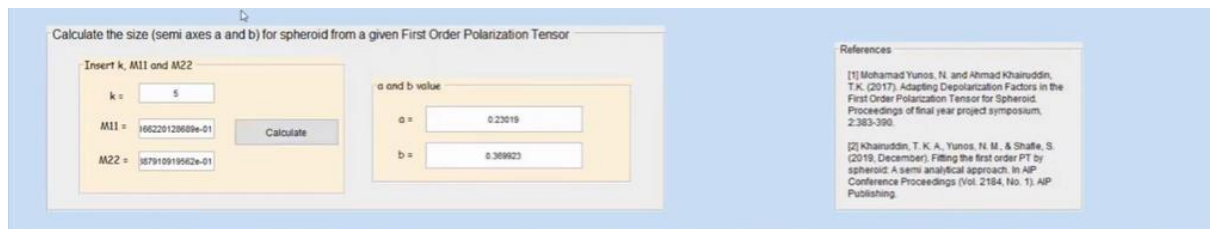


Figure 4: The value of $M11 = 1.8442 \times 10^{-1}$, $M22 = 2.5509 \times 10^{-1}$, and $k = 5$. The size of spheroid (in terms of a and b) is calculated based on the formula in [3]

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

SFOPT is innovated based on the mathematical formulations from [2] and [3] to calculate the first order PT for a spheroid and to obtain the size of the spheroid from a given first order PT. This application will be a useful aid for the other researcher who did research related to the first order PT.

5.0 CONCLUSION

In conclusion, the invention of the Spheroidal First Order Polarization Tensor (SFOPT) Calculator provides a user-friendly application to calculate the first order Polarization Tensor for spheroid as well as obtain the size of the spheroid based on the given first order Polarization Tensor of the spheroid. Additionally, this application will help the researchers save time by not writing the code themselves to calculate.

6.0 REFERENCES

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TSK-BA

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ABSTRAK

Komunikasi bahasa Arab di Malaysia masih kurang direalisasikan jika dibandingkan dengan bahasa asing yang lain meskipun bahasa ini mendapat sambutan di setiap peringkat pembelajaran. Antara penghalang utama bagi masalah ini adalah kekurangan dan kelemahan kosa kata dalam kalangan pelajar. Kekangan waktu pengajaran dan pembelajaran juga turut menyumbang kepada isu ini. Justeru, para guru perlu mencari kaedah yang terbaik bagi merangsang proses pemerolehan kosa kata pelajar. Teka Silang Kata Bahasa Arab(TSK-BA) dipilih sebagai alat inovasi yang membantu mengatasi masalah ini. Sifat asas permainan ini adalah pemetaan huruf perkataan yang ditekakan mengikut susunan ejaan yang tepat dipercayai membantu pelajar mengingat kosa kata yang dipelajari. Seramai dua puluh orang pelajar yang mengambil kursus bahasa Arab sebagai bahasa ketiga di Universiti Teknologi MARA Kampus Pasir Gudang telah bermain teka silang kata ini. Hanya empat belas perkataan digunakan dalam permainan ini dan kesemuanya telah dipelajari oleh pelajar. Hasilnya, seorang pelajar berjaya memenuhi permainan dengan susunan huruf yang tepat, manakala seorang pelajar merekodkan sifar ketepatan. Baki pelajar menunjukkan ketepatan perkataan sebanyak empat, enam, tujuh, lapan, sembilan, sebelas, dua belas dan tiga belas daripada empat belas perkataan secara keseluruhan. Kesimpulannya, majoriti pelajar mampu mengingat minimum sepuluh bunyi perkataan dengan tepat. Namun, beberapa perkataan sering disalah eja seperti pengguguran huruf alif jika huruf sebelumnya berbaris atas. Satu natijah tambahan ditemui iaitu pelajar didapati menggunakan huruf berlainan yang sama *makhraj* tetapi berbeza sifat meskipun susunan huruf adalah tepat. Sebagai contoh, huruf ط ditukar kepada huruf ت dan ق kepada ك. Akhirnya, pelajar lebih cakna dan berhati-hati terhadap perkataan baharu yang dipelajari.

Kata Kunci: Pemerolehan, Kosa Kata Arab, Permainan.

1.0 PENGENALAN

Bahasa Arab unik dan istimewa. Bahasa ini bukan sahaja memiliki bentuk huruf yang berbeza daripada bahasa lain, bahkan terdapat juga bunyi yang khusus hanya dimiliki oleh bahasa ini sahaja iaitu bunyi huruf ض. Bahasa ini bukan sekadar bahasa perbualan yang melambangkan sesebuah bangsa, malah bahasa ini juga menjadi lambang ketamadunan Islam yang berjaya diasas oleh Baginda Muhammad bin Abdullah. Erti kata lain, bahasa Arab bukan sahaja menjadi identiti kepada bangsa Arab, Islam juga turut membina ikatan pentauhidan melalui bahasa ini. Maka, apabila Islam melebarkan pengaruh ajarannya ke benua Asia, Eropah dan selainnya, bahasa mulia ini juga turut diajari kerana bahasa ini menjadi pokok kepada asas iman dan ibadah umat Islam tanpa dinafikan wujud nilai-nilai komunikasi dan kesenian yang

indah dalam bahasa ini. Kini, bahasa ini mula diberi perhatian oleh kerajaan di Malaysia agar masyarakat khususnya umat Islam menerima pembelajaran bahasa ini di peringkat awal persekolahan.

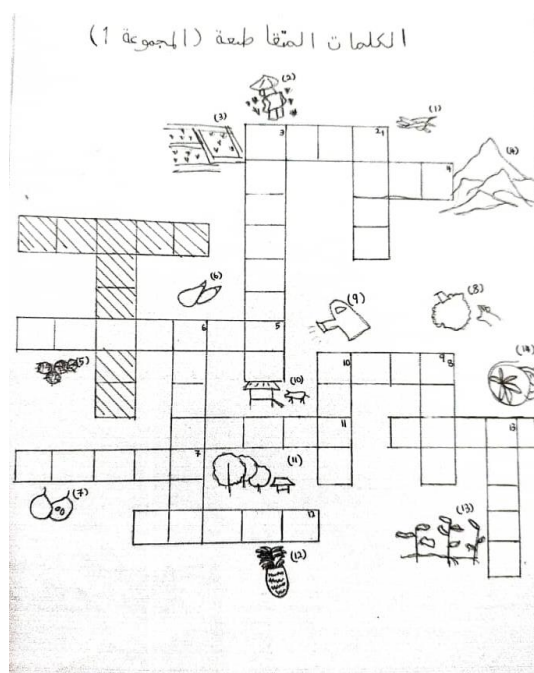
2.0 OBJEKTIF

Setiap pembelajaran mempunyai rintangan. Bahasa Arab mempunyai dua kedudukan di sisi masyarakat Malaysia. Sebahagian mempelajarinya dengan kedudukan bahasa ke-2 manakala sebahagian yang lain mempelajarinya sebagai bahasa ke-3. Permasalahan utama yang mengganggu komunikasi bahasa ini adalah kekurangan kosa kata dalam kalangan pelajar. Antara faktor yang dilihat menjadi penyumbang kepada masalah ini adalah para pelajar tiada minat dan kesungguhan untuk mengingat kosa kata yang telah dipelajari. Jadual waktu yang terhad di sekolah untuk mempelajari bahasa ini turut menjadi faktor penyumbang ke arah masalah kelemahan penguasaan kosa kata. Justeru, TSK-BA ini berobjektif untuk membantu, mendorong dan merangsang para pelajar yang mempelajari bahasa ini untuk mengingat kosa kata bahasa Arab yang telah dipelajari.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

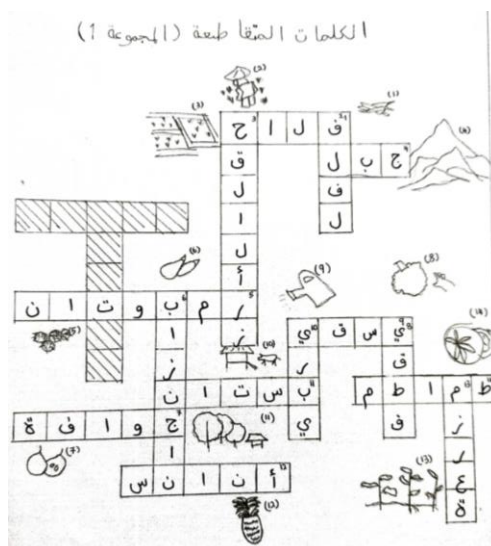
TSK-BA merupakan singkatan nama bagi Teka Silang Kata Bahasa Arab. Permainan ini diadaptasi melalui permainan teka silang kata. Permainan ini dipilih berdasarkan ciri utamanya iaitu pemetaan setiap huruf yang terkandung dalam perkataan kosa kata. Terdapat empat belas(14) perkataan bahasa Arab yang telah dipelajari oleh pelajar. Setiap perkataan diberi gambar sebagai klu kepada kosa kata yang perlu diisi. Pelajar perlu mengisi jawapan kepada gambar yang diberikan dalam kotak yang disediakan.

Rajah 1: Template permainan yang dihasilkan dan diedarkan kepada pelajar untuk diisi



(Rajah 1)

Rajah 2: Skema jawapan kepada permainan TSK-BA yang digunakan



(Rajah 2)

Hanya empat belas(14) perkataan yang digunakan dalam permainan ini. Seramai dua puluh(20) orang pelajar telah bermain TSK-BA ini.

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

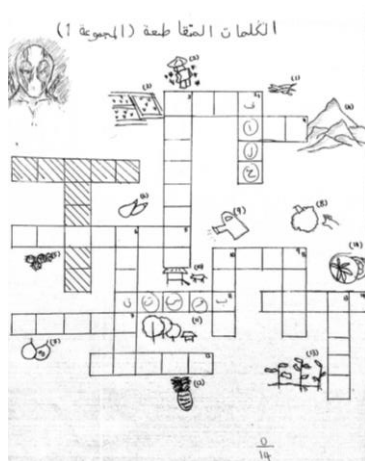
Hasilnya permaianan dengan kadar ketepatan jawapan seperti di Jadual 1.

Kadar Ketepatan Ejaan Kosa Kata	14/14	13/14	12/14	11/14	10/14	9/14	8/14	7/14	6/14	4/14	0/14
Bilangan Pelajar	1	3	2	2	3	2	1	2	2	1	1

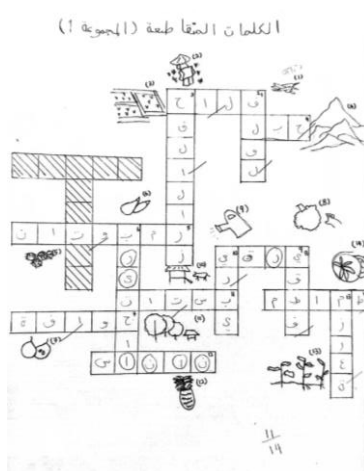
(Jadual 1: Keputusan Skor Pelajar dalam Permainan)

Melalui analisis permainan, terdapat tiga(3) faktor yang menyebabkan pelajar gagal untuk mendapat skor yang baik dalam permainan ini. Ini dijelaskan menerusi Jadual 2 seperti di bawah:

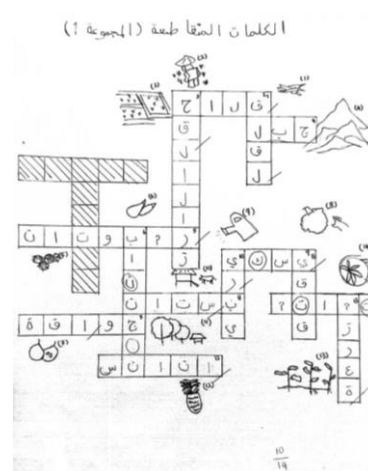
Jenis Kesalahan yang dilakukan	Contoh	Rujukan
Tidak menghafal kosa kasa	Pelajar tidak mampu mengisi kesemua kotak dengan huruf.	Rajah 3
Pelajar meninggalkan huruf <i>maddiyyah</i>	Pelajar tidak meletakkan huruf 'ا' selepas huruf yang berbaris atas. Contoh: kosa kata terong : بَازَنْجَان	Rajah 4
Pelajar tertukar huruf yang hampir sama sebutan, sama <i>makhraj</i> tetapi berbeza sifat huruf.	Pelajar menggunakan huruf ت menggantikan huruf asal perkataan iaitu ط. Contoh: kosa kata tomato : طماطم	Rajah 5



(Rajah 3)

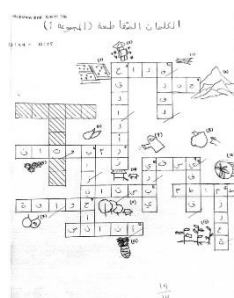


(Rajah 4)



(Rajah 5)

Manakalah, Rajah 6 menunjukkan pelajar yang berjaya skor keseluruhan betul dalam permainan ini.



(Rajah 6)

5.0 KESIMPULAN

Kesimpulannya, para pelajar memahami bahawasanya pemerolehan kosa kata dalam bahasa Arab memerlukan pemerhatian yang sewajarnya. Pelajar mengakui jika penguasaan terhadap kosa kata lemah, maka komunikasi tidak mampu dilakukan meskipun melalui pertuturan dan penulisan. Pelajar perlu peka kepada sebutan yang didengari. Berdasarkan sebutan yang dihafal bakal memberikan ingatkan terhadap penggunaan kosa kata pada masa hadapan. Pelajar akan lebih cakna dan berhati-hati terhadap kosa kata baharu yang dijumpai untuk dihafal.

SMART WATERING PLANTS SYSTEM

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ABSTRACT

Houseplants bring many benefits and will create good ecosystem inside our house. The plants need to be watered every day and different types of plants need different amounts of water. Sometimes, people are too busy or not at home, therefore they will leave the plants unattended. Traditional ways of watering plants can waste a lot of water. The main objective of this innovation is to create a smart watering plants system that focusing on sustainability and self-working system. This system uses a water tank that receives two sources of water, rainwater and tap water. A float valve will be connected to the inlet of tap water. It will stop the supply just after the water level is sufficient and the rest will be filled by rainwater. A control unit will be connected to the outlet of water tank. Users need to set watering intervals and how long it takes in one watering session. A water pump was added to the system to make sure the water can reach all parts of the system. Users can set different amount of water that will be watered to every plant by using the adjustable dripper. By installing this system, the plants will get enough water consistently. It can also boost productivity in our daily life. This system can save water consumption and helpful in maintaining the sustainability of nature. Hopefully this innovation can encourage more people to take care of plants and lead the community towards green.

Keywords: Smart watering plants system, Automatic watering plants, Irrigation system, Houseplants.

1.0 INTRODUCTION

Lately, many Malaysians started a new hobby and interest in taking care of houseplants. Many people enjoy living and working in cultivated greenspaces, and most likely having beautiful plants around. It helps reduce stress levels, help people recover from illness faster, may improve the quality of indoor air and many more. A good ecosystem will exist inside the house.

There are a few things to keep in mind before buying a new plant. The plants need to be watered every day and different types of plants need different amounts of water for their basic needs. People are not always at home, sometimes they will go on vacation or to the outstation and will leave the plants unattended. For the outdoor plants, it will be exposed to rainwater if there is rainy in that period. But for indoor plants, they will die if not watered on time.

Nowadays, people are so busy that sometimes they have no time to water the plants. They go to work early in the morning and come back late at night. People that stay at home can also be very busy, especially those who work from home or have online classes. Some plants require frequent watering that not everyone has the time for.

Other than that, the traditional ways of watering plants like watering pots or water hose can waste a lot of water. This is a bad sign for the Earth. There is also a DIY product, drip irrigation system using plastic bottles that will drop the water little by little, but it does not last long.

Hence, the smart watering plants system will be designed to outcome the current issues. This product has a control system that will water the plants consistently based on the settings set by the user. The water tank can collect rainwater, or from water tap thus it can reduce clean water consumption and a positive sign for our nature.

2.0 OBJECTIVE

To create a smart watering plants system that focusing on sustainability and self-working system that can overcome the current issues regarding taking care of houseplants.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

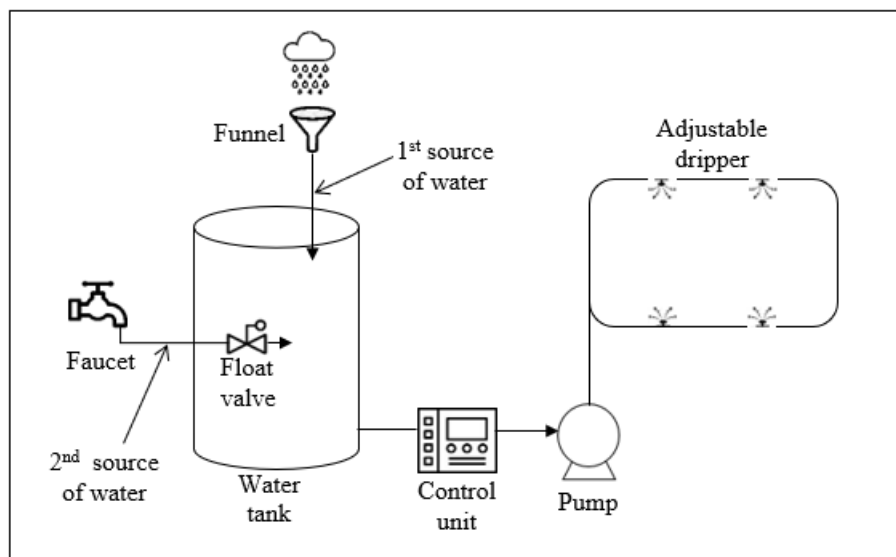


Figure 1: Smart watering plants system schematic

Refer to Figure 1 above, a schematic diagram for smart watering plants system had been constructed. It basically illustrates how this system works. This system uses a water tank which is a 45 L water pail. This water tank receives two sources of water, first, rainwater that is collected and channeled by funnel and pipes and second, tap water directly from faucet.

This system wants to reduce clean water consumption but cannot fully rely on rainwater because not every day will rain and refill the water tank. Therefore, there must be a second source of water, which is tap water, which will keep the water level sufficient. However, an automatic water level control float valve will be connected to the second source of water. The float valve will stop the supply just after the water level is sufficient and the rest will be filled by rainwater.

A control unit will be connected to the outlet of the water tank. This component has a timer function. Users need to set watering intervals and how long it takes in one watering session. This device is an important thing to this system that makes it self-working. After water is released by the control unit, it will go through a water pump. This water pump was added to the system to make sure the water can reach all parts of the system.

Watering tubing hose will deliver the water to the plants. The nozzles that were used are

adjustable eight holes dripper. Users can set different amounts of water that will be watered to every plant using this type of nozzle.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

After installing a complete set of smart watering plants system, user can set timer on the control system. Therefore, the plants will be watered on time as long as there is water and electric supplies to the system. There is also a water pump in this system to ensure that water can reach every place, especially higher or branched places. The plants will get enough water consistently in any situation thus can stay alive. People will not worry anymore about their plants when away from home.

This system can save water consumption. There will be a water tank that connects two sources of water. First, a funnel that will collect rainwater into the tank and second, water from the tap. A control system will monitor the amount of water delivered to every plant so that there is no excessive watering. This is very helpful in maintaining the sustainability of nature.

It can also boost productivity in our daily life. People now can concentrate on doing their work in the house while the plants will be watered automatically. A lot of time now can be spent on other important things. This smart watering plants system can suit any house because it is based on free configuration. The placement of pipes based on the placement of plants pot. There is no fixed shape for this system. It basically different house, different configuration. If the main components are there, the smart watering plants system can work.

5.0 CONCLUSION

As a conclusion, this smart watering plants system can provide good service for users while consistently helping to give basic need to the plants. Users now can fully rely on this new 'assistance'. This system can save clean water consumption and helpful in maintaining the sustainability of nature. Hopefully, this innovation can encourage more people to take care of plants and lead the community towards green.

HOMEAID APPLICATION

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ABSTRACT

HomeAid, offers multiple home maintenance services to users including basic housekeeping, plumbing, lawn mowing as well as wiring. This application enticing to users from different generations due to the new added features and its user-friendliness. Target audience comprises people who have the inability to clean and maintain their house. Other instances would be vulnerable individuals such as the elderly who experienced difficulties in performing house chores mainly due to their physical disabilities. Peoples may possess limited knowledge on home maintenance together with the safety considerations. In addition, they might not own suitable equipment to perform the job. Main purpose is to help and assist users who face difficulties in cleaning and maintaining their house. Meanwhile, the second objective is to provide the best home maintenance services to users in a single application. Last objective is to enable users to unwind and enjoy their free time after an exhausting day. This product increases the services offered including basic housekeeping, plumbing, lawn mowing and wiring which are not available and offered by our competitor. In addition, the details of our helpers including their rating and reviews by previous clients can be seen. In addition, we have also included details of their expertise as well as experiences in the field. It is up to the user to complete their cleaning according to their preferences; hence this application considered to be helpful for the user. The HomeAid application is made to assist users in obtaining help to clean and organize their home.

Keywords: home maintenance, cleaning services, maintenance services, application.

1.0 INTRODUCTION



Regarding this project, our target audience comprises people who are unable to clean and maintain their houses. Currently, people are busy with their schedules and hectic lifestyles such as working adults despite their marital status as well as ordinary college students. Most

importantly it would be vulnerable to individuals such as the elderly who experienced difficulties in performing house chores mainly due to their physical disabilities. Other than that, these people may possess limited knowledge on house maintenance together with the safety considerations. In addition, they might not own suitable equipment to perform the job.

We are actively engaged in the development process of this application to ensure that we cater to all our users' concerns and needs, which would eventually help them achieve satisfaction in using our application. Thus, we have determined and listed down the objectives of this application to steer us in the long run. The first objective is to help and assist users who face difficulties in cleaning and maintaining their house. Meanwhile, the second objective is to provide users the best home maintenance services in a single application. Whilst the last objective is to enable users to unwind and enjoy their free time after an exhausting day, consistent with our motto, "keep your free time free".

Therefore, our final product by the name of HomeAid, is an application that offers multiple home maintenance services to users including basic housekeeping, plumbing, lawn mowing as well as wiring. The application may be especially enticing to users from different generations due to the new added features and user-friendliness.

2.0 OBJECTIVE

The objectives to develop this product is to help and assist users who face difficulties in cleaning and maintaining their house and provide the best home maintenance services to users in a single application.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

This project uses several method to get the idea of this product. First method is using use case exploration canvas to identify user problem.

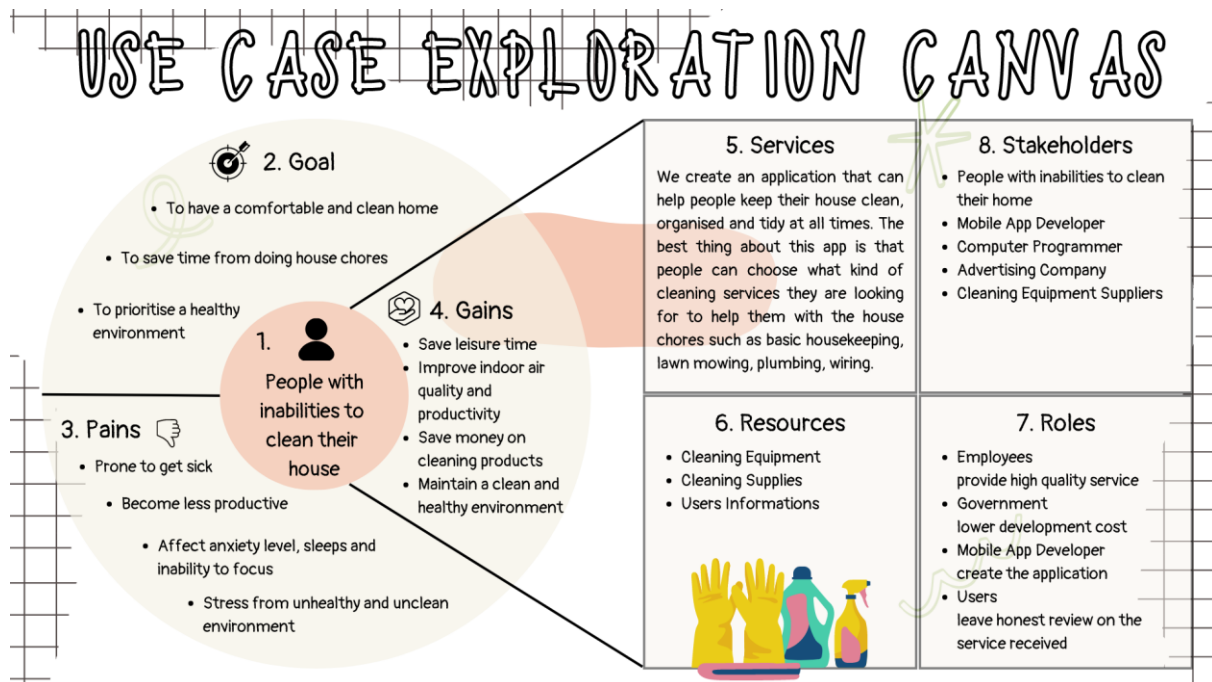


Figure 1: HomeAid Use-case Exploration Canvas

Second approach is implement QaDIM or known as Quick and Dirty Method. This method primarily intended for identify opportunities for incremental innovations on the already existing product.

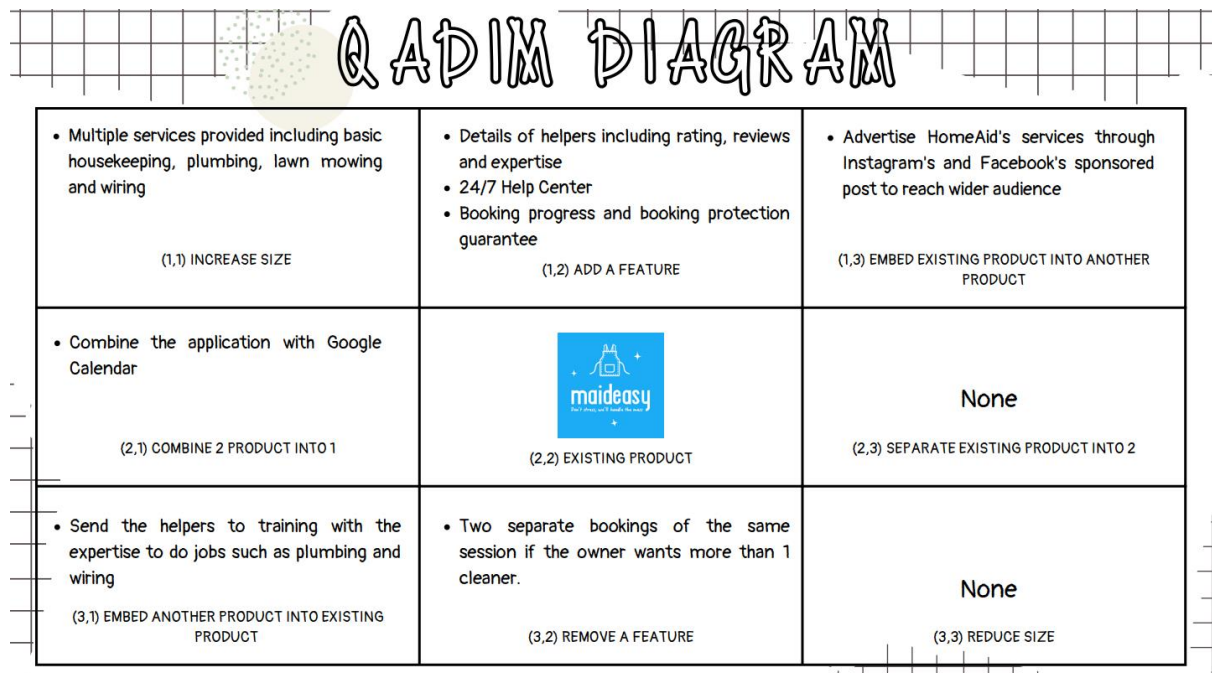


Figure 2: QaDIM diagram for HomeAid

After the intended product is finalized, sketch design for the application is drawn. Lastly, the prototype was develop using Marvel Application.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

Based on the project itself, feedback from tested users were gathered. The result, are based on the accessibility and user-friendliness of the application as well as the available features offered. Other than that, users are satisfied with the attentiveness of the helpers assigned to them.

5.0 CONCLUSION

Understanding the struggles of peoples nowadays helps to come up with and offer excellent, new, and rare solutions that others would not typically explore. Overall, those who have busy lives or are older may find it challenging to complete tasks around the house including mowing the grass, wiring, plumbing, packing up to move out, and washing clothes. In general, people will inspect a person's home to determine whether they are tidy or not. A person may feel more comfortable exhibiting their home to guests if it is clean and well-organized. Hence, the HomeAid can aid in resolving this issue. It is up to the user to complete their cleaning according to their tastes, hence this application can be considered helpful. The HomeAid app is made to assist users in obtaining help to clean and organize their home.

REVOLUTIONIZING HOSTEL MANAGEMENT: A COMPREHENSIVE CAMPUS MANAGEMENT SYSTEM

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ABSTRACT

A campus management system is usually designed to manage all student resident activities. The current trend of this type of management system can optimize processes and resources. For example, the campus does not worry about managing interactions between campus and resident students, as the system creates a smooth management process. This allows the campus to focus solely on process implementation and maintaining the entire system. Furthermore, using a computer-based system can lead to improvement outcomes, such as reducing risks and increasing quality and productivity. However, it is worth noting that the campus management system is rarely used in Malaysia. This paper introduces the structure of the system and explains how we implement some utility functions on the system to build an efficient computer-based system. We have implemented this system for the student resident at Southern University College, making management more convenient. The current system is traditional, and our goal is to transform it into a computer-based information system. As a result, resident students can manage all miscellaneous tasks through our mobile application, while the management team can easily handle miscellaneous tasks through our application service.

Keywords: Campus Management system, Image Recognition, YOLO v4, Flask Python, OCR.

1.0 INTRODUCTION

Our current system has implemented in traditional practice which has limitation in functions, especially for security services, accommodation, and facilities compliance. Other than that, current procedure for visitor and residence registration has no integration between components. In addition, the current practice has quite a number of officer which lead to the excessive unnecessary manpower that can be allocated for other tasks.

2.0 OBJECTIVE

The primary objective of this study is to integrate all module system in our own campus, Southern University college. Specifically, we aim to (1) develop a holistic system that assist campus visitors and residence on facilities access, (2) to integrate the campus facilities services and residence services as one complete system to reduce task redundancy, and (3) to automate and facilitate the manual processes of logging or recording in accessing vehicles in the campus.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The concept of the system is to use license plate scanning technology to automate the security work. Users can invite visitors using a QR code and it can create a link. Visitors will be given an electronic pass to gain access to the resident after register successfully with the link. Not only that, but the management can also manage and view the occupancy status of each room in the dormitory and the payment records of the residents through another webpage. Figure 1 below shown the context diagram of this system.

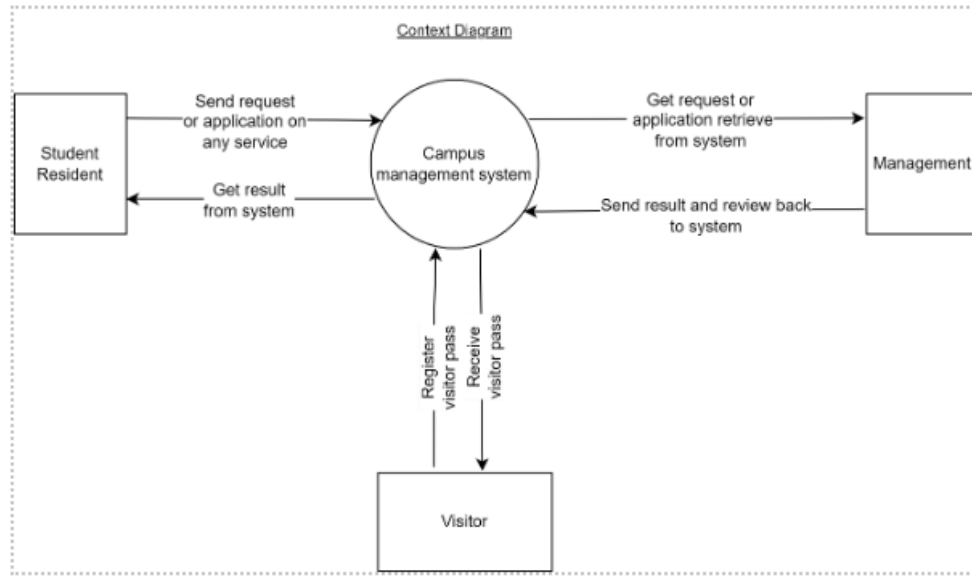


Figure 1: Campus Management System workflow

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

We have successfully developed a robust and reliable system that effectively addresses the initial problem statement. Through careful research, analysis, and implementation, we have designed a solution that meets the specific needs and requirements of our users.

In addition, the successful achievement of our goals in transforming the current system into a comprehensive campus management solution with three distinct user interfaces: management, student, and visitor. By integrating a mobile application, we have increased convenience and accessibility, allowing users to manage various aspects of campus life at their fingertips. This achievement was made possible through the use of information technology (IT) inventions and innovations that leveraged existing technology and hardware to streamline campus operations.

5.0 CONCLUSION

This project is not just about harnessing the power of technology; it's about solving real-life challenges and transforming the campus experience for the better. By streamlining registration processes and utilizing AI-driven vehicle plate number detection, we empower our campus community to focus on what truly matters - their education, growth, and well-being. Together, we are shaping a more connected, secure, and sustainable campus environment for generations to come.

G.U.S.T SURVIVAL KIT

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ABSTRACT

In the case of natural disaster occurrence, there is a dire need for electricity. In such events, the duration is uncertain and energy supply from batteries may run out. Hence, having renewable and clean energy is the utmost priority. Therefore, the Generator Utility Support Tech (G.U.S.T) survival kit is proposed as a viable solution. The G.U.S.T Survival Kit is focused on exploring and harnessing the potential of both solar and wind energy as a sustainable and renewable source for backup power supply to survive catastrophic events. The proposed innovation will emphasize the importance of sustainable practices and environmental conservation. In line with the 7th sustainable development goal, this project focuses on the use of wind energy as a renewable source and aims to contribute to the global shift towards sustainable energy sources, mitigating natural disaster impacts and promoting a greener and more sustainable future. In addition, G.U.S.T Survival Kit is designed to be compact, lightweight, and portable, making them suitable for various emergency situations or outdoor adventures. They can be easily transported and set up in different locations, ensuring a consistent and reliable source of clean energy. In sum, the G.U.S.T Survival Kit has the potential to increase the chances of survivability in dire situations by providing emergency power supply and is suitable for the use of public and rescue units.

Keywords: natural disaster, emergency power supply, renewable energy, environmental sustainability.

1.0 INTRODUCTION

During times of natural disasters, backup power supply becomes a vital asset to support critical infrastructure and services. Sustainable backup power supply helps to reduce the time it takes for first responders to begin recovery efforts. Therefore, the G.U.S.T Survival Kit is proposed as an innovative solution for backup power supply device whilst providing the essential needs to survive devastating events. G.U.S.T Survival Kit focuses on exploring and harnessing the potential of both solar and wind energy as a sustainable and renewable source for backup power supply thus emphasizing the importance of sustainable practices and environmental preservation. By focusing on wind energy as a renewable source, the proposed G.U.S.T Survival Kit aims to contribute to the global shift towards sustainable energy sources, mitigating natural disaster impacts and promoting a greener and more sustainable future.

2.0 OBJECTIVE

The objectives of proposing the G.U.S.T Survival Kit is to increase the chances of human survivability during natural disasters by providing a portable backup survival kit that could be easily transported and set up in different locations, ensuring a consistent and reliable source

of clean energy. By utilizing both solar and wind power, the survival kit promotes environmental sustainability and helps mitigate the impacts of climate change.

3.0 DESCRIPTION OF THE PROPOSED INNOVATION/METHODOLOGY

The G.U.S.T Survival Kit is designed using the AutoCAD software. The following are the special features of the proposed G.U.S.T Survival Kit:

- Utilizes wind energy whereby the perpetual motion of a fan connected to a motor converts mechanical energy into electrical energy.
- Contains solar panels that could help to collect energy from the sun in the form of sunlight and convert it into electricity that can be used as a backup power supply.
- Compact design, easy for storage and portable.
- Firm structure, designed to withstand external forces.
- Having a sealant to fill the gaps at the charge port and overall product structure making it waterproof.
- Abundant of utilities for survival
 - a. 3w flashlight torch
 - b. Multifunctional pocketknife
 - c. 5000mah built in power bank.
 - d. Mini first aid kit
 - e. Emergency whistle
 - f. Built in distress signal transmitter.

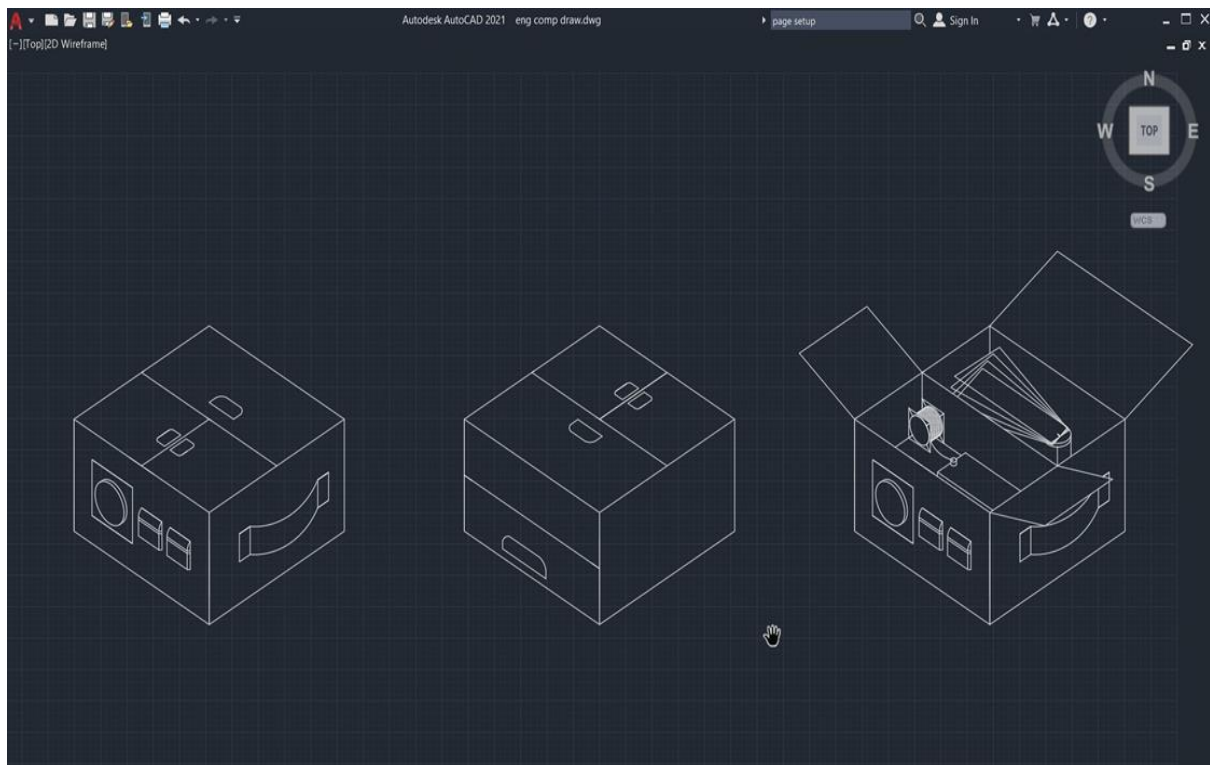


Figure 1: Visual Sketch Of G.U.S.T Survival Kit Using AutoCAD Software

4.0 ADVANTAGES//IMPACT/RESULTS/NOVELTY

The proposed G.U.S.T Survival Kit offers numerous advantages. The following are the advantages:

- Increase the chances of survivability in dire situations.
- Able to provide power supply which is scarce in an event of catastrophe.
- The product is to be used by the public and rescue units.
- Ideal to be placed in every home, schools, hospitals, offices etc.
- Instant alert to nearest rescue units via GPS when activated.
- Suitable charging port for both Android and Apple phones.
- Adhering to the principle of SDG 7 which is having access to affordable, reliable, sustainable, and modern energy for all whilst maintaining its objective to become a survival kit.

5.0 CONCLUSION

In conclusion, harnessing wind as a clean energy source for a survival kit is an innovative and practical solution that can have significant benefits. Thus, the G.U.S.T Survival Kit innovation idea is related to SDG 7 which is affordable and clean energy. SDG 7 is about ensuring access to affordable, reliable, sustainable, and modern energy for all, while promoting renewable energy sources and energy efficiency. By integrating wind power into a survival kit, individuals and communities can ensure access to clean and renewable energy even in remote or disaster-prone areas.

GARDEN RAKE ROLLER

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ABSTRACT

Malaysia has a tropical weather which often quite humid. Despite this, the weather is never too hot and temperatures range from a mild 20°C to 30°C average throughout the year; however the highlands experience cooler temperatures. This brought Malaysia a fertile soil and forests still cover about 54% of the total land area. However, due to extensive usage of garden rakes makes it uncomfortable at spinal and abdominal muscles during garden raking with two rakes and rake handles and advisable to search for better rake. Installed with 1" diameter wooden, metal or stainless steel handle. They come with a long handle and a head with a set of equally spaced steel that rolled approximately 10 inches long. The roller equipped with medium hard blades that could make sure the dead leaves and cut grasses came along while rolled it. As mentioned above, this garden roller rake has a roller that helps to collect the dead leaves and bring it together while using this equipment. Furthermore, this garden rake equipped with medium hard blades. The function of this blades specifically helps to take along all the dead leaves and cut grasses. In addition, this blades functions as detaching the soil. This process is very crucial to make sure that minerals and, air and water is not clog or soften the soil. Later it makes a good fertile soil. Potentially commercialize in Malaysia since the choices of rake is limited.

