POLITEKNIK BANTING SELANGOR

i-TOOLS LEARNING APPS

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DEPARTMENT OF AIRCRAFT MAINTENANCE

SESSION 2 2024/2025

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A REPORT SUBMITTED TO DEPARTMENT OF AIRCRAFT MAINTENANCE
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR A
DIPLOMA ENGINEERING IN AIRCRAFT MAINTENANCE

SUPERVISOR:

MR. MUHAMMAD FAEZ BIN NORDIN

REPORT ENDORSEMENT

This report is being submitted, reviewed, and endorsed to fulfill the conditions and requirements of report writing as specified.

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Date : 16 May 2025

CERTIFICATION OF PROJECT ORIGINALITY & OWNERSHIP

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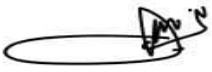
"We hereby declare that this report is the result of our own work, except excerpts that we have outlined its sources and this project will be the ownership of polytechnic.

SIGNATURE: WRITER 1

SIGNATURE: WRITER 2

SIGNATURE: WRITER 3

Endorsed by,



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SUPERVISOR'S STAMP

DATE: ……15 MAY 2025……..

ACKNOWLEDGEMENT

We would like to express my sincere gratitude to my supervisor, Mr. Faez Bin Nordin , for his invaluable guidance, support, and expertise throughout the development of this thesis. His insightful feedback, patience,and encouragement have been instrumental in shaping this research and pushing me to achieve my best.

We am deeply indebted to the faculty members of the Diploma in Aircraft Maintenance program for equipping me with the necessary knowledge andskills to undertake this research. Their unwavering commitment to excellence and their passion for teaching have played a significant role in shaping my academic journey.

We would like to extend our gratitude to my friends and classmates for their support and motivation throughout this endeavor. Their encouragement and collaboration have made this journey more enjoyable and meaningful.

Lastly, we would like to express my heartfelt appreciation to my family for their unconditional love, understanding, and constant encouragement. Theirunwavering support has been the driving force behind my pursuit of knowledge and personal growth.

In conclusion, I am truly grateful to everyone who has contributed to the completion of this thesis. Your guidance, support, and encouragement havebeen invaluable, and I am honored to have had the opportunity to work withsuch exceptional individuals.

ABSTRACT

The project aims to develop a mobile application as an educational tool for students to enhance their knowledge of various tools used in aircraft maintenance. This app provides an interactive and engaging learning experience, allowing students to become familiar with different tools and their applications. Through real-time updates, the app offers users quick access to specific tool information, making it easier to understand tool functions and instructions. Those struggling to recognize tool names or comprehend their usage will find this app particularly beneficial. Designed using platforms such as Microsoft PowerPoint, i-Spring, Canva, and WordWall, the app includes detailed descriptions, visual representations, interactive quizzes to assess knowledge retention, and supplementary resources like videos and reference materials. The content is organized into modules, allowing users to explore different tool categories at their own pace. A quantitative study conducted with a sample group of students found that the app achieved a 91.7% satisfaction rate, demonstrating its effectiveness in enhancing students' tool knowledge, usability, and overall user satisfaction. This app holds the potential to significantly improve the learning experience, bridge gaps in understanding, and offer students a practical and self-directed educational resource.

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3.4 LIST OF MATERIALS & EXPENDITURES

No	Items	Unit	Price/Unit	Total (RM)
1	PowerPoint	1	RM0.00	RM0.00
2	Canva	1	RM5.00	RM5.00
4	Subscribe WordWall	1	RM10.00	RM10.00
	GRANT TOTAL			Rm15.00

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

The concept of apps is not new. There is an app for practically everything these days, from online learning to watching movies and television shows to shopping and gaming. Mobile appdevelopment has expanded dramatically as a result of the rise in mobile usage and the development of mobile technology. Speaking of technology and smartphone apps, they have also completely changed how people teach and learn (take the Craftsman tool – a Workshop Tool learning app, for example). The only place for classes, lectures, and seminars is the classroom now. The education sector is changing as students move away from paperback books

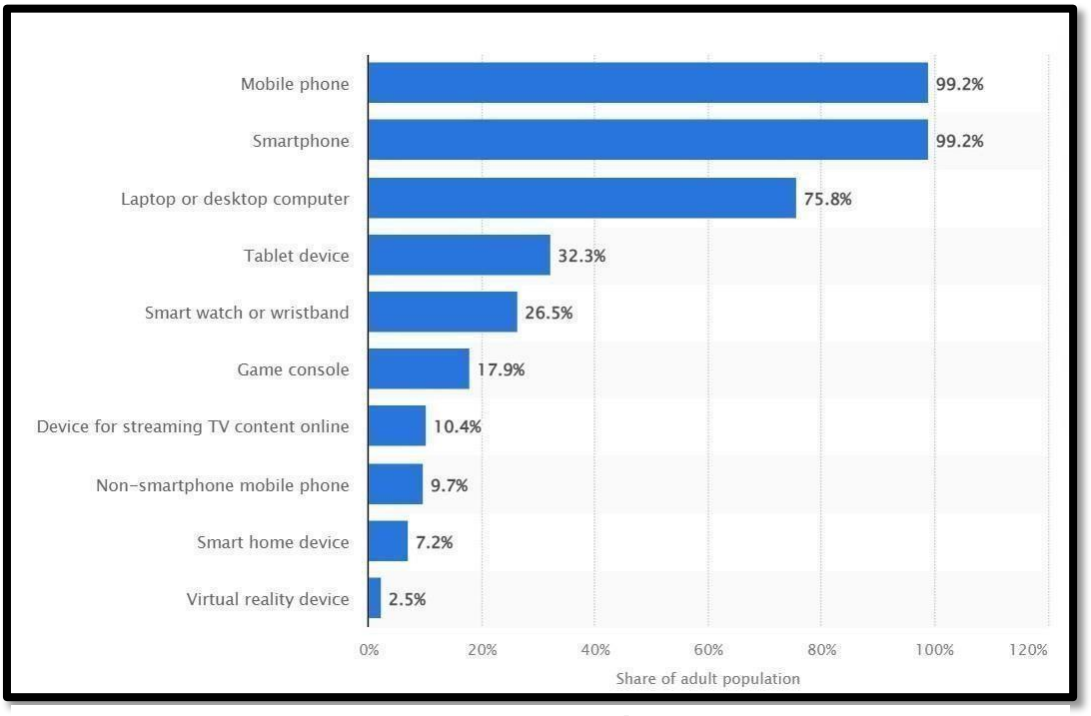


Figure 1.1: Statista Research Department

and toward digital ones, favor online classes more frequently than physical ones, and complete a variety of courses digitally.

"As of the third quarter of 2020, around 99.2 percent of the population aged 12 to 60 in Malaysia were users of mobile phones. In comparison to its neighboring countries, Indonesia and Singapore, Malaysia led the mobile smartphone ownership rate." (Statista Research Department, Oct 5, 2022). Based on the statement above it is stated that our country, Malaysia has been ranked as the most population that the teenagers owned a mobile phone. It is also means that the E-learning is gradually taking over the traditional modes. The pandemic has given an immense boost to online education. School and colleges have started giving tasks that require the use of mobile phones. That's where educational apps enter the game.

Therefore, an education app platform is all about integrating learning management systems and technologies to offer a customized, end-to-end learning solution. In other words, an educational app is a software that enables and encourages virtual teaching, especially self-learning. An educational app helps individuals with remote learning of any kind. Today, educational apps are used by school kids, college students, and even professionals. Furthermore, there are milions of mobile learning app that can be download and use as of for now in the world. One of the mobile learning app is the tooling apps. Tooling apps are not specified and more about general tools. To help students to understand about tools, specifically for engineering students, we develop a mobile learning app for workshop engineering tools and improvised, redesign, and gives it more feature so that students will attract to use it and help them to do better self- learning and understanding.

1.2 PROBLEM STATEMENTS

Based on substantial survey data and input from students and instructors in aircraft maintenance engineering education, it is clear that numerous major problems inhibit effective learning and teaching experiences for our new kind of apps.

1. LACK OF INNOVATION AND MOBILITY IN HIGHER EDUCATION

The higher education industry has enormous problems in terms of innovation and mobility, limiting its ability to respond to the quickly changing demands of the workforce and society. Traditional models frequently rely on antiquated curricula and teaching methods, which stifle creativity and engagement. This rigidity may result in graduates who lack the abilities required for current employment, creating skill shortages.

Furthermore, physical and intellectual mobility are still limited. Many universities have inflexible systems that hinder interdisciplinary collaboration and do not promote global partnerships. This lack of flexibility limits students' exposure to varied ideas and experiences, which are critical for producing well-rounded, adaptive graduates.

As technology advances, the need for innovative teaching approaches and adaptable learning environments grows. Embracing online education, experiential learning, and cross-institutional programs can increase accessibility and engagement, resulting in graduates who are more prepared to flourish in a changing society. Addressing these concerns is critical to the future of higher education.

2. EXISTING APP IS NOT INTERESTING AND APPEALING TO USE

Existing apps with little interest and appeal frequently fail to engage users successfully, resulting in low retention and usage rates. Several things contribute to this problem. For starters, a cluttered or outmoded design can make navigating difficult and unappealing, resulting in annoyance rather than enjoyment. Aesthetics important; consumers are more inclined to interact with visually appealing interfaces that provide a seamless experience.

Second, if the app's functions are too basic or unintuitive, consumers may find it unsatisfactory. Innovative functions and intuitive design are critical for maintaining user

engagement. Furthermore, a lack of personalization can leave users feeling detached; programs that do not cater to individual preferences frequently fail to maintain interest. Finally, consumers may feel uninspired by a lack of community involvement or content updates. It's critical to prioritize functionality, personalization, aesthetics, and frequent updates to improve user appeal and provide a pleasant, engaging experience that promotes continued engagement.