Keywords: *Garden rake roller; Blade;*

1.0 INTRODUCTION

Malaysia has a tropical weather which often quite humid. Despite this, the weather is never too hot and temperatures range from a mild 20°C to 30°C average throughout the year; however the highlands experience cooler temperatures. This brought Malaysia a fertile soil and forests still cover about 54% of the total land area. However, due to extensive usage of garden rakes makes it uncomfortable at spinal and abdominal muscles during garden raking with two rakes and rake handles and advisable to search for better rake.

2.0 OBJECTIVE

- 1 To innovate new tool of rake roller in the market.
- 2 To suggest new usage of rake roller.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

Installed with 1" diameter wooden, metal or stainless steel handle. They come with a long handle and a head with a set of equally spaced steel that rolled approximately 10 inches long. The rolled equipped with medium hard blades that could make sure the dead leaves and cut grasses came along while rolled it. As mentioned above, this garden roller rake has a roller that helps to collect the dead leaves and bring it together while using this equipment. Furthermore, this garden rake equipped with medium hard blades. The function of this blades specifically helps to take along all the dead leaves and cut grasses. In addition, this blades functions as detaching the soil. This process is very crucial to make sure that minerals and, air and water is not clog or soften the soil. Later it makes a good fertile soil. Potentially commercialize in Malaysia since the choices of rake is limited.

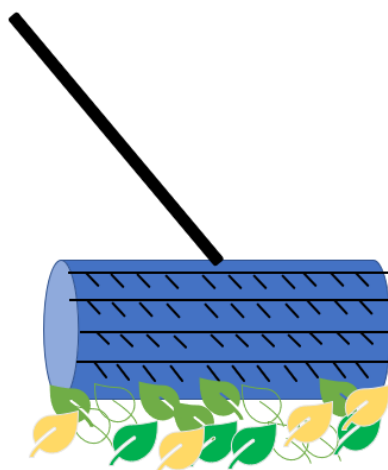


Figure 1: Depiction of garden rake roller

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

This tool comprises of 3 in 1 usage of rake: as a rake, sweeper and also medium hard blades for detaching the soil. Thus, it gives the user efficiency and save time while rake the garden. The most important is it can reduce backache because to take along time to finish the task of collecting dead leaves and cut grasses.

There are a lot of tools for gardening. But this tool is 3 in 1 task at one time. Furthermore, with the current climate in Malaysia it is suitable to commercialize for home or garden owner.

5.0 CONCLUSION

This innovation comes with simple innovation, but it gives impact for the user to the tools. Thus, garden rake roller is had an enthusiastic spirit to be commercialize in the market. With the least price it will be worth for the customer to afford this tool.

APRON BENGKEL

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ABSTRAK

Kerja-kerja penyelenggaraan peralatan elektrik dan juga pendawaian elektrik memerlukan beberapa alatan tangan khas termasuklah perkakasan kerja berkuasa elektrik atau bateri. Dengan menggunakan perkakasan yang betul dan sesuai akan membolehkan kerja penyelenggaraan dan pendawaian elektrik dapat dijalankan dengan sempurna dan cepat. Namun begitu, peralatan penyelenggaraan susah untuk dibawa ke mana-mana. Selain itu, pengguna akan mudah terlupa untuk membawa peralatan yang ingin digunakan. Tambahan pula, kotak yang dibawa terlalu besar dan menggunakan ruang yang luas. Di samping itu juga, kos untuk membeli kotak untuk mengisi peralatan bengkel agak mahal. Objektif projek ini adalah menghasilkan satu produk yang senang dibawa dan sesuai dipakai untuk melaksanakan kerja-kerja penyelenggaraan terutamanya di bengkel elektrik termasuklah menyediakan apron yang tahan lasak penggunaannya. Apron ialah lapisan atas yang menutupi hadapan badan, dipakai sebagai pakaian yang boleh membawa peralatan asas penyelenggaraan bangunan. Apron ini dibuat daripada bahan yang berkualiti di mana menggunakan kain jenis yang tahan lasak. Kaedah pelaksanaan projek terbahagi kepada empat proses iaitu pemilihan tajuk, reka bentuk produk, pembinaan produk, uji lari dan kajian tinjauan menggunakan instrumen soal selidik. Berdasarkan soal selidik yang telah dijalankan, majoriti responden bersetuju rekabentuk apron ini menarik dan bahan yang digunakan untuk membuat apron adalah bersesuaian. Seterusnya, majoriti responden bersetuju apron ini senang dibawa ke mana sahaja, sesuai untuk melaksanakan kerja penyelenggaraan dan tahan lasak penggunaannya. Kesimpulannya, produk ini berjaya dihasilkan untuk memudahkan kerja-kerja penyelenggaraan peralatan elektrik termasuklah pendawaian elektrik kerana reka bentuk dan bahan yang bersesuaian dan tahan lasak. Secara keseluruhannya produk ini boleh ditambahbaik dari aspek reka bentuk dan ciri-ciri keselamatan sebelum dikomersialkan.

Kata Kunci: Apron Bengkel, kerja penyelenggaraan

1.0 PENGENALAN

Apron Bengkel ialah produk inovasi di mana ianya dapat memudahkan kerja-kerja di bengkel penyelenggaraan terutamanya di bengkel elektrik. Justera itu, bahan-bahan atau peralatan yang digunakan untuk menghasilkan produk ini adalah kain jenis tahan lasak, benang, jarum, gunting, pelekat kain, pembaris dan kapur. Apron bengkel ini mudah dihasilkan kerana bahan yang digunakan mudah didapati dan kos penyediaannya yang tidak terlalu mahal. Di samping itu, apron yang dihasilkan ini sesuai digunakan untuk dipakai di bengkel elektrik yang mana bengkel elektrik ini mempunyai pelbagai peralatan yang digunakan dalam kerja membuat pendawaian elektrik seperti wayar, pen penguji, playar, fuis, skru driver dan alatan pendawaian lain. Peralatan bengkel susah untuk dibawa ke mana-mana. Selain itu, pengguna

akan mudah terlupa untuk membawa peralatan yang ingin digunakan dan pengguna akan terbeban untuk membawa peralatan tersebut. Seterusnya, kotak yang dibawa terlalu besar dan memakai ruang yang banyak. Selain itu, kos untuk membeli kotak mengisi peralatan bengkel agak mahal. Selain itu, apron bengkel ini juga boleh meringankan beban dan senang untuk membuat kerja berkaitan penyelenggaraan di bengkel.

2.0 OBJEKTIF

Objektif membangunkan projek ini adalah seperti berikut;

- i. Menghasilkan satu produk yang senang dibawa ke mana sahaja untuk melaksanakan kerja penyelenggaraan .
- ii. Menyediakan apron yang tahan lasak penggunaannya.
- iii. Menghasilkan produk yang sesuai dipakai semasa melaksanakan kerja di bengkel Penyelenggaraan.

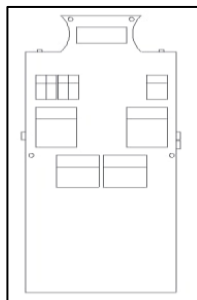
3.0 PENERANGAN TENTANG INOVASI/ METODOLOGI

3.1 Pemilihan tajuk

Semua ahli kumpulan telah melakukan sesi sumbang saran menggunakan untuk gambar rajah tulang ikan, yang mengambil kira semua faktor kemungkinan yang menjadi punca masalah melalui percambahan fikiran. Melalui kaedah ini, gambaran sebenar masalah yang dihadapi dapat dilihat dengan jelas dan menyeluruh. Kemudian, hasil daripada kaedah ini, cadangan tajuk telah dikemukakan kepada penyelia projek untuk dibuat pemilihan tajuk projek yang betul-betul boleh diteruskan untuk memastikan projek ini boleh dilaksanakan dengan jayanya. Penyelidik bersetuju memilih tajuk Apron Bengkel setelah mengambil kira faktor yang disenaraikan termasuklah masa, kos bahan, dan pelaksanaan penghasilan produk.

3.2 Reka bentuk produk

Reka bentuk produk ini telah dilakar untuk mendapatkan saiz prototaip yang akan dibangunkan. Seterusnya, lakaran produk dibangunkan dengan menggunakan perisian Autocadd versi 2022. Boleh rujuk Rajah 1 di bawah.



Rajah 1 : Pandangan hadapan Apron Bengkel

3.3 Pembinaan produk

Dalam proses pembinaan produk, terdapat banyak langkah atau proses kerja yang perlu dijalankan contohnya menyediakan keperluan bahan apron, membuat pengukuran, memotong kain yang sesuai untuk dijadikan apron bengkel , menjahit dengan ukuran betul, memasang pelekat kain dan lain -lain. Rajah 2 adalah proses kerja membuat produk ini.



Rajah 2 : Proses pembinaan produk

3.4 Uji lari dan tinjauan soal selidik

Rajah 3 menunjukkan proses uji lari yang telah dilaksanakan bersama pelajar yang menjalankan kerja pendawaian elektrik di bengkel elektrik. Penyelidik juga menggunakan borang soal selidik bagi mendapatkan maklum balas berkaitan produk Apron Bengkel ini. Seramai 19 orang responden telah terlibat dalam menjawab soalan soal selidik ini dengan menggunakan pautan google form.

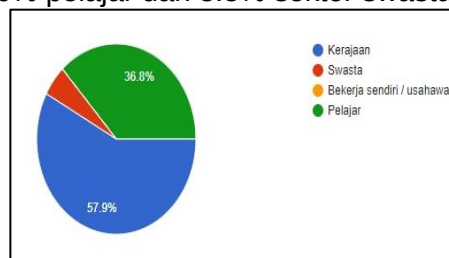


Rajah 3 : Proses uji lari bersama pelajar di bengkel elektrik

4.0 KEBAIKAN/IMPAK/ DAPATAN/ PEMBAHARUAN

Berikut merupakan dapatan bagi item bahagian demografi:

- Responden terdiri daripada 19 orang yang terdiri daripada 78.9 % lelaki dan 21.1% perempuan.
- Daripada 19 orang responden , pecahan peratus bagi bangsa adalah 84.2% Melayu, 15.8 % India.
- Peratus tertinggi responden adalah berumur antara 18 hingga 22 tahun ,iaitu sebanyak 36.8%. Manakala peratus kedua tertinggi ialah 32 hingga 37.
- Pecahan peratus bagi tahap pendidikan adalah tahap Sijil Penyelenggaraan Bangunan sebanyak 47.4% dan peratus kedua tertinggi adalah tahap Kejuruteraan Elektrik.
- Rajah 4 menunjukkan bahawa pecahan peratus bagi pekerjaan dalam sektor ialah 57.9% sektor kerajaan, 36.6% pelajar dan 5.5% sektor swasta.

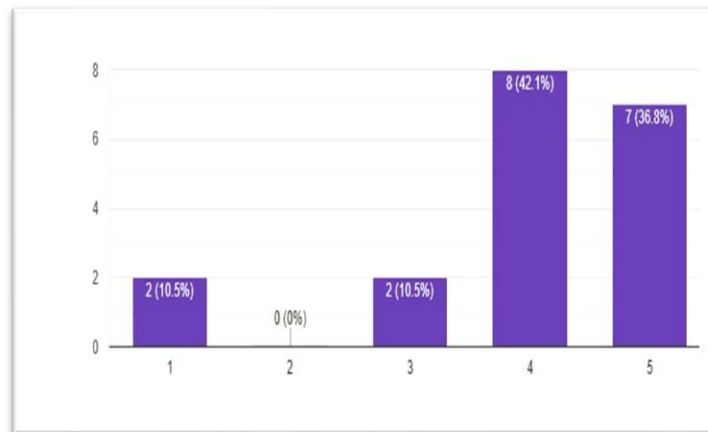


Rajah 4 : Pecahan peratus bagi pekerjaan dalam sektor

Maklum balas produk pada bahagian kedua pula diukur dengan menggunakan 5 pilihan skala Likert:

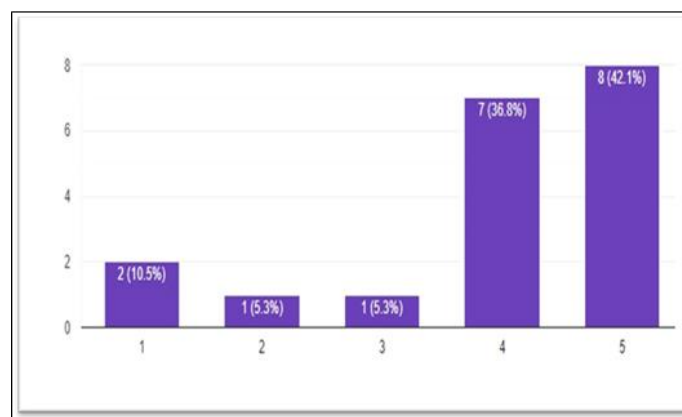
- 1 = sangat tidak setuju
- 2 = tidak setuju
- 3 = kurang setuju
- 4 = setuju
- 5 = sangat setuju

Rajah 5 menunjukkan peratusan tertinggi adalah sebanyak 42.1% setuju dan kedua terbanyak adalah 36.8% sangat setuju untuk apron ini senang membawa peralatan ke mana-mana di bengkel penyelenggaraan.



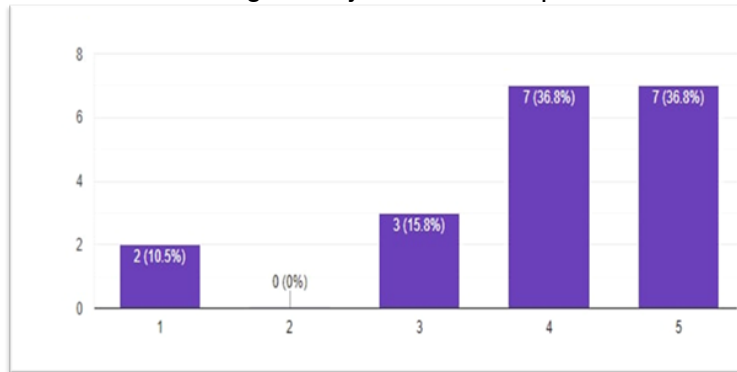
Rajah 5 : Apron ini senang dibawa ke mana sahaja untuk melaksanakan kerja penyelenggaraan

Rajah 6 pula menunjukkan peratusan tertinggi adalah sebanyak 36.8% setuju dan kedua terbanyak adalah 42.1% sangat setuju untuk item sesuai dipakai semasa melaksanakan kerja penyelenggaraan.



Rajah 6 : Apron ini sesuai dipakai semasa melaksanakan kerja penyelenggaraan

Seterusnya, Rajah 7 menunjukkan peratusan tertinggi adalah sebanyak 36.8% setuju dan kedua terbanyak adalah 36.8% sangat setuju untuk item apron tahan lasak.



Rajah 7 : Apron ini tahan lasak penggunaannya

4.0 KESIMPULAN

Kesimpulannya, produk Apron Bengkel ini berjaya dihasilkan untuk memudahkan kerja penyelenggaraan kerana reka bentuk dan material yang bersesuaian serta tahan lasak. Selain itu, produk juga senang dibawa dan senang dipakai semasa melaksanakan kerja penyelenggaraan. Secara keseluruhannya, produk ini boleh ditambahbaik dari aspek reka bentuk, ciri-ciri keselamatan dan item sebelum dikomersialkan. Selanjutnya, produk ini juga berpotensi untuk mendatangkan pelbagai manfaat kepada banyak pihak sekiranya dimajukan pada masa akan datang.

5.0 RUJUKAN

Kotak Alat Bengkel.29 Ogos 2022

Daripada

<https://shopee.co.id/search?keyword=kotak%20alat%20bengkel>

Keselamatan di tempat kerja.05 September 2022. Daripada

<https://sites.google.com/site/pendawaiandomestikmpv/assignments/homeworkforweekofoctober18th>

Mengenal Pasti Alat Tangan, Peralatan Dan Bahan Pendawaian 3fasa. 12 September 2022

Daripada

<https://www.scribd.com/presentation/409271851/Mengenal-Pasti-Alat-Tangan-Peralatan-Dan-Bahan-Pendawaian-3fasa>

Set Alat Jahit Besar.19 September 2022

Daripada

https://shopee.co.id/SET-ALAT-JAHIT-BESAR-SEWING-BOX-LENGKAP-i.42713734.2159684779?sp_atk=abd192d6-377e-481b-9be2-15326f79409f&xptdk=abd192d6-377e-481b-9be2-15326f79409f

MUSLIMAH WRISTBAND

Nor Haryanti Md Nor ¹, Yusrina Hayati Nik Muhammad Naziman¹, Nadia Farleena Mohd Aznan¹, Siti Maziah Ab Rahman¹

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ABSTRACT

Aurat issue continues to be in turmoil not only in the west. In fact, also in record in Muslims countries. This conflict often cause tragedy involving physical, mental and emotion that challenging faith and intelligence. Since 1992, Kelantan State Government is very committed in utilizing the choice given by the federal government with more comprehensive method through Kota Bharu Municipal Council-Islamic City (MPKB-BRI) law. The objectives of this product are to encourage Muslim especially women in covering full aurat, to simplify the usage of handsocks due to current hot weather, to provide alternative ways in covering the aurat and also as an accessory to women. This cuff is not same as bangle or any other accessories which is basically flexible, can be bendable, cheap, durable and easy to use. This product can also be attached to the handbag or backpack. By wearing this cuff, Muslim women are said to comply with Shariah that gazetted by Islam. For novelty, it is pioneer in the market, 2 in 1 product: accessories + covering aurat and also offered in affordable price. Material for the cuff is Layered, flexible stainless steel, bistable spring band, sealed with silicone & fabric cover and additional accessories like beads. For usefulness/benefit, this cuff can be an alternative accessories to cover the aurat, to simplify the current usage of handsocks and also it is a durable product. For commercialization, the product will be introduced in the market penetration price thus it could attract customers to buy & use this Muslimah Wristband.

Keywords: *Muslimah Usage; Wristband; Aurat;*

1.0 INTRODUCTION

As a Muslimah, aurat is the main concern and thus it require the Muslimah to attain the proper attire and also other accessories to complete the full Muslimah dress up. Aurat issue continues to be in turmoil not only in the west. In fact, also in record in Muslims countries. This conflict often cause tragedy involving physical, mental and emotion that challenging faith and intelligence. Since 1992, Kelantan State Government is very committed in utilizing the choice given by the federal government with more comprehensive method through Kota Bharu Municipal Council-Islamic City (MPKB-BRI) law. Therefore to maintain the full Muslimah attires there required product to cover the hand area. This product is design to help women to take care the aurat especially in arm areas. . This cuff is not same as bangle or any other accessories which is basically flexible, can be bendable, cheap, durable and easy to use. This product can also be attached to the handbag or backpack. By wearing this cuff, Muslim women are said to comply with Shariah that gazetted by Islam.

2.0 OBJECTIVE

- 2.1 To innovate new product to cater the aurat area for Muslimah.
- 2.2 To suggest new design look alike a bangle but Muslimah cuff.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

This product used the strap accessories that attach with adjustable soft wrist wrap for woman to support aurat area concern. A wrist strap wraps around your wrist with a conductive cord attached around your hand. Besides that, the design accumulated with the band are sparkling and modern attached and therefore this band create a new look for the Muslimah attire. Unused band can also be considered as an accessories to your handbag.



Figure 1: Depiction of Muslimah Wristband

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

This wristband durable 100% high quality fabric, eco friendly, harmless nontoxic. This include other flexible strap and a clasp design with its size in increments friendly to wrist expansion/contraction.

5.0 CONCLUSION

This product comes with a touch of minor innovation, but it gives impact for the Muslimah users. By wearing this cuff, Muslim women are said to comply with Shariah that gazetted by Islam.

DESIGN OF SEMI-AUTO FOLDING CLOTHES

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ABSTRACT

This project which is Semi Auto Folding Clothes machine is for student especially at UITM hostel who have problem in folding clothes that cause many issues. A folding clothes machine is a mechanical movement machine that consist of multiple part that can help user in folding any clothes and save the user time. Even though, this folding machine as a relatively expensive price, this machine is very much needed by users, especially for laundries and clothing factories and it's become the most important machine at the laundry shop. So, to help people who can't afford buy it, the semi auto folding clothes machine designed. Furthermore, the existing folding clothes machines has a relatively large size and weight and makes it unsuitable for use in hostels. The project focuses on establishing a way to assist users in folding clothes with the initiative to save time and using a semi auto movement. For the process that use are we design, drawing, drawing in Solidwork, material selection, estimated cost, fabrication, and testing. In a nutshell, the essence of this folding clothes's innovation is to maintain a positive relationship with household or professional users by helping them stay content at work and giving them something to look forward to each day. Lastly, for the expected result, this project may help the student in the folding clothes.

Keywords: AnakMadamHanipah, fyp1.

1.0 INTRODUCTION

The main objective of this project is to design the Semi-auto Folding Clothes Machine. This machine will help the hostel student who do not have time and interest in folding clothes especially for male students. This semi-auto machine can reduce time for the student in folding clothes and can avoid clothes from left messy and lying all over the place. It is because the student does not have to fold their clothes using hand anymore and just use this semi-auto folding clothes machine.

2.0 OBJECTIVE

To design a semi auto folding clothes machine that can help student.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

1. Main Body/Frame

The main body or machine frame is providing to support the machine and protect the gear mech. It will make from wood which is one of durable material and make this machine more solid.

2. Folding Board

The folding board is one of the main parts of this machine and will have a direct attach with the gear mechanism. This part will divide into 3-fold, left, right and centre fold and will rotate alternately each in 180-degree turn.

3. Gearing Mechanism

The gearing mechanism is the main part of this folding machine which is without it the folding board will not moving. This gear mechanism consists of motor for 3 folding board, and it will move parallel to shaft rotation in 360 degrees turn.

4. Shaft and Handle

In this machine, shaft is the cylindrical part that connect to the motor mechanism and the purpose of shaft is to convert the spinning to the motor into the moving energy for folding board while the handle will connect to it

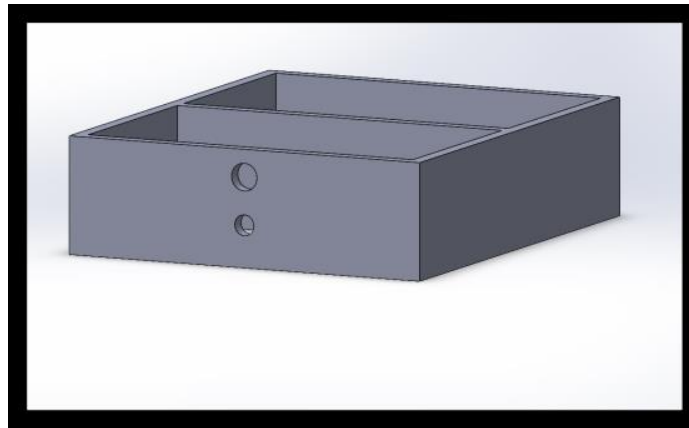


Figure 1: Frame Body

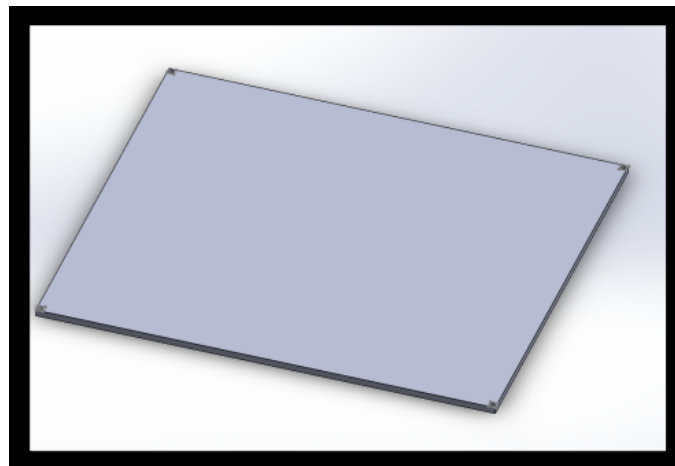


Figure 2: Frame Body Cover

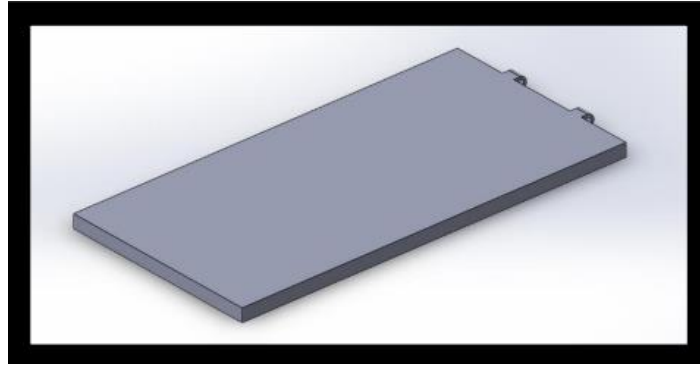


Figure 3: Upper Board

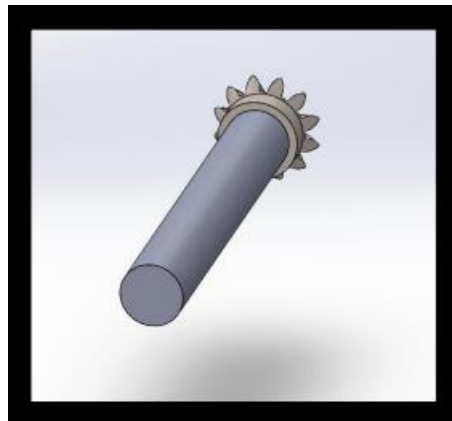


Figure 4: Shaft

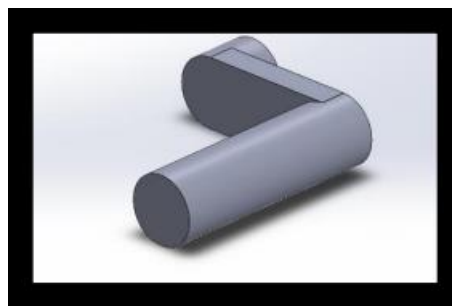


Figure 5: Main Holder

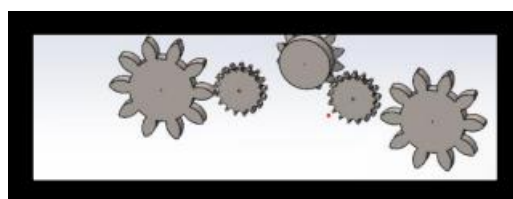


Figure 6: Gear

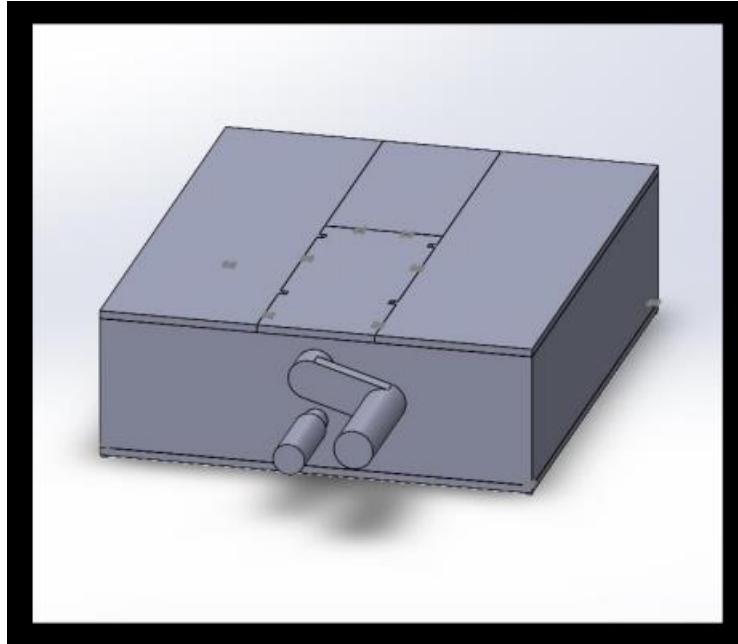


Figure 7: Assembly Drawing

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

1. Make a machine that can use for folding clothes in semi auto at the normal size clothes.
2. Student can afford to buy it, which is an affordable price offered.
3. User friendly, easy to use for all students.
4. To save student's time when use it that help them to fold clothes in semi auto.

5.0 CONCLUSION

In a nutshell, this semi-auto folding clothes machine is based on what types of clothing, what size of shirt, who want to use it and how long can use the machine, in other word, market demand. According to my observation, the target market in making this machine is the hostel student especially male student that have problem in folding clothes and does not have time to do it. So, it must be an affordable, long last, and easy to use folding clothes machine.

WIRELESS ELECTRICITY POLE

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ABSTRACT

The use of electricity has become an important necessity for all mankind on this earth. The high demand for electricity among the people makes it necessary to spread it throughout the area, so that everyone can use it. The use of wires and cables is important because it is a medium that can conduct electric current. The wires and cables are supported by electric poles which is supposed to be in a high and safe place. However, loosely hanging, scattered and overhead electrical wires and cables are common sight in cities, and this possess a great threat to human and animal's lives and property. Therefore, the Wireless Electricity Pole idea is proposed to combat the issue. The Wireless Electricity Pole utilizes the concept of electromagnetic induction whereby electric current flows from different poles through induction reaction and the use of expensive electrical wires and cables can be reduced. The proposed Wireless Electricity Pole idea could help to achieve the 9th and 11th sustainable development goals namely industry, innovation and infrastructure and sustainable cities and communities. In addition, by implementing the idea of Wireless Electricity Pole, it can provide a safer environment for humans and animals and at the same time improve our country's image for providing a more sustainable and safer infrastructure for its citizens.

Keywords: wireless electrical poles, electromagnetic induction, sustainable and safe infrastructure

1.0 INTRODUCTION

The use of wires and cables are important because it is a medium that can conduct electric current and with the help of electric poles, it supports and ensures that it is in a high and safe place. However, without us realizing nowadays most countries are facing the problem of messy wires attached to electric poles. This may cause negative impact on humans and animals, especially in countries with rapid population like in Asia. Messy, tangled or loosely hanging wires and cables face dangers associated with thunderstorms and things touching it. In extreme cases a pole can even collapse under the load of excess cable. In the tropical climate in many of Asia's most populous nations, these messy electrical poles become a real threat. Therefore, the wireless electric pole idea is proposed to solve the issue of messy wires and cables. This proposed innovation uses the concept of electric induction to ensure that electric current flows efficiently.

2.0 OBJECTIVE

The objectives of proposing the Wireless Electricity Pole are to solve the problem of messy wires and cables attached to electricity poles. In addition, this innovative idea proposal could

help prevent animals from climbing the electric poles and reduce the risk of electrocution hazards among humans and animals.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The Wireless Electricity Pole idea prototype is developed and proposed using recycle materials. The Wireless Electricity Pole uses the concept of electromagnetic induction where the use of wires can be reduced but the flow of electric current still flows efficiently. The following are the special features of the proposed Wireless Electricity Pole:

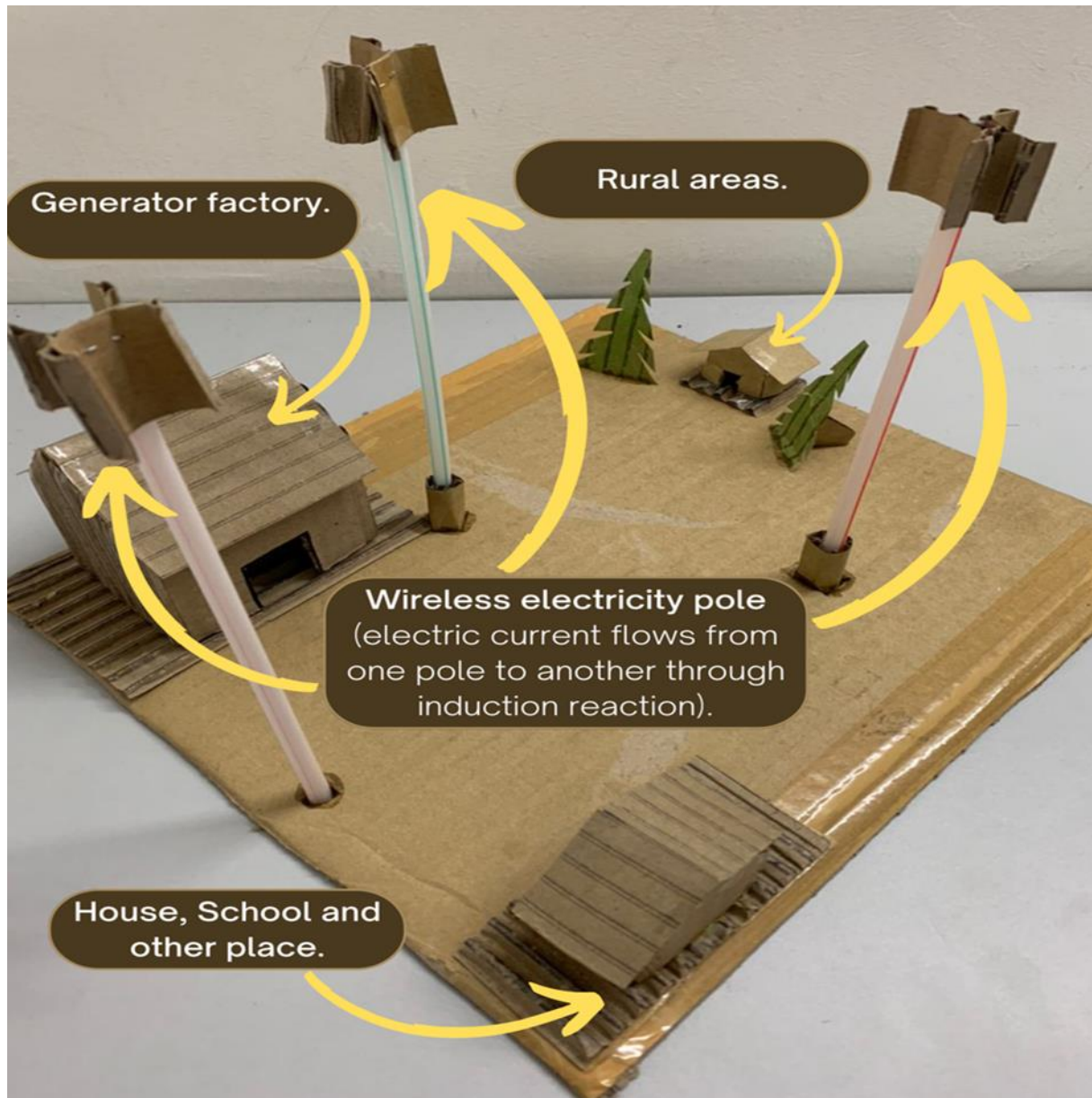


Figure 1: The proposed Wireless Electricity Pole prototype

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The proposed Wireless Electricity Pole idea offers numerous advantages. The following are the advantages:

- Reduces the use of electric poles and wires.
- Saves space and maintenance cost.
- Environmentally friendly than electric pole with wire.
- Reduces the risk of electrocution hazards on humans and animals.
- Prevents animals from climbing the poles and electric wires.
- Electricity flows by using the concept of electromagnetic induction while common electric poles use conductor wire.
- Could be proposed for rural areas lacking electricity source.

5.0 CONCLUSION

In conclusion, our Wireless Electricity Pole prototype is able to achieve the 9th and 11th sustainable development goals namely, industry, innovation and infrastructure, and sustainable cities and communities. In addition, the Wireless Electricity Pole provide a positive impact to humans, animals and the environment in terms of safety, comfort and sustainability.

SMART CAT FEEDER

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ABSTRACT

Stray cats are often referred to as "community cats" normally can be found on the street. People enjoy providing food and water to stray cats, but they frequently leave it on the floor or on the road street. Hence, the food may be contaminated with bacteria, exposing them to various infections and health issues, such as food poisoning. The objective of this project is to develop a smart device that are equipped with various features that allow users to schedule and monitor the cat's feeding times and portion size. This smart feeder cat has two main parts, which are food storage & drinking water storage. The food storage section employs the mechanical engineering idea of dynamic rotation. The food is then automatically set out within the predetermined timer using an actuator. Timer, with help of sensor and solar are innovated to this project to help user determine an appropriate feeding plan for the cats. Thus, food will always keep fresh and clean. Result and testing show that this smart feeder is functioned well. As solar power is a pollution-free and renewable energy source, make this product is an eco-friendly solution and more sustainable choice. As conclusion, this product is practical to be used, and it is expected to make sure that the health of the stray cats in safe hands and reduced the exposure to infections.

Keywords: smart cat feeder, automatic cat feeder, stray cats

1.0 INTRODUCTION

People enjoy providing food and water to cats, but they frequently leave it on the floor or on the road. Food and water become unsafe for cats to eat because of bug or contaminated environments. Cats are exposed to numerous infections because of abandoned food in this situation. Another issue found is cat's owner are busy with their work and not at home all the time. Thus, an automatic cat feeder is a terrific solution for people who spend a lot more time away from home. This smart feeder can help owner to feed their cats, helps them give vitamin or medicine by putting it in plain water (soluble) and can manage the quantity of food and drink a day. This product has 2 parts which is the inner and outer part. The inner part is divided into 3 parts which are food, drink, and an electrical or mechanical part. The food part that is categorized as the inner part uses the concept of rotation in dynamic. The drink part consists of a water bowl (stainless steel) and injector (straw rode). The rotation is made from impraboard. The drink part is looking like a water fountain for cats while the food part use rotation that can rotate the food within the setup timer. Electrical components such as a motor and timer are used to set the food dispersed out automatically. The material used to make this product is ACP, stainless steel, plastic. The total size is 600mm x 800mm x 200mm.

2.0 OBJECTIVE

The main objective of this project is to develop a smart device that are equipped with various features that allow users to schedule and monitor the cat's feeding times and portion size. Second objective is to analyse how an automatic cat feeder functions in the daytime with solar and sensor. Third objective is to fabricate automatic cat feeder wall and door using aluminium and acrylic board.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

This automatic cat feeder has 2 parts. The interior and outside sections of this product are separate. Food, drink, and an electrical or mechanical component are divided into three sections in the inner half. The food section, which is classified as the inner part, employs the mechanical engineering idea of dynamic rotation. The food is then automatically set out within the predetermined timer using an actuator such as an electrical component such as a motor and sensor. Sensors offer improved sensitivity during data collection, lossless transmission, and continuous, real-time analysis.



Figure 1: Final product of Smart Cat Feeder

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

As solar power is a pollution-free and renewable energy source, make this product is an eco-friendly solution and more sustainable choice. Besides, the advantage of this product is it can save time. The use of timer can set how many times the cat's owner wants to give their cats eat.

5.0 CONCLUSION

Overall, it can be concluded that the objectives have been achieved. An automatic cat feeder can solve the problem faced by busy owner who does not have a lot of time to feed their cats. This project can also be one solution to save their time and helps them to arrange time and quantity of foods and drink when to feed in a day. Therefore, this product can benefit the consumer to arrange their time to feed their cats, allow cats to stay hydrated and health and avoid the owner and cats stress.

MICROCONTROLLER-BASED SYSTEM FOR MONITORING HUMIDITY AND TEMPERATURE IN ELECTRONIC COMPONENT STORAGE

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ABSTRACT

Electronic components and modules are sensitive to changes in temperature and humidity. The project's objective is to establish an optimal and suitable storage environment for electronic components. The project comprises four key components: the Arduino, DHT11, buzzer, and LCD screen. The DHT11 sensor detects ambient humidity and temperature, while the Arduino functions as the central processing unit of the circuit. The LCD screen displays the current temperature and humidity values within the storage container, and the buzzer serves as an alert system for the user. All these components are enclosed within a container to maintain the desired atmosphere. Utilizing this project is essential for maintaining the components in prime condition and preventing the release of defective products into the market.

Keywords: DHT11, Arduino, Storage System.

1.0 INTRODUCTION

Electronic components are susceptible to damage, breakage, and defects, often imperceptible to the naked eye. Consequently, we may assume that the components we use are in good condition. Drastic temperature fluctuations can lead to the warping of plastic casings, while metal components expand and contract as temperatures shift. However, one of the most harmful factors for electronics is typically humidity, which signifies the moisture level in the atmosphere. Humidity can produce water molecules that infiltrate component insulation, obstruct the flow of voltage, and induce corrosion in microchips.

2.0 OBJECTIVE

The project strives to reduce the incidence of defective electronic components, considering their susceptibility, with the following objectives in mind:

- a) Construct an electronic circuit using Arduino to sense temperature and humidity using the DHT11 sensor and exhibit the measured temperature on an LCD screen.
- b) Formulate an electronic circuit with Arduino capable of triggering a buzzer to issue an alarm when the recorded temperature and humidity values deviate from the desired range.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The primary goal of our project is to minimize the occurrence of defective electronic components. The Arduino functions as a microcontroller to oversee temperature and humidity

levels, taking input from the DHT11 sensor and presenting temperature readings on an LCD screen as output. The DHT11 sensor is employed to detect the ambient temperature and humidity and then transmit this data to the Arduino. The Arduino will subsequently assess whether the temperature and humidity fall within the ideal range. If not, the buzzer will sound an alarm to prompt the user to manually adjust the humidity and temperature.



Figure 1: Prototype of the system

4.0 IMPACT OF PRODUCT

With this project, users can anticipate a reduction in defects, leading to increased profits due to fewer defective products. The use of this project is crucial to preserving the components in optimal condition and preventing the distribution of faulty products in the market. Additionally, this project is adaptable to suit users' needs and can be applied in diverse fields, including the chemical industry, libraries, and agriculture.