3. INCOMPLETE CONTENT : SOME LEARNING APPS MAY HAVE INCOMPLETE OR OUTDATED CONTENT

When learning apps have out-of-date or incomplete content, they can't do as well as they should, which will negatively affect both user satisfaction and efficacy. Inadequate research or a lack of resources might lead to incomplete material, which leaves consumers with knowledge gaps. This not only degrades the educational process but may also cause learners who anticipate thorough content to become confused and frustrated. Another major problem is out-of-date content; as knowledge advances, educational materials must include the most recent data, approaches, and trends. Users lose faith in the app when they come across outdated or irrelevant content, which leads them to look for other sources.

Apps that don't update their content frequently also lose out on chances for growth and engagement, which could drive away users. Learning applications must place a high priority on the ongoing evaluation and improvement of their content in order to stay relevant and successful and to guarantee that users have access to up-to-date, comprehensive, and superior learning materials.

1.2 PROJECT OBJECTIVES

TO MAKE IT MORE USER FRIENDLY

Higher education typically lacks innovation and flexibility, making it less user-friendly. Many schools rely on out-of-date, rigid systems that are slow to adapt to changing student and job market demands. Traditional lecture-based approaches and one-size-fits-all teaching methods limit the potential for personalized learning. This strategy leaves pupils underprepared for real-world challenges.

Furthermore, set timetables and hefty tuition expenses frequently make higher education unaffordable to non-traditional learners, such as working professionals or parents. The lack of flexibility and affordability causes barriers to education, and students' limited mobility between schools further inhibits their ability to explore varied learning possibilities. To make higher education more user-friendly, institutions should use technology for individualized learning, provide flexible study options (such as online or part-time programs), lower expenses through accessible pathways such as micro-credentials, and improve credit transfer policies. These modifications would provide a more adaptive, inexpensive, and inclusive educational experience for today's varied students.

2. TO MAKE IT COMPACTABLE FOR STUDENTS TO LEARN ANYTIME AND ANYWHERE

To make higher education more accessible at all times and from any location, schools must employ flexible, technology-driven ways. Online and hybrid learning models enable students to access courses without being bound by a physical campus, whilst asynchronous learning allows them to study at their own speed without having to attend live sessions.

While micro-credentials and modular courses offer brief, focused learning opportunities that can be stacked toward a degree, mobile learning apps and digital resources allow students to engage with content while on the go, during breaks or commuting. This makes it possible for students to learn in more manageable, smaller modules that work with their schedules.

Furthermore, inexpensive or free online courses and interactive resources like discussion

boards and virtual classrooms make for a flexible and interesting learning environment. By assisting students in juggling their schooling with other obligations, these solutions increase accessibility and convenience of learning.

3. TO HELP ENGINEERING STUDENTS TO HAVE THE EASIER ACCESS TO LEARNING ABOUT WORKSHOP TOOLS

Combining digital and hands-on methods can be a very powerful way to help engineering students learn about workshop tools more easily. Students can practice using tools in riskfree, interactive environments by participating in virtual workshops and simulations.
Students can access learning resources around-the-clock through online tool libraries that include video lessons and safety guidelines. This helps them understand how to use and handle each item.

While blended learning models enable students to learn theoretical concepts online and practice them during in-person workshops, mobile learning apps can provide convenient access to tool guides while on the road. Tool training can be improved by augmented reality (AR), which offers interactive, three-dimensional views of tools and their components.

Furthermore, student options for learning and practicing with physical tools can be expanded through partnerships with local maker spaces and expert webinars that are available on demand. These instructional approaches offer a thorough, adaptable learning environment that lets students study workshop instruments at any time, anyplace.

1.3 SCOPE OF PROJECT

TO BUILD UP THE INTEREST OF LEARNING USING MOBILE

There are numerous ways that can be used to increase interest in learning through mobile platforms. First, creating user-friendly, visually appealing apps can boost engagement through simple navigation. Gamification components, such as points and leaderboards, can inspire students by transforming learning into a game.

Incorporating interactive information (quizzes, polls, and simulations) encourages active engagement, whereas micro-learning delivers content in small, digestible chunks that fit into busy schedules. Social features such as discussion forums promote a sense of

community and encourage collaboration.

Personalizing content based on individual choices motivates students, while regular updates and new content keep them interested. Using multimedia tools, such as videos and podcasts, accommodates different learning styles, making classes more engaging. Highlighting real-world applications helps students understand the importance of their study. Finally, offering rapid feedback and progress tracking can boost commitment. Implementing these tactics can transform mobile learning into an exciting and valuable educational experience.

2) TO MAKE IT EASIER FOR STUDENTS TO LEARN ABOUT TOOLS

As mobile technology becomes more prevalent in education, it is critical to adjust instructional practices to improve students' grasp of the tools. Creating mobile-friendly resources, such as brief video lessons and interactive tools like Quizlet and Kahoot, can greatly increase student engagement.

Visual aids, such as infographics, explain complex concepts, whilst downloadable PDFs offer step-by-step instructions for convenient reference. Gamification encourages learning by introducing game-like aspects, making the experience more pleasurable and engaging. Collaborative projects using platforms such as Google Docs promote peer learning, whereas mobile-friendly quizzes check comprehension and provide rapid feedback.

Finally, frequently soliciting student feedback enables educators to adapt resources and strategies to changing demands. Using these tactics, instructors may build a dynamic learning environment that allows students to grasp a variety of tools, ultimately preparing them for success in the digital apps.

1.4 PROJECT IMPACT

This project aims to improve student understanding of tools and equipment during workshops. Furthermore, lectures do not need to go over the fundamentals of tooling multiple times. Students and users can learn the fundamentals of tooling without relying heavily on lectures

CHAPTER 2
LITERATURE REVIEW

2.1 GENERAL LITERATURE REVIEW

2.1.2 Education Industry in Malaysia

In contrast to many informal and non-formal forms of socialization, education is the field that studies how to teach and learn in classrooms or similar settings. Lectures and students typically have something to do with education. These days, there are many different kinds of learning methods. In the 1990s, students had a hard time finding information about their studies because the internet had not yet developed. They also had a hard time studying because the only way they could find knowledge was through their books. Only people who were born in the 1990s faced those challenges after the advancement of education. However, we now live in a modern age with the internet and a variety of educational tools that are applicable to our sector. Since there are numerous strategies to make studying easier, education has become more beneficial for students.

2.1.2 Workshop Explanation

As in the era of the Industrial Revolution, a workshop can be any room, set of rooms, or structure that provides the space and tools (or machinery) required for the production or maintenance of manufactured goods. The only centers of production were workshops until industrialization and the construction of larger factories. Hardware like as a workbench, power tools, and hand tools are frequently seen in home workshops. Workshops are often utilized not just for practical purposes of fixing things but also for experimentation and prototyping. The engineering workshops include the following: the Smithy, the Fitting Shop, the Foundry, the Welding Shop, the Carpentry Shop, the Motor Vehicle Repair Unit and Service Facility, and the Machine Shop (metal work). The Engineering Workshops provide two main functions. First, undergraduate engineering students are taught using its resources and facilities. First-, third-, and final-year undergraduates participate in training sessions and experiments in the areas of production, workshop technology, and

automotive technology, production technology, and engineering. The workshops also provide the hardware needed for student projects in addition to these. The other function includes manufacturing research and teaching tools, maintaining machinery, training undergraduates and NAITA (National Apprentice Industrial and Training Authority) trainees for the workforce, providing industrial consulting services (designing and producing tools and mechanisms for industry), evaluating technical staff and craftsmen, repairing and maintaining university-owned vehicles, and performing various fabrication tasks

2.1.3 Types of Engineering apps

1. **Engineer**: This app stores all of your engineering textbooks in your hand. An information database about screws and bolts is provided by I Engineer. It will assist you in determining what drill to use or whether a bolt or screw can tolerate a particular amount of force.

2. **HVAC Professional**: This program includes the entire International Mechanical Code and 200 HVAC Formulator formulas. Searching, adding formulas to your "favorite" list, and accessing commonly used formulas are all possible.

3. **i Circuit** is a user-friendly app for iPhone and iPad that allows circuit building and experimentation. It features a powerful simulation engine that can handle both analog and digital circuits, as well as more than 30 parts that you can use to design your own circuits.

4. **Lux Calc Fluid Prop**: Engineers in mechanical With the help of this software, you can quickly and precisely determine the thermophysical characteristics of common fluids used in heat transfer I won't even pretend to understand what that means!

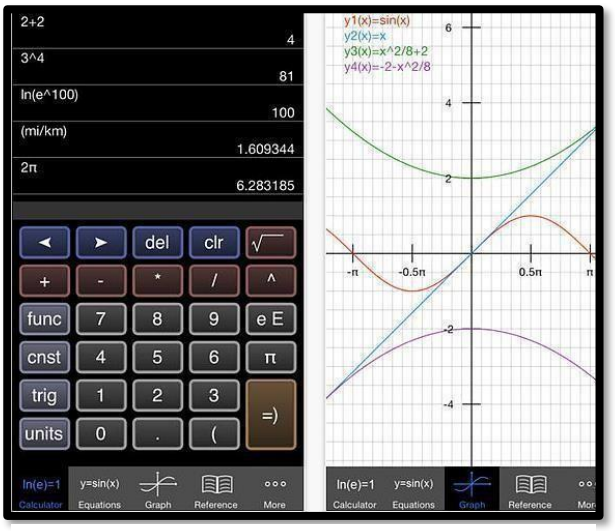


Figure 2.1: Lux Calc Fluid Prop

5. **Graphing Calculator**: This useful app transforms your iPad into a multipurpose tool that includes a scientific calculator, unit converter, and high-resolution function plotter.

6. **Mechanical engineer**: This software offers more than 300 useful mechanical engineering formulas and conversion formulas to help you finish tasks, whether you're a full-time mechanical engineer, an engineering student, or a do-it-yourselfer.

7. **Engineering Professional**: This program will make you appear like the most accomplished engineering professional. Chemical, civil, electrical, environmental, hydrological, and mechanical engineering formulas are covered. This is an especially useful reference tool for engineering students who want to impress their teachers.

8. **Finger CAD** : Finger CAD is a computer aided design application for technical drawing. You can draw houses, bridges, mechanical components, geometrical figures - just about anything the same way you would on your desktop.

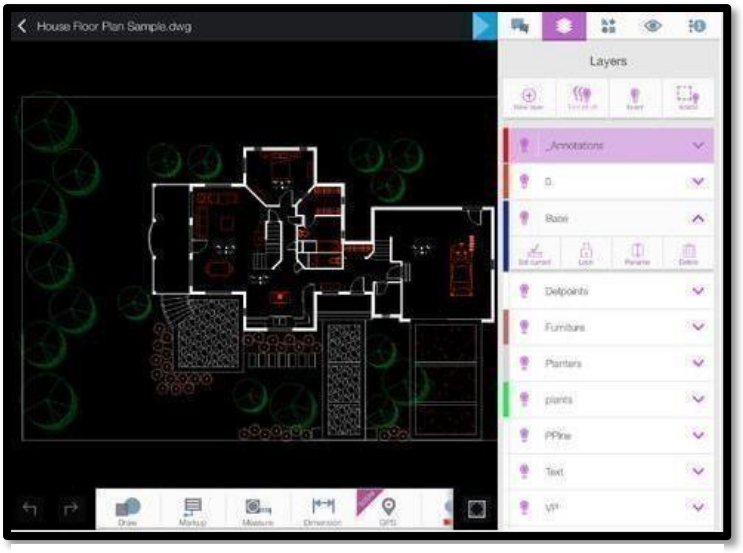


Figure 2.2: AutoCad 360

9. **AutoCAD 360**: Engineers can view, modify, and share DWG drawings using this official AutoCAD app. You may share your brilliant ideas with others by annotating and editing drawings whether you're out of the office, at meetings, or in the field

2.2 SPECIFIC LITERATURE REVIEW

2.2.1 Storyboard

We provide two methods for downloading it: either use the app downloaded directly from the phone or launch it using a shared link. The document and all of the app's capabilities are available on the home page, which is the first thing that appears after downloading the app. A few tool-related facts will be displayed on the home page together with tool figures.

In the middle of the features there is a document icon which inside there contain all the info about the safety precautions, tools, video demonstration, quiz and about developer. Clicking this button users will find lots of tools option that they want to learn about. If users click on either one of it, then it will display all the information about each tools and information about the tools. Users also provided with back button to go back to the tools selection option and choose other tools that they want to learn. Each tool provides precise information about the tools. Users also provided with another back button to go back to the menu. Other than that, inside the tools selection section there is a next button to show many more tool to be selected. Other than that, in the menu there is also a video demonstration upon the usage of the tools. Clicking this button users also will go to the tool selection section. This time, upon selecting the tools it will show the users video about how to use the tools. Users also provided with back button to go back to tools selection section and watch other video demonstration on different tools and a next button to show many more tool to be selected. If you users don't want to watch the tutorial they can press the back button on the tools selection section and went back to the menu to select other features.

The "safety precaution" is the next characteristic. Users who click this option will be prompted to take general safety precautions for their personal safety within the workshop. Additionally, it had a back button for selecting other options and returning to the menu. Additionally, the apps include a "quiz" element. This feature uses a series of quizzes to assess the user's knowledge. By selecting this option, the tools selection will be displayed once more. Clicking on any tool will take users directly to the "word wall" app. Additionally, users have access to a menu, a back button to return to the tools selection area, a quiz on various tools, and a

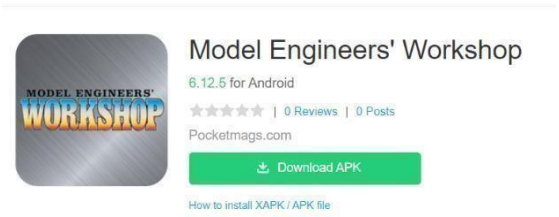
next button that displays a large number of other tools for choosing. Users can choose other features by pressing the back button in the tools selection section if they choose not to answer the question. There are three questions on the test. By hitting the start button, the timer will

begin, and the amount of time spent responding to the question will be noted. Every question has a multiple-choice response. Users will go on to the following question if they provide a correct response. It will automatically display the right response to the question and go on to the next one if consumers provide an incorrect response.

Users will be ranked on the leader board once they have responded to every question. Placement, name, score, and time will all be listed on the leader board. Pressing the home icon in the upper right corner of the screen will allow users to leave the "word wall." They will receive a notification asking them to choose whether or not to exit the apps. Users can return to the menu by selecting "yes," and they can return to the "word wall" by selecting "no." The developer information is the last feature. Users will be able to view developer information when they click this button. Additionally, it has a back button that allows users to return to the menu after reading the developer's details.

2.3 REVIEW OF RECENT RESEARCH AND RELATED PRODUCT

2.2.2Recent Market Products

No.	Marketed Product	Patent Summary
1.		Product name: Model Engineer's Workshop Published Date: 12/8/2015 Inventors: Pocketmags.com Description: This publication covers the tools, supplies, methods, and processes used in precision metalworking. It's free to download this software. Users of the app can buy both
		the most recent issue and older issues. Additionally, the application offers subscriptions. The most recent issue will be the first in a subscription.

2.		Product Name: Workshop Technology Published Date: 29/8/2018 Inventors: Brain Strom Description: Create a user-friendly website that gives a reputable client a global presence. The primary goal is to offer scalable, affordable services offshore.

3.		Product name: Basic Engineering Dictionary Published date: 8/2/2020 Inventors: Edutainment Ventures Description: This engineering app will definitely solidify your understanding of the fundamentals of engineering with its more than 11000

		engineering terms and abundance of engineering equations, formulas, and facts. This Basic Engineering Dictionary includes a Quick Guide of equations and formulas with illustrations for speedy learning. Numerous engineering quizzes can be found in the Basic Engineering App to challenge your learning and help brush up knowledge.

2. 4: COMPARISON BETWEEN RECENT RESEARCH AND CURRENT PROJECT

2.4.1 : Product A vs Our Product

Product	Model Engineer's Workshop	I-TOOLS
Design		
Data usage	YES	NO
Purpose	Covers the tools, supplies, methods, and processes used in precision metal working.	Explain the fundamentals of tools used in engineering workshop intruction
Features	Wording explanation	Video explanation
Target	Everyone	MRO students and instructor
Platform	Android	Android

Table 2.4.1: Product A vs Our Product

2.4.2 : Product B vs Our Product

Product	Workshop Technology	I-TOOLS
Design		
Data usage	YES	NO
Purpose	Android Application that contains MCQ Quiz for the subject of Workshop Technology in Mechanical Engineering.	explains the fundamentals of tools used in engineering workshop instruction.
Features	Subscription to access	Free software to make this app.
Target	Everyone	MRO students and instructor
Platform	Android	Android

Table 2.4.2: Product B vs Our Product

2.4.3 : Product C vs Our Product

Product	Basic Engineering Dictionary	I-TOOLS
Design		
Data usage	YES	NO
Purpose	solidify your understanding of the fundamentals of engineering	Tells about basic knowledge about tooling to use in engineering workshop education
Features	Explain details on fundamentals of engineering	Simple explanation
Target	Engineering Students	MRO students and instructor
	Android and Ios	Android