5.0 CONCLUSION

In summary, the goal of this project is to establish proper storage conditions for electronic components. The Arduino will assess whether the temperature and humidity are within the optimal range. If not, the buzzer will alert the user to manually adjust the humidity and temperature.

DEVELOPING LOW CARBON PARKS THROUGH THE 360° TREE MANAGEMENT

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ABSTRACT

Urban parks can help incredible cities and reduce energy consumption by mitigating the heat island effect. However, effectively managing urban parks can take time and effort, especially when striving for sustainable development. To address this challenge, the 360° Tree Management innovation has been created to assist park managers in promoting sustainability and enhancing community well-being. This innovation has three main goals: 1) providing a comprehensive and integrated system for tracking tree inventory and development, including species, location, size, and number; 2) evaluating the health and vitality of park trees; and 3) managing and reducing carbon emissions during park management. By assessing carbon-saving potential and implementing suitable landscape patterns, urban parks can play a vital role in mitigating climate change and promoting environmental sustainability.

Keywords: Low carbon parks; Landscape management; Landscape maintenance

1.0 INTRODUCTION

According to the Sustainable Development Report 2022, Malaysia ranks 72nd out of 163 countries regarding Sustainable Development Goal (SDG) performance. The SDGs were established in 2015 as a blueprint for the peace and prosperity of people and the planet, both now and in the future. Comprised of 17 goals to be achieved by 2030, the SDGs include Climate Action, which is SDG 13. However, Malaysia has been struggling to progress in this area, especially concerning CO₂ emissions, which have been steadily increasing over the years, according to the World Bank. Carbon dioxide, or CO₂, is the main gas affecting global warming, negatively impacting the world. Thus, Malaysia has established the Low Carbon City Framework (LCCF) to address this issue.

One of the programs implemented by LCCF is the Urban Park initiative, which aims to reduce carbon emissions in urban areas. Planting greenery is believed to help sequester carbon, as plants use photosynthesis to create food and grow. During this process, they use sunlight, water, and CO₂ to produce oxygen and sugar, with the exchange of gases occurring through stomata, usually located on the lower surface of leaves. However, some scholars found that landscape development also emits carbon. Carbon emission in the landscape is due to production, construction, transportation, management, maintenance, removal, disposal, and recycling over their entire life cycle. Misni et al. (2020) discovered that the number of trees is insufficient and not balanced with users and that the outdoor environment is not meeting carbon reduction targets. Therefore, it is crucial to have good planning and management to reduce carbon production and reach the carbon reduction target.

2.0 OBJECTIVE

The objectives of the innovation are:

- To create sustainable parks with low carbon emissions through an effective landscape management system.
- To manage and produce the quality of trees in urban areas as a source of carbon sequestration.
- To reduce the time taken by the park managers to solve tree issues
- To improve the quality of life of urban communities.

3.0 INNOVATION: THE 360° TREE MANAGEMENT

The 360° Tree Management is a systematic tree management database that can provide essential information for managing trees in urban parks. This innovation has three main goals which are:

- Tree Inventory:** A comprehensive and integrated system for tracking tree inventory and development, including species, location, size, and number.
- Assess the Health and Vitality of Trees:** Analyzing tree health by monitoring trees' growth with proper maintenance. This allows park managers to identify the factors influencing tree health and vitality and develop strategies to enhance carbon saving.
- Manage and Reduce Carbon Emissions in Park Management:** Urban parks significantly mitigate the urban heat island effect. Healthy trees can create "cool islands" within cities and reduce the absorption of heat radiation by the ground. This helps lower energy consumption, particularly during the summer or hot weather.

As depicted in Figure 1, each tree located in the urban parks will contain five data components. To maintain an informative and practical database, the operator is suggested to update the tree data every six months to keep track of its progress and identify any potential problems.

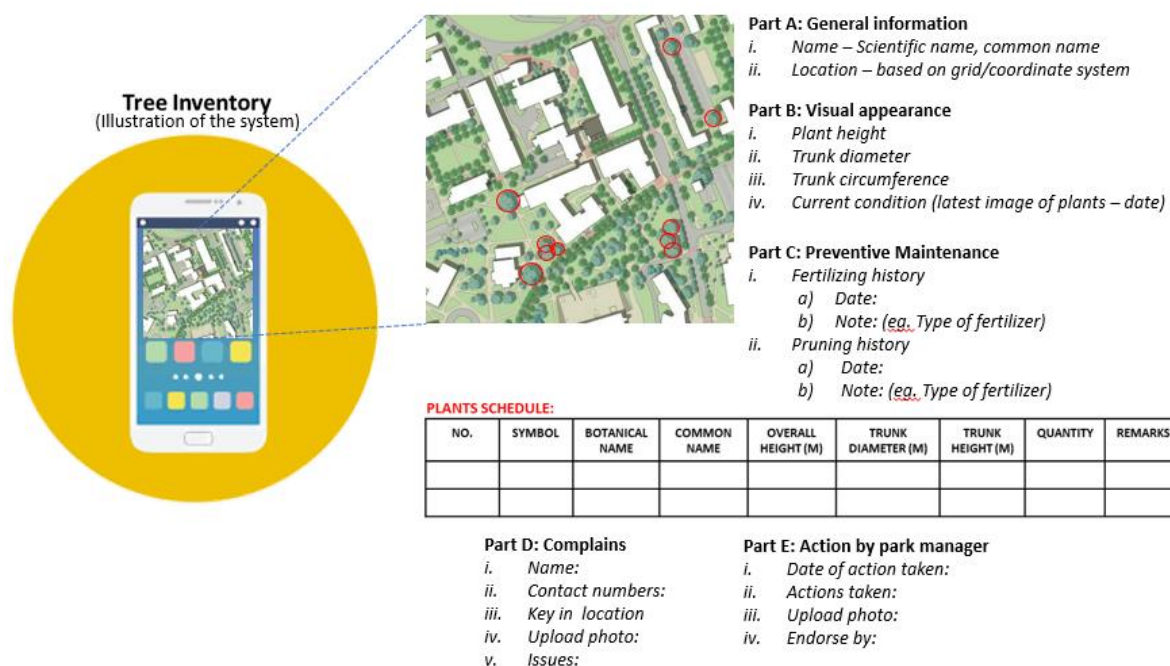


Figure 1: Illustration of the system on Tree Inventory

Healthy and rapidly growing trees are crucial as the amount of CO₂ a tree captures depends on its size, age, and other factors. Trees that are healthy and growing well absorb more carbon from the atmosphere. Predicting the impact of trees is possible using a tree carbon calculator

created by academic research and the USDA Forest Service (Figure 2). By utilizing the calculator and database from the 360° Tree Management innovation, we can estimate how much oxygen trees can generate and how much carbon they can store based on age and size. Trees play an essential role in the environment by producing oxygen and serving as a carbon sink, and this tool helps us understand their potential impact.

Figure 1: An example of a tree carbon calculator to measure tree benefit.
Source: Academic research and USDA Forest Service

4.0 ADVANTAGES

Following are some advantages of putting the innovation into practice:

- i. A systematic database system that records and evaluates tree history and measures tree benefit.
- ii. Park managers can effectively maintain urban parks due to their ease of management.
- iii. Efficient prevention of tree issues can be achieved by promptly identifying and resolving problems with trees.
- iv. Improve the tree value.
- v. Enhance the awareness of healthy trees.
- vi. Increase carbon sequestration of urban parks.
- vii. Reduce carbon emissions in urban areas.
- viii. Help to mitigate climate change.
- ix. Enhance the quality of life for urban communities.

5.0 CONCLUSION

In conclusion, climate change has negatively impacted the environment and people. We must reduce or mitigate the carbon in the atmosphere to counteract these negative impacts. One way to reduce carbon in the city is by creating urban parks, as trees absorb CO₂ during photosynthesis. Through the innovation of 360° Tree Management, park managers and landscape architects can utilize this system to incorporate the park's design and park management with the carbon sequestration rate of the proposed trees.

DESIGN AND FABRICATION OF A SELF-BALANCING DEVICE FOR FOOD DELIVERY

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ABSTRACT

The self-balancing device for food delivery is designed to secure food and beverages inside the delivery bags, minimizing spills and damage during rushed or winding road deliveries. Maintaining the food in perfect condition after delivery significantly enhances the customer experience. Existing food delivery literature has explored solutions like a bag carrier mounted at the back of motorcycles or worn like a backpack by the rider. However, such setups rely on motorcycle swerving, leading to potential spills and damage, especially on busy or winding routes. Moreover, this approach jeopardizes rider safety as they must balance swift delivery with keeping the food intact, potentially leading to accidents due to divided attention. This project's main objectives are twofold: first, to design an efficient self-balancing device for food delivery, and second, to analyse the mechanical systems involved in its implementation. By achieving these goals, the project aims to reduce the risk of accidents for riders while ensuring the food reaches customers in perfect condition. This project seeks to revolutionize food delivery by introducing a self-balancing device to maintain food stability during transportation.

Keywords: Self-balancing devices, food beverages

1.0 INTRODUCTION

Food delivery has started to become common in the past two and three years due to the pandemic Covid-19. This is also influenced by the increasing of food delivery services in Malaysia which created many job opportunities for the community such as food delivery riders. The food delivery riders are the ones who are responsible for delivering food to customers who request a food delivery through the food delivery application. Maintaining the food in perfect condition after delivery significantly enhances the customer experience. Existing food delivery literature has explored solutions like a bag carrier mounted at the back of motorcycles or worn like a backpack by the rider. However, such setups rely on motorcycle swerving, leading to potential spills and damage, especially on busy or winding routes. Moreover, this approach jeopardizes rider safety as they must balance swift delivery with keeping the food intact, potentially leading to accidents due to divided attention. Therefore, this project aims to design an efficient self-balancing device for food delivery and to analyse the mechanical systems involved in its implementation. The self-balancing device for food delivery is designed to secure food and beverages inside the delivery bags, minimizing spills and damage during

rushed or winding road deliveries. This device also might potentially reduce the risk of accidents for riders while ensuring the food reaches customers in perfect condition.

2.0 OBJECTIVE

The goal of this project is to create a self-balancing device for food delivery to keep food safe during fast or bumpy deliveries. Thus, the objectives of this project is to design an efficient self-balancing device and analyze its mechanical systems.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

Figure 1 shows the product of the self-balancing device. The steps to use the self-balancing device are as follows:-

1. Place the device at the back of a motorcycle by bolting it on and making sure it is anchored properly as shown in Figure 2.
2. The food delivery bag is then tied onto the platform by using paracords or elastic ropes as shown.
3. Test whether the device is working properly by swinging the platform gently as shown in Figure 3.
4. Position the food on top of the swinging device and cover it with the delivery bag, making it ready for the delivery process.

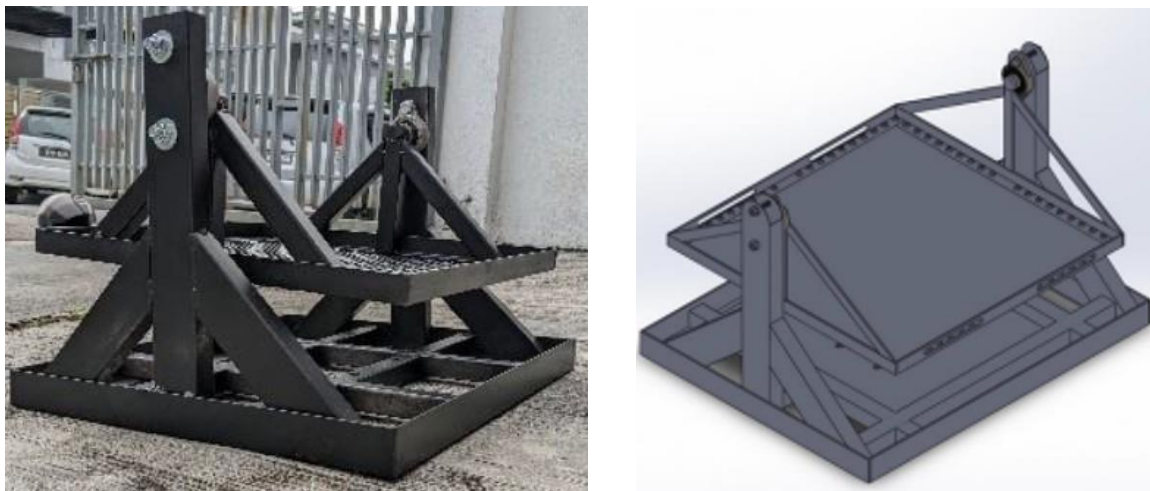


Figure 1: Product of Self-Balancing Device

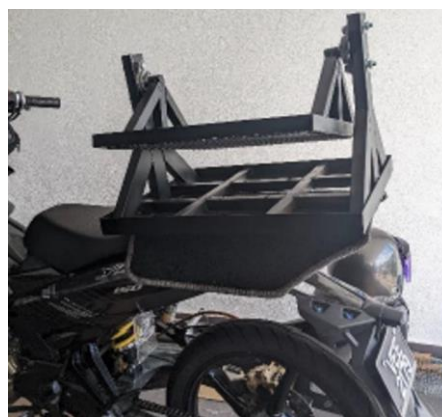


Figure 2: Self- Balancing Device Placed at The Back of Motorcycle



Figure 3: Test the Self- Balancing Device

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

This device can be beneficial to food delivery riders by providing reliable, efficient food delivery and reducing accidents. The impact of this product is expected to transform the food delivery industry by increasing customer satisfaction by preventing food spillage during delivery.

5.0 CONCLUSION

The project successfully created a food-balancing device to prevent food spillage during delivery and makes food deliveries more reliable and efficient. This device greatly improves the food delivery experience for customers and delivery partners.

EASY MATERIAL LAB TESTING

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ABSTRACT

Lab work is a hands-on activity that enhances students' skills. Therefore, it was introduced at the beginning of the course under the title Construction Materials and Material Properties, so that first semester students are exposed to different types of materials and tests related to construction industry. For this reason, the idea of developing progressive learning methods was born to replace conventional methods. Using Google Forms, the sample concept was developed by integrating the course requirement summary and the content of each lab test. The information is supported by pictures, tables or diagrams and a brief paragraph to enhance the student's understanding of the purpose and method of the test being designed. The Google Form is designed like a quiz, contains a quick feedback mechanism to score sections and answers, and takes less than five minutes to complete. Additionally, targets, equipment and materials lists, including observation results, were posted on a Google form. This method allows students to quickly choose the correct answer instead of listening to a summary in the usual mode appreciation to the one-way communication of online distance learning (ODL). A questionnaire survey was conducted to collect responses from students, respectively from the first semester of the survey degree. Analysis of the results shows that the feedback is very positive and proves that students' ability to understand the lesson increases rapidly when applying the Easy Material Lab Test format. This statement was supported by 100 respondents who answered questions related to construction materials and laboratory testing, of which 58% received top scores.

Keywords: Laboratory work test, Building Materials, Google form, online understanding.

1.0 INTRODUCTION

The building surveying program is one area of study in construction science, including aspects of building materials, design, structures and project costs. In the field of construction materials, the provision of knowledge about basic construction materials such as concrete, metals, organic materials and polymers is introduced at the beginning of the semester because of the mastery of knowledge. of students is very important. To support structural design and ensure building stability, a basic understanding of the characteristics and behavior of construction materials is required (Neville, 2008). In general, course codes are delivered via two modes:

Lectures and laboratory work materials. Students are required to attend and conduct their own material testing in the laboratory or on-site to gain further knowledge about the properties of these materials, i.e. durability, workability, humidity and others. The coronavirus disease (Covid19) phenomenon that hit the whole world, including Malaysia in early 2020, made it necessary to immediately apply and practice a new alternative learning technique. Online

distance learning (ODL) lectures have become a popular choice via Google Meet, video, YouTube or another platform. However, random survey results, including continuous assessment results (UiTM 2019), show that laboratory tests on materials assigned to students do not meet the course learning outcomes. learning (CLO). Feedback shows that students have difficulty understanding and even focusing on each topic in the program, especially the “virtual lab”.

Therefore, to overcome this problem, changing the teaching and learning process is necessary. We are launching an initiative to introduce progressive learning as an innovative alternative to the ODL approach. Using Google Forms, a conceptual model was developed by including a summary of statements related to course requirements and the content of each exam. This information is supported by images, tables, diagrams and text to enhance student understanding of testing objectives and methods. The Google form is designed like a quiz, including (i) a quick feedback mechanism for scores and answers and (ii) a time limit for answering questions - under five minutes. In addition, (iii) objectives, (iv) list of equipment and construction materials, in which (v) observation results are presented on Google Form. This method allows students to quickly choose the correct answer instead of listening to a summary in one-way communication through online distance learning (ODL).

2.0 OBJECTIVE

The target of this innovative project is students participating in the Materials Properties, Building Construction I and II courses of the Construction Surveying program. This group of students are studying the first to second semester of their diploma, at the Seri Iskandar campus of MARA University of Technology Perak Branch. There are two main goals of this innovation;

- i) Develop learning methods using Google Forms that integrate information and content of each lab test as well as images and concise text,
- ii) Improve students' understanding of the purpose and methods of laboratory testing.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

Google Forms allows to design and evaluate surveys directly in mobile or web browser, without the need for additional software. It may receive immediate findings and quickly summarize survey data with charts and graphs.

Why was this form chosen in this innovation project?

It is because this form is easy to adapt and manage. In other words, it facilitates the method of understanding among the students. The form is named as 'Easy Material Lab Testing', aims to expose students to the basic material used in construction fields (concrete, metal, organic material, and polymer) as stated in syllabus content.

In normal practice, students are instructed to perform material testing in the laboratory or on site to obtain additional information on the qualities. Students also need to record the results from the testing work and submit a written report. However, it is very frustrating when a significant number of them did not attain a good understanding of the testing. The feedback from the students stated that they could not clearly understand the method of conducting laboratory tests due to the difficulty of listening to lectures through ODL. For that reason, the Easy Material Lab Testing Form was developed to improve the level of comprehension and information on each of the test.

Figure 1 to Figure 2 show the example of the 'Easy Material Lab Testing' forms which contain basic questions and responses to two testings that will be conducted namely Sieve Analysis, and Slump Test.

Section 1 of 3

Easy Material Lab Testing

This form aims to expose students to the basic material used in construction fields such as concrete, metal, organic material and polymer. Students also need to do material testing in a Laboratory or on a site to obtain additional information on the qualities; nonetheless, a significant number of them did not attain a good understanding of the testing. As a result of this reason, this form was developed to improve the level of comprehension and information on each of the tests.

Name

Short answer text

Matriculation number *

Short answer text

Class *

☐ AAP1191A

☐ AAA1191B

☐ AAP1191C

Figure 1: Example of the front page of the Easy Material Lab Testing Form.

Section 2 of 3

Sieve Analysis Testing

Easy Lab Testing content

- 1) Equipment
- 2) Material
- 3) Procedure
- 4) Data collection

Q1: What is the objective of Sieve Analysis Testing *

☐ Analyse the grading by passing representative sample of dry aggregate through a series of sieves, starting...

☐ Determine of compacting factor of concrete of low, medium and high workability

☐ Determine the workability of a sample of a batch of fresh concrete of a given mix.

☐ Obtain uniform 150mm/100mm cube specimens for density and crushing strength determinations

Q2: What is the standards that referred the procedures, apparatus, and parameters of the testing? *

☐ ASTM C136-C6

☐ BS EN 12350-3:2009

Figure 2: Example of Section 2 displays Questionnaire related to *Sieve Analysis Testing*.

The following figures displays the questions regarding equipment as well as building materials related to the selected laboratory test. Figure 3 highlight the example of questions of multichoice and checkboxes regarding tools and materials use for the Sieve Analysis Testing. Meanwhile Figure 5 illustrates the example of questions of multichoice and checkboxes regarding tools and materials required in the Slump Test.

6. Q3: Select the equipment that related to the testing *

Check all that apply.

☐ Picture 1

☐ Picture 2

☐ Picture 3

☐ Picture 4

☐ Picture 5

☐ Picture 6

☐ Picture 7

☐ Picture 8

Figure 3: Example of the multi choice and checkboxes Questionnaire regarding tools and materials for Sieve Analysis Testing

8. Q5: Tick the proper sequence of testing procedure *

Check all that apply.

☐ 1) Put the set of sieve on the mechanical shaker, set the time for 10 to 15 minutes and turn on the shaker.

☐ 2) Record the data

☐ 3) At the end of the shaking period, determine the weight of the aggregate which is retained on each sieve by find the different between the mass of sieve with aggregate retained and the mass of empty sieve

☐ 4) Prepare a set of sieves. Sieves having larger opening sizes are placed above the smaller ones and a pan is placed under the last sieve. Then pour the aggregate.

☐ 5) Place the samples in the sieves and shake materials using hand

4.0 RESULTS AND DISCUSSION

4.1. Data collection from Google form

A total of one hundred (100) students from the first semester of the Diploma in Building Surveying took part in this survey. The students may answer for approximately 15 seconds to complete a multiple-choice and checkbox option with a total of 12 questions, with a possible total score of 30 points. The allowed answer time is 3 minutes. Therefore, after 3 minutes of students responding, their results and position will be displayed shortly thereafter. Table 1 shows a point score and counts of respondents who answered the questionnaire.

4.2. Performance of students

Figure 4 display the graph of the result for a total score of 30 points. A hundred (100) answers from students involved in this form of the survey have been received, and the result of the performance of students was depicted in the graph below (Figure 4). The point score of each interval stated the number of respondents from the lower point of 2 to the highest point of 30. The 42 number of students recorded points more than half of the total marks of 15 points. The highest number of 16 students with 24 points was recorded as greater performance. Meanwhile, there are 7 students with a total score of 26, and 5 students achieved the full points of 30 respectively.

Table 1: Point score and count of respondent

Point score	Count of total score (respondent)
2.00	3
4.00	6
6.00	7
8.00	10
10.00	9
12.00	7
14.00	6
16.00	10
20.00	14
24.00	16
26.00	7
30.00	5
	100

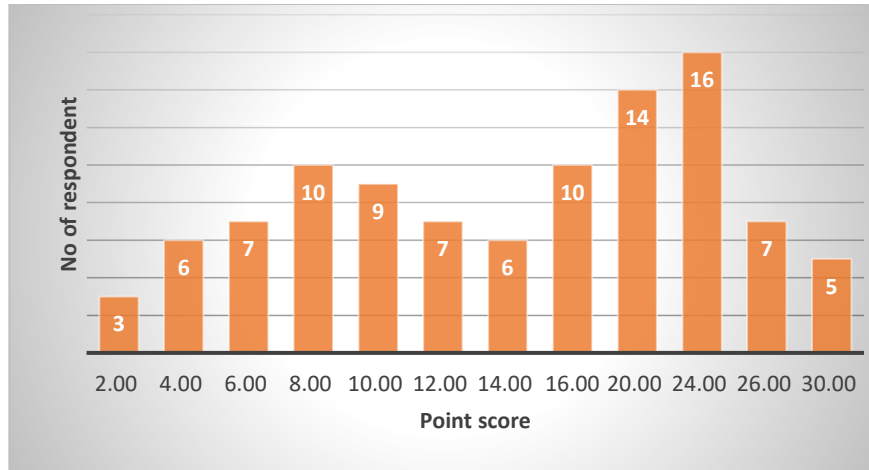


Figure 4: Graph of the total score of respondents

5.0 CONCLUSION

In conclusion, the results of these findings have encouraged new dimensions to the research team to improve the performance of EMLT Forms in the future. In fact, it is proposed to be implemented to other programs in Faculty of Architecture, Planning and Surveying that also have courses related to laboratory testing and building materials. This innovation project will be enhanced periodically to make it more effective and efficient.

ACKNOWLEDGEMENT

The researcher's team would like to express our appreciation to all students who participated in this survey. Also, many thanks to Universiti Teknologi MARA Perak and HITeL for organizing the Innovation in Teaching & Learning Competition 2022 (InTeLec2022) as a platform for the exploration of technology and support to lecturers in expressing their innovative ideas and talents in T & L. Our sincere gratitude also goes to our families and the Head of the Department of Building Surveying for moral support and encouragement.

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BS EN 12350-2: 2000 Testing fresh concrete. Slump test

BS EN 12350-6: 2000 Testing fresh concrete. Density

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Vigilant-E: EMPOWERING ONLINE COMMUNITIES AGAINST FRAUDULENT ACTIVITIES

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ABSTRACT

Introducing Vigilant-E, a groundbreaking shared database combatting online scams through the collaborative efforts of social media users. With the surge in online fraud, this platform stands as a safeguard against scams, fostering a vigilant online community. Vigilant-E empowers users to report and access scammer information, displaying bank and mobile numbers with evidence, curbing future fraud and raising awareness for secure online transactions. Its key features include user reporting, efficient search and verification, and community engagement. Social media users contribute scam details and evidence such as screenshots, conversations from the social media platforms or instant messaging apps, or transaction records, while the platform facilitates swift verification, ensuring safer financial dealings. Vigilant-E provides a secure and user-friendly database that empowers individuals to actively combat scams and protect themselves and others from financial losses. Vigilant-E's secure database enables proactive scam prevention, magnifying impact through collective contributions. Its innovation lies in user-driven action, distinguishing it from conventional approaches reliant on limited data sources or authorities. This means that fraudulent activities that has not been officially reported to the law enforcement will be captured by Vigilant-E; as long as the social media users reported them, even for small value scams! Vigilant-E holds promising commercial prospects through subscriptions, partnerships, and collaborations with finance or e-commerce platforms, attracting cybersecurity backers. As a pivotal tool in fighting online fraud, it entices investors championing safer digital environments.

Keywords: online scammers, reporting, vigilant online community

1.0 INTRODUCTION

The rise of online scams and fraudulent activities in recent years has become a significant concern for individuals and businesses alike. With the growth of online transactions and social media usage, scammers have found new avenues to exploit unsuspecting victims. In response to this escalating problem, Vigilant-E emerges as a groundbreaking solution that harnesses the power of community collaboration to combat online scams effectively. This platform empowers social media users to actively participate in the fight against scams, creating a vigilant online community dedicated to the protection of individuals and their financial assets.

2.0 OBJECTIVE

The primary objectives of Vigilant-E are as follows:

- **Combat Online Scams:** Vigilant-E aims to serve as a comprehensive and real-time database for reporting, tracking, and preventing online scams. It encourages users to

report scam details, providing a platform to share evidence and information related to fraudulent activities.

- **Foster Community Engagement:** The platform seeks to foster a sense of community and shared responsibility among social media users. By enabling individuals to actively participate in identifying and reporting scams, it creates a collaborative environment dedicated to online safety.
- **Raise Awareness:** Vigilant-E intends to raise awareness about online scams and their various forms. Through the dissemination of scammer information and evidence, it educates users about potential threats and promotes secure online transactions.
- **Secure Financial Dealings:** The platform's ultimate objective is to ensure safer financial dealings by offering a reliable source of scammer information. It equips users with the tools to verify the legitimacy of individuals or entities involved in online transactions.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

Vigilant-E is a user-driven platform designed to combat online scams through collaborative efforts. Its key features include:

- **User Reporting:** Social media users can report suspected scams, providing details such as bank and mobile numbers, along with supporting evidence such as screenshots, conversation logs, or transaction records.
- **Efficient Search and Verification:** Vigilant-E facilitates swift verification of reported scams, ensuring the accuracy of the information in the database. Users can efficiently search for specific scammer details to make informed decisions during online transactions.
- **Community Engagement:** The platform encourages community engagement by enabling users to contribute to the database actively. This collaborative approach magnifies the impact of scam prevention.
- **Secure Database:** Vigilant-E maintains a secure and user-friendly database, safeguarding the privacy and security of both contributors and users. It ensures that sensitive information remains protected.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

Vigilant-E stands out due to its novel approach to combating online scams. It distinguishes itself from conventional methods that rely on limited data sources or authorities by harnessing the collective power of social media users. This unique approach presents several commercialization opportunities:

- **Subscriptions:** The platform can offer subscription plans to users who seek premium features, such as advanced search capabilities or priority scam verification. These subscriptions can generate recurring revenue.
- **Partnerships:** Vigilant-E can establish partnerships with financial institutions and e-commerce platforms to integrate its database and verification tools. This collaboration can enhance the security of these platforms and attract a broader user base.

- **Cybersecurity Backers:** As a pivotal tool in the fight against online fraud, Vigilant-E can attract cybersecurity investors and backers who are dedicated to creating safer digital environments. These backers can provide the necessary resources for the platform's growth and development.

5.0 CONCLUSION

In conclusion, Vigilant-E is a pioneering solution to combat the surge in online scams by empowering social media users to actively report, verify, and access scammer information. Its user-driven approach, efficient database, and community engagement set it apart from traditional methods of addressing online fraud. The platform not only contributes to safer online transactions but also holds promising commercial prospects through subscriptions, partnerships, and support from cybersecurity backers. Vigilant-E represents a significant step toward creating a more secure digital environment and fostering a vigilant online community dedicated to the protection of individuals and businesses.

NUR MOBILE LAB: A PORTABLE TEACHING AID

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ABSTRACT

The primary approach of comprehending lighting principles in the classroom is through verbal explanation. Thus, students encounter difficulties in visualizing the concepts and often experience confusion while acquiring knowledge of the fundamental principles of lighting. The Nur Mobile Lab aims to provide a visual demonstration of students' understanding in the fundamental principles of lighting within the classroom setting. The Nur Mobile Lab is a teaching aid constructed from plywood and acrylic Perspex materials. This innovative tool shows the principles of light. The innovation for a lighting box is a light, portable structure that is easy to carry to class to teach about artificial lighting as part of the Environmental Science subject. The objective of this subject is to provide the students with a fundamental knowledge of the methods employed by lighting practitioners for measurement purposes as well as the terminology commonly used in this field. Therefore, students can show their understanding of the subject by designing and calculating sufficient lighting in a space as required by the standards and regulations. The result of the final test also shows an increment in students' grades, and the survey distributed reflects a positive outcome from the use of the tools. The Nur Mobile Lab assists students creative performance in learning through activities in the class.

Keywords: lighting principles, built environment, teaching aid, innovation.

1.0 INTRODUCTION

The main approach employed by educators to teach knowledge on lighting principles in the classroom setting is verbal instruction. The conceptualization and comprehension of fundamental lighting principles appear to be challenges for students. Light is a form of energy that can be measured with standard units of energy, but the effect of light on the human environment also depends on how sensitive the human eye is. A distinct quantitative measure is employed to quantify the intensity of lighting. These are some of the topics for the Environmental Technology subject taught to students who study building surveying. Due to the many terminologies, sometimes students struggle to visualise and are often confused about understanding this basic theory of lighting. The Nur Mobile Lab will illustrate the understanding of lighting principles visually to the students in the class. The lighting box demonstrates the seven (7) principles of understanding the basic theory of lighting for effective teaching and learning.

2.0 OBJECTIVE

Nur Mobile Lab was invented to overcome students difficulty in understanding the seven (7) principles of lighting. The seven (7) principles are: solid angle, luminous intensity, luminous flux, inverse square law, cosine law of illuminance and illuminance.

3.0 METHODOLOGY

The influence of lighting on the human environment also depends on the sensitivity of the eye. Lighting quantities are thus quantified using a separate set of units. The goal of this topic is to provide a fundamental knowledge of the basic measuring techniques and terminology used in the lighting industry.

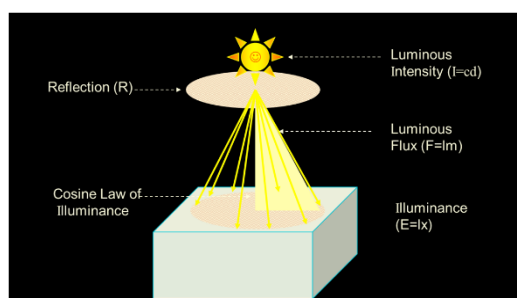


Figure 1: The basic principle of lighting in the human environment

For the enhancement of an understanding of this light theory, the NUR Mobile Lab was constructed using reuse plywood and acrylic Perspex. Visualisation of light is assisted by using modified torch lights, a laser pointer, and body mist that acts as smog. The NUR Mobile Lab will be brought to the lecture class to explain the topic of lighting.



Figure 2: Portable teaching aid - Nur Mobile Lab

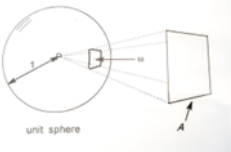
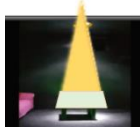
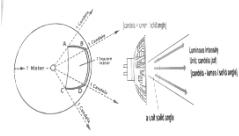
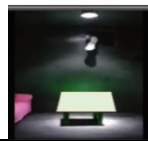
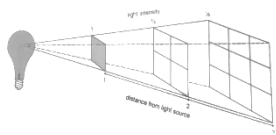
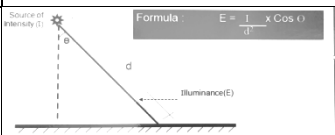
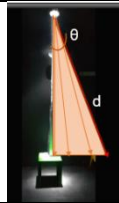
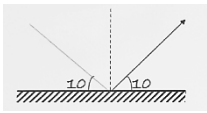
This lighting box is a very light structure and easy to bring along during class sessions to teach artificial lighting under the Environmental Science subject. The lighting box demonstrates the seven (7) principles in understanding the basic theory of lighting for effective teaching and learning. The principles are solid angle, luminous intensity, luminous flux, illuminance, inverse square law, cosine law of illuminance and reflection.



Figure 3: Setting of the lighting box with the actual interior of the human environment

The lighting box is finished with the real setting of a human environment, and a transparent perspex sheet allowed students to see the effect of the light source as the laser pointer flashed through the box.

Table 1: Visualization of the lighting theory in the Nur Mobile Lab.

Principle	Theory	Visualizing in the Nur Mobile Lab
1. Solid angle		
2. Luminous intensity		
3. Luminous flux		
4. Illuminance		
5. Inverse Square Law		
6. Cosine law of illumination		
7. Reflection		

4.0 RESULTS/NOVELTY

The implementation of the Nur Mobile Lab will provide students in the lesson with a tangible means of studying the principles and mechanisms governing lighting. The lighting box visually presents the fundamental principles of lighting theory, encompassing seven (7) key elements

that hold significance in the discipline of education. Through the acquisition of theoretical knowledge, students can illustrate their understanding by formulating a lighting design and conducting simulations that ensure enough illumination in each space, in accordance with the related guidelines and regulations. A comparison study was conducted on the testing outcomes of two consecutive semesters to ascertain whether there was any apparent enhancement in students' comprehension levels when responding to queries that related to the subject matter. A questionnaire survey was conducted to collect responses from students. The results indicate an encouraging reaction, with students demonstrating enhanced comprehension of lighting concepts through the utilisation of the Nur Mobile Lab, facilitating visual representation. A questionnaire survey was administered to students who had completed the subject, and the findings reveal multiple beneficial results associated with this teaching and learning innovation. The implementation of various classroom activities by Nur Mobile Lab aims to facilitate students' acquisition of knowledge through innovative and imaginative approaches. Students gain lessons on the usage of this and apply their knowledge during classroom activities. The utilisation of this mobile laboratory is conducive to the transfer of fundamental knowledge related to lighting among students in elementary and middle schools. The application of light as a means of illuminating objects involves an investigation of their composition and motion characteristics. This will foster an increased interest in science among students.

5.0 CONCLUSION

The most typical way to understand lighting principles in class is through verbal explanation. As a result, students struggle to visualise and frequently become confused when learning the fundamental principle of lighting. The above-mentioned problem was solved by the development of this new teaching aid, which helps students use visualisation skills to further improve their knowledge. Future exploration will expand this portable teaching aid's functionality with additional features related to fundamental environmental technology course material that are appropriate for all students. The initiative for continuous innovation in teaching and learning methods will increase the efficiency of educational activities.

SIMULTINUT

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ABSTRACT

Changing a punctured tyre is a frequent issue for car owners and usually involves loosening the wheel's lug nuts and jacking up the car—a process that can be both tiring and time-consuming. This project aims to simplify this task by introducing SimultiNut, a four-way lug nut remover designed to facilitate the tyre replacement process. SimultiNut attaches to the slightly loosened lug nuts and employs a gear-based mechanism to rotate them simultaneously, making them easier to remove. Made from durable materials like steel alloy and mild steel, the product is intended for both individual car owners as an addition to emergency car kits and for use in automotive workshops. SimultiNut offers a time- and effort-saving alternative to the limited range of single-lug nut wrenches currently available on the market.

Keywords: tyre replacement, lug nuts remover, SimultiNut, automotive

1.0 INTRODUCTION

Cars are a vital part of everyday life for many Malaysians, serving as the main form of transportation for both short and long trips. Because of this, regular upkeep is crucial for making sure the car remains safe and reliable over time. This maintenance covers a range of parts, from the engine and transmission to the air conditioning and tires. While issues like engine or transmission failures require expert repair, simpler problems like a flat tire can usually be fixed by car owners themselves if they know the basic steps. To help with this, car manufacturers often include basic tools like L-wrenches, T-wrenches, and jacks in the car for on-the-spot tyre changes.

The task of changing a tyre quickly and easily comes with its own set of challenges. The initial step of loosening the lug nuts can be hard work and time-consuming when using standard tools like T-wrenches or L-wrenches. This is even more of a hurdle for people who might not have the strength to turn the wrench with enough force. This is where SimultiNut comes in. This specially designed 4-way lug nut remover can loosen all four lug nuts at the same time, making the whole process faster and easier. The main aim of this new tool is to make changing a tyre simpler and quicker for as many people as possible, no matter their level of physical strength or know-how in car repairs.

2.0 OBJECTIVE

The primary goals of this project are twofold: first, to design and develop a 4-way lug nut remover known as SimultiNut; and second, to simplify the tyre-changing process for both car owners and mechanics. The product is engineered from the ground up using readily available materials and involves various stages of design and fabrication.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The methodology for developing SimultiNut is fully outlined in Figure 1. The motivation for creating SimultiNut comes from the common issue of flat tyres, which affects many car owners. Given the technical challenges and the need for a practical solution, this project is well-suited for final-year projects and innovation contests.



Figure 1: SimultiNut methodological flow

Preliminary studies focus on studying existing tools for manual tyre changing, such as lug nut wrenches, spider wrenches, and T-wrenches. Information gathered from these tools is used to set performance standards for SimultiNut. The design targets vehicles with a four-lug nut wheel configuration, commonly found in smaller to mid-sized cars like the Perodua Myvi and Perodua Bezza. A gear mechanism is incorporated into the design, allowing for the simultaneous rotation of all four lug nuts with a single hand movement, as shown in Figure 2. This feature significantly improves both the speed and ease of the tyre-changing process.



Figure 2: SimultiNut working prototype

The assembly of SimultiNut is carried out manually in an in-house setting, using key components such as circular steel plates, shafts, and gear sprockets. The manufacturing process includes various steps, including computer-aided design (CAD) and computer-based analysis, precise measurements, CNC machining, welding, assembly, and surface coating. After the manufacturing phase, the finished product is tested on an actual wheel rim to evaluate its effectiveness and make any needed minor adjustments.

In terms of usage, the process for SimultiNut is similar to that of traditional wrenches. Initially, the lug nuts are loosened manually before SimultiNut is attached to them. After it is mounted, rotational force is applied to the main shaft, which activates the connected gear sprockets, allowing all lug nuts to turn at the same time. This design significantly reduces the time needed to change a tyre compared to using conventional wrenches.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

SimultiNut represents a major step forward in tyre-changing tools, specifically designed to loosen four lug nuts at the same time, a notable improvement over traditional single-nut wrenches. This new feature speeds up the tyre-changing process, cutting down both the time and effort needed from the person using it. The tool's portable design makes it easy to transport and store.

Keeping ergonomic factors in mind, SimultiNut is built for easy use by a single person, eliminating the need for extra help and lessening the chance of fatigue or discomfort. This focus on user-friendly design was driven by the current market's lack of tools, where most available tools can only handle one lug nut at a time, presenting a clear opportunity for improvement.

The making of SimultiNut follows a carefully planned set of manufacturing steps aimed at using materials and labour efficiently while producing as little waste as possible. This organised approach not only makes the production process more efficient but also aligns with sustainable practices. As for ongoing care, the tool is designed to be low-maintenance; a simple, regular application of lubricant to the gears is all that's needed to keep it working well. This user-friendly maintenance feature not only prolongs the life of the product but also lessens its long-term environmental impact.

5.0 CONCLUSION

In conclusion, SimultiNut has successfully met its design goals by enabling the simultaneous loosening of four lug nuts through a single-handed turn of the main shaft. This feature significantly simplifies the task of changing a tyre, reducing both the time and effort usually required for this process. It offers a more efficient method compared to traditional wrenches, which can only handle one lug nut at a time.

Targeted at specific users, SimultiNut proves to be a useful tool for a range of people involved in car maintenance, from individual car owners to professional repair shops and vehicle testing labs. In these various settings, SimultiNut can serve as a key part of emergency tyre-changing kits, providing a quicker and less labour-intensive solution.

By incorporating these features, SimultiNut not only achieves its initial design objectives but also addresses broader issues of efficiency and user friendliness in the field of automotive maintenance. As such, it represents a significant step forward in the larger landscape of car repair and maintenance tools.