Table 2.4.3: Product C vs Our Product

CHAPTER 3

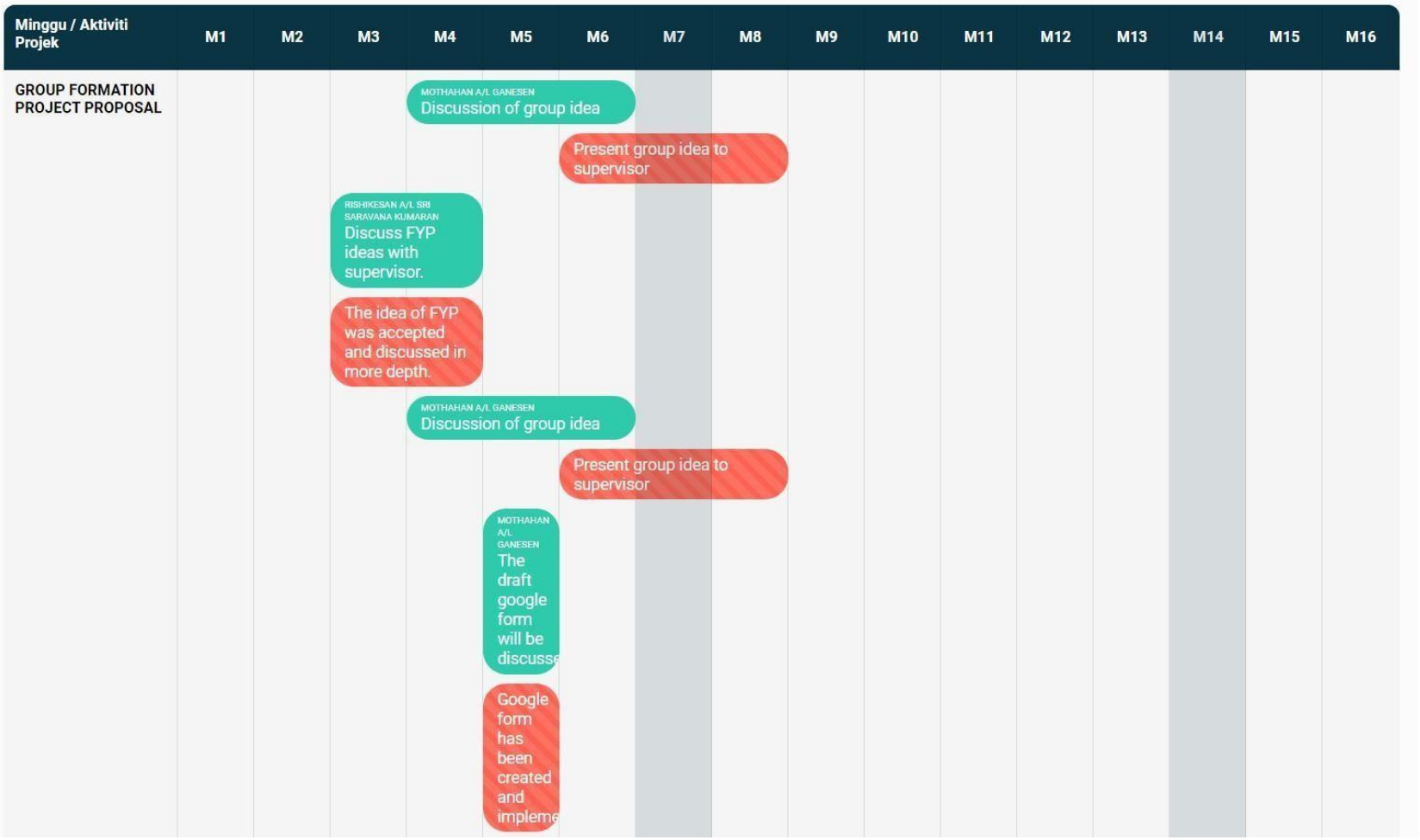
RESEARCH METHODOLOGY

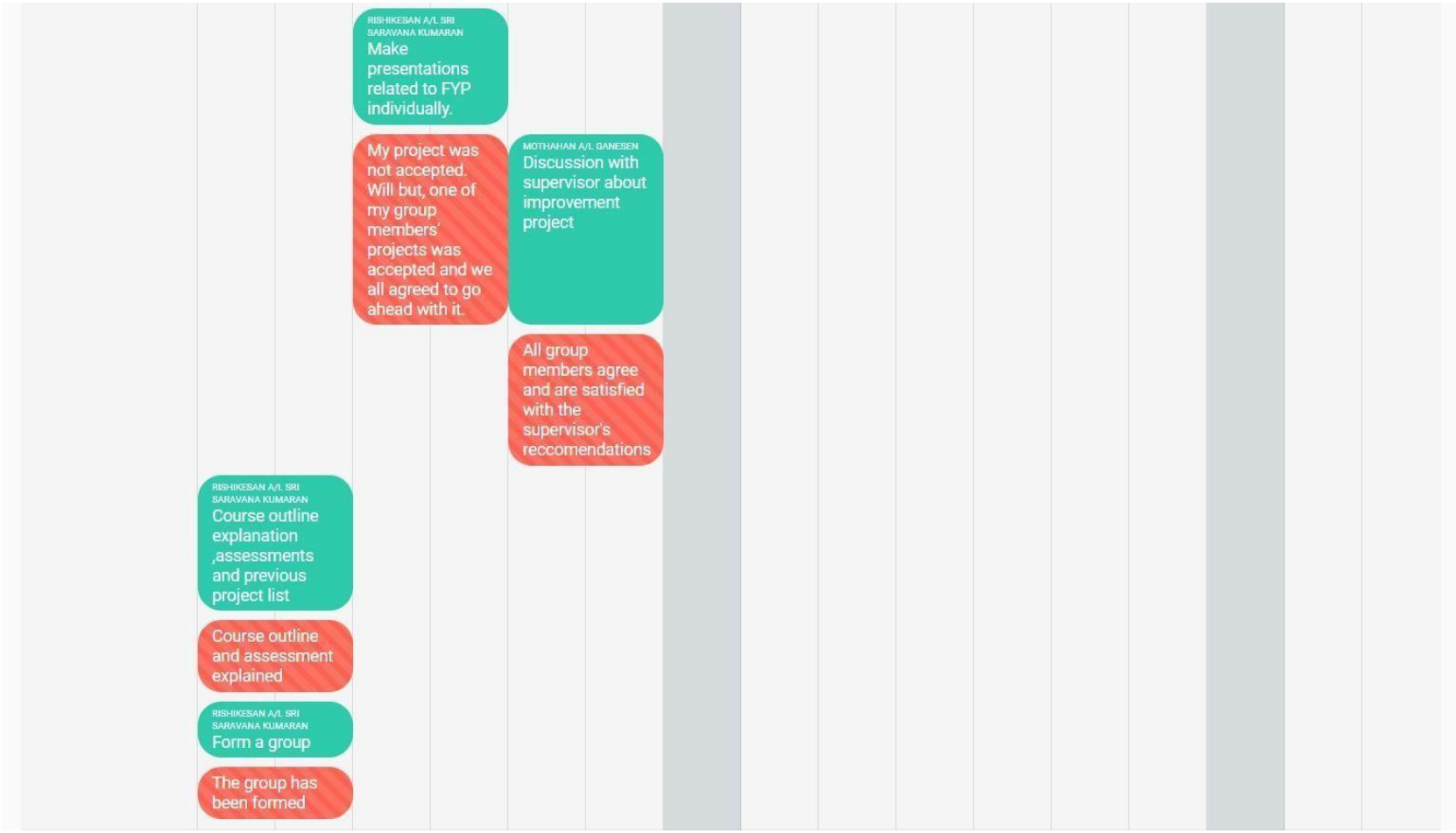
3.1 PROJECT BRIEFING & RISK ASSESSMENT

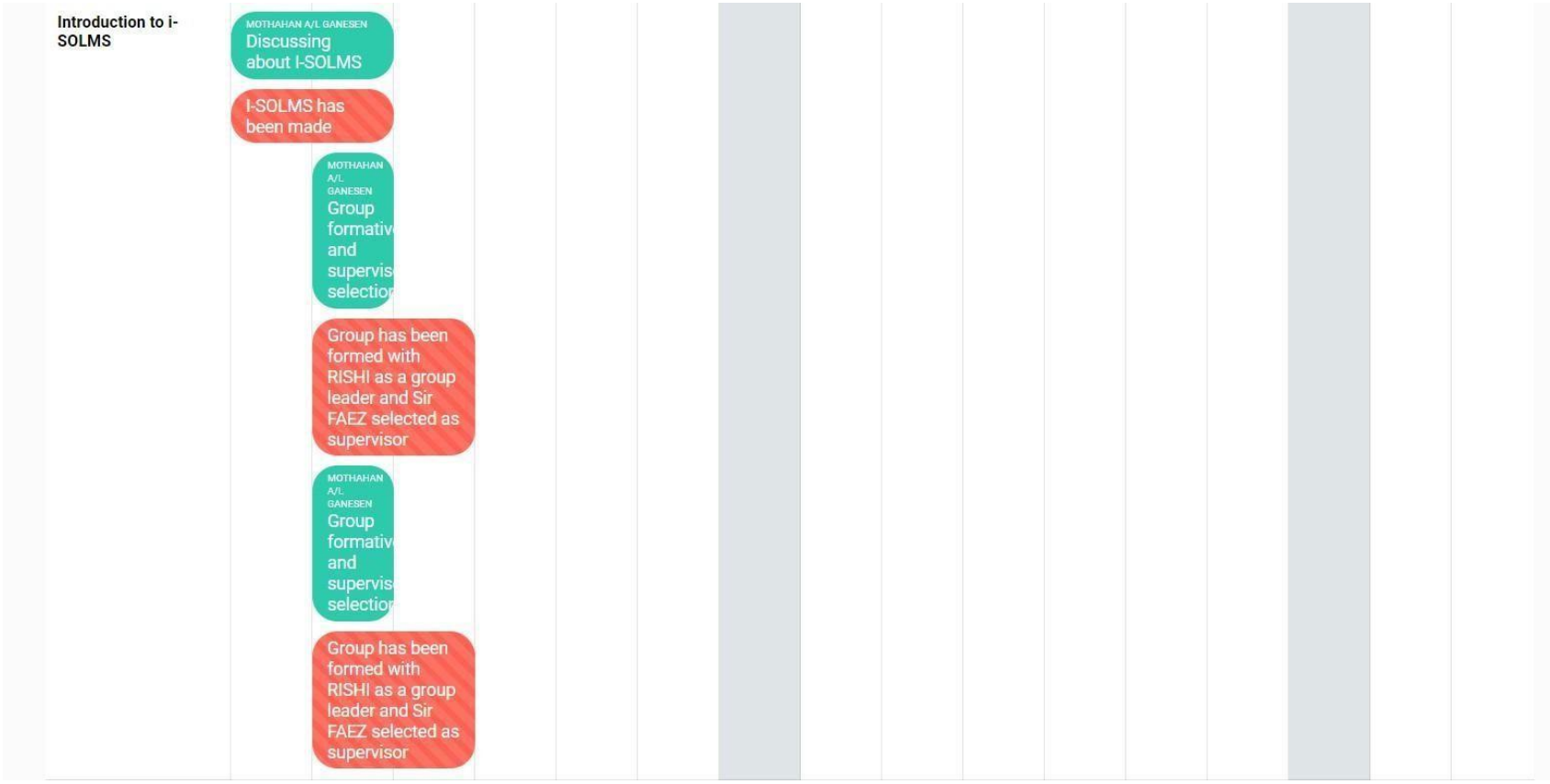
We will provide an overview of our product in this chapter, along with a number of steps to ensure that it functions well and is accessible to all, in order to meet our aims and objectives. Many steps in the creation of our app, including designing, editing, creating, and testing, were covered in this course. Even though our product is software, every member of our team took extreme precautions to ensure that nothing untoward transpired.

3.1 OVERALL PROJECT GANTT CHART

3.1.1 : Gantt Chart for AEM


Minggu / Aktiviti Projek
M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
M11
M12
M13
M14
M15
M16
GROUP FORMATION PROJECT PROPOSAL
MOTHAHAN A/L GANESEN
Discussion of group idea
Present group idea to supervisor
RISHIKESAN A/L SRI SARAVANA KUMARAN
Discuss FYP ideas with supervisor.
The idea of FYP was accepted and discussed in more depth.
MOTHAHAN A/L GANESEN
Discussion of group idea
Present group idea to supervisor
MOTHAHAN A/L GANESEN
The draft google form will be discusse
Google form has been created and impleme


RISHIKESAN A/L SRI SARAVANA KUMARAN
Make presentations related to FYP individually.
My project was not accepted. Will but, one of my group members' projects was accepted and we all agreed to go ahead with it.
MOTHAHAN A/L GANESEN
Discussion with supervisor about improvement project
All group members agree and are satisfied with the supervisor's reccomendations
RISHIKESAN A/L SRI SARAVANA KUMARAN
Course outline explanation ,assessments and previous project list
Course outline and assessment explained
RISHIKESAN A/L SRI SARAVANA KUMARAN
Form a group
The group has been formed


Introduction to i-SOLMS
MOTHAHAN A/L GANESEN
Discussing about I-SOLMS
I-SOLMS has been made
MOTHAHAN A/L GANESEN
Group formativ and supervis selectio
Group has been formed with RISHI as a group leader and Sir FAEZ selected as supervisor
MOTHAHAN A/L GANESEN
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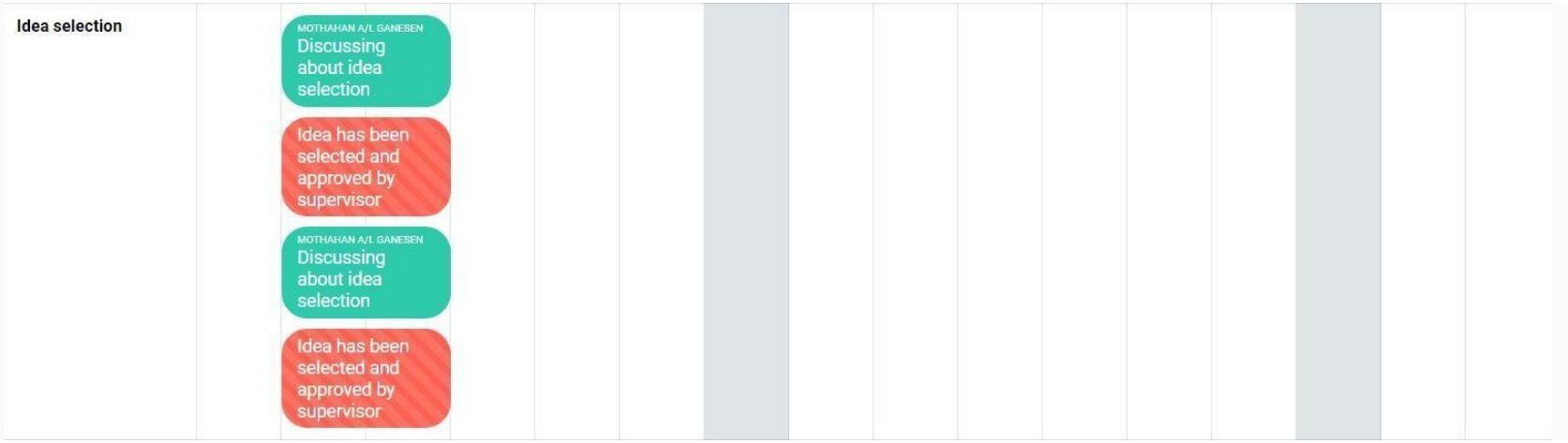
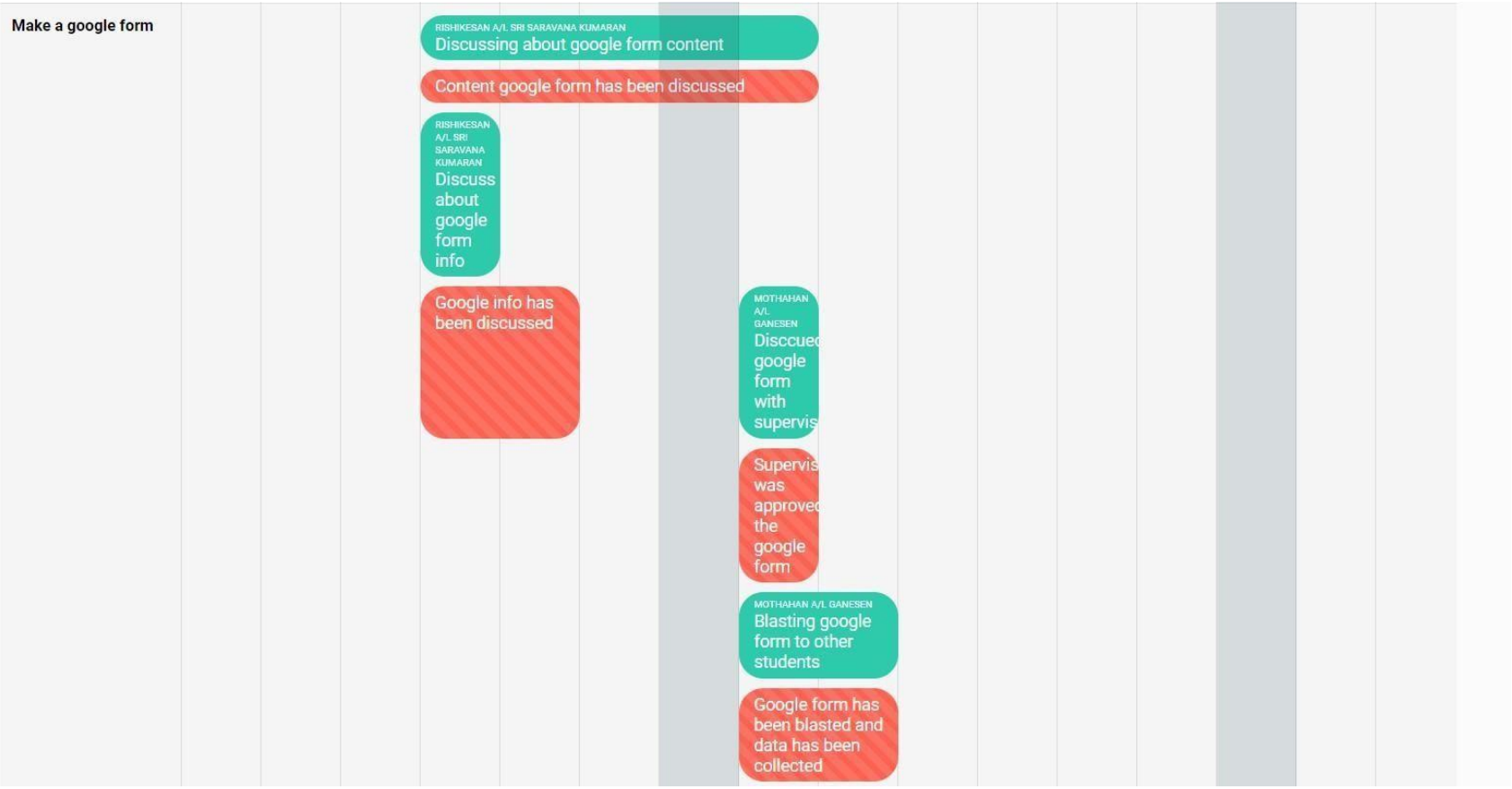
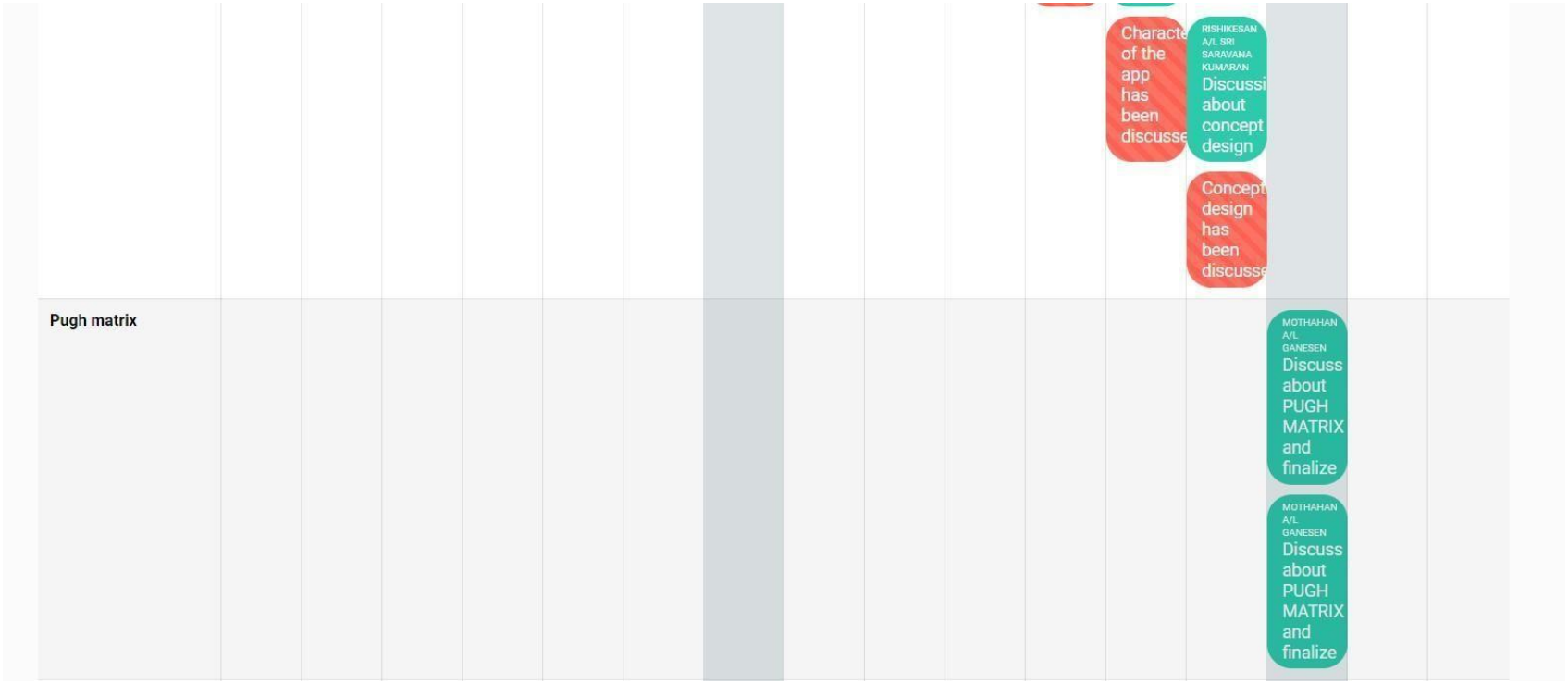
Group has been formed with RISHI as a group leader and Sir FAEZ selected as supervisor