SMART GUIDED DELIVERY ROBOT

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ABSTRACT

Focusing on the food manufacturing sector, these sectors do play a significant part in the production of a variety of consumable goods for international markets. The food manufacturing industry places considerable physical demands on its employees, involving tasks such as lifting heavy loads and moving trolleys. These physically strenuous activities are integral to the production and logistics processes, encompassing the handling of raw materials, and finished products within the manufacturing facility. Working in an environment with few employees undoubtedly required employees to perform more tasks, such as lifting and carrying heavy objects from the store to the kitchen, which required them to expend more energy and time than if they had remained on the kitchen side and only performed their duties. To address this issue, the implementation of Smart Lean Manufacturing practices in the food industry is necessary. One viable solution involves utilizing smart guided delivery robots equipped with wireless technology. These robots can be easily monitored by users or employees in-charge, enabling them to track the robot's movement and the load it carries. The incorporation of line tracking robots, enhanced by Internet of Things (IoT) technology, offers further advancements. These innovations effectively reduce the burden of heavy workloads in the manufacturing industry, while simultaneously promoting the safety and well-being of employees in the workplace. By embracing Smart Lean Manufacturing practices and employing smart guided delivery robots, the physical strain on employees is alleviated, leading to increased efficiency and productivity.

Keywords: Smart lean manufacturing, Internet of Things (IoT), Line tracking robot.

1.0 INTRODUCTION

Focusing on the food manufacturing sector, these sectors do play a significant part in the production of a variety of consumable goods for international markets. The preparation, packaging, and distribution of a wide range of food products, including drinks, baked goods, and more are all included in this dynamic industry. Food producers use cutting-edge technology and exacting quality control procedures to satisfy customer needs while maintaining a continual emphasis on guaranteeing quality, safety, and compliance with strict requirements. The food manufacturing industry places considerable physical demands on its employees, involving tasks such as lifting heavy loads and moving trolleys. These physically strenuous activities are integral to the production and logistics processes, encompassing the handling of raw materials, ingredients, and finished products within the manufacturing facility. In Malaysia, experienced employees continue to work in this industry due to their expertise in managing these challenging tasks.

However, the recent economic pandemic that has affected Malaysia, along with other countries, has resulted in a scarcity of employees due to less appealing job opportunities amid the economic downturn. This ongoing issue directly impacts current employees who must work diligently to meet the company's service commitments to consumers. The shortage of

workforce adds pressure to the existing employees in coping with the demanding workload within the food manufacturing sector.

Due to a shortage of employees managing ingredient inventory, workers in the food industry increasingly face heavy lifting tasks during their daily responsibilities. Even older employees cannot avoid these tasks due to the lack of staff. Kitchen workers, in particular, have to personally retrieve ingredients from the store, impacting productivity and potentially their health. The physically demanding nature of these tasks calls for the adoption of proper ergonomic practices, employee training, and innovative solutions to reduce the risk of injuries and enhance the overall well-being and safety of the workforce. To address this, we have developed a Smart Lean Manufacturing idea known as the Smart Guided Delivery Robot.

This robot is an advanced version of a line tracking robot, featuring the addition of an ultrasonic sensor that enables automatic stopping when encountering obstacles on its designated path. Additionally, it incorporates a load cell and Internet of Things (IoT) technology. The robot can detect the weight of the load it carries, ensuring it stays within its capacity limits and this information is accessible via smartphones through the Blynk application by the user or person in-charge of handling this robot. In case any obstacles are detected along the robot's path, the user receives an alert notification on the user devices and the robot will stop immediately. With this innovative solution, we can effectively monitor the robot's condition, promoting a more efficient workplace for employees. By implementing this Smart Lean Manufacturing approach, we create a better work environment, increase productivity, and enhance the health and well-being of our employees facing this challenge.

2.0 OBJECTIVES

The Smart Guided Delivery Robot is being proposed in order to accomplish the following objectives:

1. To minimize workplace injuries and alleviate physical strain experienced by employees during their work.
2. Enhancing efficiency and productivity in the food manufacturing industry through the implementation of an automated delivery robot.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

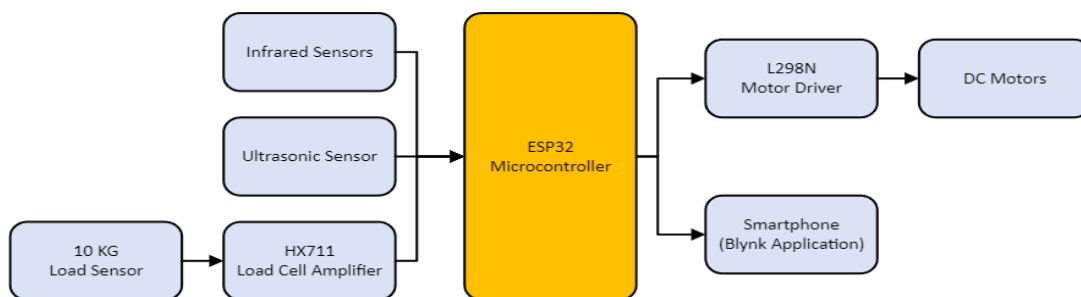


Figure 1: Block diagram of the Smart Guided Delivery Robot

The figure above shows the block diagram of the Smart Guided Delivery Robot, designed with various components that collaborate to ensure its efficient operation. The robot takes input from IR sensors, which detect a line on the ground, enabling it to follow a predetermined path accurately. An ultrasonic sensor is employed to detect obstacles in front of the robot, ensuring collision avoidance. To accurately measure the weight of delivered items, a 10kg load cell and an HX711 load cell amplifier are utilised, which amplifies the load cell's electrical signals for precise weight measurements. At the heart of the system is the ESP32 microcontroller, which is responsible for processing the input data from the sensors. It analyses the information and

decides based on the detected line, obstacle presence, and weight measurements. The microcontroller then controls the outputs accordingly.

The outputs of the system include an L298N motor driver and DC motors. The L298N motor driver allows for precise control of the DC motors, enabling the robot to adjust its speed and direction as needed to follow the designated path. This integration of the L298N motor driver and DC motor ensures accurate navigation and delivery. Furthermore, the robot is connected to Wi-Fi with a smartphone running the Blynk application, which acts as a monitoring tool. The smartphone provides real-time status updates and allows users to monitor the robot's activities remotely. It offers convenience and accessibility, ensuring users can stay informed about the robot's performance and make necessary adjustments if required.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The advantages stemming from this project extend to both employees and employers alike. For employees, the benefits are manifold. Firstly, it enhances their work efficiency by delegating repetitive and time-consuming tasks, such as the transportation of items within a facility or goods delivery, to smart delivery robots. This, in turn, liberates employees to concentrate on more intricate and value-added responsibilities, resulting in an overall boost in job satisfaction. Additionally, manual material handling or long-distance deliveries, which often lead to physical strain and fatigue, are taken over by smart robots, mitigating the risk of workplace injuries and promoting the well-being of employees. Moreover, robots are less prone to accidents caused by human errors, such as collisions or falls, thereby fostering a safer working environment for employees who share their workspace with these robots. Furthermore, working alongside smart delivery robots offers employees the opportunity to acquire new skills related to robot operation, maintenance, or supervision, potentially enhancing their job marketability and career growth potential.

For employers, the advantages are equally compelling. To start with, there's a significant increase in productivity. Smart guided delivery robots operate tirelessly without breaks or fatigue, resulting in heightened operational efficiency and productivity. This translates into quicker order fulfillment and reduced lead times. Additionally, these robots offer consistency and reliability in tasks as they consistently follow programmed routes and perform with precision, reducing errors and operational variability. This commitment to precision can lead to higher product quality and increased customer satisfaction. Lastly, the scalability factor is a game-changer. Employers can effortlessly expand their operations by simply adding more smart robots as needed, sidestepping the challenges associated with hiring and training additional human workers. This adaptability proves invaluable in meeting fluctuating demand and maintaining competitiveness.

5.0 CONCLUSION

In conclusion, the Smart Lean Manufacturing system is an effective and innovative approach to reduce wasteful movements and enhance productivity within a company. This simple yet powerful idea has shown significant improvements, transforming into a massive and brilliant solution to enhance various aspects of a workplace. With this clear understanding, we then defined specific criteria and prerequisites that needed to be met to solve each identified problem. Extensive research on available products in the global market led us to find the best example that we could enhance with advanced technology. After going through a rigorous process to find solutions, we successfully developed our own product. The result is a delivery robot that not only minimizes workplace injuries and reduces physical strain experienced by employees but also significantly improves efficiency and productivity in the food manufacturing industry. With the implementation of this automated delivery robot, we have achieved our goal of optimizing operations and creating a safer, more efficient workplace.



CATEGORY B

**Primary / Secondary School
Student / Special Education
School in Johor**



EGNA 3.0

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ABSTRACT

Eggs shells and banana skins are the domestic waste used to produce these organic fertilizers. It's effective. One innovation in organic fertilizer production. Can improve the economy of the local community. Reducing dependence on chemicals in the market. EgNa Fertilizer also serves as organic fertilizer and can solve local problems with dermal shell debris. This innovation can prove the effectiveness of egg shells to help tree growth. This product is environmentally friendly, easy & save and safer. The results of the experiments were neutral pH value and the tree became more fertile when added to the egg husk. Among the products contributed to reducing the number of dead plants caused by chemical fertilizers. Furthermore, it also improves the local economy and optimizes the use of egg shells and reduces pollution. No other fertilizers use the egg shell as the main ingredient. Easy to use. Saves natural resources. Improve the economy of the locals. Reduces the problem of dumping eggshells. This product has the opportunity to be marketed because the raw material is natural and it is profitable. Profit is expected as early as the first quarter of marketing. This product is very attractive to buyers, especially nature lovers. Its use is devoted to the agricultural industry. Target groups are farmers and growers. Method of production, Sifted egg shells to get the powder. Eggplant eggs are mixed with stripped bananas skin. Eggplant eggs are mixed with stripped bananas skin. Experimental results show that EgNa is very effective in helping tree seedlings, neutral, safe and portable. In conclusion, EgNa Fertilizer is the best product to solve the environment problem.

Keywords: EgNa, Egg shell, banana

1.0 INTRODUCTION

The purpose of this project is to overcome the problem of local residents who face the problem of dumping eggshells and banana peels. This innovation is expected to be able to provide a solution to the problems of local residents as well as improve their economy and reduce environmental pollution as a result of dumping eggshells and banana peels.

The rationale behind the production of this product is to overcome the problem of dumping eggshells and banana peels and solve the economic problems of the local population. Seen this product is very significant in solving the problem faced. The marketability of this EgNa fertilizer is seen to be able to provide competitiveness to other fertilizer-based products because it is more economical, environmentally friendly and reliable.

2.0 OBJECTIVE

EgNA works as an organic fertilizer. It reduces the dependency of chemicals present in existing fertilizers. EgNa also solves local problems related to the dumping of eggshells and banana peels. The production of EgNA reduces the rate of domestic waste disposal. As well as improving the economy of the population

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

Egg shells and banana skin peels are known as local waste is key ingredient for organic fertilizer products. It is cost saving and effective. EgNa is a new invention and innovation in fertilizer industry. It helps to save the environment by reducing the amount of egg shell and banana skin being thrown as rubbish and reduce the pollution that may been cause by these substance. It also reducing dependence on chemicals products on the market. As we all know, agriculture industry like to use chemical based fertilizer that may pollute the environment. EgNa act as an alternative resource for the farmer to use in their field. The usage of EgNa may increase their crop yield. EgNa fertilizer comprise of the following component:

1. Egg shell
2. Banana leaves

Table 1: Experiments result of liquid EgNa

EXPERIMENT	RESULT
pH value	pH 8
Egna present against plant growth	Egna increase the the plant growth
Comparison of EgNa Fertilizer's powder with EgNa Fertilizer's fluid	liquid is more effective than powder.
Comparison of EgNa Fertilizer's ingredients with other fertilizer	EgNa Fertilizer is more effective than another fertilizer
Mass of EgNa against plant growth	If the mass of EgNa 20 g, so the number of leaves increase.



Figure 1. Example of liquid EgNa

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

EgNa uniqueness lies in its concept of making innovation in EgNa fast, easy and accessible, while keeping the design open sourced and the cost as low as possible. Further more, EgNa also come in 2 types of packing which are liquid and powder form. EgNa helps to reduce the pollution cause by the dumping of domestic waste. Beside is acts as an alternative to the widely used chemical based fertilizer.

EgNa fertilizers is easy to use. It helps people to manage their time and increase their productivity. It also save nature's source by using waste material. The usage of EgNa can increase the local economy by increasing their yield of crop, providing new job opportunity and it can also decrease the dumped egg shell and banana skin problem.

5.0 CONCLUSION

In conclusion, the EgNa Fertilizer 3.0 product is seen to be popular for use because of the large amount of eggshells and banana peels that are thrown away every year. The products produced are also seen as relevant for use and suitable for marketing. This EgnA Fertilizer can be improved by increasing the mixture of banana peel and eggshell in the EgNa Fertilizer mixture.

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MATRIX BOARD

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ABSTRACT

Matrix Board is produced to increase the interest of students in learning the subject of matrix and make learning matrix more interesting. It also reduces dependence on the use of calculators and improves exam performance in mathematics subjects. The results of the Pre and Post Tests show an increase in student achievement in answering Matrix questions among 50 form 5 students. The increase in the number of students who obtained higher scores in the Post test shows the effectiveness of using the Matrix Board. The findings of the survey show that the Matrix Board is able to increase students' interest, provide a positive effect and impact and it is more effective in helping to attract students' interest. It is hoped that the Matrix Board can be used by other school students in mastering the matrix topic. In addition, Matrix Board has the potential to be marketed as a learning stimulant as well as a board game that has a positive impact on student learning.

Keywords: Matrix

1.0 INTRODUCTION

Matrix is one of the hardest topic in SPM's Mathematic. The purpose of this project is to overcome the problem of students on facing the topic Matrix and helping them to understand better about the topic. It also helps the students to improve their grades in Mathematic.

2.0 OBJECTIVE

Matrix Board is produced to increase the interest of friends in learning matrix topics and make learning matrices more interesting. Matrix Board helps reduce dependence on the use of calculators. Matrix Board also improves exam performance in mathematics subjects

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

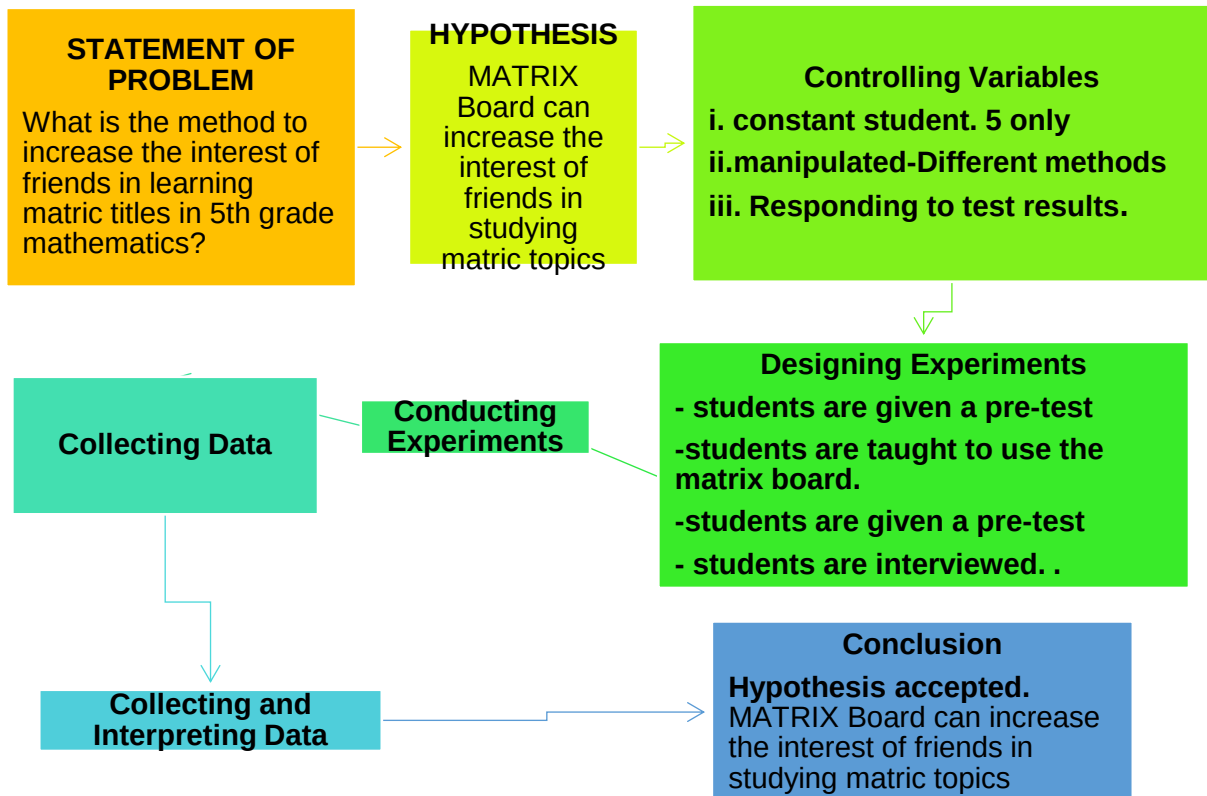


Figure 1: Flowchart of progress & methodology

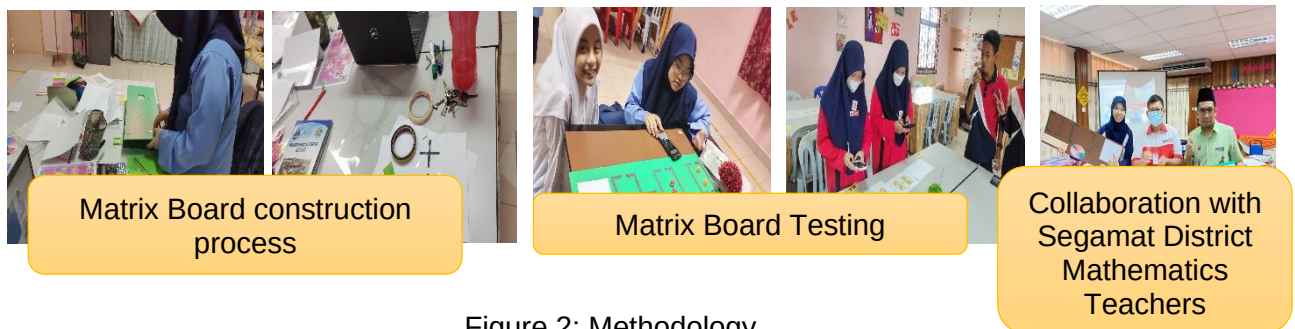
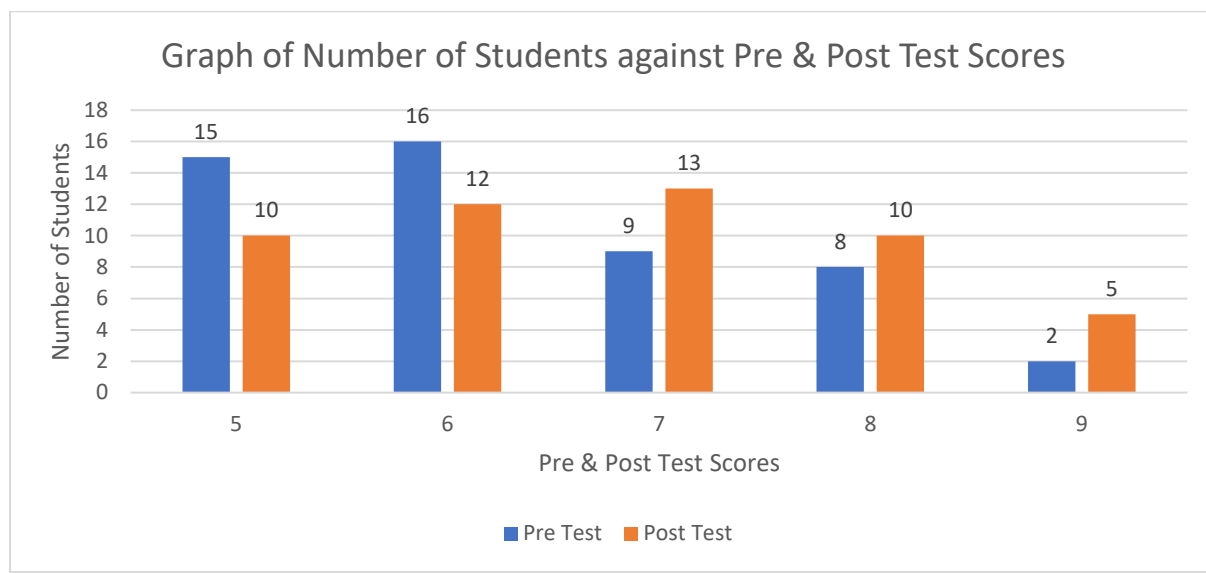


Figure 2: Methodology

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY



Graph 1: Number of Students against Pre & Post Test Scores

The results of the Pre and Post Tests show an increase in student achievement in answering Matrix questions among 50 form 5 students. The increase in the number of students who obtained higher scores in the Post test shows the effectiveness of using the Matrix Board.

QUESTION ASPECT	Yes	No	Results
Product effectiveness	8	1	Effective in increasing students' interest and understanding
Student interest	9	0	Increase student interest
Comparison with the traditional	7	2	Matrix board method is more effective

Table 1: Survey Results

The results of the survey show that this Matriks Board is able to increase students' interest, provide a positive effect and impact and it is more effective in helping to attract students' interest.

5.0 CONCLUSION

In conclusion, Matrix Board can be used by students from other schools in mastering matrix topics. In addition, Matrix Board has the potential to be marketed as a learning stimulant as well as a board game that has a positive impact on student learning.

Suggestions for improvement:

1. Design Matrix Board into an easily accessible online application.
2. Can be combined with other subjects.

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**TITISAN REZEKI DARI ALAM UNTUK ALAM
DROPLET FROM NATURE FOR NATURE (DFN2)**

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ABSTRAK

Projek ini akan menghasilkan model reka bentuk baharu penyiraman air kepada tanaman dengan penggunaan sistem titisan air secara automatik. Tugas ini adalah untuk menilai tahap keberkesanan model reka bentuk penyiraman titisan air ini terhadap tanaman secara automatik tidak seperti kebiasaan petani menyiram tanaman secara manual seperti siraman dua kali sehari. Model reka bentuk ini diharap dapat menjimatkan kos, tenaga dan masa pengusaha tanaman. Murid secara berkumpulan perlu menjana idea melalui bimbingan guru membina model reka bentuk sistem penyiraman titisan air secara automatik dari sumber air kepada tanaman. Peserta-peserta kajian ini terdiri daripada semua murid Tahun 6 Arif di sebuah sekolah kebangsaan di daerah Kluang. Kajian ini dilaksanakan secara bersepadu dengan gabungan mata pelajaran Reka Bentuk dan Teknologi (RBT), Sains, Bahasa Melayu, Bahasa Inggeris, Pendidikan Islam dan Matematik. Pelaksanaan tugas ini mengambil masa selama lapan minggu. Tugas ini dinilai berdasarkan kreativiti murid menghasilkan inovasi model rekabentuk penyiraman titisan air secara automatik. Murid boleh menjana idea untuk mencipta model sistem penyiraman titisan air automatik yang akan diuji keberkesanannya melalui projek fotosintesis yang dipelajari dalam mata pelajaran Sains. Setiap kumpulan diminta mencari dan mengumpul maklumat daripada pelbagai sumber untuk menyelesaikan tugas dalam masa yang ditetapkan dan menguna semula bahan yang terbuang untuk menghasilkan projek ini. Hasil tugas akan dipersembahkan dalam bentuk pembentangan multimedia, visual dan buku skrap. Melalui tugas ini murid diharap dapat mengaplikasi kemahiran yang telah dipelajari. Penilaian terhadap setiap peringkat tugas adalah berdasarkan rubrik tertentu yang telah disediakan. Projek ini diharapkan dapat memberikan implikasi terutama kepada murid dan guru dalam menghasilkan inovasi teknik penyiraman titisan air automatik serta membudayakan pembelajaran berasaskan projek (PBP) dan kelestarian alam sekitar.

Kata Kunci: Sistem Titisan Air Automatik, Kelestarian Alam Sekitar, Pembelajaran Berasaskan Projek

1.0 PENGENALAN

Titisan Rezeki Dari Alam Untuk Alam atau pun Droplet From Nature For Nature dengan akronim (DFN2) menghasilkan model reka bentuk baharu penyiraman air kepada tanaman dengan penggunaan sistem pengairan titis secara automatik yang merupakan satu daripada sistem penanaman secara hidroponik. Tugas ini adalah untuk menilai tahap keberkesanan model reka bentuk penyiraman titisan air ini terhadap tanaman secara automatik tidak seperti kebiasaan petani menyiram tanaman secara manual seperti siraman dua kali sehari. Model pengairan titis ini diharap dapat menjimatkan kos, tenaga dan masa pengusaha tanaman.

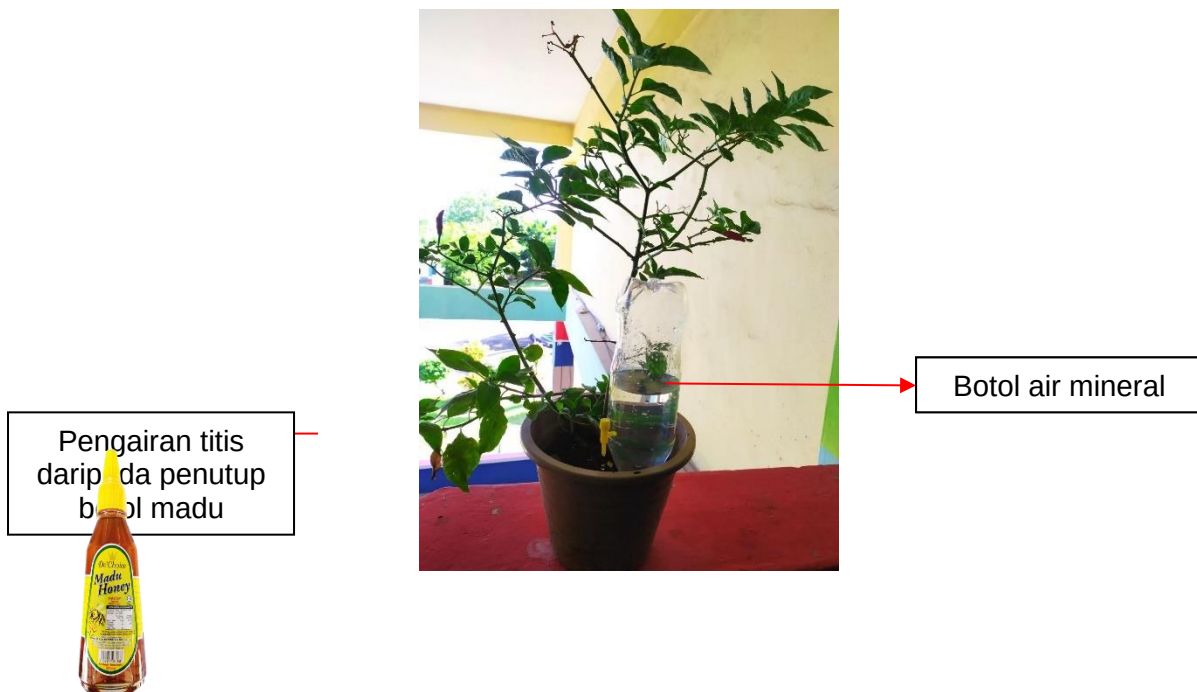
Murid secara berkumpulan perlu menjana idea melalui bimbingan guru membina model reka bentuk sistem penyiraman titisan air secara automatik dari sumber air kepada tanaman. Peserta-peserta kajian ini terdiri daripada murid Tahun 6 Arif. Kajian ini dilaksanakan secara bersepadu dengan gabungan mata pelajaran Reka Bentuk dan Teknologi (RBT), Sains, Bahasa Melayu, Bahasa Inggeris, Pendidikan Islam dan Matematik.

2.0 OBJEKTIF

- 2.1 Murid dapat memberikan maksud teknologi dan kepentingannya kepada kehidupan Manusia dan melakar reka bentuk menggunakan teknologi peralatan moden.
- 2.2 Murid menghasilkan lakaran bahagian tumbuhan yang bergerak balas terhadap rangsangan dan semasa proses fotosintesis.
- 2.3 Murid dapat mengenal pasti sekurang-kurangnya 3 maklumat kepentingan air.
- 2.4 Murid dapat menjawab soalan penyelesaian masalah berkaitan ukuran dalam situasi harian.
- 2.5 Murid dapat mengenal pasti sekurang-kurangnya 3 perkataan pinjaman Bahasa Inggeris.

3.0 PENERANGAN TENTANG INOVASI / METODOLOGI

Sistem pengairan titis ialah kaedah pengairan di mana air dibekalkan secara terus ke zon akar tanaman pada kadar yang rendah, perlahan serta secara kerap dengan menggunakan penitis. Sistem ini paling berkesan kerana penggunaan air yang berlebihan dapat dielakkan, kos yang murah dan menjimatkan masa .



4.0 IMPAK PROJEK

Tugasan ini dinilai berdasarkan kreativiti murid menghasilkan inovasi model rekabentuk penyiraman titisan air secara automatik iaitu menggunakan semula bahan yang terbuang seperti botol air mineral dan penutup botol madu. Murid boleh menjana idea untuk mencipta model sistem penyiraman titisan air automatik yang akan diuji keberkesanannya melalui projek fotosintesis yang dipelajari dalam mata pelajaran Sains. Tugasan ini adalah untuk mengukur

tahap keberkesanan model struktur reka bentuk kawalan titisan air terhadap tanaman secara automatik tidak seperti kebiasaan petani menyiram tanaman fertigasi secara manual seperti siraman 2 kali sehari. Model reka bentuk ini diharap dapat menjimatkan kos, tenaga dan masa pengusaha tanaman fertigasi. Projek ini diharapkan dapat memberikan implikasi terutama kepada murid dan guru dalam menghasilkan inovasi teknik penyiraman titisan air automatik serta membudayakan pembelajaran berasaskan projek (PBP) dan kelestarian alam sekitar.

5.0 KESIMPULAN

Model rekabentuk penyiraman titisan air secara automatik iaitu mengguna semula bahan yang terbuang seperti botol air mineral dan penutup botol madu merupakan model reka bentuk baharu penyiraman air kepada tanaman dengan penggunaan sistem titisan air secara automatik yang telah diuji keberkesanannya melalui projek fotosintesis yang dipelajari dalam mata pelajaran Sains. Model struktur reka bentuk kawalan titisan air terhadap tanaman secara automatik boleh menggantikan kebiasaan petani menyiram tanaman fertigasi secara manual seperti siraman 2 kali sehari. Model reka bentuk ini dapat menjimatkan kos, tenaga dan masa pengusaha tanaman fertigasi. Projek ini memberikan implikasi kepada murid dan guru dalam menghasilkan inovasi teknik penyiraman titisan air automatik serta membudayakan pembelajaran berasaskan projek (PBP) dengan mengekalkan kelestarian alam sekitar.

APLIKASI AR PLAN ELEVATION

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ABSTRAK

Kemajuan teknologi ini bukan sahaja memudahkan proses sesuatu sistem malah meningkatkan kualiti dan kuantiti penghasilan, bahkan ia turut mempercepatkan lagi aliran kerja (Ahmad Zaki, 2014). Senario pembelajaran kini menunjukkan para murid lebih cenderung kepada pembelajaran sendiri, akses bahan secara sendiri dan dengan kadar sendiri. Sehubungan itu, pembangunan aplikasi pembelajaran berasaskan teknologi realiti terimbuh (augmented reality – AR) melalui pendekatan pembelajaran secara interaktif dan menyeronokkan yang diberi nama AR Plan Elevation dihasilkan. Objektif utama inovasi ini adalah untuk meningkatkan penguasaan menjawab soalan Pelan dan Dongakan dengan melukis pandangan pelan, dongakan sisi dan dongakan hadapan dengan tepat melalui aplikasi AR Plan Elevation melalui proses pembelajaran konsep 3D melalui imbasan kamera peranti ke arah imej tertentu yang telah direka. Tinjauan awal dilaksanakan dengan menggunakan instrumen ujian pra. Hasil tinjauan menunjukkan murid tidak dapat melukis pandangan pelan, dongakan sisi dan dongakan hadapan dengan tepat. Murid tidak dapat melukis garisan yang tersembunyi dan juga membiarkan sahaja jawapan tidak berjawab dan menyalin semula soalan yang diberi. Aplikasi ini dibangunkan dengan menerapkan elemen-elemen multimedia seperti video, audio, imej, teks dan objek 3 dimensi. Pembangunan aplikasi dicipta menggunakan perisian Unity 3D, Vuforia dan 3D Blender. Aplikasi ini menggunakan buku teks Matematik sebagai sumber rujukan utama. Seperti yang semua sedia maklum penggunaan buku teks bagi semua guru dan murid di sekolah adalah satu perkara yang sangat penting sebagai rujukan. Hasil analisis melalui beberapa instrumen, iaitu ujian pos menunjukkan terdapat peningkatan. Kesimpulannya, aplikasi yang dibangunkan dapat membantu meningkatkan kefahaman dan tahap visual murid dalam menguasai topik pelan dan dongakan.

Kata Kunci: Realiti Terimbuh, Pelan dan Dongakan, visual, aplikasi.

1.0 PENGENALAN

AR PLAN ELEVATION ialah satu aplikasi peranti mudah alih yang menggunakan teknologi AR (Augmented Reality) membantu murid memahami topik Pelan dan Dongakan dalam subjek Matematik. Aplikasi dibangunkan dengan menerapkan elemen-elemen multimedia seperti video, audio, imej, kuiz dan objek 3 dimensi. Pembangunan aplikasi dicipta menggunakan perisian Unity 3D, Vuforia dan perisian 3D Blender serta menggunakan buku teks Matematik Tingkatan 3 sebagai sumber rujukan utama. Aplikasi ini dapat meningkatkan tahap visual murid melalui proses pembelajaran konsep 3D melalui imbasan kamera peranti ke arah imej tertentu yang telah direka.

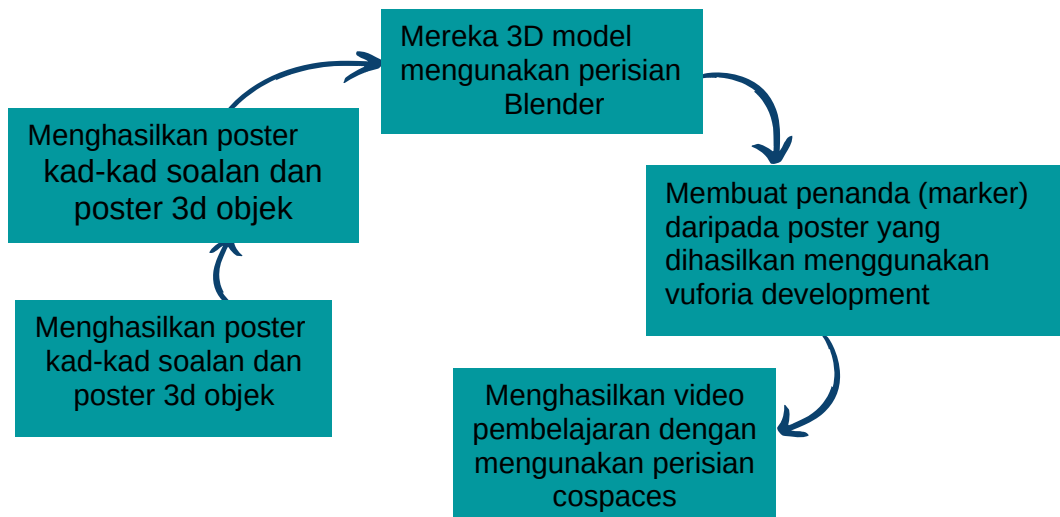
2.0 OBJEKTIF

Objektif umum inovasi ini adalah untuk meningkatkan penguasaan menjawab soalan Pelan dan Dongakan dengan melukis pandangan pelan, dongakan sisi dan dongakan hadapan dengan tepat melalui aplikasi AR Plan Elevation.

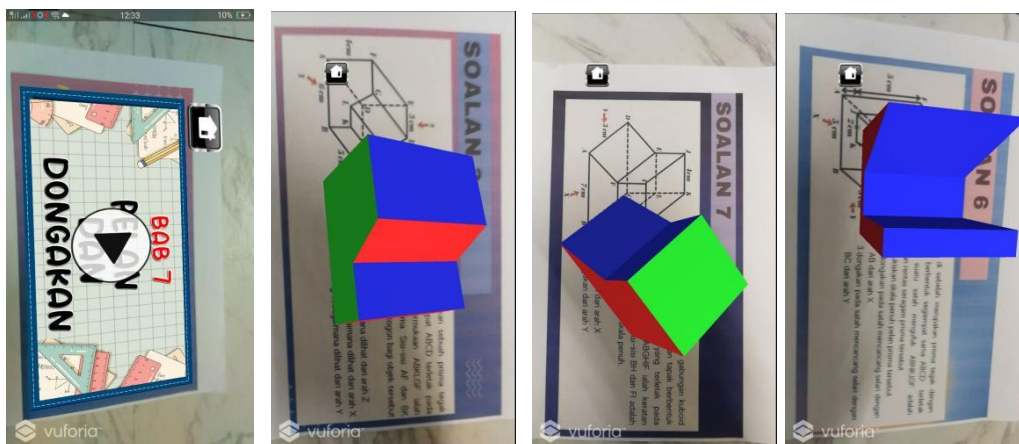
Objektif Khusus ialah

- Murid dapat melukis pelan dengan betul.
- Murid dapat melukis dongakan hadapan dengan betul.
- Murid dapat melukis dongakan sisi dengan betul.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI



Rajah 1: Carta alir pembangunan aplikasi AR Plan Elevation



Rajah 2 : Reka bentuk aplikasi AR Plan Elevation

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

aplikasi AR Plan Elevation ini sangat berpotensi untuk diperluaskan kepada guru-guru dan ibu bapa kerana ia sangat mudah untuk disediakan dan digunakan di dalam bilik darjah mahupun di rumah .Penggunaan aplikasi ini dapat menjimatkan masa kerana guru-guru boleh memilih kaedah atau masa yang sesuai digunakan dalam pengajaran dan pembelajarannya. Aplikasi ini juga berpotensi untuk digunakan dalam subjek Matematik bagi topik Pelan dan Dongakan untuk semua sekolah di Malaysia . Aplikasi yang kami hasilkan ini juga boleh dijadikan sebagai bahan penambahan interaktif ke atas buku teks sedia ada supaya buku teks KPM kekal relevan dengan persekitaran pendidikan digital serta menjadikan buku teks sebagai bahan sumber utama pengajaran dan pembelajaran (PdP).

5.0 KESIMPULAN

Secara kesimpulannya, kajian ini dapat menjelaskan keberkesanan aplikasi AR Plan Elevation dalam membantu murid meningkatkan penguasaan menjawab soalan Pelan dan Dongakan dengan melukis pandangan pelan, dongakan sisi dan dongakan hadapan dengan tepat. Hal ini perlu diberi perhatian yang serius kerana pendidikan pada zaman kini telah memasuki abad 21 yang memfokuskan kepada kemahiran berfikir aras tinggi (KBAT).

THE MILKY WAZE

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ABSTRAK

Sekolah merupakan institusi utama yang menyediakan kemudahan pendidikan kepada masyarakat bagi melahirkan modal insan sesebuah negara. Suasana sekolah yang bersih dan kondusif dapat menyokong pengajaran dan pembelajaran para pelajar. Walaubagaimanapun, pengkaji mendapati Sekolah Kebangsaan Bukit Hampar tidak mempunyai penanda arah yang dapat memudahkan pelawat luar, ibu bapa atau murid baru untuk mencari destinasi yang dituju di dalam sekolah. Suasana tidak mesra pengguna dalam kawasan sekolah ini akan menimbulkan ketidakselesaan terutamanya kepada para pelajar baru dan pelawat luar apabila mereka dalam keadaan tergesa-gesa untuk menghadiri mesyuarat atau ke tandas. Namun begitu, hasil tinjauan harga pasaran bagi tempahan papan tanda di kedai melebihi bajet yang diperuntukkan oleh sekolah. Kementerian Pendidikan Malaysia telah melaksanakan Program Susu Sekolah (PSS) bagi membantu murid daripada keluarga miskin agar mendapat makanan seimbang semasa berada di sekolah. Namun begitu, sisa buangan dari kotak susu ini semakin bertambah setiap hari sehingga menyumbang kepada pencemaran alam sekitar. Oleh itu, inovasi *The Milky Waze* telah menghasilkan penanda arah yang mesra alam, menjimatkan kos serta mempunyai lampu agar dapat berfungsi pada waktu malam dengan menggunakan kotak susu ini. Penggunaan bahan kitar semula dapat memberi pendedahan kepada seluruh warga sekolah dan masyarakat luar berkenaan kebaikan kitar semula bahan buangan serta cara untuk mengubah bahan terbuang kepada sesuatu yang lebih bernilai. Kesimpulannya, *The Milky Waze* menjadikan suasana sekolah lebih kondusif dan bersih sekaligus memupuk kesedaran berkenaan kelestarian alam bukan sahaja kepada pelajar tetapi turut memberi impak positif kepada guru, sekolah, ibu bapa dan masyarakat awam tentang.

Kata Kunci: Kotak susu, Program Susu Sekolah (PSS), penanda arah, *The Milky Waze*, kelestarian alam.

1.0 PENGENALAN

Kementerian Pendidikan Malaysia telah melaksanakan Program Susu Sekolah (PSS) bermula pada tahun 1982 di seluruh negara kecuali Sabah yang mempunyai program susu tersendiri (Kementerian Pendidikan Malaysia, 2019). Program ini dilaksanakan untuk murid daripada keluarga miskin yang berpendapatan isi keluarga di paras status sosio ekonomi yang rendah agar mendapat makanan seimbang semasa berada di sekolah bagi memastikan pertumbuhan fizikal, kesihatan mental dan kesihatan umum murid sekolah bertambah baik.