Proposal project title
RISHIKESAN A/L SRI SARAVANA KUMARAN
Make a research on product articles in links, propose project title
Found research and articles and try to analyze about product, project titles proposed to supervisor
RISHIKESAN A/L SRI SARAVANA KUMARAN
Introduc project title
project title has been introduc


Idea selection
MOTHAHAN A/L GANESEN
Discussing about idea selection
Idea has been selected and approved by supervisor
MOTHAHAN A/L GANESEN
Discussing about idea selection
Idea has been selected and approved by supervisor


Make a google form
RISHIKESAN A/L SRI SARAVANA KUMARAN
Discussing about google form content
Content google form has been discussed
RISHIKESAN A/L SRI SARAVANA KUMARAN
Discuss about google form info
Google info has been discussed
MOTHAHAN A/L GANESEN
Disccue google form with supervis
Supervis was approve the google form
MOTHAHAN A/L GANESEN
Blasting google form to other students
Google form has been blasted and data has been collected


MOTHAHAN A/L GANESEN
Discussing about concept generation
Concept generation has been discussed
MOTHAHAN A/L GANESEN
Discussing about concept generation
Concept generation has been discussed
Generate features, characteristics and concept design
RISHIKESAN A/L SRI SARAVANA KUMARAN
Discuss about app's features
App's features has been discusse
RISHIKESAN A/L SRI SARAVANA KUMARAN
Discuss about characte of the app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GANESEN
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finalize
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PUGH
MATRIX
and
finalize

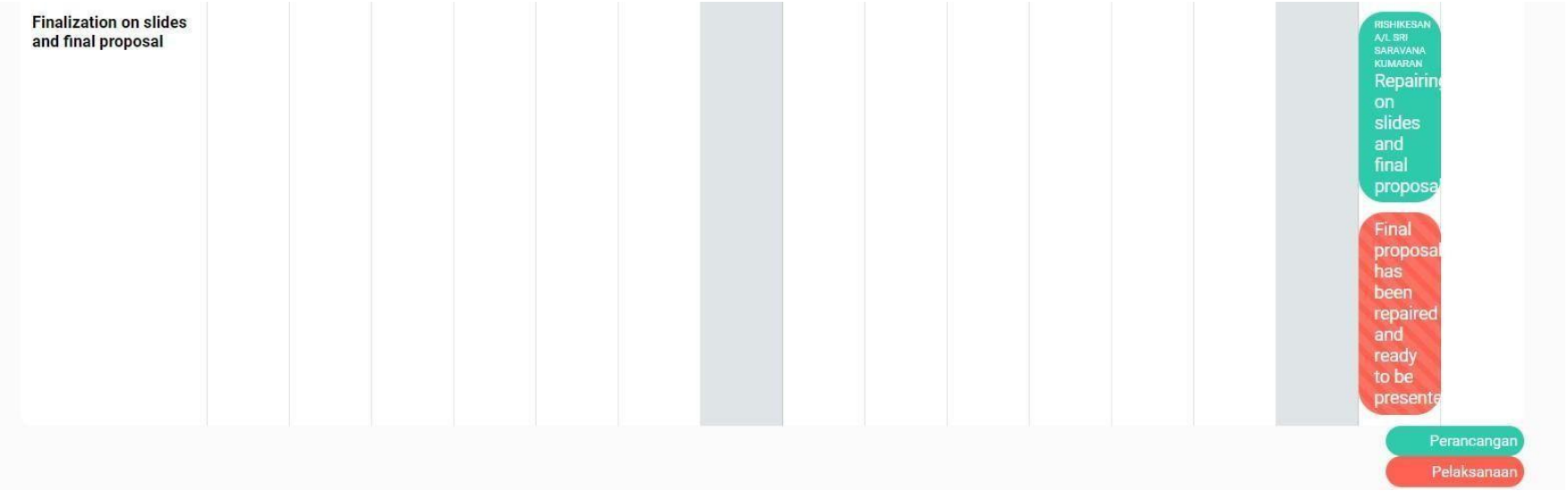

Table 3.2.1: Gantt Chart for AEM

3.2 PROJECT FLOW CHART

3.2.1 Overall AEM Project Flow Chart

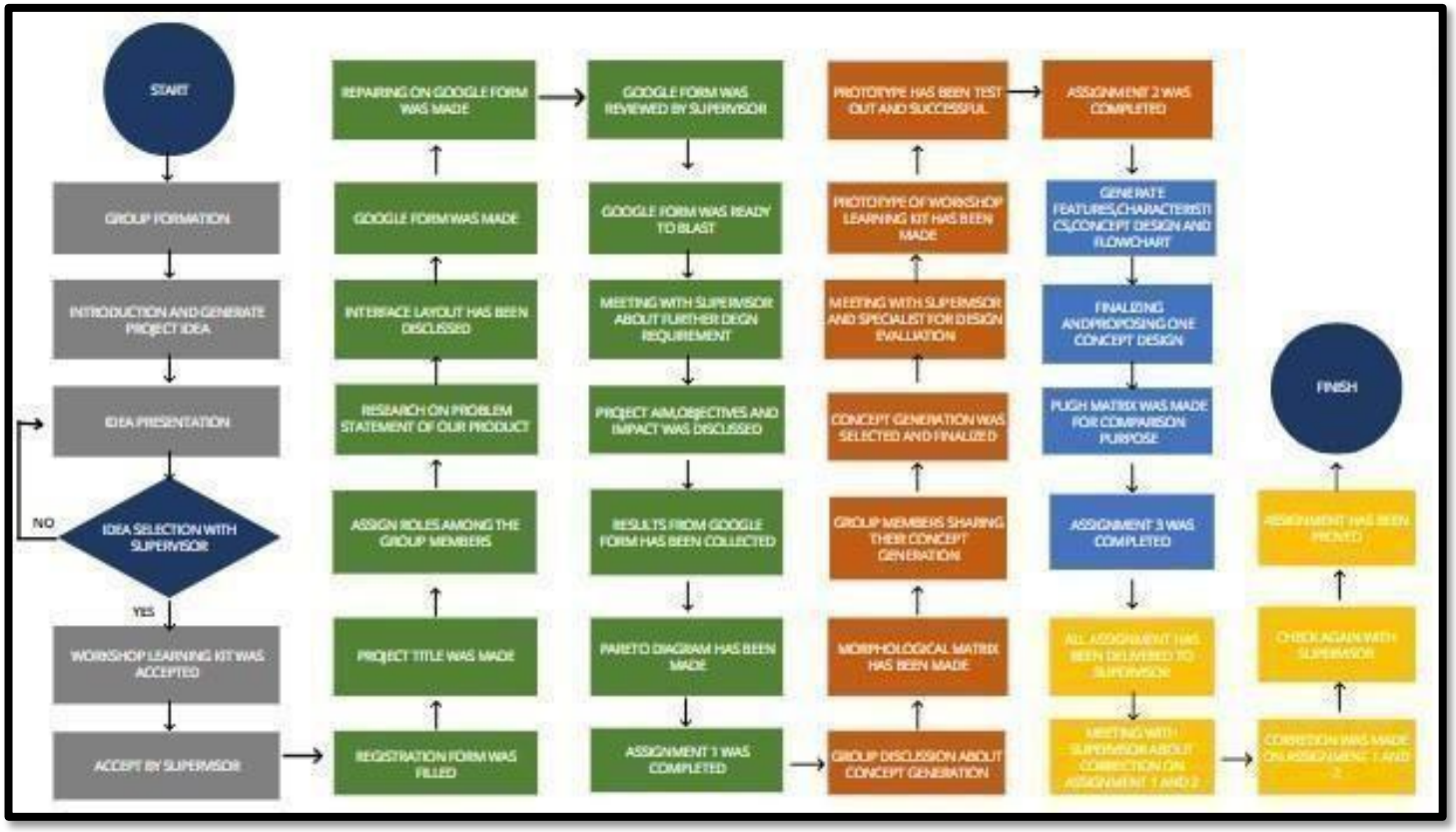

Figure 3.1: AEM Project Flow Chart

3.4 LIST OF MATERIALS & EXPENDITURES

No	Items	Unit	Price/Unit	Total (RM)
1	PowerPoint	1	RM0.00	RM0.00
2	Canva	1	RM5.00	RM5.00
4	Subscribe WordWall	1	RM10.00	RM10.00
	GRANT TOTAL			Rm15.00

Table 3.1: List of Materials & Expenditures

3.1 INTERFACE LAYOUT

3.1.1 : General Product Interface Layout

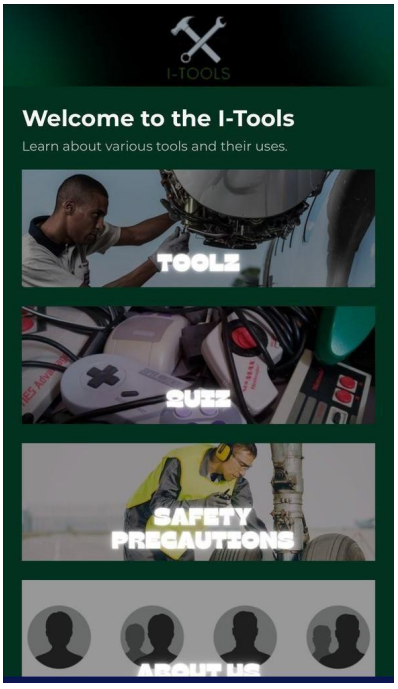

Figure 3.3: General Product Interface Layout

When login into our app, this interface will show and you can choose the option as where you want to go. There is tool detail, video demonstration about the tool, general safety precaution, quiz for students to challenge their knowledge and lastly about us.

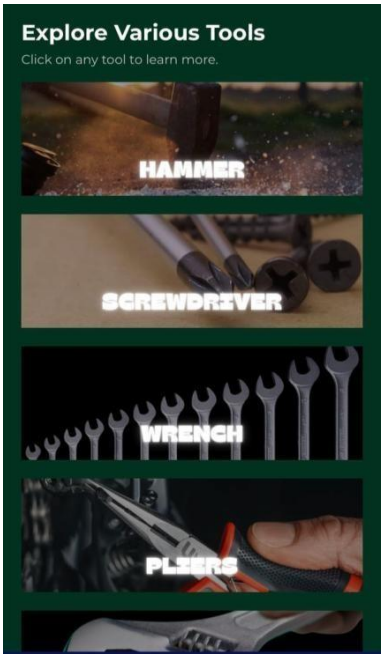

Figure 3.4: Tool Details

After you pressed tool detail, there are so many options for the tools you want to learn or know about.

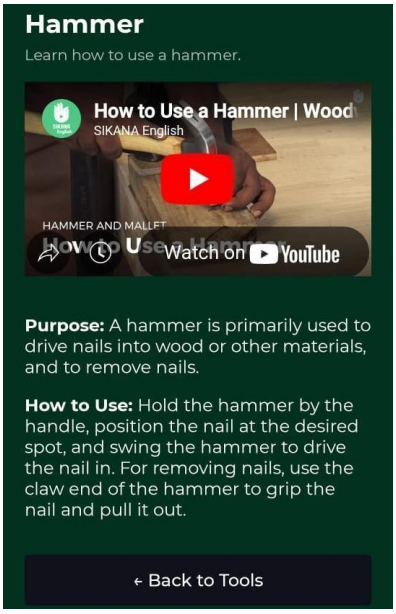

Figure 3.5: Specific Tool

Then, this interface will pop out if you tap the tools you want to know about.

Figure 3.6: Video Demonstration

For the video demonstration part, you also can choose many options for the tools you want to learn about and the video will autoplay and there link below the video as a credit to the youtuber

Figure 3.7: Safety Precaution

Concerning safety precautions, the interface will display general safety precautions when you use tools for your own protection. This guideline will assist you in the future.

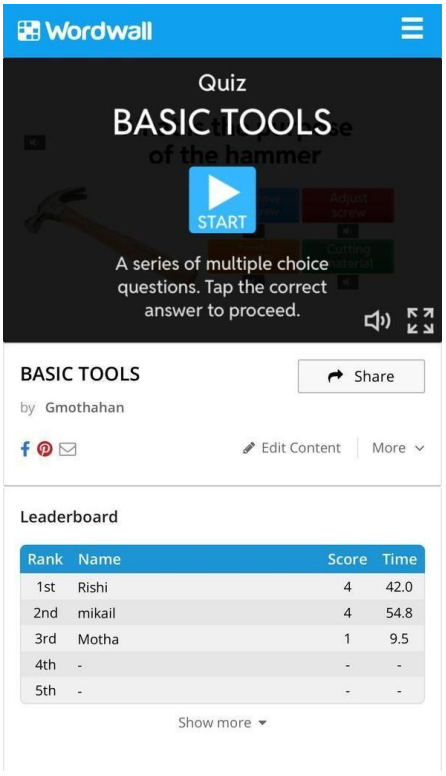

Figure 3.8: Quiz

Following that, the quiz section includes all of the tools we provided as a quiz to ensure that the students fully understand the tools. This can improve their knowledge.

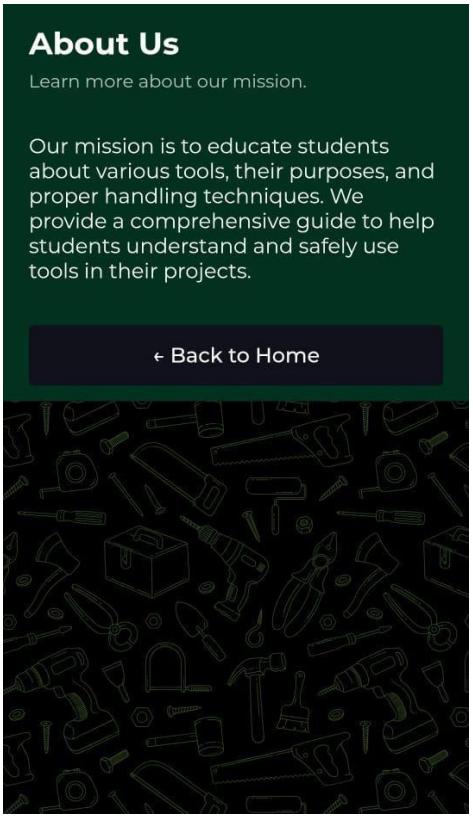

Figure 3.9: About Us

Finally, in the About Us section, we included our poster to inform people about all of our objectives and goals, so they understand why we created this app. We also want to attach our credit so that people can't steal our product

3.3 : DEVELOPMENT OF PRODUCT

3.3.1 : Material Acquisition

Description	Material
As a platform to edit and design an app.	
As a platform to design our user interface in the beginning.	
The software that helps convert the slides from PowerPoint to HTML.	

This software helps convert from HTML from i-spring to apk that can be download.	
As a website for students that can access to answer our quiz.	

Table 3.6.1: Material Acquisition

3.3.2 DEVICES

3.3.2.1 Personal Computer / Laptop

Figure 3.8

Designing and developing are the two main tasks required to complete this i-Tools Learning App. There are some computer specifications needed for the designing phase. This is due to the fact that the computer being used is a hardware platform for Canva and PowerPoint; if the hardware platform does not support the version, it will have an impact on either the program or the hardware. Some consequences of not following the specifications include corrupt files, fatal errors when starting the software, crashing images in a drawing, software that crashes randomly while working, inability to execute Application Manager, and product problems while interacting with the licensing server.

A computer or laptop must have the operating system in Microsoft Windows 10 (64-bit only), Windows 8.1 (64-bit only), or Windows 7 SP1 (64-bit only) in order to avoid any of these issues. In addition, the hardware's memory and 72 processor are crucial. In general, a computer's 2.5 GHz processor and 8GB of RAM are its default settings. Lagging and a slow refresh are two problems that can arise when utilizing the default. The processor must be upgraded to 3 GHz and 16GB of memory added in order to prevent it. The hardware's 6.0 GB of disk space is sufficient for use by default. The resolution of the screen also important to create the amazing graphics. So, the specs that need to have is 1920 x 1080p with true color.

3.3.2.2 Smartphone / Tablet

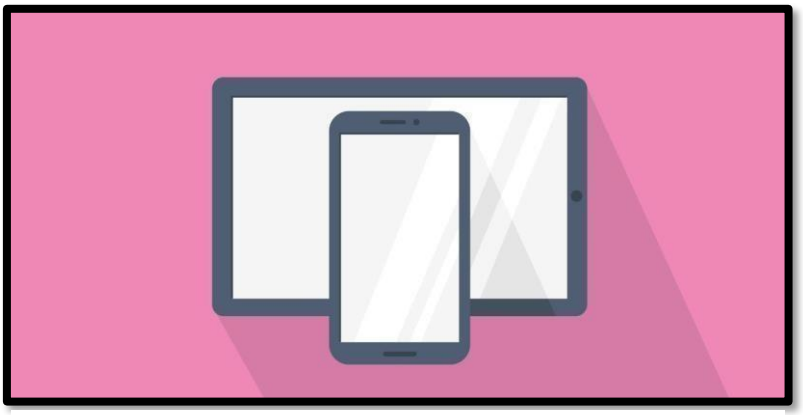

Figure 3.10: Smartphone & Tablet

We use laptops, iOS devices, and Android smartphones to evaluate the i-Tools Learning App. Only by using the URL from the app to open through the website can the testing be done on an iOS machine. This app is also compatible with phones with low specs. The appropriate smartphone has certain specifications. The phone that must be utilized cannot be more than three or four years old than this year. The reason for this is because some hardware problems cannot be fixed by software. The phone's default version is sufficient to access the game when the phones are not too old. For a phone to function properly, 4GB of RAM is sufficient. Display of the phone also important, there are some types of phone displays which are AMOLED, Super AMOLED, IPS, LCD, OLED, Retina, LED and TFT.