Program ini telah memberi manfaat kepada ramai murid diseluruh Malaysia. Namun begitu, sisa buangan dari kotak susu ini semakin bertambah saban hari. Sisa pepejal merupakan

sampah-sarap atau bahan buangan yang bukan bentuk cecair ataupun gas yang memerlukan sistem pengurusan pembuangan dan pelupusan yang baik demi kelestarian alam sekitar (Haslinda & Harlida, 2015). Sekolah Kebangsaan Bukit Hampar mempunyai seramai 81 orang murid yang layak menerima bantuan susu daripada program ini. Oleh itu, setiap hari sekurang-kurangnya 81 kotak susu akan dibuang dan dalam masa seminggu sebanyak 405 kotak susu terkumpul sebagai sisa buangan. Bayangkan berapa banyak kotak susu terbuang dalam masa setahun? Hassan et al.(2022) melaporkan bahawa anggaran penjanaan sisa pepejal di negara ini pada tahun 2021 adalah 38, 081 tan sehari dan penghasilan sisa pepejal bagi tahun 2022 terus meningkat sehingga 38,699 tan sehari yang bakal mengumpulkan 14 juta tan sisa pepejal sehingga akhir tahun 2022.

Kajian oleh Chong dan Mapa (2019) menemui bahawa persepsi dan penglibatan pelajar dalam program kitar semula adalah rendah walaupun mereka mengetahui adanya pelbagai program kitar semula dijalankan di sekolah. Oleh itu, penglibatan murid dalam program kitar semula kotak susu (PSS) ini secara tidak langsung dapat meningkatkan pengetahuan murid berkenaan kepentingan kitar semula dan kelestarian alam semula jadi. Saifudin et al. (2020) menyokong bahawa pelbagai pendekatan dan program yang disepadukan perlu dijalankan demi memastikan pengurusan sisa pepejal Berjaya agar dapat memastikan keseimbangan dan kelestarian alam sekitar terjaga.

2.0 OBJEKTIF

Secara umumnya, objektif projek ini adalah satu usaha untuk mengurangkan pembuangan sampah di sekolah manakala objektif khusus projek ini adalah seperti berikut:

- i. Menghasilkan penunjuk arah ke bilik-bilik khas di kawasan sekolah
- ii. Memudahkan orang luar/pelajar baru mencari arah tempat yang dituju
- iii. Mewujudkan suasana Sekolah Mesra Pengguna
- iv. Mengurangkan pembuangan sisa pepejal di kawasan sekolah
- v. Memupuk sikap cintakan alam sekitar dalam kalangan warga sekolah
- vi. Melahirkan murid berfikir kreatif dan inovatif dalam meningkatkan budaya reka cipta

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Projek ini mengutamakan bahan kitar semula bersesuaian dengan objektif yang telah ditetapkan. Kitar semula atau 3R (reduce, reuse, recycle) merujuk kepada proses memungut atau mengasingkan sisa pepejal untuk menghasilkan atau mengubah semula bahan buangan menjadi sesuatu produk atau barangan yang mempunyai nilai (Hassan & Zulhumadi, 2013). Kotak Susu (PSS) merupakan bahan utama dalam penghasilan projek ini kerana ianya merupakan salah satu bahan terbuang paling banyak terhasil di sekolah memandangkan seramai 81 orang murid yang layak menerima sekotak susu setiap hari.

Selain itu, kayu dan corong pembesar suara terpakai juga digunakan sebagai bahan dalam penghasilan projek inovasi ini. Pemilihan bahan kitar semula bagi projek ini adalah berfokuskan bahan buangan yang terhasil dalam kawasan sekolah kerana mudah diperolehi dan lebih dekat dengan kehidupan seharian pelajar. Chong Oi Min dan Mapa (2021) telah membuktikan bahawa sekolah bersih dan sifar sampah dapat dicapai melalui pengurusan sisa pepejal yang sistematik. Usaha ini diharap dapat membantu pihak sekolah dalam menambah baik prasana dan persekitaran sekolah yang lebih bersih dan kondusif.

Fungsi utama *Milky Waze* adalah sebagai penunjuk arah ke bilik-bilik khas dalam kawasan Sekolah Kebangsaan Bukit Hampar. Ianya diletakkan di kawasan laluan utama bangunan sekolah. Sekolah ini tidak mempunyai sebarang penunjuk arah berlabel yang mana menyukarkan orang luar untuk mengenalpasti arah tujuan. Inovasi *Milky Waze* dapat

memudahkan pelajar baru, ibu bapa, dan pelawat mencari arah tujuan tempat yang dituju tanpa perlu bertanya kepada sesiapa. Purwita dan Yasa (2019) juga bersetuju bahawa papan tanda merupakan medium visual yang sangat penting dalam menyampaikan maklumat tentang arah destinasi agar pelawat tidak keliru tentang arah destinasi.



Rajah 1: Milky Waze Sebagai Penunjuk Arah

Bahan utama Kotak Susu (PSS) terdiri daripada dua bahagian iaitu kotak minuman susu dan kotak menyimpan susu-susu tersebut. Kedua-dua bahan ini dijadikan sebagai papan penunjuk arah yang dilabel menggunakan Bahasa Melayu dan tulisan yang mudah difahami oleh semua pelajar, warga SKBH ataupun orang luar. Kotak ini telah dibasuh, dikeringkan dan dicat supaya lebih bersih dan menarik.



Rajah 2: Tulisan Bahasa Melayu yang jelas dan mudah difahami

Kotak minuman susu pula dijadikan tulang belakang penanda arah agar ianya lebih tahan lama, kuat dan kukuh. Kotak susu ini telah diasingkan lebihan cecair susu, dibasuh, dikeringkan, dicat dan disambung untuk menjadi tulang belakang penanda yang kukuh.



Rajah 3: Kotak minuman susu yang bersih setelah dibasuh dan dikeringkan



Rajah 4: Tulang belakang penanda arah yang kuat setelah 3 kotak susu disambungkan

Ketinggian *Milky Waze* juga direka bersesuaian dengan ketinggian pelajar sekolah rendah serta mempunyai tapak yang kukuh dan selamat diperbuat daripada corong pembesar suara yang telah rosak.



Rajah 5: Corong pembesar suara diubah suai menjadi tapak penanda arah yang kukuh dan stabil



Rajah 6: Kayu terpakai diubah suai mengikut ketinggian yang sesuai kepada pelajar sekolah rendah dan lokasi penanda arah ditempatkan

Keistimewaan *Milky Waze* juga adalah mempunyai lampu rama-rama yang bukan sahaja berfungsi sebagai hiasan tetapi mempunyai fungsi lampu untuk kegunaan waktu malam. Justeru, ini memudahkan label penanda arah dibaca terutamanya apabila terdapat program sekolah yang dijalankan pada waktu malam seperti perkhemahan, solat hajat dan perjumpaan ibu bapa.

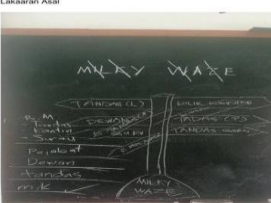


Rajah 7: Milky Waze mempunyai lampu untuk kegunaan waktu malam

Pembinaan penanda arah melalui projek *Milky Waze* juga menggunakan kos yang rendah, berbaloi dan murah berbanding harga pasaran. Model projek telah dihantar kepada dua buah syarikat untuk mengetahui kos sebenar dalam pembinaan penunjuk arah. Rajah di bawah menunjukkan sebut harga yang diberikan oleh Syarikat MK Tegar Bina Enterprise dan Syarikat Kenanga Era Enterprise, Segamat.

SEBUT HARGA

Nama Sekolah: SK BUKIT HAMPAR Kod Sekolah: JBB7043

1. Nama Guru	WAN NOR HASLINDA BINTI WAN ZADI
2. Nama Projek	Projek Tanda Beranda
3. Lokasi: Lahan Blok A	
4. Tarikh Permintaan	10/10/2022
5. Masa: null	
6. Tempat	Blok GPK HEM
7. Sinopsis: MENYEDIAKAN PAPAN TANDA SEPERTI LAKARAN MEMILIKI RODA DAN BOLEH BERGERAK KETINGGIAN: 5.5 KAKI JENIS BAHAN: BESI/ ROD	
8. Lukisan Asal	
9. Membekal mengikut saiz dan rekabentuk yang dilampirkan. Tuliskan adalah jenis kalis or. Pemberat tapak mengikut saiz yang sesuai. Tanggailah besi saiz 2x2 inchi 5.5 kaki tinggi. Kos: Anggaran 1500.00 SATU RIBU DAN LAPAN RATUS RINGGIT SAHAJA	

Disediakan oleh: 
 (AHMAD RAFI SAFAR)
 EKSPERT PEMASARAN
 MK TEGAR BINA ENTERPRISE
 (003481111) (M)
 NO 2, JALAN GERAI
 BATU JAWA SEGAMAT
 TEL: 0177468336

KENAGA ERA ENTERPRISE
 (MA0088098-X)
 NO 94 JLN PUTRA, 85000. SEGAMAT JOHOR

TARIKH: 7/10/2022

PERKARA SEBUT HARGA PAPAN TANDA

DENGAN SEGALA HORMATNYA MERUJUK PERMINTAAN TUAN BERTARIKH: 5/10/2022 MELALUI GPK HEM, SK BUKIT HAMPAR

BIL	KUANTITI/ KETERANGAN	HARGA SEUNIT	JUMLAH
	MEMBEKAL DAN MELAKAR SERTA MEREKA BENTUK PAPAN TANDA DOKAWASAN BLOK A KE BLOK B SK BUKIT HAMPAR	LUM SUM	RM 2000.00
	KETINGGIAN: 5.5 KAKI SAIZ BESI: 2 INCI JENIS: STICKER WARNA: MAROON/ BIRI/ KUNING		
	JUMLAH: RM 2000.00		

ESKUTIF PEMASARAN KENAGA ERA

TARIKH LAKU : 3 BULAN DARI TARIKH SEBUT HARGA

Rajah 8: Sebut harga Papan Tanda dari Syarikat MK Tegar Bina Enterprise dan Kenangan Era Enterprise

Manakala kos penghasilan projek *Milky Waze* pula hanya sebanyak RM 61.10 sahaja kerana projek ini mengutamakan bahan kitar semula sebagai bahan utama. Berdasarkan perbandingan sebut harga di atas, kos penanda arah dapat dijimatkan sebanyak RM 1,938.90. Jadual di bawah menunjukkan kos yang digunakan dalam penghasilan projek *Milky Waze*.

Bil	Bahan	Kos (RM)
1	Kotak Susu RMT	0
2	Kayu terpakai	0
3	Corong Pembesar Suara	0
4	Spray merah, biru dan hitam	51.50
5	Lampu rama-rama	9.60
JUMLAH		61.10

Jadual 1: Kos penghasilan projek *Milky Waze*

Jadual di bawah merupakan perbandingan harga penanda arah antara syarikat MK Tegar Bina Enterprise, Kenangan Era Enterprise dan *Milky Waze*.

MK Tegar Bina Enterprise	Kenangan Era Enterprise	Milky Waze
RM 1,800.00	RM 2,000.00	RM 61.10

Jadual 2: Perbandingan kos penghasilan Milky Waze

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

4.1 Impak kepada sekolah

Projek *Milky Waze* dapat memberikan impak positif terutamanya kepada warga SK Bukit Hampar. Penggunaan bahan kitar semula dalam proses penghasilan projek ini secara tidak langsung dapat memberi pendedahan kepada pelajar, guru dan seluruh warga sekolah berkenaan kebaikan kitar semula bahan buangan serta cara untuk mengubah bahan terbuang kepada sesuatu yang lebih bernilai. Nor Fazilah et al. (2021) bersetuju bahawa pengajaran dan pembelajaran alam sekitar di sekolah dapat melahirkan generasi muda yang berpengetahuan dan mempunyai kesedaran tinggi terhadap kepentingan memelihara alam sekitar serta membentuk sikap positif dan nilai murni ke arah gaya hidup lestari.

Penghasilan projek reka cipta ini dapat memberi pendedahan kepada guru dan murid untuk menggunakan kreativiti dalam menghasilkan sesuatu penciptaan yang dapat memberi manfaat besar kepada warga sekolah. Selain itu, pihak sekolah juga dapat mencungkil minat dan mencetuskan amalan Kemahiran Berfikir Aras Tinggi (KBAT) dalam kalangan pelajar. Derum dan Arip (2022) menyatakan bahawa KBAT dapat melahirkan generasi yang berdaya saing dalam semua aspek kehidupan serta memberi impak positif kepada peningkatan sistem pendidikan negara.

Selain itu, penggunaan sisa pepejal sebagai bahan utama telah dapat membantu pihak sekolah mengurangkan jumlah pembuangan sampah seterusnya menjadikan persekitaran sekolah yang lebih bersih dan kondusif. Rahman (2022) melaporkan bahawa kerajaan perlu memperuntukkan perbelanjaan yang besar akibat dari kesan pembuangan sisa buangan yang tidak terkawal serta penambahan tapak pelupusan sampah yang melibatkan kos yang tinggi. Oleh itu, projek *Milky Waze* ini secara tidak langsung telah membantu meningkatkan ekonomi negara kita.

4.2 Impak Kepada Komuniti

Anjakan kesembilan dalam Pelan Pembangunan Pendidikan Malaysia 2013- 2025 memberi tumpuan terhadap penglibatan ibu bapa, komuniti dan pihak swasta dalam memperkasakan sekolah (Halimah Abdul Majid, 2017). Penglibatan pelajar dalam projek reka cipta yang melibatkan pihak swasta dan sekolah seluruh Malaysia dapat memberikan pendedahan secara tidak langsung kepada ibu bapa serta komuniti tentang kepentingan kitar semula bahan terhadap kelestarian alam sekitar.

Pelawat luar yang terdiri daripada pelajar, guru, ibu bapa, VIP dan masyarakat yang datang ke sekolah ini dapat melihat bukti kemenjadian projek kitar semula secara nyata seterusnya dapat meningkatkan kesedaran dan motivasi mereka untuk menjadikan amalan kitar semula sebagai usaha bersama demi kelestarian alam semula jadi. Penunjuk arah menjadikan suasana sekolah lebih kondusif dapat memberikan gambaran positif kepada komuniti tentang amalan baik sekolah ini. Ini menunjukkan Projek *Milky Waze* sangat memberi manfaat bukan

sahaja kepada pelajar yang menyertai pertandingan tetapi turut memberi impak kepada guru, sekolah, ibu bapa dan masyarakat awam.

4.4 Kelestarian projek

Amalan dan kempen kitar semula dibuktikan dapat memberi impak positif dalam pemuliharaan alam sekitar (Nor Fazilah et al., 2020). Projek *Milky Waze* mengetengahkan penggunaan bahan kitar semula sebagai bahan utama disamping membantu pihak sekolah menyediakan prasarana yang lebih baik dan jimat kos merupakan pendekatan terbaik dalam memberi pendidikan secara tidak langsung kepada seluruh warga sekolah serta masyarakat luar.

Milky Waze sebagai penunjuk arah sudah pastinya akan memberi kebaikan bukan sahaja untuk pertandingan ini malahan memberi manfaat kepada seluruh warga sekolah dan masyarakat luar dalam jangka masa yang panjang. Lokasi *Milky Waze* dilaluan utama kawasan sekolah sangat strategik bagi memudahkan pelawat luar atau ibu bapa yang datang ke sekolah untuk mencari destinasi yang dituju. Tambahan pula, penghasilan projek kitar semula ini secara tidak langsung telah membantu menjimatkan kos pihak sekolah dalam menyediakan prasarana kondusif kepada semua pihak. *Milky Waze* juga direka kukuh, stabil dan tahan lasak untuk kegunaan dalam jangka tempoh yang panjang. Justeru, projek *Milky Waze* akan terus dikekalkan di sekolah ini pada masa akan datang malah dapat memperluaskan kegunaannya kepada sekolah-sekolah lain serta ditambah baik untuk projek masa akan datang.

5.0 KESIMPULAN

Secara kesimpulannya, *Milky Waze* merupakan ciptaan yang unik, mempunyai kelainan yang tersendiri kerana mempunyai lampu rama-rama, kos rendah, serta penggunaan keseluruhan projek daripada bahan kitar semula sangat berkesan dalam usaha memulihara alam sekitar. Pengkaji bercadang untuk menghasilkan lebih banyak penanda arah di seluruh kawasan sekolah menggunakan pelbagai bahan kitar semula agar dapat mewujudkan suasana sekolah mesra pengguna dan mesra alam sekitar seterusnya memberi kesedaran kepada masyarakat bahawa suasana bersih dan menarik dapat diwujudkan melalui penghasilan idea kreatif kos rendah serta mudah diaplikasikan oleh sesiapa sahaja.

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TENAGA PERCUMA- (E-KenTial)

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ABSTRAK

Dasawarsa ini, penggunaan sumber tenaga elektrik umpama nyawa kepada umat manusia. Hari demi hari penggunaan sumber tenaga ini telah meningkat secara mendadak tanpa sebarang penurunan. Sekiranya perkara ini berterusan, tidak mustahil suatu masa nanti negara akan mengalami kekurangan tenaga yang serius dan perlu menampung kos yang tinggi untuk mendapatkan sumber tenaga. Oleh itu, kami melakukan inovasi ini untuk membendung masalah ini sebelum ia menjadi lebih kronik. Seperti yang kita semua sedia maklum, tenaga elektrik amat diperlukan oleh seluruh masyarakat terutama sektor perubatan yang sangat genting kerana ia berkaitan dengan nyawa pesakit. Hal ini menyebabkan penggunaan elektrik melebihi penjanaannya. Oleh itu, kami telah memikirkan satu teknologi alternatif yang dapat menggantikan penjana sedia ada sekiranya bekalan elektrik terputus. Inovasi ini dilakukan bertujuan untuk mengurangkan penggunaan elektrik sedia ada, sebagai pengganti sumber tenaga yang tidak boleh diperbaharui dan sebagai sumber tenaga alternatif bagi penduduk luar bandar. Dalam inovasi ini, graviti digunakan sepenuhnya bagi mewujudkan daya keupayaan untuk ditukarkan kepada tenaga kinetik dan seterusnya dapat menjana tenaga elektrik. Sekiranya inovasi ini dapat kami jalankan, kebaikan yang bakal diperolehi termasuklah boleh digunakan dalam situasi kecemasan seperti di hospital, dapat membekalkan tenaga elektrik kepada penduduk luar bandar serta membantu mengurangkan pencemaran. Diharapkan dengan inovasi ini, kami dapat memudahkan urusan seharian para pengguna khususnya pengguna luar bandar dan seterusnya menggalakkan kepada kemajuan negara.

Kata Kunci : teknologi hijau, tenaga percuma, daya graviti, tenaga elektrik, tenaga keupayaan

1.0 PENGENALAN

Pada era globalisasi ini, penggunaan sumber tenaga seperti elektrik semakin meningkat hari demi hari tanpa henti. Perkara ini akan menjadi suatu masalah yang serius kepada kerajaan sekiranya sumber bekalan elektrik ini kehabisan di masa hadapan. Selain itu, kerajaan juga mungkin terpaksa menanggung kos yang tinggi untuk mendapatkan sumber tenaga elektrik. Oleh itu, kami melakukan inovasi ini untuk membendung masalah ini sebelum ia menjadi lebih serius. Kami menggunakan graviti sepenuhnya sebagai penjana utama yang dapat menghasilkan tenaga elektrik dalam inovasi yang kami lakukan kerana tenaga tersebut tidak akan kehabisan.

2.0 OBJEKTIF

Inovasi ini dilakukan bertujuan untuk mencari alternatif lain bagi menghasilkan tenaga elektrik daripada sumber yang tidak akan habis. Selain itu, masalah yang dinyatakan juga dapat dielakkan secara tidak langsung.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Tarikan graviti digunakan sepenuhnya bagi mewujudkan daya keupayaan untuk ditukarkan kepada tenaga kinetik dan seterusnya dapat menjana tenaga elektrik .

Berikut merupakan beberapa langkah penghasilan inovasi ini:



Bentuk akhir inovasi :



Cara inovasi berfungsi :

1. Berikan sedikit daya untuk memastikan e-kential bepusing
2. Bola kecil dalam e-kential akan memastikan e-kential terus berpusing
3. Apabila e-kential terus berpusing, tenaga kinetik yang ada akan menjadi sumber untuk menjana tenaga elektrik

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Melalui inovasi ini, masalah pencemaran yang berlaku dapat dikurangkan. Selain itu, inovasi ini juga dapat memudahkan penduduk luar bandar bagi mendapatkan capaian elektrik. Dengan adanya ciri mudah alih pada inovasi ini, pengguna mudah menggunakan dalam situasi kecemasan. Sekiranya inovasi ini digunakan secara meluas, ia dapat berfungsi sebagai sumber utama penjana tenaga elektrik di Malaysia selain sumber yang sedia ada bagi menampung keperluan yang semakin meningkat.

5.0 KESIMPULAN

Diharapkan dengan adanya inovasi ini, kami dapat memudahkan urusan seharian para pengguna khususnya pengguna luar bandar dan seterusnya menggalakkan kepada kemajuan negara.

PENGUNAAN DAKWAT KONDUKTIF BERSAIZ NANO SEBAGAI PENGALIR ARUS DALAM SESI PEMBELAJARAN SUBJEK REKA BENTUK TEKNOLOGI (RBT)

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ABSTRAK

Revolusi Perindustrian Keempat (Industri 4.0) yang berlaku pada generasi ini merupakan teknologi baharu yang memberi kesan kepada semua bidang sains, teknologi dan inovasi terutamanya pada bidang elektronik. Peralatan elektronik telah mengalami pembangunan yang sangat pesat di mana trend pengecilan dan pengurangan penggunaan bahan dalam produk elektronik bagi menghasilkan produk yang ringan, kecil, kuat, kukuh, murah serta mempunyai prestasi yang tinggi. Perkembangan ini telah memangkin kepada penyelidikan dan pembangunan bahan baharu yang berprestasi tinggi seperti polimer dan bahan nano. Kemajuan dalam teknologi nano telah menarik minat para penyelidik untuk menggunakan bahan nano dalam produk elektronik. Oleh itu, timbullah konsep idea dalam menggunakan bahan konduktif bersaiz nano dalam sesi pembelajaran subjek Reka bentuk Teknologi (RBT). Pembelajaran RBT sedia ada menggunakan bahan-bahan konvensional seperti wayar untuk mengalirkan arus kepada LED. Oleh yang demikian, dengan menggunakan dakwat konduktif bersaiz nano yang sedia ada di pasaran untuk mengambil alih fungsi wayar sebagai pengalir arus kepada LED. Pendekatan ini membolehkan sesi pembelajaran subjek ini lebih mudah, menarik dan interaktif serta diminati oleh para pelajar kerana dakwat konduktif ini boleh digunakan di atas pelbagai bentuk permukaan bahan seperti kertas, plastik mahupun kayu. Objektif utama idea inovasi ini adalah untuk memberi pemahaman kepada pelajar asas pengaliran arus elektrik menggunakan dakwat konduktif yang merupakan teknologi terkini di pasaran.

Kata Kunci: Dakwat Konduktif, Pengaliran Arus, Teknologi Nano, Reka Bentuk Teknologi (RBT).

1.0 PENGENALAN

Kemunculan teknologi baharu yang dikenali sebagai Revolusi Perindustrian Keempat (Industri 4.0) pada era ini telah memberi pelbagai impak yang positif terhadap bidang sains, teknologi dan inovasi terutamanya bidang elektronik. Kepesatan pembangunan dalam produk elektronik sehingga dapat menghasilkan produk yang ringan dan kos yang murah memberi nadi kepada perkembangan bidang elektronik untuk ke arah pembangunan bahan baharu iaitu komposit polimer digabungkan dengan bahan nano. Idea inovasi ini tercetus apabila sesi pembelajaran subjek RBT, topik pembangunan produk, berkaitan dengan rekabentuk elektrik yang menggunakan wayar lembar tunggal. Wayar merupakan elemen penting sebagai penghubung atau elemen untuk pengaliran arus elektrik. Oleh itu, dalam idea inovasi ini, dakwat konduktif digunakan bagi menggantikan fungsi wayar. Dakwat konduktif ialah dakwat yang

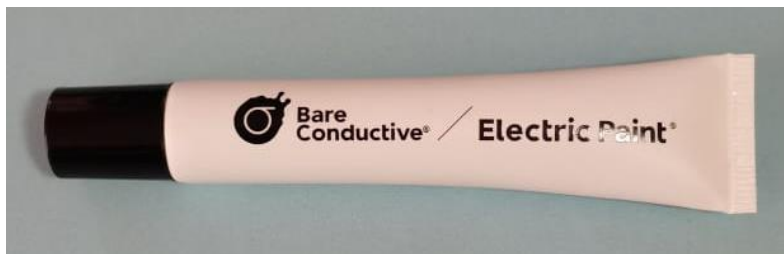
menghasilkan objek bercetak yang mengalirkan arus elektrik. Dakwat konduktif yang biasa digunakan adalah adunan zarah nano atau mikro seperti perak, kuprum dan karbon ke dalam dakwat. Inovasi ini menggunakan dakwat konduktif sedia ada di pasaran bagi menggantikan wayar. Dakwat konduktif yang digunakan adalah adunan zarah nano jenis karbon.

2.0 OBJEKTIF

Objektif idea inovasi ini adalah untuk menggantikan fungsi wayar dengan dakwat konduktif dalam rekabentuk elektrik dan memberi pemahaman asas pengaliran arus elektrik menggunakan dakwat konduktif kepada pelajar.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Pembelajaran RBT sedia ada menggunakan bahan-bahan konvensional seperti wayar untuk mengalirkan arus elektrik kepada LED. Oleh yang demikian, dakwat konduktif yang sedia ada di pasaran digunakan untuk mengambil alih fungsi wayar sebagai pengalir arus elektrik kepada LED. Rajah 1 menunjukkan dakwat konduktif yang sedia ada di pasaran dan digunakan dalam idea inovasi ini.

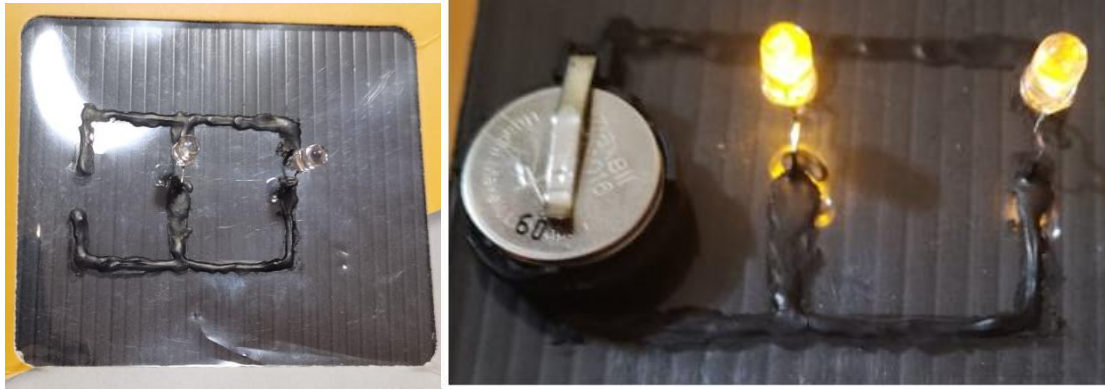


Rajah 1: Dakwat konduktif yang digunakan dalam idea inovasi

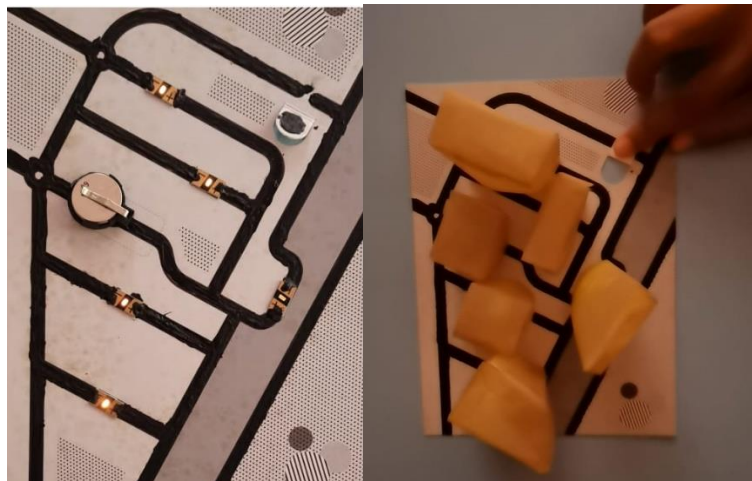
Penggunaan dakwat konduktif ini dipilih untuk menggantikan wayar kerana dakwat konduktif ini boleh digunakan di atas pelbagai medium. Antara medium yang boleh digunakan seperti permukaan kayu, plastik dan kertas. Rajah 2 menunjukkan bagaimana penggunaan dakwat konduktif di atas permukaan kayu.



Rajah 2: Dakwat konduktif di atas permukaan kayu



Rajah 3: Dakwat konduktif di atas permukaan plastik



Rajah 4: Dakwat konduktif di atas permukaan kertas

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Idea inovasi ini bukan sahaja menjadikan sesi pembelajaran subjek RBT lebih ineteraktif, malah lebih mesra alam dan selamat untuk digunakan kerana dakwat konduktif yang digunakan ini tidak mempunyai bahana-bahan yang boleh mencemarkan alam sekitar serta berbahaya kepada kesihatan. Selain itu, dakwat konduktif ini boleh digunakan di atas pelbagai medium seperti kayu, plastik mahu pun kertas. Oleh yang demikian, idea inovasi ini dapat membantu para pelajar yang mengambil subjek RBT untuk menghasilkan rekacipta yang lebih bermutu dengan menggunakan teknologi dakwat konduktif bagi menggantikan penggunaan wayar dalam rekabentuk elektrik.

5.0 KESIMPULAN

Penggunaan dakwat konduktif untuk menggantikan fungsi wayar dalam sesi pengajaran dan pembelajaran subjek RBT menjadi lebih menarik, interaktif dan memudahkan para pelajar memahami konsep asas arus elektrik serta dapat membantu para pelajar menghasilakn idea inovasi yang lebih bermutu tinggi berdasarkan teknologi terkini.

BATU BERKUASA

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ABSTRAK

Projek ini menghasilkan Kit Aktiviti tindakan magnet bagi menguji atau membuktikan keupayaan magnet dapat menarik atau menolak sesuatu objek. Kit Aktiviti ini dapat membantu menarik minat murid mempelajari tajuk magnet dan mengaitkan kegunaan magnet dalam aktiviti seharian. Kit Aktiviti ini digunakan oleh murid Tahun 1 dan di laksanakan secara bersepadu melibatkan matapelajaran Sains, Bahasa Melayu, Bahasa Inggeris, Matematik, Sejarah dan Pendidikan Islam. Kit Aktiviti ini bertujuan merangsang minat murid untuk meneroka keupayaan magnet. Kit Aktiviti ini menggunakan Kaedah Inkuiri Penemuan yang melibatkan "5 E" iaitu Engage (penglibatan), Explore (penerokaan), Explain (penerangan), Elaborate (pengembangan) Evaluate (penilaian). Menurut (Colburn,2000) inkuiri penemuan ialah satu pendekatan pembelajaran yang berpusatkan murid dan melibatkan aktiviti hands-on. Murid akan merasai pengalaman bagaimana perasaan menjadi seorang ahli Arkeologi untuk mencari fosil yang terdapat dalam Kit Aktiviti dan menyiasat hasil penemuan fosil tersebut. Aktiviti akan dijalankan secara berkumpulan melibatkan empat orang murid. Murid bertindak sebagai seorang Ahli Arkeologi dan Saintis Cilik. Ahli Arkeologi akan menyenaraikan lapan penemuan fosil di papan putih manakala Saintis Cilik akan menjalankan eksperimen bagi menguji fosil menggunakan magnet sama ada menarik atau tidak. Kemudian Saintis Cilik akan mengelaskan objek yang dapat ditarik oleh magnet dan tidak dapat ditarik oleh magnet. Mereka dapat mencapai objektif dengan membuat kesimpulan bahawa bahan yang diperbuat daripada besi dapat ditarik oleh magnet.

Kata Kunci : Kaedah Inkuiri Penemuan, Magnet, Modul STEM, Kreativiti Saintifik

1.0 PENGENALAN

Kit Batu Berkuasa dihasilkan untuk membantu guru mengajar tajuk magnet menggunakan kaedah inkuiri penemuan. Justeru itu, Kit Batu berkuasa dilaksanakan di SK Seri Intan (SKRIN) melibatkan sebanyak 10 orang murid Tahun 1 bagi matapelajaran Sains dan menerapkan aspek Elemen Merentas Kurikulum atau EMK melibatkan gabungjalnin mata pelajaran Bahasa Melayu, Bahasa Inggeris, Matematik, Pendidikan Islam dan Sejarah. Dalam aktiviti ini, murid Tahun 1 akan dapat mengetahui tentang sejarah penemuan magnet dan meneroka keajaiban magnet disamping memupuk minat murid dalam mata pelajaran Sains.

Sejarah penemuan magnet menurut cerita yang paling umum menyebut bahawa magnet pertama kali ditemukan secara tidak sengaja di wilayah Yunani oleh seorang penggembala sekitar Tahun 2000 Sebelum Masihi dalam bentuk batu hitam besar. Penggembala itu mendapati, batu hitam besar itu telah menarik tongkat gembalanya dan menamakan batu berkuasa itu dengan sebutan Magnes bersesuaian dengan nama penggembala tersebut hingga kemudian dikenali dengan sebutan Magnet.

2.0 OBJEKTIF

- 2.1 Murid dapat menyatakan bahawa magnet dapat menarik objek yang diperbuat daripada besi.
- 2.2 Murid dapat mengenal objek hasil dari penemuan bahan fosil.
- 2.3 Murid dapat mengeja dan menyebut nama objek yang ditemui dan membina ayat mudah.
- 2.4 Murid dapat mengira bilangan objek yang dapat ditarik oleh magnet.
- 2.5 Murid dapat mengetahui sejarah penemuan magnet.

3.0 PENERANGAN TENTANG INOVASI / METODOLOGI

Sekumpulan murid yang terdiri daripada dua orang murid bertindak sebagai Saintis Cilik menghasilkan kit projek. Bahan-bahan untuk menghasilkan kit projek ialah tepung jagung, pewarna makanan yang dicampur sabun, minyak masak, bahan-bahan untuk diuji dan magnet. Saintis Cilik akan menguji tepung jagung, pewarna makanan yang dicampur sabun dan minyak masak untuk membentuk fosil dan menyembunyikan bahan-bahan yang diuji ke dalam fosil tersebut. Dua orang murid yang lain bertindak sebagai Ahli Arkeologi yang akan memecahkan fosil dan menemukan lapan bahan yang diuji iaitu guli, penyedut minuman (straw), klip kertas, pin tudung, skru, pemadam, pensil dan duit syiling. Saintis Cilik akan menjalankan eksperimen bagi menguji fosil menggunakan magnet sama ada menarik atau tidak. Kemudian Saintis cilik akan mengelaskan bahan yang dapat ditarik oleh magnet dan tidak dapat ditarik oleh magnet.

Jadual 1: Markah Ujian Pra

Bil	Nama Murid	Markah (80%)							
		SOALAN:							
		TANDAKAN ✓ BAGI BAHAN YANG BOLEH DITARIK OLEH MAGNET DAN X BAHAN YANG TIDAK BOLEH DITARIK OLEH MAGNET							
		Guli	Skru	Pemadam	Straw	Klip Kertas	Pin Tudung	Pensil	Duit syiling
1.	Murid A					✓			✓
2.	Murid B	✓							0
3.	Murid C	✓							0
4.	Murid D			✓					0
5.	Murid E				✓				0
6.	Murid F						✓		12.5%
7.	Murid G							✓	12.5%
8.	Murid H					✓			12.5%
9.	Murid I				✓				0
10.	Murid J			✓					0

Jadual 1 menunjukkan markah ujian pra murid-murid yang dikaji. Daripada jadual tersebut, didapati pencapaian murid-murid ini berada pada tahap yang lemah dari segi mengenal bahan magnet dan bahan bukan magnet. Mereka hanya dapat mencatat satu atau dua

bahan berdasarkan pengalaman sedia ada mereka. Hal ini berlaku disebabkan murid-murid kurang menguasai dan tidak terdedah kepada konsep mengenal bahan magnet dan bukan magnet yang betul. Lima orang murid didapati tidak kenal langsung bahan magnet dan bukan magnet. Tiga orang murid dapat mencatat 1 bahan magnet dengan betul dan hanya seorang murid sahaja yang dapat mencatat 2 bahan magnet dengan betul.

Jadual 2: Markah Ujian Post

Bil	Nama Murid	Markah (100%)								
		SOALAN:								
		TANDAKAN ✓ BAGI BAHAN YANG BOLEH DITARIK OLEH MAGNET DAN X BAHAN YANG TIDAK BOLEH DITARIK OLEH MAGNET								
		Guli	Skru	Pemadam	Straw	Klip Kertas	Pin Tudung	Pensil	Duit syiling	Markah
1.	Murid A	X	✓	X	X	✓	✓	X	✓	100%
2.	Murid B	X	✓	X	X	✓	✓	X	✓	100%
3.	Murid C	X	✓	X	X	✓	✓	X	✓	100%
4.	Murid D	X	✓	X	X	✓	✓	X	✓	100%
5.	Murid E	X	✓	X	X	✓	✓	X	✓	100%
6.	Murid F	X	✓	X	X	✓	✓	X	✓	100%
7.	Murid G	X	✓	X	X	✓	✓	X	✓	100%
8.	Murid H	X	✓	X	X	✓	✓	X	✓	100%
9.	Murid I	X	✓	X	X	✓	✓	X	✓	100%
10.	Murid J	X	✓	X	X	✓	✓	X	✓	100%

4.0 IMPAK PROJEK

Kit Aktiviti Batu Berkuasa menggunakan Kaedah Inkuiri Penemuan yang melibatkan "5 E" iaitu Engage (penglibatan), Explore (penerokaan), Explain (penerangan), Elaborate (pengembangan) Evaluate (penilaian). Menurut (Colburn,2000) inkuiri penemuan ialah satu pendekatan pembelajaran yang berpusatkan murid dan melibatkan aktiviti hands-on. Murid akan merasai pengalaman bagaimana perasaan menjadi seorang ahli Arkeologi untuk mencari fosil yang terdapat dalam Kit Aktiviti dan menyiasat hasil penemuan fosil tersebut

5.0 KESIMPULAN

Bahan-bahan magnet iaitu skru, klip kertas, pin tudung dan duit syiling boleh ditarik menggunakan batu berkuasa manakala bahan bukan magnet iaitu guli, pemadam, penyedut minuman (straw) dan pensil tidak boleh ditarik menggunakan batu berkuasa.

PROJEK AUR DENGAN TEBING

Zainudin bin Zainal Abidin¹, Mimi Mazura binti Sungip¹, Wan Ali Jabar bin Wan Alias¹, Nafis Jauhari bin Mohd Nafiz¹, Ibrahim Ikram bin Mohammad Safarudin¹, Fayyad Mueez bin Abdullah⁶

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ABSTRAK

Dalam tajuk Penjagaan Haiwan, Standard Pembelajaran 3.2.1, menyediakan dan menggunakan alatan pemeliharaan haiwan dengan betul, murid berjaya menguasai tahap penguasaan (TP) 4 iaitu menyediakan alat pemeliharaan haiwan. Oleh itu, untuk mencapai TP 5 dan 6, murid perlu boleh menggunakan pelbagai alatan pemeliharaan haiwan mengikut kesesuaian. Murid perlu menyatakan peralatan-peralatan tambahan dalam penjagaan haiwan serta apakah dan bagaimanakah ianya berfungsi. "Projek Aur Dengan Tebing" merupakan satu inovasi yang membolehkan murid menggunakan teknologi dalam penjagaan haiwan. Inovasi ini menekankan konsep saling perkaitan antara benda hidup. Projek ini adalah penanaman pokok dan siraman air secara automatik mengikut kelembapan tanah menggunakan teknologi, disamping menggunakan air yang bernutrien daripada ternakan ikan. Sebuah akuarium daripada botol yang di dalamnya terletak ikan-ikan peliharaan diletakkan bersebelahan dengan pokok tersebut. satu saluran getah dengan aplikasi rekabit digunakan untuk menyalurkan air daripada akuarium tersebut kepada tanah di pasu pokok tersebut. Maka, air yang akan diterima oleh pokok setiap kali pam automatik beroperasi adalah air yang bernutrien daripada ikan. Malah, projek ini juga menggunakan bahan-bahan terpakai. Projek ini telah berjaya menjadikan kumpulan sasaran kami mencapai TP6 iaitu yang tertinggi dalam Standard Pembelajaran 3.2.1. Malah, projek ini juga berguna untuk diaplikasikan kepada orang ramai yang mempunyai ruang yang sempit di rumah, untuk menjalankan penternakan dan pertanian dalam satu masa dan ruang yang terhad.

Kata Kunci: Siraman air automatik, aplikasi rekabit, air bernutrien, ruang sempit.

1.0 PENGENALAN

Sewaktu mengajar tajuk bunyi tahun 6 dalam penjagaan haiwan, murid pendidikan khas telah berjaya mencapai Tahap Penguasaan (TP) 4 iaitu menyediakan alatan penjagaan haiwan dengan betul. Murid-murid ini dilihat mampu untuk menguasai TP5 dan lebih tinggi lagi. Sekiranya mengikut sukatan pembelajaran asal, teramat mudah untuk murid ini sampai ke TP tertinggi iaitu TP6. Maka, inovasi Projek Aur Dengan Tebing dicipta bagi membolehkan murid mengoptimumkan lagi kebolehan mereka dalam menggunakan kebijaksanaan dalam reka cipta untuk menjalankan satu projek yang lebih tinggi impak dan tahap pemikirannya. Hal ini bagi mengelakkan murid ini bosan dan tidak berminat untuk menjalankan aktiviti kelas yang selalu dihadapi.

Projek "Aur Dengan Tebing" merupakan penghasilan sebuah inovasi penggabungan kaedah penternakan dan pemeliharaan haiwan dengan menggunakan teknologi penyiraman air secara automatik. Penghasilannya melibatkan penggunaan bahan guna semula iaitu botol 5 liter

sebagai akuarium untuk ternakan ikan, pasu dan pokok, serta set penyiraman air secara automatik mikrobit. Ia disusun atur dengan meletakkan pokok serta akuarium buatan bersebelahan, dan disambungkan dengan penyiram air automatik dengan penggunaan getah saluran.

2.0 OBJEKTIF

1. Murid dapat menggunakan pelbagai alatan pemeliharaan haiwan dan menyatakan fungsinya.
2. Guru dapat mempelbagaikan aktiviti dalam kelas untuk menjadikan kelas lebih aktif.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

3.1 Bahan yang digunakan untuk menghasilkan inovasi

Botol 5 liter
Pasu
Pokok
Ikan peliharaan
Air
Set mikrobit



3.2 Cara inovasi digunakan

- a) Murid perlu menyediakan sebuah akuarium daripada botol yang berisi ikan dan sebuah pasu berisi tumbuhan atau pokok.
- b) Kemudiannya, mereka perlu meletakkan kedua-duanya bersebelahan.
- c) Mereka perlu membuat coding kepada mikrobit untuk membolehkan set penyiraman automatik berfungsi untuk mengepam air dari botol akuarium tersebut ke tanah di pasu secara automatik.
- d) Apabila sensor yang terdapat dalam set mikrobit itu mengesan tanah yang tidak basah dan kering, maka sensor akan memberikan isyarat untuk membolehkan mesin penyiram automatik menyedut air dalam akuarium tersebut dan menghantar air melalui getah ke tanah di pasu sehinggalah tanah betul-betul menjadi lembap dan sesuai untuk tumbuhan. Apabila telah mencapai tahap kelembapan yang baik, sensor akan memerhentikan pengaliran siraman air tersebut secara automatik.

Jadual 1: Kos menghasilkan inovasi

BIL	PERKARA	HARGA 1 UNIT (RM)	BILANGAN	JUMLAH HARGA (RM)
1	Set mikrobit	100.00	1	100.00
2	Pasu	2.00	1	2.00
3	Beteri	1.00	4	4.00
4	Botol 5 liter guna semula	0.00	1	0.00
JUMLAH				106.00

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

4.1 Temu bual

Berikut dapatan temu bual dibanding sebelum menggunakan inovasi dan dengan penggunaan inovasi Projek Aur Dengan Tebing.

Jadual 2: Perbandingan temu bual sebelum dan dengan menggunakan inovasi Projek Aur Dengan Tebing.

Soalan kepada murid	Jawapan murid sebelum menggunakan inovasi	Jawapan murid dengan penggunaan Projek Aur Dengan Tebing
Cuba awak selesaikan tugas ini	Bosanlah, cikgu.	Yes, jom kita buat coding, cikgu!
Apa yang awak belajar hari ni?	Buat tempat haiwan je...	Saya gunakan komputer untuk masukkan data. Lepas tu saya sambungkan dengan akuarium ni, cikgu. Nanti airnya akan automatik masuk sendiri.
Seronok tak belajar?	Biasa saja.	Seronok cikgu. Nak buat lagi cikgu!

4.2 Rakaman Video

Daripada rakaman video, dapati dilihat bagaimana guru mudah untuk mengajar murid, dan murid juga aktif menyoal dan bermain secara hands on bahan Projek Aur Dengan Tebing.

5.0 KESIMPULAN

Nyatakan kesimpulan terhadap projek ini. Projek Aur Dengan Tebing telah pun dikongsikan kepada rakan-rakan guru di sekolah baik dalam pendidikan khas, dan dalam aliran perdana di sekolah. Penggunaannya bukan sahaja dengan pendidikan khas, malah turut boleh digunakan untuk murid lain atau dikomersilkan sebagai bahan permainan bantu belajar. Projek telahpun dikongsikan ideanya dalam kajian tindakan sekolah oleh guru pembimbing yang menghasilkan inovasi ini.

INOVASI DRIVE TRUE

Dhiya Sofia Iman binti Abdul Rahman¹, Nur Dini binti Sufian¹, Nuralyssa Damia binti Noorhasreen Shah¹, Nama Ahli Keempat Zainudin bin Zainal Abidin¹

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ABSTRAK

Drive True merupakan satu inovasi yang dicipta daripada permasalahan asas matematik murid tahun 6. Agak mengejutkan apabila sebahagian besar murid tahun 6 dalam kelas kami menghadapi masalah dalam menjawab soalan asas matematik. Mereka bukan sahaja tidak tahu cara membahagi, malah darab, tambah dan tolak. Hal ini cukup membimbangkan. Maka, Drive True dicipta untuk membolehkan murid melakukan aktiviti menolak dan menambah dengan mengumpul semula, mendarab dan membahagi secara bentuk lazim dengan teratur dan betul. Drive True terdiri daripada sebuah kad yang mempunyai 3 bahagian, iaitu bahagian penambahan dan penolakan, bahagian pembahagian dan sifir pendaraban. Murid boleh menggunakan bahagian penambahan dan penolakan untuk menyelesaikan masalah pengumpulan semula. Murid boleh merujuk sifir untuk pendaraban dan boleh membuat pembahagian nombor besar dengan menggunakan bahagian pembahagian. Data dikumpul daripada pemerhatian, ujian pra dan pasca serta temu bual menunjukkan peningkatan yang ketara terhadap hasil daripada penggunaan Drive True. Ternyata penggunaan Drive True sangat membantu guru dalam meningkatkan penguasaan murid terhadap membuat jalan kerja asas matematik tambah, tolak, darab dan bahagi.

Kata Kunci: Menolak, menambah, pendaraban, pembahagian, asas matematik.

1.0 PENGENALAN

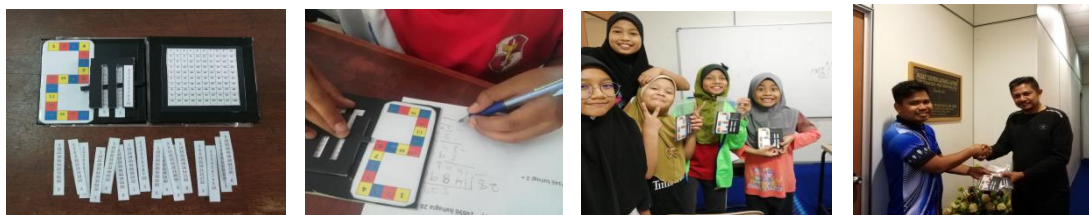
Berdasarkan ujian mengenal pasti masalah, didapati bahawa murid tahun 6 masih tidak dapat mengenalpasti apa yang perlu dilakukan daripada satu langkah ke satu langkah dalam membahagi. Mereka juga keliru bagaimana untuk meletakkan nombor apabila proses pembahagian dilakukan. Setiap langkah perlu ditunjukkan oleh guru, dan apabila soalan itu ditukar nombornya sahaja, mereka sudah tidak mampu menjawab. Pemahaman tentang sifir juga tiada apabila mereka cuma mengharap sifir yang telah dihafal untuk membuat pembahagian. Mereka tidak tahu untuk membahagi nombor yang lebih daripada sifir 12. Hal ini menunjukkan bahawa mereka tidak memahami sifir. Dalam menjawab soalan tambah dan tolak pula, mereka tidak mampu untuk menyelesaikan konsep meminjam dan membuat tambahan melebihi angka 9. Hal ini menunjukkan bahawa mereka benar-benar lemah dalam operasi asas. Sedangkan operasi asas ini pun mereka tidak mampu, bagaimanakah mereka hendak menempuh topik yang jauh lebih berat? Maka, itulah sebabnya Drive True dihasilkan.

2.0 OBJEKTIF

- 2.1 Murid dapat membuat jalan kerja penambahan dan penolakan dengan mengumpul semula.
- 2.2 Murid dapat menjawab soalan pembahagian dan pendaraban yang melibatkan angka besar.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

3.1 Bahan yang Digunakan dalam Penghasilan 'Drive True' Mounting Board, Kertas A4, Laminated paper



Gambar rajah 1: Muka hadapan dan belakang 'Drive True' berserta strip sifir dan penggunaannya di luar kawasan sekolah

3.2 Cara Inovasi Digunakan

Untuk operasi tambah dan tolak, murid menggunakan bahagian kiri Drive True. Mereka boleh membuat operasi tambah dan tolak dengan menggerakkan jari menunjuk ke nombor yang dikehendaki. Apabila membuat tambah atau tolak, gerakkan jari ke nombor berikutnya atau sebelumnya seperti bermain dam. Maka, murid dapat membayangkan nilai dengan lebih jelas.

Bagi operasi bahagi, murid menggerakkan kad menutupi sebahagian operasi dan menyelesaikan satu demi satu. Dalam masa yang sama, murid menggunakan pelaras sifir apabila membahagi nombor dua angka.

Murid menggunakan strip yang disusun mengikut nombor yang hendak dibahagikan dan kemudiannya pelaras digerakkan untuk mencari nombor yang sesuai dalam pembahagian. Bagi operasi darab, murid boleh menggunakan sifir darab di bahagian belakang kad untuk semakan dan memahami konsep pendaraban.

Penggunaan 'Drive True' boleh diketahui lebih lanjut dengan melayari pautan berikut:
<https://www.youtube.com/watch?v=wA5bV9qdtAE>

3.3 Kos Penghasilan Inovasi

RM2.00 (papan mounting board) + RM0.02 (kertas A4) + RM0.40 (laminated paper)
= RM2.42

Jika dikira secara asasnya, penghasilan Drive True ini tidak menggunakan sebarang kos. Hal ini kerana semua bahan adalah yang setiap masa digunakan oleh seorang guru. Namun, untuk tujuan dokumentasi, pengiraan dibuat berdasarkan kiraan satu bahan berbanding harga semasa.

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Jelaskan kebaikan/impak/dapatan/pembaharuan tentang rekapipta/produk inovasi/idea inovasi yang dihasilkan. Pembaharuan merujuk kepada keaslian dan keunikan dari segi pendekatan yang digunakan, kaedah, atau pemerhatian baharu yang membawa kepada penemuan produk/ maklumat baharu. Jumlah sampel diambil sebanyak 10 orang murid dalam melihat kepada keberkesanan penggunaan 'Drive True' ini. Murid sasaran adalah daripada tahun 6 seramai 10 orang dari SK Bandar Tenggara 1.

Kami melakukan tiga kaedah dalam menilai objektif yang telah ditetapkan iaitu pemerhatian, temu bual, serta ujian pra dan pasca. Daripada dapatan pemerhatian, dapat dilihat usaha yang lebih baik oleh mereka untuk menjawab soalan. Mereka juga lebih seronok kerana menggunakan sesuatu yang berwarna dan menarik dalam menjawab soalan. Penggunaan Drive True ini sememangnya menjadikan mereka lebih aktif. Dalam konteks temu bual pula, kesemua murid menyatakan keseronokan menggunakan 'Drive True' dan menunjukkan jalan kerja dengan lebih jelas dan tersusun tanpa banyak contengan terutama dalam tambah dan tolak. Malah mereka dapat menyatakan cara penggunaan inovasi ini kepada rakan lain pula. Bagi ujian pra, kami memberikan 10 soalan untuk murid jawab menggunakan bentuk lazim yang melibatkan semua empat operasi asas matematik tambah, tolak, darab dan bahagi. Pada ujian pasca pula, kami memberikan set soalan yang sama kepada mereka tanpa mereka ketahui bahawa mereka akan menjawab soalan yang sama. Kami membuat perbandingan markah yang mereka perolehi daripada kedua-dua ujian itu. Jadual 1,2, dan rajah 1 menunjukkan keputusan dan perbandingan yang diperolehi.

Jadual 1: Data pemerhatian

Sebelum penggunaan 'Drive True'	Dengan Penggunaan 'Drive True'
Murid langsung tidak menjawab soalan.	Murid menjawab soalan.
Murid menulis jawapan sahaja.	Jalan kerja ditunjukkan oleh murid.
Murid menjawab tetapi salah konsep.	Murid menjawab dengan konsep yang betul.

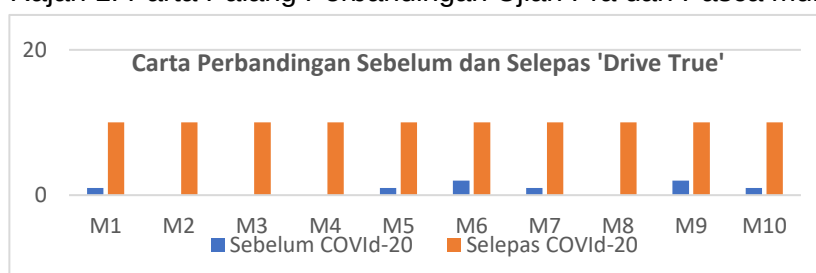
Berdasarkan jadual 1, murid menunjukkan perbuahan daripada segi sikap mereka terhadap menjawab soalan asas ini, mereka mula seronok dan memberikan perhatian, malah mahu berulang-ulang mempelajarinya lagi kerana berasa seronok kerana telah menguasainya.

Jadual 2: Data Temu bual

Soalan Temu Bual	Reaksi Sebelum Penggunaan 'Drive True'	Reaksi Selepas Penggunaan 'Drive True'
Darab tu macam mana?	Tak hafal sifirlah, cikgu.	Tambahkan sahaja berulang nombor yang sama.
Bagaimana nak bahagi nombor kalau tak hafal sifir?	Tak boleh kalau tak hafal, cikgu.	tulis sifir kat tepi, kalau tak dapat hafal kira satu-satu tambah. Kalau nombor besar satukan sifir.
Macam mana nak kira tolak kalau jadi tak cukup?	Guna kaki cikgu, tak pun conteng garis-garis kecil dan kira.	Senaraikan nombor 1 sampai 18, lepas tu gerakkan jadi je cikgu.

Berdasarkan jadual 2, soalan temu bual berjaya dijawab dengan reaksi yang positif. Ia adalah berdasarkan soalan yang sama diajukan kepada murid yang sama. Perbezaan reaksi ini menunjukkan bahawa murid telah menguasai asas matematik dengan baik. Mereka bukan sahaja dapat menjawab dengan betul, malah dapat memberi sebab daripada jawapan yang diberikan itu.

Rajah 1: Parta Palang Perbandingan Ujian Pra dan Pasca murid



Rajah 1 menunjukkan perbandingan prestasi murid dalam ujian pra dan pasca. Murid sasaran diberikan soalan yang sama dalam kedua-dua ujian tersebut. Perubahan jelas dapat dilihat kepada kesemua 10 orang murid setelah menggunakan 'Drive True'. kesemua murid menunjukkan keputusan markah penuh pada ujian pasca berbanding ujian pra, dimana ada yang diantara mereka tidak mendapat markah langsung. Logiknya perkara ini berlaku kerana mereka tidak menjawab langsung pada mulanya, namun apabila telah minat dan menguasai pengkelasan tersebut, barulah mereka berminat untuk membuat ujian pasca dan inilah hasilnya.

5.0 KESIMPULAN

Nyatakan kesimpulan terhadap projek ini. Kesimpulannya, kami sentiasa cuba memastikan objektif penciptaan 'Drive True' ini tercapai. Sememangnya, ia sangat membantu murid dalam menguasai asas matematik dengan pendekatan yang menarik. Inovasi ini adalah sangat praktikal kerana ia dapat membantu murid-murid meningkatkan penguasaan matematik. Penggunaan 'Drive True' ini bukan sahaja membantu murid dalam penguasaan tersebut, malah murid juga tidak terlalu bergantung kepada gajet semata-mata, yang mana ianya boleh memberikan kesan dalam jangka masa panjang terhadap kesihatan tubuh badan. Penghasilan 'Drive True' adalah inovasi yang sihat dan tidak langsung mengancam kesihatan, mudah dan seronok untuk digunakan serta mesra alam.

**MODEL KIT INOVASI DALAM PDPC SEBAGAI BAHAN BANTU MENGAJAR (BBM) DI
KALANGAN MBPK KEFUNGSIAN RENDAH BAGI MATA PELAJARAN KAV
PERTANIAN DAN PEMELIHARAAN HAIWAN**

NURUL FATIN BINTI RAMELI, MOHD SHAHIDAN BIN MAT YAACOB
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ABSTRAK

Pendekatan belajar melalui bermain (BMB) bukanlah sesuatu kaedah yang baharu dalam kalangan Murid Berkeperluan Khas (MBPK). Namun, kaedah ini dilihat sebagai suatu kaedah yang sesuai bagi MBPK terutama sekali bagi MBPK kefungsi rendah yang memerlukan bantuan guru ketika proses Pengajaran dan Pemudahcaraan (PdPc) dijalankan di dalam kelas. Selain itu, ia memberi peluang kepada MBPK untuk meneroka kemampuan mereka melalui aktiviti permainan yang dijalankan (Sphero Team, 2021). Mereka boleh mengecam dan mengenal melalui Alat Bantu Meangajar (ABM) yang telah dibangunkan dalam proses PdPc bersama mereka. Kaedah ini dikenal pasti sebagai salah satu pendekatan PdPc yang berkesan terutamanya mewujudkan sikap dan motivasi guru dan murid yang positif (Fong dan Mohd Fikri Ismail, 2020). Cabaran guru MBPK untuk mencapai objektif di dalam PdPc mereka terutama murid kefungsi rendah sangat tinggi. Oleh itu, dengan pembangunan kit ABM ini MBPK boleh mengecam setiap jenis haiwan peliharaan dan ternakan melalui alat separa maut yang digunakan di dalam pembangunan kit ini. Aktiviti dalam PdPc ini adalah aktiviti hands-on yang melibatkan diri secara aktif serta melatih tahap fokus dan koordinasi mata-tangan mereka dengan lebih baik dan cekap. Penggunaan inovasi ini dapat membantu guru untuk melihat perkembangan kemahiran mengecam dan mengenal haiwan ternakan dan peliharaan serta membantu melatih psikomotor MBPK melalui kaedah belajar sambil bermain (BMB). Aktiviti bermain dalam kalangan MBPK ini dirangka mengikut kurikulum dan penambahbaikan rutin pembelajaran murid seawaktu PdPc akan lebih menyeronokkan. Inovasi ini juga dilihat sebagai satu kaedah pembelajaran yang mampu merangsang interaksi ibu bapa dan MBPK di samping dapat meningkatkan keyakinan MBPK berkomunikasi dalam kehidupan seharian mereka. Secara khususnya, pengkaji memilih tajuk kit inovasi mengecam dan mengenal pasti haiwan ternakan dan peliharaan bagi MBPK kefungsi rendah sebagai ABM dalam subjek KAV Pertanian Pemeliharaan Haiwan.

Kata Kunci : Pengajaran dan Pemudahcaraan (PdPc), Pendekatan Belajar Melalui Bermain (BMB), Murid Berkeperluan Khas (MBPK), Alat Bantu Mengajar (ABM)

MATH RIDDLE FOR YEAR 6

MUHAMMAD ALIF BIN AZMAN, MUHAMMAD AZIRUL AZIQ BIN AHMAD,
MUHAMMAD FIRDAUS ALIF BIN ROSLAN , SACHIN,

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ABSTRACT

Math puzzles offer a distinct approach to practicing mathematics compared to traditional questions. Unlike specific topic-based problems, puzzles often lack clear indications of the required skills. They challenge students to determine their own solution strategies instead of following predefined steps. Puzzles extend advanced students beyond grade-level content without widening curriculum gaps. Most importantly, they provide a glimpse into real-world math applications, allowing practice of important standards and fostering critical thinking and problem-solving skills essential for practical use. This system is targeted to students out there. They can be anywhere and anytime to enhance their ability in math. Math riddles enhance concentration and comprehension by developing the ability to decipher text beyond basic literacy. Reading between the lines, considering context, and comprehending multiple layers of meaning are essential skills that riddles help students cultivate.

Keywords: mathematics, practice, solve, year 6.

1.0 INTRODUCTION

At a basic level, playing the game helps to understand the rules of the game. They can think more strategically and go further. This project aims to train the minds of children, especially at the elementary level, to become more active and effective in counting objects. In addition, it can take up time in the nursery at home and strengthen the relationship between family members.

The project we are doing is a follow-up member of the application family where our application is still the same application as the original creation but we have done a little modification on this application. Our application was originally created to test the level of children by following the given level and the application is not focused on anyone where everyone can try it. So a group of us created this application focusing on children who are in primary school so we changed the level of the question and the background of the application to make it more interesting and the time to answer the question. Here we have some pictures regarding the application we created.

The environment while doing this project is very safe and the equipment to implement this project is sufficient. This project will operate on a computer and the hardware to implement

this project is very sufficient where it only uses hardware such as a monitor, keyboard and mouse. In terms of operating the system, it uses code studio visual software.

2.0 OBJECTIVE

The goal of the Mathematical Puzzle System project is to create a perfect scenario to practice many standards of mathematical practice, especially understanding problems and persevering in solving them.

1. Train children's minds to be more efficient in doing things matter.
2. Learning and understanding how to understand a system more interestingly
3. Engage children and adults in learning mathematics.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

The project we're working on is the next member of the app family, where our app is still the same app we originally created but we've made a small change to it . Our app was originally created to test children's level by following certain level and this app is not for anyone but everyone can try it. So a team of us created this app focused on elementary school kids. So we changed the question level and the background of the app to make it more interesting as well as the time it takes to answer the question. Here we have some images related to the app we created.

Users, children or students will start with the display of the figure 1 interface in this system. Where there is a starting button to start the adventure of answering the questions.

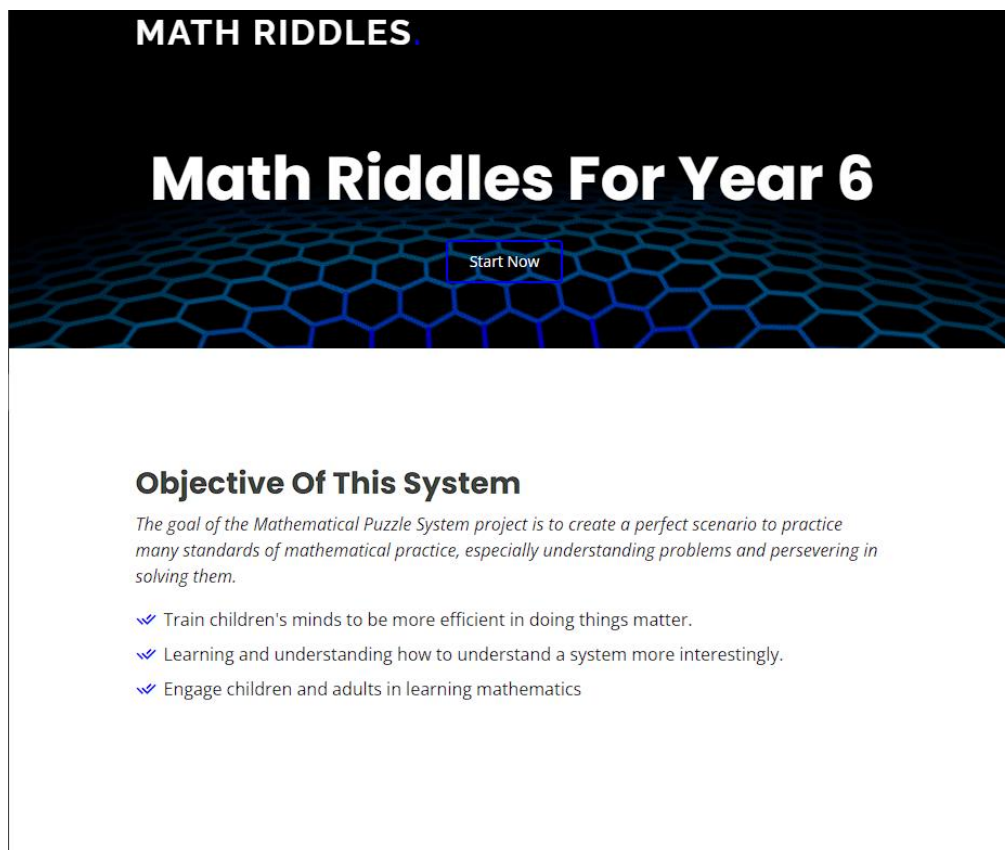


Figure 1: MainPage Interface

Figure 2 provides math knowledge including history of mathematical figures and famous math quotes. user need to press Get Started button to answer math questions in this system.

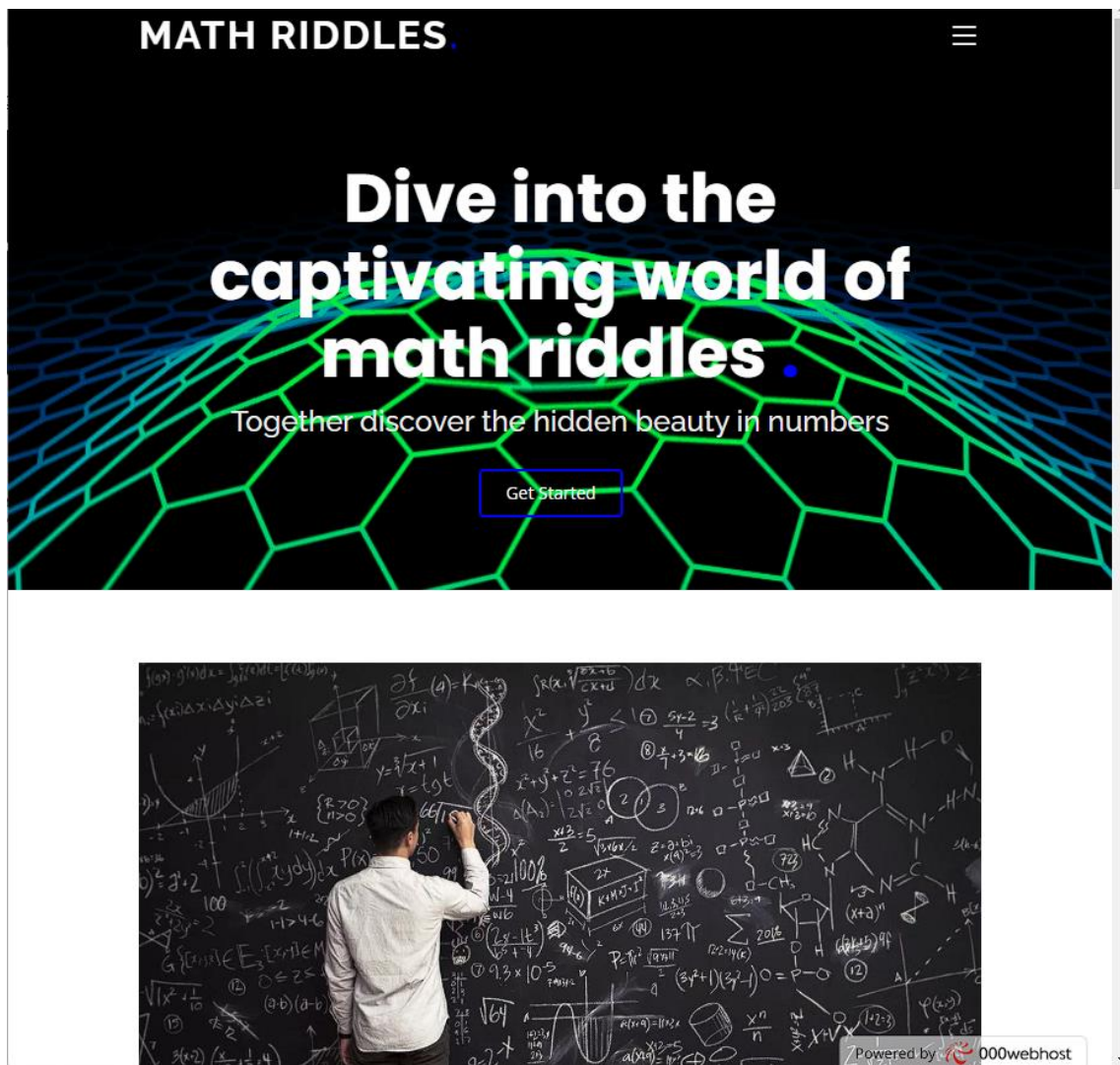


Figure 2: Dashboard Interface

There are several options based on themes and sub-themes that can be selected. Selected topics are taken from textbooks used in school PDPC activities together with their teachers. This way, they will not avoid the subject they are learning at school. Users can choose the topic they want to focus on to enhance their learning in figure 3.

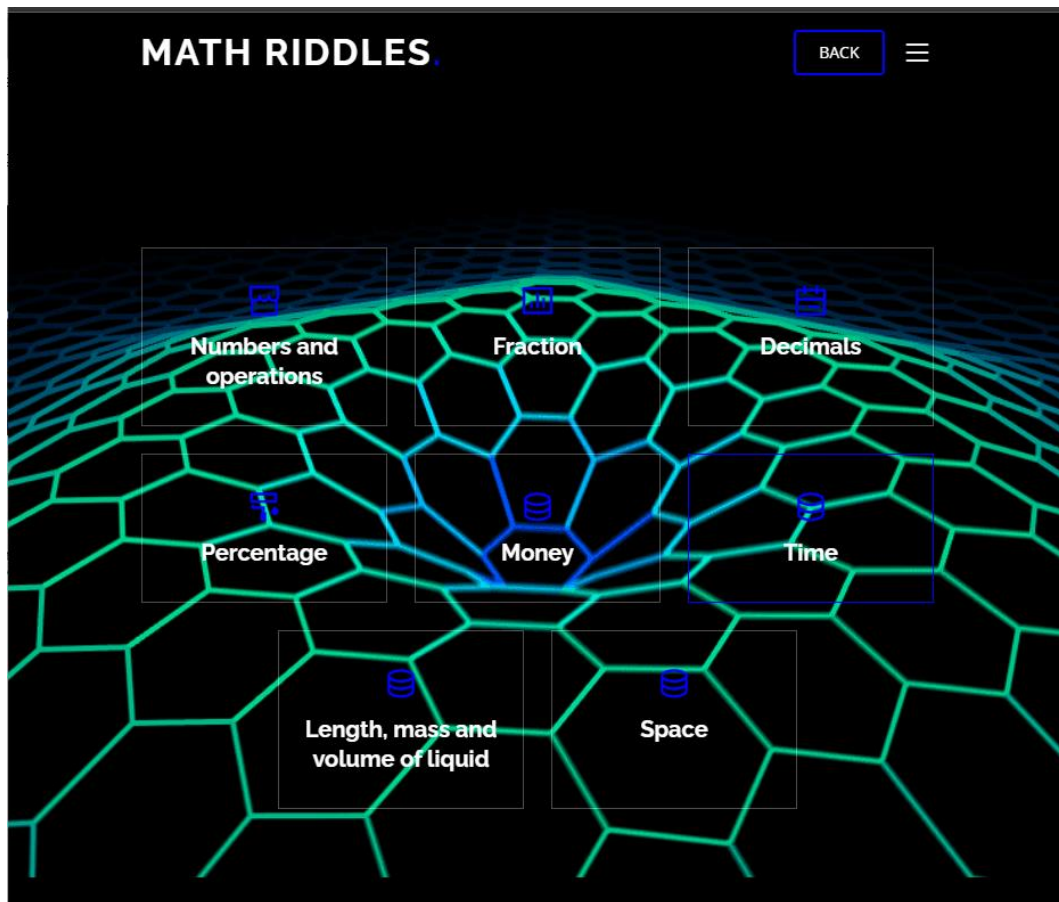


Figure 3: Multiple Topics Interface

Users should read the instructions before starting to answer multiple choice questions. After reading the instructions, users need to press the Start Quiz button to answer the multiple choice questions.

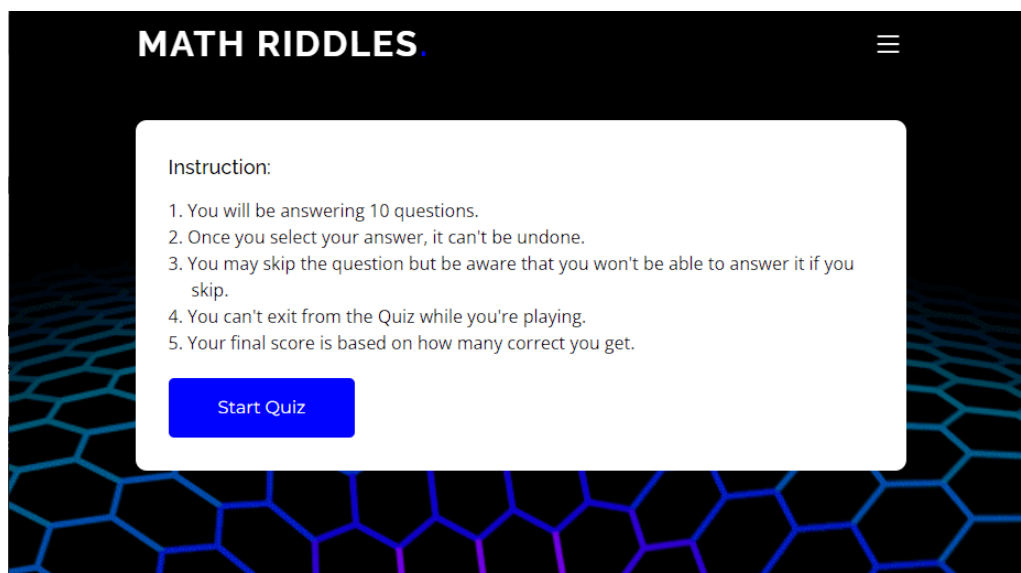


Figure 4 : Quiz Question

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

This system can strengthen your brain. A study from Stanford University found that kids who are good at math use brain regions that also show strong cognitive tasks like visual attention and decision-making. Studies show that the area of the brain that helps you do math is involved in decision making and attention.

Math quiz to help you learn life skills. A person who understands math can understand basic skills such as managing budgets, building interiors, forecasting, and telling time. Math helps you understand expenses, balance bank accounts, and subtract balances, which are important skills as an adult.

5.0 CONCLUSION

In conclusion, Math riddles for children can successfully develop their capacity for critical thought and problem-solving. Kids can discover a passion for mathematics and boost their self-confidence by taking part in entertaining and stimulating activities. Math riddles and other instructional games could be incorporated into a variety of learning environments, with potential benefits that extend beyond the traditional classroom setting. A solid understanding of mathematical concepts means more than just numbers. It helps us see paths to solutions. Equations and word problems need to be considered before determining the best method to solve them. And in many cases, there are ways to arrive at the right answer. Not surprisingly, logical reasoning and analytical thinking improved along with math skills. Logical skills are required at all levels of math education. This is because problems often force us to change our thinking and approach to problems in many ways. The first process we try may not work. We need flexibility and creativity to think of new paths to solutions. And like anything else, this way of thinking becomes stronger with practice. The parts of the brain used to solve math problems seem to work in concert with the parts of the brain that regulate emotions. This shows that practicing math can really help us solve difficult situations. In these studies, the more proficient a person was in numerical calculations, the better they were able to regulate fear and anger. Good math skills can even help treat anxiety and depression.

ROSELLE BLISS

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ABSTRAK

Produk inovasi yang dihasilkan dalam projek ini merupakan satu produk berasaskan daripada *Hibiscus Sabdariffa L.*, atau lebih dikenali sebagai Bunga Roselle. Produk inovasi ini dinamakan sebagai *Roselle Bliss*. *Roselle Bliss* merupakan produk inovasi berbentuk sabun pepejal. *Roselle Bliss* ini merupakan satu inisiatif baharu untuk mengurangkan pembuangan minyak terpakai yang terhasil daripada proses memasak melalui matapelajaran Kemahiran Asas Vokasional Masakan dan Kemahiran Spesifik Vokasional Pembuatan Roti. Kegunaan minyak terpakai dan bunga Roselle ini mencetuskan idea untuk menghasilkan sabun bagi kegunaan murid kelas Kemahiran Asas Vokasional Masakan ini. Hal ini kerana, bunga Roselle mempunyai banyak khasiat untuk kesihatan dan kecantikan yang boleh dimanfaatkan oleh masyarakat kini kerana bunga ini terkandung khasiat vitamin C yang lebih tinggi daripada buahan sitrus yang lain. Oleh yang demikian, objektif inovasi ini dijalankan adalah untuk menghasilkan produk inovasi berasaskan minyak masak terpakai dan bunga Roselle yang bebas dari kimia berbahaya dan memberi kesedaran kepada murid tentang keperluan mengurus sisa bahan domestik rumah dengan lebih terancang.

Kata Kunci: Minyak masak terpakai, Hampas Roselle, Sabun

1.0 PENGENALAN

Seperti yang sedia maklum, kosmetik ialah campuran sebatian kimia yang diperolehi sama ada dari sumber semula jadi atau yang dicipta secara sintetik. Sabun juga termasuk dalam bidang kosmetik dimana ianya boleh digunakan untuk pelbagai kegunaan harian. Sabun merupakan campuran pencuci yang digunakan bagi kegunaan peribadi. Ia biasanya dijual dalam bentuk ketulan yang dipanggil buku. Ia juga pernah digunakan sebagai bahan pencuci pakaian dobi sebelum ia digantikan dengan bahan sintetik yang lebih kuat dan berkesan. Produk inovasi yang dihasilkan dalam projek ini merupakan satu produk berasaskan daripada *Hibiscus Sabdariffa L.*, atau lebih dikenali sebagai Bunga Roselle. Produk inovasi ini dinamakan sebagai *Roselle Bliss*.

Roselle Bliss ini merupakan satu inisiatif baharu untuk mengurangkan pembuangan minyak terpakai yang terhasil daripada proses memasak daripada matapelajaran Kemahiran Asas Vokasional Masakan. Kegunaan minyak terpakai dan bunga Roselle ini mencetuskan idea untuk menghasilkan sabun bagi kegunaan murid kelas Kemahiran Asas Vokasional Masakan ini. Hal ini kerana, bunga Roselle mempunyai banyak khasiat untuk kesihatan dan kecantikan yang boleh dimanfaatkan oleh masyarakat kini kerana bunga ini terkandung khasiat vitamin C yang lebih tinggi daripada buahan sitrus yang lain. Oleh yang demikian, objektif inovasi ini dijalankan adalah untuk menghasilkan produk inovasi berasaskan minyak masak terpakai dan bunga Roselle yang bebas dari kimia berbahaya dan memberi kesedaran kepada murid tentang keperluan mengurus sisa bahan domestik rumah dengan lebih terancang.

2.0 OBJEKTIF

- Mengurangkan masalah pembuangan sisa makanan serta penggunaan lebih minyak masak yang berlebihan.
- Memberi kesedaran pada murid tentang keperluan menguruskan sisa domestik rumah dengan lebih terancang.
- Menghasilkan dan mempelbagaikan produk daripada ekstrak bunga Roselle.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Produk inovasi Roselle Bliss ini menggunakan satu bahan utama iaitu minyak masak terpakai untuk dijadikan sebagai sabun yang boleh digunakan sebagai sabun pencuci pinggan dan mangkuk malahan boleh digunakan untuk memcuci peralatan masakan yang lain dan sesuai dijadikan sabun mencuci tangan kerana kandungan vitamin C daripada ekstrak Bunga Roselle.

Prosedur Pembuatan Roselle Bliss

Langkah 1 : Menapis minyak terpakai



Rajah 1: Proses menapis minyak terpakai daripada sisa makanan.

Langkah 2 : Membersihkan bunga Roselle dan ditumbuk/dikisar halus untuk mendapat ekstrak bunga Roselle.



Rajah 2: Proses mengisar untuk mendapatkan hampas Roselle.

Langkah 3 : Menyediakan bahan dan peralatan untuk proses bancuhan.



Rajah 3: Bahan-bahan yang diperlukan adalah minyak terpakai, air, garam alkali dan acuan.

Langkah 4 : Membuat proses bancuhan sabun.



Langkah 5 : Bancuhan dituang kedalam acuan

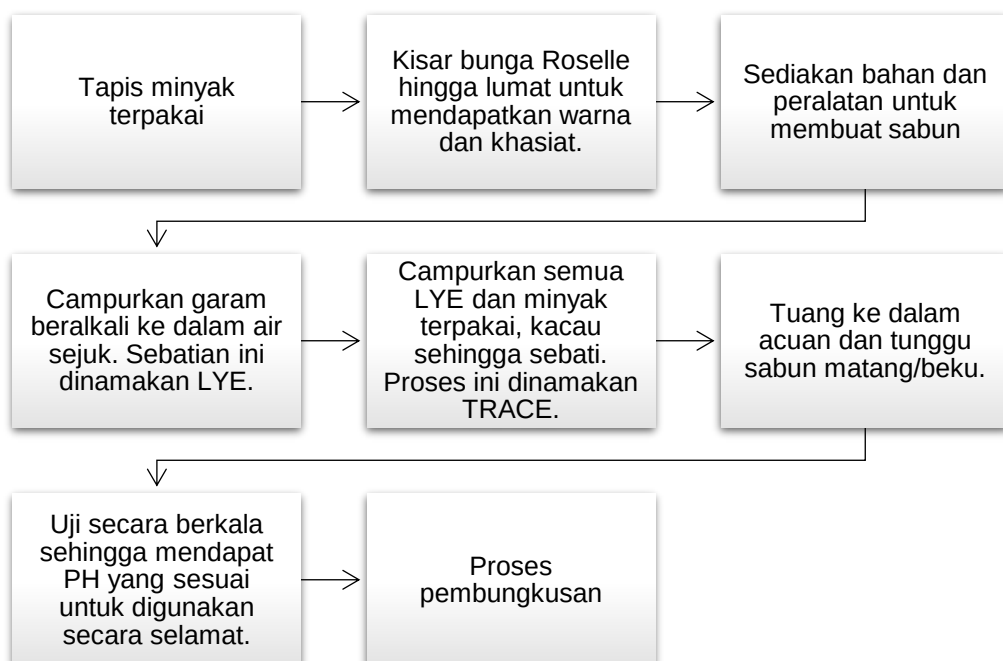


Rajah 5: Bancuhan yang telah siap proses Trace akan dituang kedalam acuan dan dicampur dengan ekstrak Roselle yang telah dikisar

Langkah 6 : Hasil Produk Inovasi



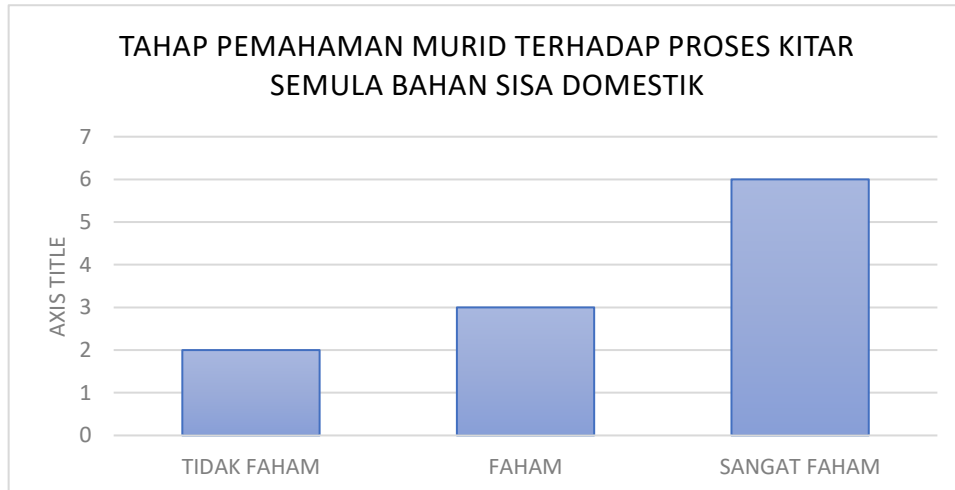
Proses Pembangunan Produk



Rajah 7: Proses Kerja

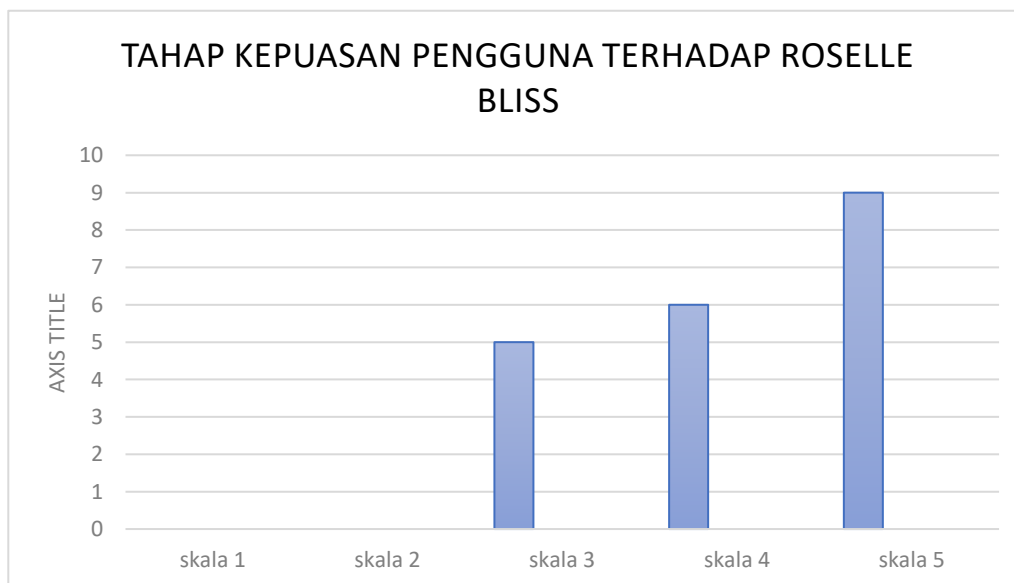
4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Terdapat seramai 10 orang bilangan murid yang telah memberi maklum balas dan telah direkodkan iaitu dari tahap 1 hingga 3 bagi kefahaman bagaimana mengurus sisa bahan domestik. Jumlah murid paling tertinggi pada tahap SANGAT FAHAM iaitu sebanyak 6 orang, manakala pada tahap TIDAK FAHAM menunjukkan tahap minimum iaitu sebanyak 2 orang seperti di rajah 8. Ini menunjukkan 6 daripada 10 murid dapat memahami bahawa bahan/sisa domestik boleh digunakan semula untuk kegunaan harian.



Rajah 8: Tahap Kefahaman murid terhadap keperluan mengurus sisa domestik.

Terdapat seramai 20 orang bilangan responden yang telah memberi maklum balas dan telah direkodkan iaitu dari skala 1 hingga 5 bagi penilaian tahap kepuasan produk ini. Jumlah responden paling tertinggi pada skala 5 iaitu sebanyak 9 orang, manakala pada skala 3 menunjukkan tahap minimum iaitu sebanyak 5 orang seperti di rajah 9.



Rajah 9: Tahap kepuasan pengguna terhadap produk

Selain itu, terdapat beberapa faedah yang dapat murid pelajari daripada penghasilan produk inovasi ini iaitu :

1. Memberi kesedaran pada murid tentang keperluan menguruskan sisa domestik rumah dengan lebih terancang.
2. Memberi pendedahan kepada murid bahawa sisa domestik rumah boleh digunakan semula untuk kegunaan harian.
3. Memberi galakan dan motivasi kepada murid untuk berfikir secara kreatif dan kritis dalam teknologi hijau.
4. Murid dapat mengaitkan proses PdPc dalam alam sekitar terutamanya bagi matapelajaran kemahiran Asas Vokasional Masakan.

5.0 KESIMPULAN

Kesimpulannya, objektif bagi inovasi Roselle Bliss berjaya dicapai di mana majoriti pengguna memberi maklumbalas yang positif terhadap penerimaan produk Roselle Bliss. Selain itu, pengguna juga menyukai inovasi produk Roselle Bliss kerana produk ini menggunakan lebih minyak masak terpakai dan bahan semula jadi iaitu Bunga Roselle. Seperti yang sedia maklum, Bunga Roselle mempunyai banyak khasiat untuk merawat masalah kesihatan dan kaya dengan khasiat Vitamin C. Oleh itu, majoriti pengguna yakin bahawa produk Roselle Bliss tiada kesan sampingan yang memudaratkan serta tidak mengandungi bahan kimia yang berpotensi mendatangkan ancaman kepada kesihatan dan keselamatan pengguna. Roselle Bliss merupakan inovasi yang relevan dan ia adalah satu alternatif yang menarik untuk mengatasi masalah pembuangan sisa makanan terutamanya minyak masak terpakai. Seperkara lagi, Roselle Bliss merupakan produk bebas kimia dan sesuai bagi pengguna yang mempunyai masalah kulit. Minyak masak terpakai boleh dikitar semula bagi menghasilkan pelbagai bahan yang berguna seperti sabun dan juga bahan bakar kenderaan bagi menggantikan petrol dan diesel. Pembuatan sabun ini juga dilakukan untuk kegunaan harian iaitu untuk mencuci pinggan dan mangkuk serta boleh digunakan untuk mencuci tangan. Dengan adanya pendedahan seperti ini murid lebih cakna terhadap pentingnya menjaga alam sekitar dan perlu memperbanyakkan lagi amalan mengitar semula makanan dan mengaplikasikan dalam kehidupan seharian dan sekaligus ia juga dapat memberi impak yang baik terhadap alam sekitar.

COCO M BOARD

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Nurin Qistina Basyirah binti Rusli⁴,

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ABSTRACT

Coconut trees plantations is widely seen in Malaysia. Parts of the trees are used to produce many various products and used in many ways especially in cooking. Coconut fibre becomes the waste products and contributes to environmental pollution which has been one of the global problems.

This product supports the government efforts to enhance the recycle programme which has been one of the country's agenda and help to reduce rubbish in the environment. Hence turning waste to wealth to preserve the ecosystem.

Coco-M Board, Coconut Multipurpose Board is a two in one product. Fibre from the coconut fruit is used as the main material to produce the board. The raw and blended coconut fibres are mixed together Starch flour is used as the binding agent. Starch flour solution is then poured to the mixture of coconut fibre. The mixture is then compressed and dried to a specific mould. It has a multipurpose function, one side act as a white board and another side is a bulletin board. This product can be stand upright and hung. It is portable, easy to handle and can be used in different premises for different purposes.

The product supports the Ministry of Education in implementing the 21st Century Learning. It can be one of the teaching aids in the learning dan teaching process which makes learning more interesting. Hence providing a conducive learning environment. It is cheaper from the already existing product.

Keywords: coconut fibre, starch flour, recycle, board, 21st Century Learning

1.0 INTRODUCTION

In the era of modernization, the impact and effect of the activities on the environment can endanger humans and the ecosystem. Environmental pollution has been one of the global problems.

The plantation of coconut trees is a common situation in Malaysia. Parts of the coconut trees are used to produce many various products with different purposes. Coconut fruits are usually known in Malaysian cooking and coconut fibre become waste products.

2.0 OBJECTIVE

The objective of this product is to enhance the recycling campaign by using waste materials and preserving the environment by using degradable materials. It can also prevent allergies due to the use of artificial materials. It is a safe health and environmental product. Besides that, by producing this product will enhance to use of Malaysia natural resources.

This product is hope to be one of the choices of teaching aids and tools for 21st Century Learning. The community can also have the opportunity to purchase and own multipurpose boards which can be used for different reasons.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

Coco M Board, Coconut Multipurpose Board is invented by improving the already made product in the market. Coco M Board is made up of coconut fiber as the main material. Starch flour is used as the binding agent. The natural and blended fiber and starch solution are mixed together and then compressed to a precise mold. The product is then dried under the hot sun for several days. By using other materials such as decorative paper and white board sheet, the board is produced into a two sided board. One side is a white board and the other side is a bulletin board.

This product is a two in one product with a multipurpose function. The board can be stand upright and hung for easy usage in any type of conditions. It is a portable board and easy to be used. It is also easy to kept. The product is biodegradable because it is produced from natural resources. By combining two different types of boards, the cost of the board is cheaper from buying two different types of boards.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The product can reduce the after used rubbish in the environment which can turn waste to wealth. Hence enhance the recycle programme by producing by-product using recycle fibre. It produces a safe and biodegradable material and preserve the aesthetic value of the ecosystem. It also educates the society of using natural products and supporting the recycling campaign. The product is the first and only board product made by using coconut fibre as the main material. It gives the opportunity for the community to have a better choice of buying and using a natural, safe and environmental board. The product provides the teaching tools / aids for the 21st Century Learning, implemented by the Malaysia Ministry of Education.

5.0 CONCLUSION

Coco M Board is a invented by upgrading the already existing board by using natural resources as the main materials. It gives a new perspective to the already existing board in the market which is a two in one product. It did not use materials that can be harmful to the customers' health. It is a multipurpose board with can be used for different type of activities in different type of premises. It is a product of Malaysian identity which Malaysia can be proud of.

NATMAG CLEANER

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ABSTRACT

Dirty floors affected by dirt, dust, and debris provide a conducive environment to reproduce and lead to human health problems. Floor cleaners are the solution but most of them are chemical based. In the oil palm industries, most of the empty fruit bunches become waste products and these by product can be converted to other beneficial products.

NatMag Cleaner, Natural Magnificent Cleaner is a multipurpose floor cleaning product made mostly of natural ingredients. It cleans stains and repels insects. The main material is the wastes of empty fruit bunches of the palm oil trees which are dried and burnt to ashes and then mixed together with blended curry leaves, pandan leaves and fragrant lemon grass. The ashes have the ability to clean heavy dirty stains. The fermentation of cellulose in the ashes can break down protein and lipid in stains. The different types of leaves have the specialty and ability of repelling different type of insects.

NatMag Cleaner is an environmentally friendly product. It is a waste to wealth product which is the first ever floor cleaning product using the waste of palm oil empty fruit branches as the main ingredient. It will enhance the usage of Malaysian natural resources and the recycling campaigns. The product helps the society to resolve household problems such as cleaning tough stains, repelling insects and preventing health problems and give an awareness to the society to use natural based product. The unique combination of materials will make the product a Malaysian brand.

Keywords: Empty fruit bunches, Pandan Leaves, Curry Leaves, Fragrant Lemongrass.

1.0 INTRODUCTION

Empty fruit bunches (EFB) are the remains of the fresh fruit bunches after the fruit has been removed for oil pressing. Empty fruit bunches are a type of mill waste which is very valuable for farmers because it provides nutrients. Floor cleaners can be found in various forms. They are either marketed in liquid form or powder form. Nowadays cleaning products are created, designed and used to clean various types of flooring. An acidic tile cleaning solution can be used on ceramic and porcelain floors. Household and cleaning products such as soaps, polishes and grooming supplies often include harmful chemicals.

Many cleaning supplies or household products can cause health problems, including cancer. Some products release dangerous chemicals. Other harmful ingredients include ammonia and bleach.

2.0 OBJECTIVE

The objectives of producing the product are problems of cleaning tough dirty floors and most of the floor cleaners in the market are chemical based. There are not many natural based

products in the market. Some floor cleaners give side effects to the users which involved health problems. It will prevent allergies due to the use of artificial and chemical materials

Empty fruit bunches are waste products of palm oil industries. It is used as the main material in the product. This product helps to turn waste to wealth. Besides that, the other materials are leaves that are commonly used in Malaysian cooking. The usage of the leaves helps to promote the natural resources of Malaysia.

This product will preserve the environment by using safe and natural substances. It produces a safe and environmental product. It is easy to prepare because the product uses local resources which are easy to obtain. We hope this will enhance the customer to use Malaysian product.

3.0 DESCRIPTION OF INNOVATION/METHODOLOGY

NatMag Cleaner is invented by improving the already made products in the market which are floor cleaning products. This product has multifunction purposes which cleans floor and at the same time repels insects. It can be used for different types of users and premises.

The main purpose of Natura Cleaner is to help overcome tough floor stains. It also has the ability to repels insects. The main ingredients are from natural resources and mixed together with other materials to enhance the quality of the product.

NatMag Cleaner is produced from the mixture of the ashes of palm oil empty bunches, pandan leaves, lemon fragrant grass, tobacco leaves and curry leaves. The empty bunches of palm oil tree are dried and burnt slowly. The ashes are collected and mixed with the blended fragrant lemon grass, pandan leaves and curry leaves. The solution is then dried to form the cleaning powder.

The ashes of the oil palm empty bunches is able to clean tough and dirty stains. Fragrant lemon grass contains citronella oil which is unfavorable to insects. Pandan leaves and curry leaves also give the same effect to insects. The mixture of these materials is able to produce a multipurpose floor cleaner.

NatMag Cleaner will give an alternative to the customers to choose a safe and environmental floor cleaning product in the market. It has special features and will be one of the potential products in the market. It can be one of the Malaysian product that can be highlighted because the production of the product uses simple and local materials that can easily be found.

4.0 ADVANTAGE/IMPACT/RESULTS/NOVELTY

The product helps the society to resolve household problems by using natural based product. It is a multipurpose product which helps to clean and repels insects. The main material, the palm oil empty fruit bunches is the waste product of palm oil industries and the product helps to turn waste to wealth. The usage of pandan leaves as a cockroach repellent, curry leaves and fragrant lemon grass as a repellent to insects increase the quality of the floor cleaning product. The product will ensure that the premises will always be clean and clear of insects. Since the main material is the palm oil empty fruit bunches, added to the blended pandan leaves, curry leaves and fragrant lemon grass, the product is different from other floor cleaners in the market. It will be a Malaysia product with big potential.

5.0 CONCLUSION

NatMag Cleaner is a natural based floor cleaner. It is a multipurpose floor cleaner which cleans dirty floor and at the same time, repels insects. It can be a potential product due to the multiple usages provided by the product. It uses the waste product of one of the main and important plantations in Malaysia which is palm oil trees. The empty fruit bunches are used as the main materials and this become a special aspects in the production of this product. It will a product that Malaysia can be proud of and a product with Malaysia identity.

BALISTIK

Fatin Binti Md Ghazali¹ (Sk Taman Permas Jaya 2)
Siti Husna Binti Hassan Basri (Sk Taman Permas Jaya 2)

ABSTRAK

Kemahiran menulis merupakan kemahiran kognitif yang kompleks dan merupakan satu cabaran bagi guru dan murid ketika sesi pengajaran dan pembelajaran. Bertitik tolak daripada permasalahan ini inovasi ini bertujuan untuk membantu murid mewujudkan ruang di antara penulisan perkataan dengan perkataan yang lain dalam kalangan murid Pendidikan Khas. Kebanyakan murid Pendidikan Khas mempunyai masalah perkataan ditulis terlalu rapat di antara satu sama lain dalam menyelesaikan tugas seharian. Hal ini menyukarkan guru untuk menyemak hasil kerja murid kerana ketiadaan ruang dalam penulisan perkataan mereka. Untuk mencapai objektif ini, BALISTIK (Pembaris Tulisan Cantik) dihasilkan berperanan sebagai pembahagi antara perkataan. Penggunaan BaLiSTik ini dilihat telah membantu murid untuk mewujudkan ruang di antara perkataan agar mutu penulisan mekanis mereka lebih kemas dan teratur. Ianya juga membantu murid Disleksia melalui deretan huruf dan nombor. Produk BaLiSTik mempunyai potensi kepada murid-murid Pendidikan Khas dalam menghasilkan ruang antara perkataan akan dan hasil penulisan murid lebih kemas serta mudah difahami.

Kata Kunci: Kemahiran menulis¹, BALISTIK², Murid Berkeperluan Pendidikan Khas³.

1.0 OBJEKTIF INOVASI

- a) Membantu murid Pendidikan Khas mewujudkan ruang di antara penulisan perkataan dengan perkataan yang lain.
- b) Meningkatkan tahap kekemasan tulisan tangan murid Pendidikan Khas
- c) Meningkatkan tahap penguasaan kemahiran menulis mekanis dalam kalangan murid Pendidikan Khas.

2.0 KUMPULAN SASARAN

Murid Pendidikan Khas yang bermasalah menulis perkataan terlalu rapat di antara satu dengan lain atau penulisan yang tidak konsisten (ada yang rapat dan ada yang jauh).

3.0 LATAR BELAKANG

Definisi menulis menurut Kamus Dewan Edisi Keempat (muka surat 1729), ialah mencatat kata-kata dengan huruf dan memakai pena seperti kalam, kapur, pensel dan lain-lain. Di samping itu, menulis juga bermaksud melahirkan perasaan (fikiran dan lain-lain) dengan catatan yang memakai huruf, membuat surat atau mengarang.

Konsep menulis secara khusus dikaitkan dengan proses penyaluran ilmu, idea atau maklumat secara sistem yang mengambil kira aspek tujuan menulis, penggunaan bahasa, audiens dan gaya penulisan supaya dapat menggambarkan keadaan, alam dan kehidupan secara lebih menyeluruh.

Dalam proses pengajaran dan pembelajaran, peranan tulisan sangat penting kerana tulisan bertindak sebagai alat bagi menurunkan segala isi pelajaran dan mempamerkan buah fikiran seseorang. Tulisan berhubung rapat dengan membaca di mana kedua-duanya mementingkan teknik dan akal. Membaca tidak mungkin ada kalau tidak ada tulisan begitu juga sebaliknya.

Di sekolah-sekolah, pelajaran menulis dan membaca bukanlah sesuatu yang terpisah sifatnya malah seharusnya dijalankan serentak atau dalam masa selari. Walaupun pada dasarnya membaca seharusnya mendahului tulisan tetapi kadangkala kanak-kanak telah pandai menulis ketika masuk sekolah. Ini tidaklah merisaukan kerana sewaktu mereka menulis mereka juga membaca.

Sepanjang pengajaran dan pembelajaran (Pdp) di dalam kelas Pendidikan Khas, pengkaji mendapati terdapat murid PPKI mempunyai masalah dalam kemahiran menulis. Murid-murid akan menulis atau menyalin secara rapat-rapat antara perkataan dan hasil penulisan yang tidak kemas. Kebanyakan mereka yang mempunyai masalah menulis secara rapat tidak memahami konsep ruang atau jarak antara perkataan yang ditulis.

Kajian dijalankan kepada 15 orang murid Pendidikan Khas daripada kelas PK Kreatif dan PK Proaktif dari SK Taman Permas Jaya 2. Berdasarkan pemerhatian guru melalui lembaran kerja murid, terdapat 15 orang murid tersebut mengalami masalah menulis terlalu rapat antara satu perkataan dengan perkataan yang lain. Ada juga murid yang menulis secara tidak konsisten. Di mana ada perkataan yang dirapatkan dan ada perkataan yang ditulis berjauhan. Murid akan mengalami kesukaran untuk membaca kembali hasil tulisan mereka kerana ayat tersebut menjadi tidak bermakna dan menyukarkan guru untuk menyemak hasil kerja tersebut.

Isu / Masalah Sebelum Pelaksanaan Inovasi

Isu 1 : Murid menulis terlalu rapat antara perkataan

Isu 2 : Tulisan murid yang tidak konsisten (ada yang rapat dan ada yang dijarakkan)

Isu 3 : Hasil tulisan tangan murid tidak kemas dan sukar utk membaca perkataan bermakna

Huraian Inovasi

- Bahan yang digunakan untuk menghasilkan inovasi
 - i. BALISTIK (Pembaris Tulisan Cantik)
 - ii. Mountin Board
 - iii. Kertas pelekat
 - iv. Squishies Toy
- Cara inovasi digunakan
 - i. Murid akan meletakkan BALISTIK pada buku Latihan atau lembaran
 - ii. Penunjuk anak panah perlu diletakkan selari dengan garisan pada buku tulis atau lembaran kerja.
 - iii. Senggatan akan digerakkan bagi menghasilkan jarak antara perkataan
 - iv. Murid akan menulis perkataan di dalam ruangan kosong yang terbentuk pada BALISTIK
 - v. BALISTIK akan digerakkan untuk menyalin perkataan atau ayat seterusnya.

- Kos menghasilkan inovasi

BIL	BAHAN	HARGA (RM)
1.	Mountin Board	2.00
2.	Kertas Pelekat	1.00
3.	Squishies Toy	1.00
JUMLAH		4.00

- Keberkesanan inovasi kepada pengajaran dan pembelajaran (sertakan bukti)

ISU	SEBELUM PENGGUNAAN BALISTIK	SELEPAS PENGGUNAAN BALISTIK
Tulisan terlalu rapat antara perkataan	Adriana Emak membeli sayur-sayuran ikan dan daging di pasar. Rmai orang membeli barang-barang di pasar. Kita boleh tawar-menawar di pasar. Emak selalu tawar-menawar apabila membeli barang-barang sayur-sayuran dan barang-barang lain yang dibeli di pasar akan disimpan di dalam peti sejuk di rumah.	Adriana Gagak yang cerdik cucak hari ini panas terik seekor gagak sedang mencari air tiba-tiba ternampak sebuah takar yang berisi sedikit air. Gagak tidak dapat. Gagak cuba mencari akal. Ia memasukkan batu-batu kecil ke dalam takar. Perlahan-lahan air disedut takar mula naik. Gagak terus berusaha akhirnya gagak dapat minum air itu.
Tulisan terlalu rapat antara perkataan	YUSOF Emak membeli sayur-sayuran ikan dan daging di pasar. Rmai orang membeli barang-barang di pasar. Kita boleh tawar-menawar di pasar. Emak selalu tawar-menawar apabila membeli barang-barang sayur-sayuran dan barang-barang lain yang dibeli di pasar akan disimpan di dalam peti sejuk di rumah.	YUSOF cucak hari ini panas terik. gagak sedang mencari air. tiba-tiba ia ternampak sebuah takar yang berisi sedikit air. Gagak tidak dapat minum. Gagak cuba mencari akal. Ia memasukkan batu-batu kecil ke dalam takar. Perlahan-lahan air di dalam takar mula naik. gagak terus berusaha. Akhirnya gagak dapat minum air itu.
	RAHMAT Emak membeli sayur-sayuran ikan dan daging di pasar. Rmai orang membeli barang-barang di pasar. Kita boleh tawar-menawar di pasar. Emak selalu tawar-menawar apabila membeli barang-barang sayur-sayuran dan barang-barang lain yang dibeli di pasar akan disimpan di dalam peti sejuk di rumah.	RAHMAT Gagak yang cerdik cucak hari ini panas terik seekor gagak sedang mencari air tiba-tiba ia ternampak sebuah takar yang berisi sedikit air.
	PASAR JAJUN Emak membeli sayur-sayuran ikan dan daging di pasar. Rmai orang membeli barang-barang di pasar. Kita boleh tawar-menawar di pasar. Emak selalu tawar-menawar apabila membeli barang-barang sayur-sayuran dan barang-barang lain yang dibeli di pasar akan disimpan di dalam peti sejuk di rumah.	JAJUN Gagak yang cerdik cucak hari ini panas terik seekor gagak sedang mencari air tiba-tiba ia ternampak sebuah takar yang berisi sedikit air.

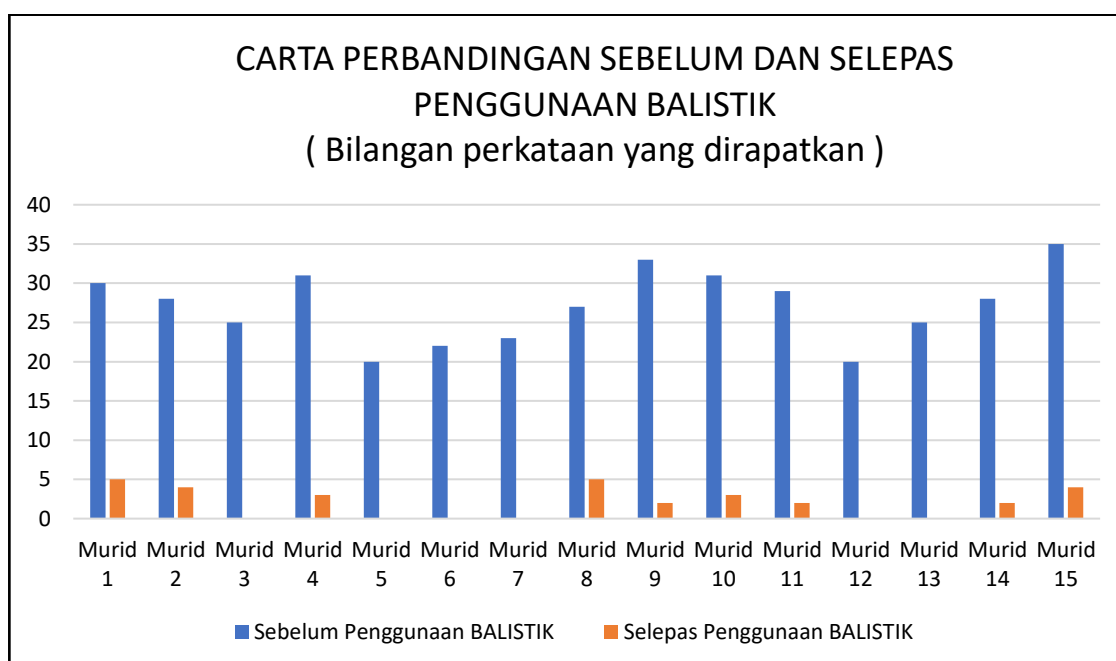
Tulisan bercampur jarak (ada perkataan yang jauh dan ada perkataan yang dekat)	- Sebelum - Emak membeli sayur-sayuran ikan dan daging di pasar. Ramai orang membeli barang-barang di pasar. Kita boleh tawar-menawar apabila membeli barang di pasar. Sayur-sayuran dan barang-barang di pasar yang dibeli di pasar akan disimpan di dalam peti sejuk di rumah.	- Selepas - Cuaca hari ini panas terik. Gagak sedang mencari air. Tiba-tiba ia ternampak sebuah takor yang berisi sedikit air. Gagak tidak dapat minum.
	Qayyum Emak membeli sayur-sayuran ikan dan daging di pasar. Ramai orang membeli barang-barang di pasar. Kita boleh tawar-menawar apabila membeli barang di pasar. Sayur-sayuran dan barang-barang di pasar yang dibeli di pasar akan disimpan di dalam peti sejuk di rumah.	Qayyum Gagak Yang Cerdik. Cuaca hari ini panas terik. Seekor gagak sedang mencari air. Tiba-tiba ia ternampak sebuah takor yang berisi sedikit air. Gagak tidak dapat minum.
Tulisan bercampur jarak (ada perkataan yang jauh dan ada perkataan yang dekat)	Ray Emak membeli sayur-sayuran ikan dan daging di pasar. Ramai orang membeli barang-barang di pasar. Kita boleh tawar-menawar apabila membeli barang di pasar. Sayur-sayuran dan barang-barang di pasar yang dibeli di pasar akan disimpan di dalam peti sejuk di rumah.	Azroy Gagak Yang Cerdik. Cuaca hari ini panas terik. Seekor gagak sedang mencari air. Tiba-tiba ia ternampak sebuah takor yang berisi sedikit air. Gagak tidak dapat minum.

Jadual 1: Jadual Bukti Gambarajah Keberkesanan Penggunaan BALISTIK.

MURID	SEBELUM PENGGUNAAN BALISTIK	SELEPAS PENGGUNAAN BALISTIK
	BILANGAN PERKATAAN DIRAPATKAN SEBELUM MENGGUNAKAN BALISTIK (37 PERKATAAN)	BILANGAN PERKATAAN DIRAPATKAN SELEPAS MENGGUNAKAN BALISTIK (37 PERKATAAN)
MURID 1	30	5
MURID 2	28	4
MURID 3	25	0
MURID 4	31	3

MURID 5	20	0
MURID 6	22	0
MURID 7	23	0
MURID 8	27	5
MURID 9	33	2
MURID 10	31	3
MURID 11	29	2
MURID 12	20	0
MURID 13	25	0
MURID 14	28	2
MURID 15	35	4

Jadual 2: Jadual Perbandingan Sebelum dan Selepas Penggunaan BALISTIK



Rajah 1 : Carta Perbandingan Sebelum dan Selepas Penggunaan BALISTIK

Jadual 2 dan Rajah 1 merupakan keputusan sebelum dan selepas penggunaan BALISTIK terhadap 15 orang murid Pendidikan Khas. Pengkaji mengukur keputusan berdasarkan bilangan perkataan yang dirapatkan pada Latihan yang diberikan kepada murid. Latihan yang diberikan mengandungi 39 perkataan merupakan sebuah perenggan ringkas. Berdasarkan Jadual 2, didapati terdapat 15 orang murid Pendidikan Khas yang mempunyai masalah dalam menyalin perkataan mekanis. Antara isu yang dapat diperhatikan ialah murid menyalin perkataan terlalu rapat atau menyalin secara tidak konsisten. 15 orang murid tersebut mencatatkan skor tertinggi bilangan perkataan yang dirapatkan sebelum penggunaan BALISTIK diaplikasikan.

Selepas penggunaan BALISTIK diaplikasikan, didapati berlaku pengurangan perkataan yang dirapatkan. Pengurangan yang sangat ketara boleh dilihat berdasarkan carta pada Rajah 1. Kesemua murid dapat mengaplikasikan penggunaan BALISTIK dengan baik dan boleh membantu mereka menyalin atau menulis secara mekanis.

Lampiran

- Potensi untuk disebar luaskan kepada pihak lain

Ciri khas BALISTIK ini boleh digunakan bagi murid Disleksia atau yang mempunyai masalah dalam penulisan huruf atau nombor terbalik. Aturan huruf dan nombor mengikut arah mampu membantu murid membezakan cara penulisan huruf

atau nombor berkenaan. Dengan cara ini murid-murid tersebut dapat membezakan huruf atau nombor berkenaan dan boleh menulisnya dengan betul.

BALISTIK boleh disebarluas penggunaannya bagi murid Prasekolah, Tahun 1 dan pelatih Program Pemulihan dalam Komuniti (PDK) yang mempunyai masalah dalam menulis perkataan terlalu rapat bagi membantu mereka menulis dengan kemas dan betul serta meningkatkan tahap penguasaan kemahiran menulis mekanis dalam kalangan murid tersebut.

BALISTIK telah disebarluas semasa Pertandingan 3-mins Pitching Daerah Pasir Gudang tahun 2022 dan mendapat Tempat Pertama Ketika pertandingan tersebut di peringkat daerah Pasir Gudang dan Tempat Ketiga di peringkat Negeri Johor.

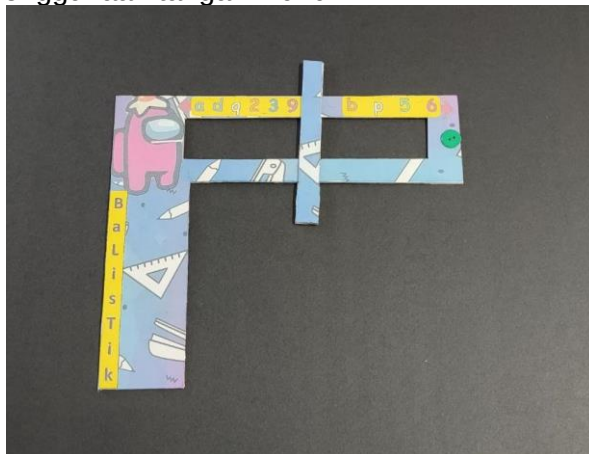
BALISTIK juga boleh digunakan dalam membantu meningkatkan kemahiran mewarna dalam kalangan murid Pendidikan Khas. Penggunaannya boleh diubahsuai bagi membantu murid mewarna dalam ruang yang disediakan. Kemahiran ini perlu dalam melatih murid Pendidikan Khas untuk mewarna tidak melebihi gambar atau ruang yang disediakan.

Diharapkan dengan penggunaan BaLiSTik ini mampu membantu murid untuk menulis dengan lebih kemas dan cantik serta mampu membezakan cara penulisan sesuatu huruf atau nombor. Moga dengan penciptaan BaLiSTik ini mampu meningkatkan keyakinan murid Pendidikan Khas khususnya dalam kemahiran menulis dan berjaya pada masa hadapan.

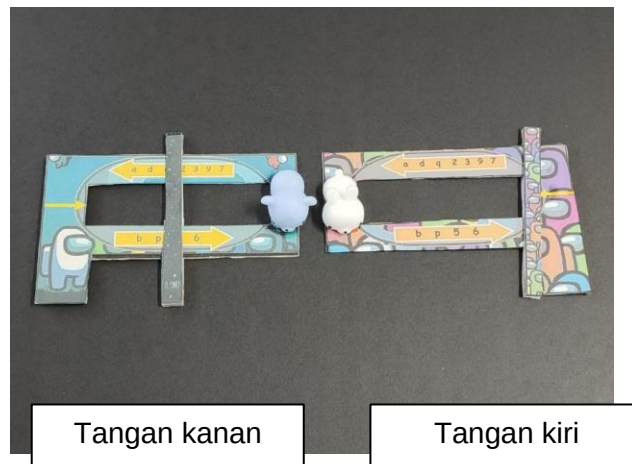
- Keterangan lain yang berkaitan.

BALISTIK telah ditambahbaik dari versi yang sebelumnya. Pada versi 1.0, BALISTIK direka dengan saiz yang lebih besar berbanding versi Kedua. Penambahbaikan dibuat dari aspek saiz, reka bentuk rupa, dan penambahan alat sensori.

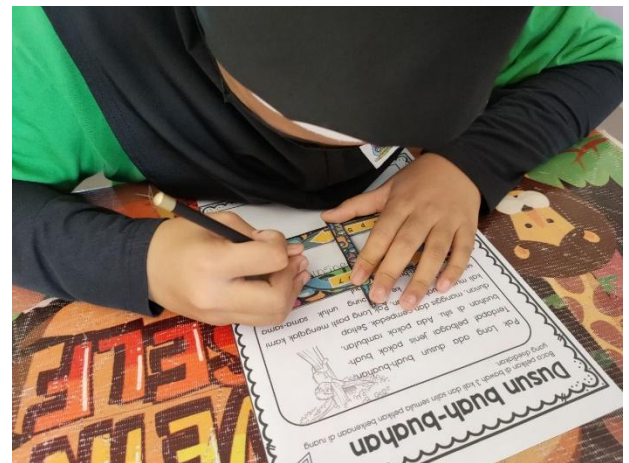
BALISTIK versi 2.0 lebih kecil saiznya memenuhi keperluan ruang buku tulis dan lembaran kerja murid. Hal ini akan memudahkan untuk murid Pendidikan Khas mengawal BALISTIK ketika digunakan. Reka bentuk rupa BALISTIK juga ditambah baik dengan menggunakan tema animasi kartun 'Among Us' yang merupakan animasi kegemaran kebanyakan murid Pendidikan Khas. Ciri tambahan sensori juga di masukkan ke dalam versi kedua BALISTIK iaitu 'Squishie Toy'. Squishie Toy ini berperanan meransang kemahiran motor halus dan sensori murid Pendidikan Khas. Murid boleh memegang dan memicit permainan tersebut ketika waktu senggang semasa menyelesaikan tugas yang diberikan. BALISTIK 2.0 juga direka dalam dua versi tangan kanan dominan dan tangan kiri dominan. Reka bentuk dibezakan mengikut cara penggunaan tangan murid.



Rajah 2 : BALISTIK 1.0



Rajah 3 : BALISTIK 2.0 (Pengguna tangan kanan dominan dan tangan kiri dominan)



Rajah 4 : Gambar Penggunaan BALISTIK di dalam kelas

INOVASI LAMPU MEJA

Imanina Lutfiyah Binti Muhammad Lotfie¹, Muhammad Hariz Fayyadh Bin Mohd Hairi¹,
Aisy Nurhannani Binti Hairulasmi¹, Khalisha Sofia Binti Mohd Khalil¹

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ABSTRAK

Kajian ini memperkenalkan lampu meja inovatif yang dicipta oleh Kumpulan Tahun 5 menggunakan bahan sekolah dan terpakai. Lampu ini mempunyai rekaan unik dan bertujuan menggabungkan mata pelajaran Sains, Matematik, dan Reka Bentuk Teknologi dalam pendekatan bertema dalam pengajaran Tahun 5.

Lampu meja ini berperanan sebagai alat pengajaran untuk konsep litar elektrik asas dalam mata pelajaran Sains Tahun 5. Selain itu, ia melibatkan murid dalam merancang bahan, alat, dan mengatur jadual projek mengikut silibus Reka Bentuk Teknologi. Projek ini juga mengajar kemahiran Matematik melalui pengiraan sudut, bentuk, dan rupa.

Keunikan lampu meja ini membuka potensi untuk pembangunan kemahiran sendiri dan kolaboratif murid. Ia juga mengenalkan aspek keusahawanan dengan memahami konsep pengiraan modal dan keuntungan dalam proses penghasilan produk.

Kesimpulannya, lampu meja inovatif ini berjaya menggabungkan kemahiran dan pengetahuan dari tiga mata pelajaran utama: Sains, Reka Bentuk Teknologi, dan Matematik. Ia juga memberikan pemahaman yang mendalam tentang konsep litar elektrik asas dan berpotensi untuk merangsang minat serta pemahaman pelajar serta memberi impak positif dalam penggunaan sumber tenaga dan pembangunan produk secara lestari.

Kata Kunci: lampu meja, inovasi, pendidikan, bahan terpakai, keusahawanan

1.0 PENGENALAN

Lampu meja inovatif yang diperkenalkan dalam kajian ini merupakan hasil kerja murid Kumpulan Tahun 5. Produk ini unik kerana ia dikeluarkan daripada bahan sekolah dan bahan terpakai yang biasanya tidak lagi digunakan. Kajian ini akan menyentuh aspek penggabungan mata pelajaran Sains, Matematik, dan Reka Bentuk Teknologi Tahun 5 melalui pendekatan bertema.

2.0 OBJEKTIF

Objektif utama projek ini adalah untuk mencipta sebuah lampu meja inovatif dari bahan sekolah dan bahan terpakai serta menggabungkan konsep Sains, Matematik, dan Reka Bentuk Teknologi dalam pendekatan pendidikan bertema.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Lampu meja ini dihasilkan daripada bahan-bahan sekolah seperti sel kering, pemegang sel kering, suis, wayar dan kadbod sekolah yang tidak lagi digunakan. Proses penghasilan lampu meja melibatkan lakaran, pemotongan, dan penyusunan semula bahan-bahan tersebut. Jadual 1 di bawah menunjukkan butiran keperluan bahan:

Jadual 1: Keperluan Bahan untuk Lampu Meja

No.	Bahan	Kuantiti
1	Sel kering	2
2	Pemegang sel kering	1
3	Suis	1
4	Wayar	15 cm x 3
5	Kadbod	1
6	Batang aiskrim	Ikut keperluan
7	Penjalur wayar, pemutar skru	Ikut keperluan

Contoh gambarajah diberi seperti di bawah.



Rajah 1: Produk Lampu Meja yang telah dihasilkan.

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Lampu meja inovatif ini memberikan peluang kepada murid untuk memahami konsep litar elektrik asas dalam mata pelajaran Sains Tahun 5. Selain itu, penggunaan bahan sekolah dan terpakai juga mengajar murid tentang kelestarian alam dan penggunaan kreatif sumber-sumber yang ada.

5.0 KESIMPULAN

Kesimpulannya, lampu meja inovatif ini bukan hanya mencapai objektif menggabungkan mata pelajaran Sains, Matematik, dan Reka Bentuk Teknologi, tetapi juga memberikan kesedaran mengenai penjimatan sumber dan pembangunan produk yang mampan. Produk ini mempunyai potensi untuk digunakan dalam konteks pendidikan holistik dan boleh dijadikan sebagai satu langkah menuju pendidikan yang lebih lestari.

KIT TETINGKAP BUINDAR : MENGUKUHKAN KONSEP PEMBUNDARAN NOMBOR DALAM KALANGAN MURID BERKEPERLUAN PENDIDIKAN KHAS

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Gangga Tarshini Rajan³, Siti Haidah Buang⁴

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ABSTRAK

Inovasi ini dijalankan untuk mengatasi masalah yang dihadapi oleh murid berkeperluan pendidikan khas (MBPK) dalam mata pelajaran Matematik Pendidikan Khas KSSMPK Tingkatan 1, topik pembundaran. Masalah utama yang dilihat di kalangan MBPK dalam sesi Pengajaran dan Pemudahcara (PdPc) ialah kurang tumpuan serta minat terhadap pengajaran dan pembelajaran secara konvensional. MBPK juga memerlukan masa yang agak lama untuk mereka cukup memahami sesuatu konsep baharu dan mempunyai ingatan jangka pendek jika konsep tersebut tidak diaplikasikan. Maka penggunaan bahan pembelajaran yang hands-on lagi menyeronokkan digunakan dalam menyokong proses pembelajaran berlaku sesuai dengan pembelajaran abad ke 21 (PAK21). Kit Tetingkap Bundar digunakan untuk mengukuhkan konsep asas pembundaran. Murid diberi contoh dan cara penyelesaian penggunaan bundar dalam kehidupan harian. Kesan penggunaannya dikenalpasti melalui hasil ujian pra dan pos menunjukkan peningkatan kemahiran membundar setelah menggunakan bahan ini. Selepas ujian pos dijalankan, keputusan ujian pos telah menunjukkan peningkatan prestasi sebanyak 28.29% iaitu daripada purata 54.00% kepada 82.29%. Murid juga belajar menghargai sesuatu dan bertanggungjawab menjaga amanah dengan baik. Kesimpulan kajian ini, telah dapat meningkatkan kemahiran murid menguasai objektif pembelajaran. Pendekatan sebegini berpotensi diperluaskan lagi pada masa akan datang.

Kata Kunci: bundar, pembundaran, Pendidikan khas

1.0 PENGENALAN

Pembundaran adalah asas matematik yang perlu dikuasai dengan baik dan banyak digunapakai dalam kehidupan harian. Masalah utama yang dilihat di kalangan MBPK dalam sesi Pengajaran dan Pemudahcara (PdPc) ialah kurang tumpuan serta minat terhadap pengajaran dan pembelajaran secara konvensional. MBPK juga memerlukan masa yang agak lama untuk mereka cukup memahami sesuatu konsep baharu dan mempunyai ingatan jangka pendek jika konsep tersebut tidak diaplikasikan.

Seramai 7 orang murid berkeperluan pendidikan khas (MBPK) yang terlibat mempunyai pelbagai kategori iaitu cerebral palsy, lembam, sindrom Down, masalah pertuturan, autistik, disleksia dan masalah pendengaran dengan keupayaan serta tahap kognitif yang berbeza.

2.0 OBJEKTIF

Penyediaan suasana pembelajaran yang lebih aktif dengan aktiviti hands-on seperti menyediakan bahan maujud untuk mengatasi masalah memahami konsep pembundaran. Rasional pemilihan bahan pembelajaran ini adalah untuk keluar daripada kebiasaan

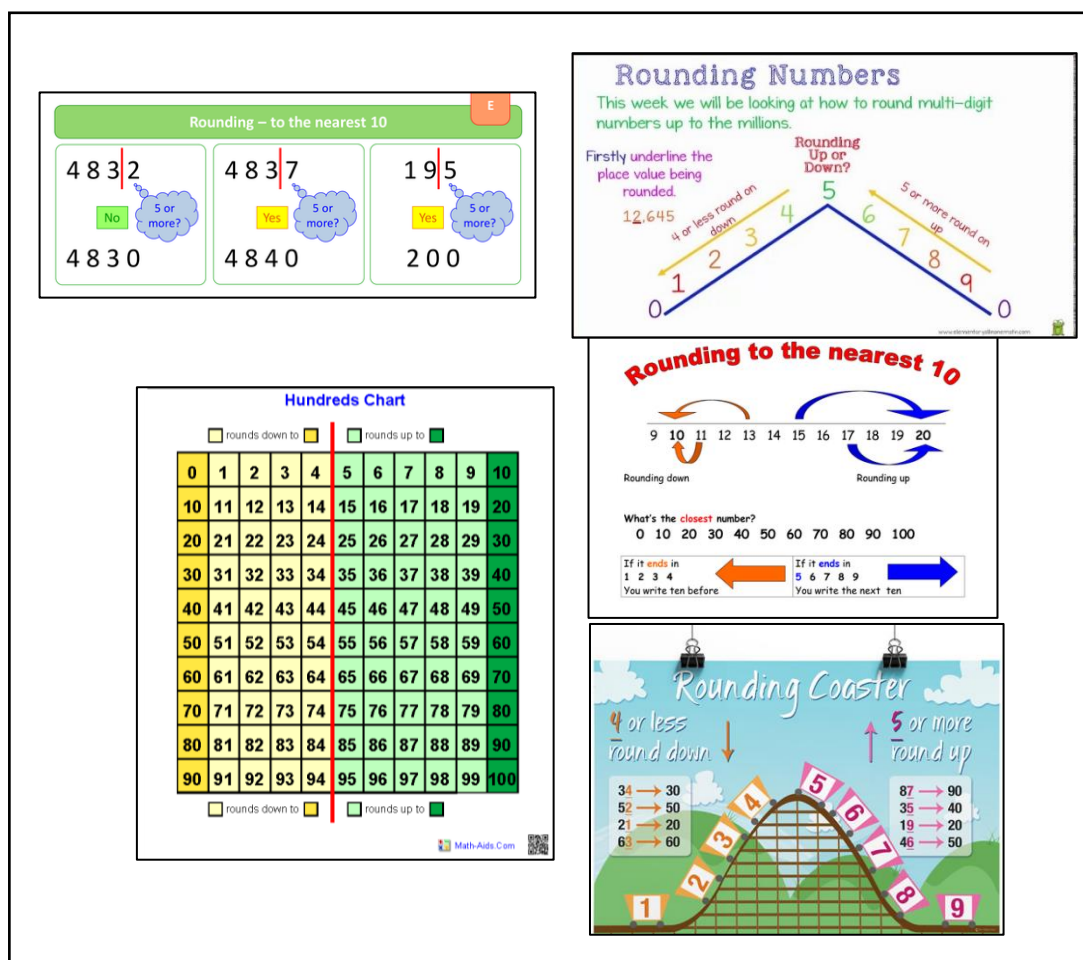
menggunakan pensel, kertas dan papan putih secara konvensional juga berpotensi meningkatkan stimulasi MBPK dalam kemahiran multisensori iaitu mendengar, melihat dan sentuhan. Maka Kit Tetingkap Bundar dibina dan diperkenalkan untuk menyokong proses pembelajaran.

Objektif penghasilan inovasi Kit Tetingkap Bundar dalam kalangan MBPK ini adalah seperti berikut:

- mengasah kemahiran MBPK mengendalikan perisian dan perkakasan komputer.
- menyediakan bahan pembelajaran yang hands-on lagi menyeronokkan
- bahan pembelajaran menyokong proses pembelajaran sesuai dengan PAK21

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Kajian terhadap bahan pembelajaran bagi topik pembundaran yang sedia ada kebanyakannya kurang interaktif. Ia juga tidak melibatkan murid belajar secara hands-on malah kurang menyeronokkan. Ada bahan menggunakan jadual sebagai panduan pembundaran, gambar keretapi, puncak bukit, garis nombor, teknik segi tiga dan macam-macam lagi seperti ditunjukkan dalam Rajah 1.

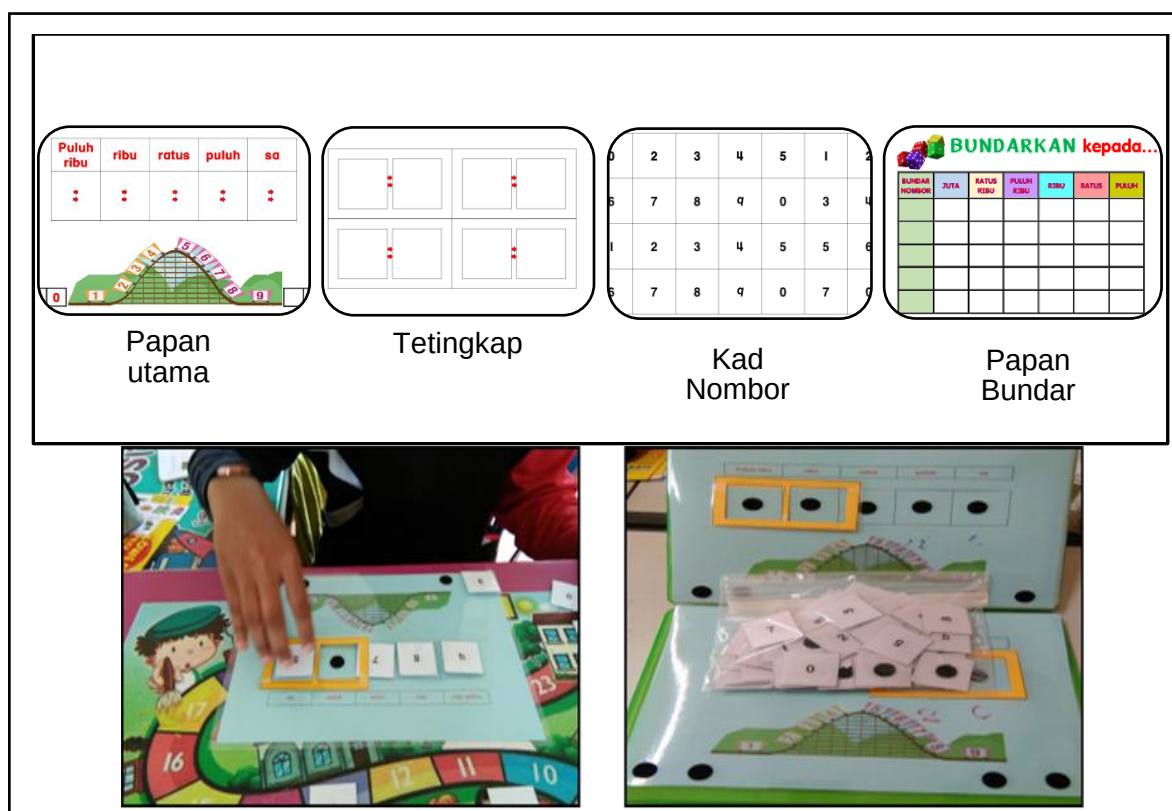


Rajah 1 : Contoh bahan pembelajaran topik pembundaran.

Kit Tetingkap Bundar ialah bahan bantu pembelajaran untuk mengukuhkan konsep pembundaran yang boleh digunakan secara individu, berpasangan dan berkumpulan Bersama aktiviti yang menarik dan pelbagai. Setelah menjalan kajian lepas terhadap bahan sedia ada, maka kami mendapat idea dan memutuskan untuk membina bahan inovasi Tetingkao Bundar sebagai penambahbaikan dan ciptaan baharu yang lebih interaktif dan mesra pengguna.

Bahan yang digunakan untuk menghasilkan inovasi adalah seperti berikut:

- 4 helai kertas A4 berwarna untuk mencetak papan utama, tetingkap dan kad nombor
- Plastik laminate untuk membuat lapisan kertas keras dan tahan lama
- Pita Velcro untuk melekatkan kad nombor di papan utama
- Papan bundar nombor rawak
- Dadu



Rajah 2 : Bahan inovasi.

Manual pengguna :

- Pengguna perlu membaling 5 biji dadu untuk memperolehi nombor rawak
- Nombor yang diperolehi dibaca dari dadu paling kiri ke kanan
- Nombor dicatatkan ke dalam papan bundar
- Pengguna menggunakan papan utama untuk membantu mendapatkan hasil nombor yang akan dibundarkan
- Pengguna perlu menggerakkan tingkap bundar mengikut rumah digit yang ingin dibundarkan
- Pengguna menentukan nilai kiri dan kanan kemungkinan nombor bundar
- Pengguna menyemak 'nombor tingkap jiran' sama ada telah naik 'roller coaster' atau belum untuk menentukan tambah nilai 1 atau tidak
- Pengguna menentukan nombor yang dibundarkan
- Hasil pembundaran mengikut digit dicatat dalam papan bundar
- Pengguna mengulangi papan utama tetingkap bundar untuk digit yang diinginkan
- Permainan boleh dilakukan secara individu atau berkumpulan
- Ia juga boleh diguna bersama permainan 'Bundarkan QR Code Challenge' secara luar talian.

Proses Menghasilkan Bahan Inovasi



Rajah 3 : Proses menghasilkan bahan inovasi.

- i. Merekabentuk bahan dalam slaid Power Point dan mencetak.
- ii. Meletakkan lapisan plastik dan memotong bahagian yang tertentu.
- iii. Menampal pita Velcro.
- iv. Mencadangkan nama bahan dan membuat undian.
- v. Menggunakan bahan dalam PdPc.

MBPK bersemangat untuk menyiapkan bahan bantu belajar sendiri di samping mengasah kemahiran mengendalikan perisian dan perkakasan komputer. Murid melakukan aktiviti dengan penuh semangat dan ceria.

Aktiviti 2

Murid diberi beberapa biji dadu kemudian diminta melempar dadu tersebut di atas meja. Murid perlu menyebut nombor yang diperolehi dan menampal kad nombor di papan utama Tetingkap Bundar. Aktiviti ini adalah terapi untuk merangsang pergerakan hujung jari serta koordinasi mata-tangan disamping mengimbas kembali pengetahuan mengenal nombor bulat.

Murid diberi Kit Tetingkap Bundar secara individu untuk mengukuhkan konsep asas pembundaran. Tetingkap Bundar boleh digerakkan mengikut rumah digit yang hendak dibundarkan kemudian melihat rujukan nombor roller coaster untuk dibundarkan. Murid diberi contoh dan cara penyelesaian penggunaan bundar dalam kehidupan harian.



Rajah 4 : Penggunaan bahan inovasi dalam PdPc

Aktiviti 3

Murid dibahagikan kepada 2 atau 3 orang setiap kumpulan dan diberi komputer tablet untuk melakukan aktiviti Bundar QR Code Challenge bersama Kit Tetingkap Bundar. Murid perlu mengimbas kod QR untuk menyelesaikan 5 soalan pembundaran pada 5 check point. Aktiviti ini dapat melibatkan murid berkomunikasi dalam kumpulan dan berfikir secara kritis untuk membundar nombor. Jawapan akan dicatat ke dalam buku latihan.

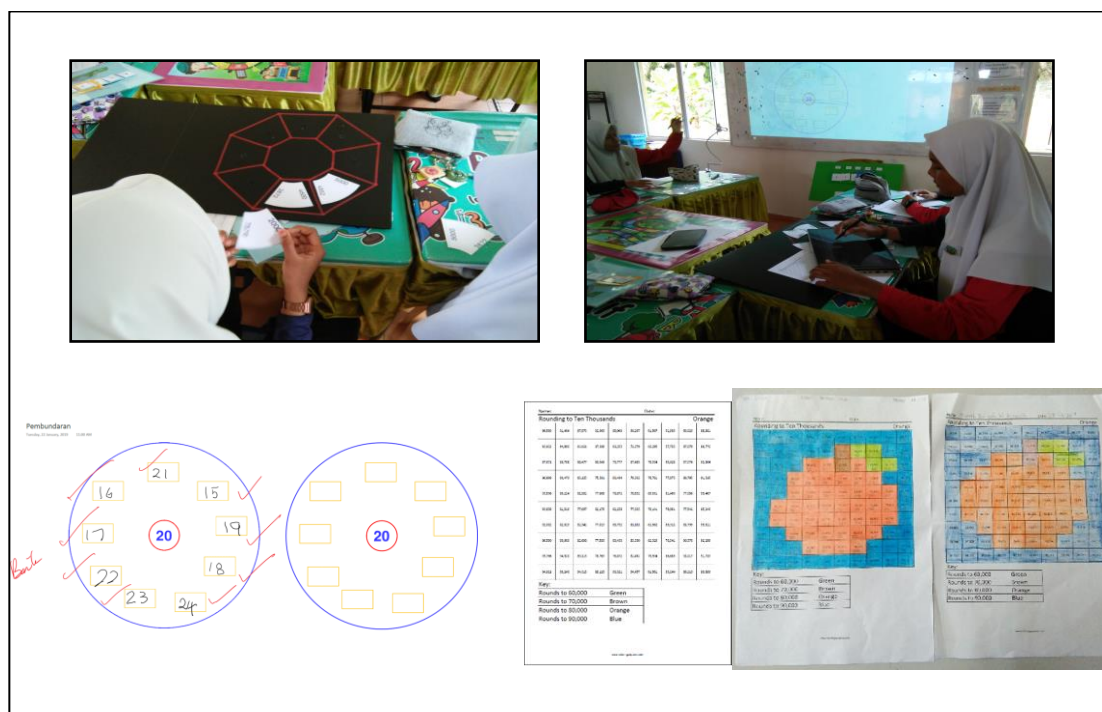
Kumpulan terawal siap dibenarkan bermain permainan Video Sensing di mana murid perlu menyentuh bola secara maya yang mempunyai jawapan pembundaran. Murid boleh berbincang mencari jawapan dan bertoleransi menentukan siapa yang akan menanduk bola tersebut mengikut giliran.



Rajah 5 : Penggunaan bahan inovasi dalam PdPc

Aktiviti 4

Aktiviti seterusnya murid diberi kepingan-kepingan kad Tarsia pembundaran untuk dicantum dan diselesaikan bersama oleh semua ahli kumpulan. Permainan uji minda puzzle Tarsia digunakan untuk menambah keseronokan belajar di samping mengaplikasikan kolaborasi, kreatif, koperatif dan pemikiran kritikal MBPK. Sebanyak 8 keping kad perlu dicantumkan untuk memadankan nombor buldar. Setelah murid menguasai kemahiran membundar, murid diberi latihan pengukuhan dalam bentuk peta bulatan. Murid menyelesaikan peta bulatan secara kolaboratif menggunakan teknik digital ink. Murid dibekalkan kerja rumah Bundar Minecraft.



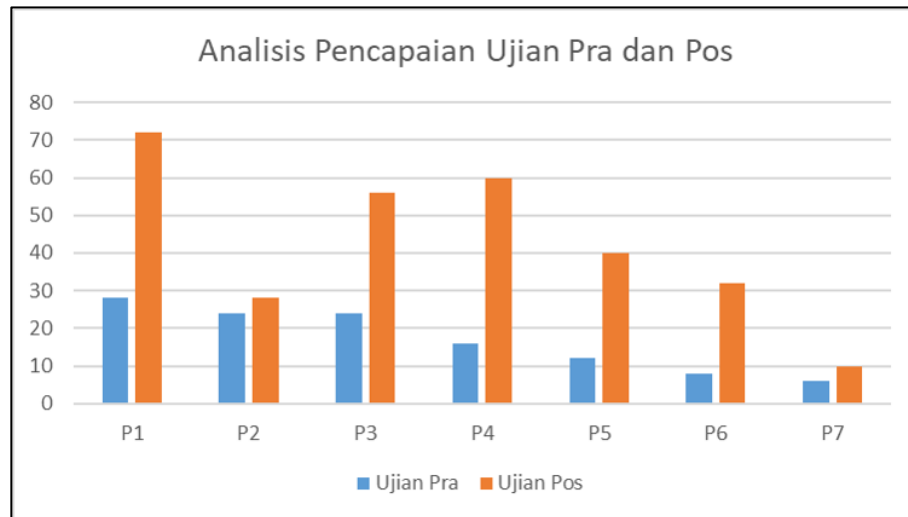
Rajah 6 : Penggunaan bahan inovasi dalam PdPc

Penggunaan digital ink menarik minat murid untuk menulis dalam medium yang luar daripada kebiasaan mereka. Murid gigih untuk menyiapkan kerja rumah dengan pantas tanpa menyedari mereka sedang melakukan latihan kerana teruja hendak melihat gambar apa yang akan diperolehi apabila selesai tugas. Murid bertanding antara individu atau pun antara kumpulan yang dapat membentuk yakin diri dan berdaya saing.

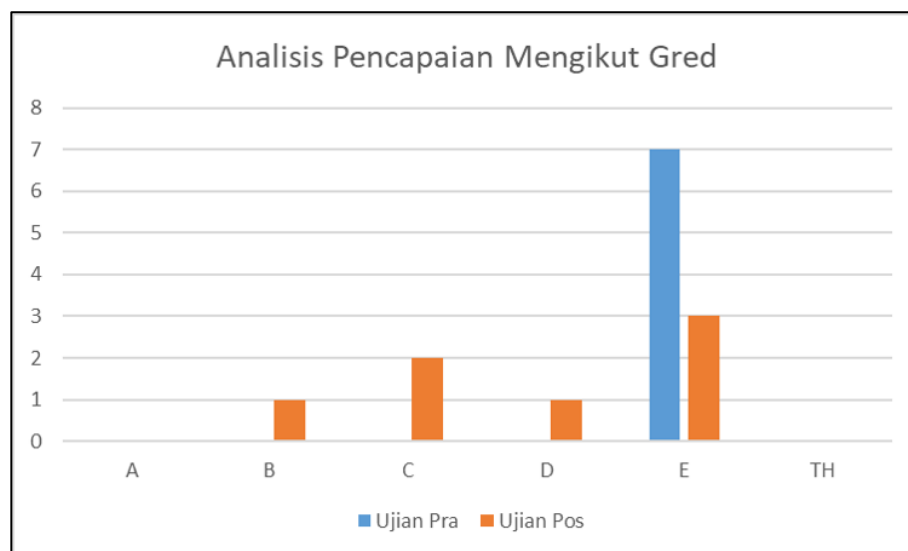
Jadual 1 : Data ujian pra dan pos penggunaan Kit Tetingkap Bundar

Pelajar	Ujian Pra		Ujian Pos		Perbezaan Markah (y – x)
	x/100	Gred	y/100	Gred	
P1	66	B	80	A	14
P2	70	B	83	A	13
P3	50	C	88	A	38
P4	45	D	75	B	30

P5	48	D	85	A	37
P6	45	D	85	A	40
P7	54	C	80	A	26



Rajah 7 : Analisis Pencapaian Ujian Pra dan Pos



Rajah 8 : Analisis pencapaian mengikut gred

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Penggunaan Kit Tetingkap Bundar dalam PdPc telah memeberikan kebaikan atau impak yang besar untuk MBPK khususnya dan murid aliran perdana amnya, antaranya ialah:

- i. Menyediakan medium pembelajaran yang luar daripada kebiasaan dengan pelbagai teknik.
- ii. Menyokong PAK21 secara langsung untuk MBK, pelajar sekolah rendah, pemulihan khas, dan pelajar sekolah menengah dalam topik pembundaran dan angka bererti.
- iii. Mengasah kemahiran MBK mengendalikan perisian dan perkakasan komputer seterusnya mengaplikasikan kemahiran membundar dalam kehidupan harian.

Projek inovasi ini telah berdaftar dengan MyIPO pada tahun 2020. Selain daripada memberi faedah terhadap MBK, ia juga telah memberi sumbangan menaikkan nama sekolah, daerah dan negeri dalam Kementerian Pendidikan Malaysia. Antara pencapaian yang projek inovasi ini ialah :

- i. Diangkat sebagai 10 terbaik dalam Kempen Guru Pembelajaran Abad ke-21 peringkat kebangsaan (ADIWIRA PAK21)
- ii. Johan Guru Inovatif Daerah Kota Tinggi (Kategori Individu Sekolah Menengah) 2019
- iii. Wakil daerah Pertandingan Guru Inovatif Peringkat Negeri Johor 2019
- iv. Pameran sempena sambutan Hari Guru Peringkat Negeri Johor
- v. Pingat Emas Pertandingan Inovasi Sekolah-sekolah Daerah Kota Tinggi
- vi. Anugerah 30 terbaik Microsoft Innovative Educator Expert Malaysia 2019-2020

5.0 KESIMPULAN

Kit Tetingkap Bundar ini sangat sesuai untuk disebar luaskan memandangkan saiznya yang kecil dan ringan serta mudah alih. Harganya juga mampu milik untuk disebar luaskan ke sekolah-sekolah lain.

Kandungan pembelajaran juga sesuai diguna pakai bukan sahaja di kalangan murid berkeperluan khas, malah untuk murid pemulihan khas dan aliran perdana bagi membantu mengukuhkan konsep asas pembundaran.

Ia juga didatangkan dalam satu set kit pembelajaran lengkap untuk digunakan oleh guru dan murid yang mengandungi set tetingkap bundar, kad nombor, papan nombor rawak, dadu dan sebuah folder penyimpanan mudah alih.

REAL LIFE OCEAN MALL : MINECRAFT EDUCATION

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ABSTRACT

Minecraft Education has been developed to encourage students produce any idea and product based on their creativity. This product not only demonstrates the students' ingenuity, but it also aids in the resolution of societal issues such as hunger, climate change, education quality, and others. Using minecraft education, mall have been developed with real life ocean theme.

The floor of this mall are filled with sea creatures such as turtles, fish, coral, and others. There is also a food court on the premises that serves free food to those in need. This is one of the initiatives aimed at eradicating hunger among Malaysians. Aside from that, there is a garden with fruit trees on the roof that is open to the public. This fruit tree is yet another endeavor to combat hunger. This mall is entirely powered by solar panels. The solar panels are all positioned on the mall's roof. Solar panels are used to generate renewable energy and can help you save a lot of money in the long run. There is also a library that everyone can use. This library contains books for everyone, from toddlers to university students. There are also newspapers and novels for people of all ages. This is one method of encouraging young people to read rather than rely solely on technology. Finally, the construction of this mall may assist to alleviate hunger, revitalize people's energy, and inspire them to read a variety of books for lifelong learning opportunities.

Keywords: solar panel, sea life, library, zero hunger.

1.0 INTRODUCTION

Millions of students around the world has been using Minecraft Education whether in their history class coding class, mathematics class or any other subject. Currently this game provided 500 plus lesson challenges and curriculum to be explored by students and academicians. This game not only for creativity collaboration it also supports STEMS education.

Minecraft Education is an open-world game. This game are full of possibilities where players can use their imagination to create and build anything they want. This game can be played in group or per person. In group, students learn to solve problems together while exploring the amazing world created in Minecraft.

Impact of the learning outcome using Minecraft Education are students able to discover the power of game-based learning and engage students in their curriculum while building skills along the way.

In this creation, a mall has been built in a futuristic way. The mall not only features sea water animal but there is also garden in it. Electricity in the mall 80% are from solar panel source. Solar panel are built outside the mall to encourage the development of renewable energy. Every food stall inside the mall provided free food for needed people. Beside that on the

second floor garden are built and people can take any fruit inside the garden for them to eat. This is one of the ideas to achieve zero hunger among Malaysian people. On the first floor there are library section which provide variety of books from all ages. This is one of the idea to encourage Malaysian people to read a book and not only using their gadget.

2.0 OBJECTIVE

The objective of the study are

- to create a mall using renewable energy source
- to help zero hunger among Malaysian people
- to help increase quality education among Malaysian people from all ages.

3.0 DESCRIPTION OF CREATION

3.1 Sustainable Development Goals (SDG)

3 SDG been used in the creation

No	SDG	Description
1	Zero Hunger	Help the needy people by providing them with free food. They can get free food from all the stall in the mall and they can also pick their own fruits inside the provided garden.
2	Climate Action	Provide long term electric source with more efficient cost. Solar panel are install on the roof top of the mall. Since Malaysia are tropical country with higher chances of getting sun light everyday solar system are the most applicable way to encounter electricity problem. This opportunity will help the mall getting the renewable energy every day without any problem.
3	Quality Education	Library section are built in order to encourage people to read book and not depending on their gadget all the time. Variety of book are provided for all ages. This idea is to provide education to all Malaysian people from toddlers to adults.

4.0 RESULTS



The floor of the mall are built with sea creatures inside. The purpose is to make people feel like they in the ocean with different type of coral fish, starfish, turtle and many others sea creatures.



Food stall are built in the ground floor to provide food for all visitors. Every food stall also provided free food for the needs.



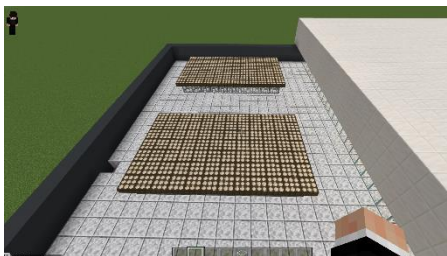
Swimming pool are built for kids and adults.



Library section that include variety of books for all ages



Playground are built beside library for kids to play while their guardians reading the books



Solar Panel at the rooftop of the mall that provide renewable energy for the mall



Garden are built for visitor to experience life in the garden. Visitor can also pick fruits their own.

5.0 CONCLUSION

As a conclusion, minecraft education are one of the platform to encourage students built any creation using their own creativity. The creation of the mall are not just for fun but also to help sustainable development goals that has been set by the government. Therefore, it is hope that this creation can be used to help others build a mall that not only for shopping and entertainment purpose but also beneficial to all Malaysian people from the wealthy family to the poor family.

EASY MOVABLE BENCH PLASMA CUTTER MACHINE

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ABSTRAK

Di kampus Kolej Komuniti Bandar Penawar terdapat bengkel kimpalan yang aktif dengan proses pemotongan logam. Oleh itu, keperluan memotong bahan adalah situasi yang mendesak memandangkan bilangan pelajar yang ramai. Masalah timbul apabila pelajar bergilir-gilir memotong bahan menggunakan mesin pemotong disk menyebabkan proses amali mengimpal bermula lambat. Oleh itu, alternatif lain adalah mesin pemotongan plasma. Mesin plasma pula berat untuk diangkat oleh pelajar dan pensyarah. Meraka menjadi penat kerana beban mengangkat sebelum persediaan kerja mengimpal. Kebaikan inovasi produk ialah menjimatkan ruang penyimpanan alatan, jimat masa proses pemotongan, mengurangkan beban pengguna dan mudah memasang kelengkapannya. Objektif pembinaan produk ialah menghasilkan inovasi meja pemotongan logam yang mudah alih, menjimatkan masa proses pemotongan, mengurangkan penggunaan tenaga pelajar dan pensyarah sebelum persediaan amali mengimpal serta menjimatkan ruang dalam bengkel. Kajian persepsi pengguna yang terdiri daripada kalangan pelajar dan pensyarah menggunakan dapatan medium *Goggle Form* adalah sangat positif di mana 100% setuju ianya memudahkan, menjimatkan masa dan alternatif terbaik bagi kerja pemotongan logam. Produk ini boleh dikomersilkan kerana tiada produk seumpama di pasaran. Produk ini seharusnya berada di semua pusat latihan yang menjalankan proses pemotongan logam.

Kata Kunci: Easy, Movable, Bench, Plasma, Cutter

1.0 PENGENALAN

Mesin Pemotongan Plasma merupakan peralatan utama yang sering digunakan dalam kerja pemotongan logam terutamanya dalam bidang yang berkaitan pembuatan dan penyelenggaraan bahan logam. Mesin ini mempunyai saiz serta berat yang berbeza-beza dalam pasaran. Di Kolej Komuniti Bandar Penawar, penggunaan mesin plasma adalah kerap selain penggunaan mesin pemotong disk / piring. Oleh itu, mesin pemotongan plasma ini memerlukan meja khas yang perlu digabungkan bersama untuk kemudahan pemotongan yang lebih cepat. Oleh itu, inovasi meja pemotong perlu dibuat dan digandingkan bersama-sama mesin plasma. Mesin plasma memerlukan tekanan angin daripada kuasa mesin pemampat angin bagi menjalankan operasi pemotongan. Hal ini akan menjadi lebih mudah kerana setiap tiang di dalam bengkel telah dilengkapi dengan punca injap pemampat angin. Oleh itu, Easy Movable Plasma Cutter perlu dicipta dan diinovasikan demi merealisasikan kemudahan untuk pelajar menjalankan pemotongan logam dengan selesa.

2.0 OBJEKTIF

Menghasilkan inovasi meja bergerak bagi mesin *plasma cutter*, membina meja pemotong plasma mudahalih yang menjimatkan masa pemotongan logam *dan* mengurangkan penggunaan tenaga pelajar dan pensyarah sebelum persediaan amali mengimpal.

3.0 PENERANGAN TENTANG INOVASI/METODOLOGI

Projek adalah menggunakan meja sedia ada daripada bahan logam keluli lembut yang mempunyai banyak ruang-ruang atau celah diantara dipermukaannya. Bahan antara celah meja tersebut ialah jenis logam plat keluli lembut. Meja tersebut diinovasikan dengan pemasangan 4 buah roda tahan lasak dimana 2 daripada 4 roda tersebut mempunyai spesifikasi mengunci pergerakan meja. Kos pembinaan produk inovasi ini tidak mahal, hanyalah RM 84.50 sahaja mengikut harga pasaran semasa pembeliannya. Senarai harga pembinaan inovasi ini adalah seperti jadual item dan harga dibawah.

Jadual 1: Jadual harga item produk tambahan inovasi *Easy Movable Bench Plasma Cutter Machine*

Bil	Keterangan	Unit	Kuantiti	Kadar (RM)	Jumlah (RM)
1	Roda getah	nos	4	8.00	32.00
2	Brush cup	nos	1	7.50	7.50
2	Plat besi (100mm ×100mm×5mm)	mm	4	5.00	20.00
4	Plat tambahan (tapak mesin dan penyangkut kabel mesin)	nos	1	25.00	25.00
Jumlah keseluruhan					84.50

Disertakan gambar rajah sebelum dan selepas proses inovasi *Easy Movable Bench Plasma Cutter Machine* dijalankan



Rajah 1: Gambar sebelum inovasi adalah sebuah meja berkarat yang tiada fungsi di Bengkel Kimpalan



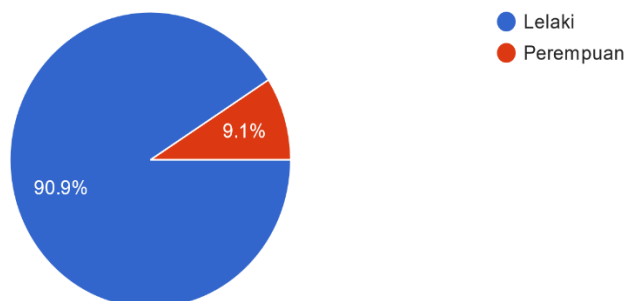
Rajah 2: Gambar selepas inovasi telah menjadi produk *Easy Movable Bench Plasma Cutter Machine* yang menyelesaikan masalah di Bengkel Kimpalan

4.0 KEBAIKAN/IMPAK/DAPATAN/PEMBAHARUAN

Bagi mengenal pasti persepsi pengguna terhadap potensi produk ini, satu kajian ringkas berbentuk tinjauan telah dijalankan dengan menggunakan soal selidik sebagai instrumen. Dalam penyediaan borang kaji selidik ini, Maklum balas projek diukur dengan menggunakan 5 pilihan skala Likert:

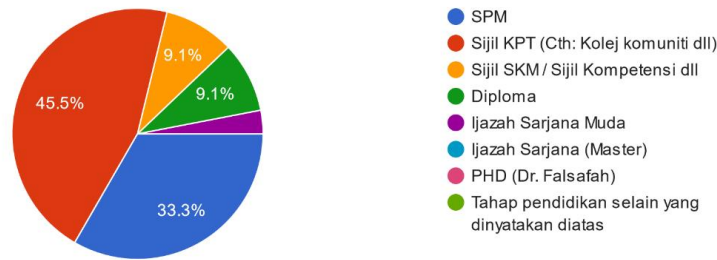
- 1 sangat tidak sesuai
- 2 tidak sesuai
- 3 tidak pasti
- 4 sesuai
- 5 sangat sesuai

Jantina
33 responses



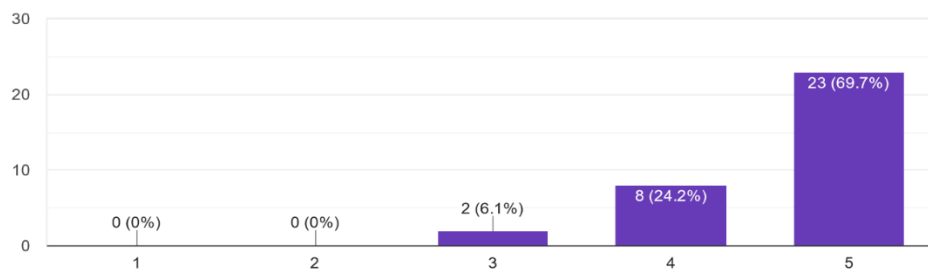
Rajah 3 merujuk carta pie iaitu jantina responden. Jantina lelaki mewakili 90.9 peratus (30 orang) manakala jantina perempuan mewakili 9.1 peratus (3 orang).

Tahap Pendidikan
33 responses



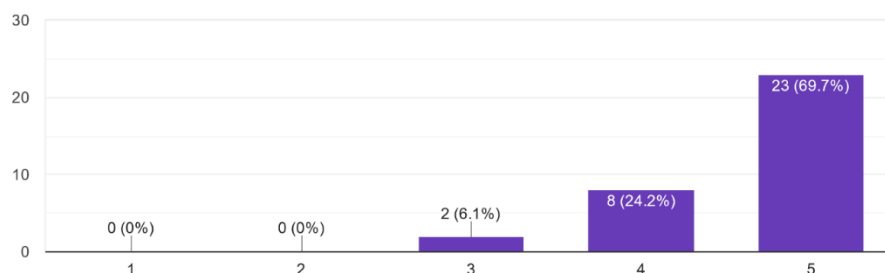
Rajah 4 diatas merujuk carta pie iaitu merupakan tahap pendidikan responden. Respon pendidikan Sijil KPT adalah tertinggi sebanyak 45.5 peratus mewakili 15 orang. Kedua tertinggi ialah Sijil SPM sebanyak 33.3 peratus mewakili 11 orang. Ketiga ialah Sijil SKM mewakili 9.1 peratus iaitu 3 orang. Tahap Diploma mewakili 9.1 peratus iaitu 3 orang. Terakhir ialah tahap ijazah Sarjana Muda mewakili 3 peratus iaitu 1 orang sahaja.

Rekabentuk meja memudahkan kerja-kerja pemotongan logam
33 responses



Rajah 5 diatas menunjukkan carta palang iaitu 23 orang (69.7 peratus) sangat bersetuju dengan rekabentuk meja projek memudahkan kerja-kerja pemotongan logam. 8 orang (24.2 peratus) bersetuju dan hanya 3 orang (6.1 peratus) hanya merekodkan di peringkat skala pertengahan iaitu tidak pasti.

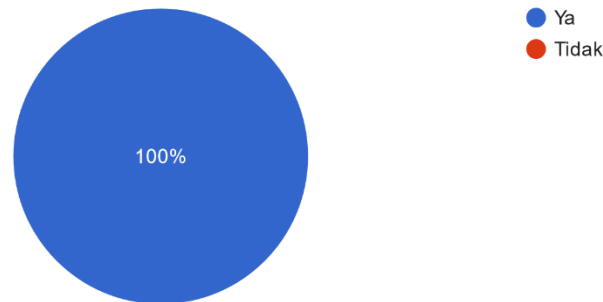
Produk yang diinovasikan memudahkan pergerakan meja (movable) dan praktikal kepada semua pengguna.
33 responses



Rajah 6 diatas merujuk carta palang iaitu menunjukkan 23 orang sangat bersetuju mewakili 69.7 peratus. 8 orang bersetuju mewakili 24.2 peratus manakala 2 orang tidak pasti mewakili 6.1 peratus.

Adakah produk ini dianggap salah satu alternatif kepada pemotongan logam menggunakan disk / piring dan pemotongan menggunakan gas (oksiasetilena)

33 responses



Rajah 7 merujuk carta pie diatas iaitu menunjukkan kesemua responden seramai 33 orang memberikan 100 peratus jawapan YA untuk bersetuju projek inovasi adalah salah satu alternatif kepada pemotongan logam selain penggunaan mesin pemotong disk / piring dan pemotongan oksiasetilena.

5.0 KESIMPULAN

Keseluruhannya projek yang telah diinovasikan ini telah pun mencapai objektifnya. Walaubagaimanapun, terdapat beberapa cadangan penambahbaikan yang boleh di buat pada masa akan datang kerana mana-mana produk yang telah dihasilkan semestinya mempunyai persaingan dan perubahan teknologi yang pesat. Antara cadangan tersebut ialah meja perlu mempunyai ketinggian yang boleh dilaras supaya semua individu boleh menggunakannya, membina tapak tambahan untuk meletakkan barang, membina ragam pada meja pemotong, dan memperluaskan penggunaanya di institusi pendidikan yang lain. Oleh itu, inovasi perlu lah sentiasa di kemaskini atau ditambah baik bagi memartabatkan pendidikan yang berkualiti di Malaysia khususnya

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