3.3.2.3 Overall Learning App Flow

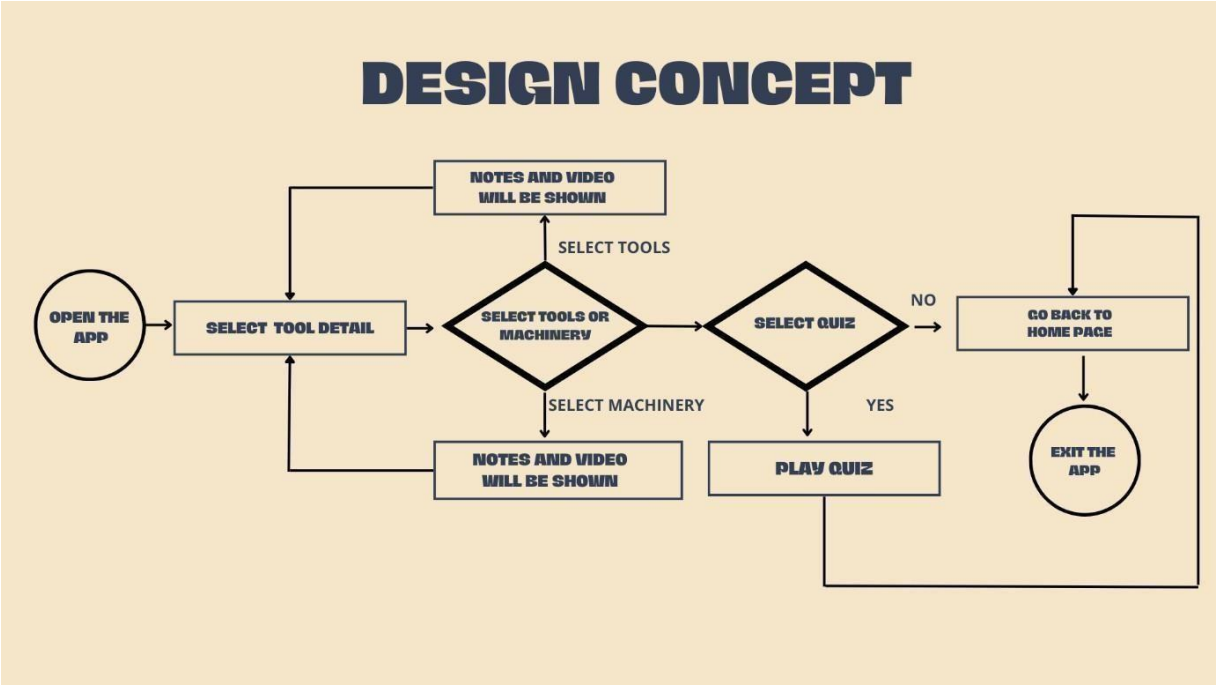

Figure 3.11: Overall Learning App Flow

CHAPTER 4

RESULT & DISCUSSION

4.1 PRODUCT DESCRIPTION

4.1.1 General Product Features & Functionalities

For engineering students who have a training module, there is an application called the training toolkit application. This application includes several features such as a tool detail, calibration, security precautions, questions and videos on how to use it, and images.Applications like this can be found all over the Play Store, but we try to make ours stand out and be more practical. Several elements from other applications were used to complete and develop this application. We hope that our presentation helps you better understand our project.

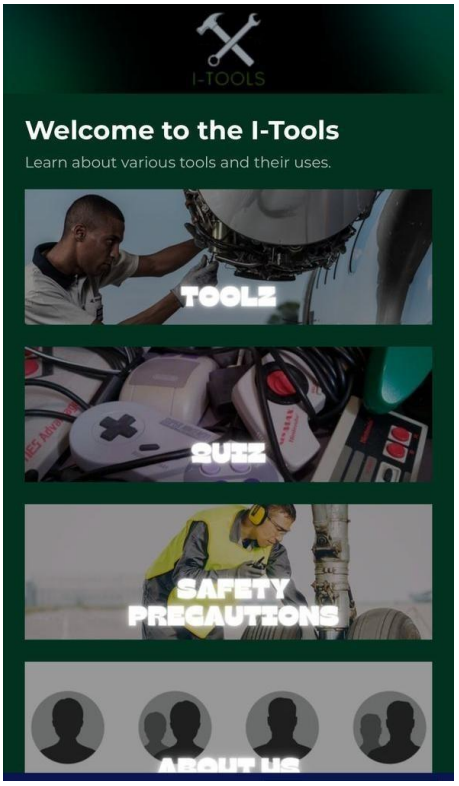

Figure 4.1: Main Menu of I-TOOLS

4.1.2 Specific Part Features

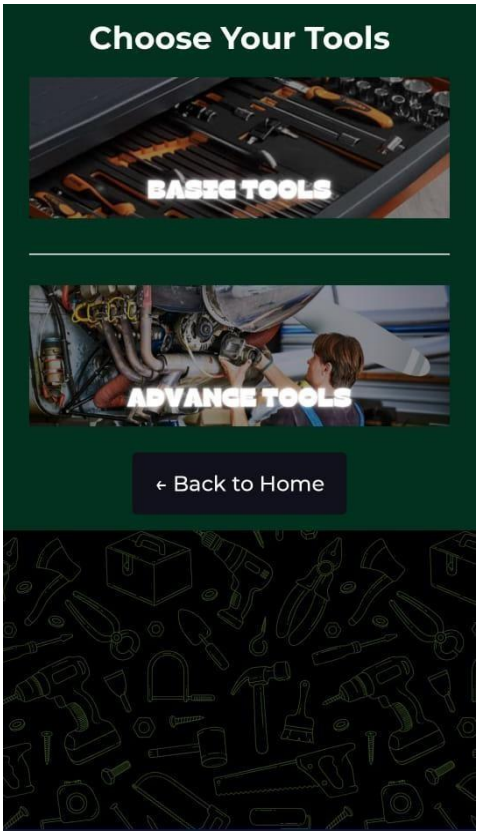

Figure 4.2

4.1.2.1 Product Structures

The app Workshop Learning Tools provides an essential function for effective learning, skill development, and knowledge acquisition in a workshop setting. These functions are tailored to the specific needs of those looking to improve their presentation skills and tool usage knowledge.

1. **Tool Details/ Catalog:**

   The application includes a detailed tool catalogue or database with information about tools commonly used in workshops. Users can browse the catalogue to find various tools, read their descriptions, and obtain detailed information about each one. Every tool in the catalogue is fully described, including specifications and maintenance instructions. Users can use this information to fully comprehend what each tool does, how it works, and how to use it correctly.

2. **Video demonstration:**

   The application includes video demonstrations that visually demonstrate how to operate and use the proper techniques for a variety of tools. Users can view these movies to see how tools are used in real-world settings to improve their understanding and practical use.

3. **Safety precautions:**

   The application emphasizes the significance of maintaining a secure workspace by offering precautions and comprehensive security plans for each tool. Users can learn about potential risks, security protocols, and best practices to reduce the risk of accidents and injuries while doing the practical application.

4. **Quiz:**

   Applications may include skill assessments and questionnaires to gauge the user's comprehension of the use of tools, techniques, and security procedures. These interactive evaluations help users assess their progress and find areas for improvement.

5. **Project ideas and inspiration:**

   This application may offer a collection of concepts for classroom projects, creative applications, and motivation for using various tools. Users can explore these concepts to spark their creativity, test out new projects, and enhance the functionality of the workshop.

6. **Offline Access:**

   The application can provide access to previously seen content such as tool details, tutorials, and movies without a connection. Users can access these resources even when they are not connected to the Internet, allowing uninterrupted research and consultation.

7. **User-friendly interface:**

   The application offers a user-friendly interface with intuitive navigation, well-organized content, and quick access to several functions. This makes learning easier and enhances the user's overall experience.

4.1.2.2 Product Mechanism

The Workshop Learning Tool App's functionality is delivered through a combination of technology, data management, and user interactions. Apps commonly use the following product mechanisms:

1. **User interface:**

   The application has an easy-to-use user interface that enables users to easily navigate between various sections and access a variety of functions. The user interface was created to be simple to use, visually appealing, and open to user interaction.

2. **Backend infrastructure:**

   The application is supported by a reliable back-end infrastructure that manages data archiving, processing, and retrieval. This infrastructure frequently includes servers, databases, APIs (application programming interfaces), and other components required for proper operation and connectivity.

3. **Tool catalog and details:**

   This application maintains a comprehensive tool catalogue, which includes a database of information on tools commonly used in training sessions. Specific details about each tool include specifications, usage guidelines, safety precautions, and maintenance instructions. This information is stored in a database and linked to the necessary tools.

4. **Video demonstration:**

   This application offers a library of video demonstrations that demonstrate how to use various tools correctly and in a variety of situations. These films connect to the proper tools and tutorials for a seamless integration and are stored in the application's data base or stored on external platforms.

4.1.2.3 Interface Layout

Accessories and finishing products for the Workshop Learning Tools app refer to complementary elements that enhance the user experience, aesthetics, and functionality of the app. This includes:

1. **App icon:**

   An eye-catching and high-quality icon that depicts how Workshop Learning Tools will be applied to the user's device. Users can more easily locate and access their applications with the help of application icons.

2. **User Interface (UI) Design:**

   a well-designed interface that prioritizes usability, intuitive navigation, and aesthetics. This includes designs, color schemes, typefaces, buttons, and other graphic elements used throughout the entire application.

3. **Brand Elements:**

   Consistent brand elements such as logotypes, color schemes, and typefaces that complement the application's identity and enhance recognition. The brand elements help to create a strong visual presence and promote brand consistency.

4. **Illustrations and graphics:**

   Customized illustrations and graphics that enhance the visual appeal of the application's content, tutorials, or tool instructions. These graphic elements help explain complex ideas, provide visual cues, and add creativity and fun to the learning process.

5. **Animations and transitions:**

   Transitions and useful animations that enhance the application's aesthetic appeal, provide feedback on user actions, and create an engaging and interactive user experience. The use of animation can highlight crucial elements, grab the user's attention, or dynamically convey information.

6. **Responsive design:**

   An approach to responsive design that ensures that your application can adjust to various screen sizes and orientations. This enables users to roam between devices like smart phones, tablets, and desktop computers without experiencing any issues accessing the applications.

7. **Accessibility features:**

   Accessibility features make an application more inclusive and easy for people with disabilities to use. This includes features such as screen reader compatibility, adjustable source size, color contrast options, and image alternative text.

4.1.3 General Operation of Product

Execute the application. In essence, Workshop Learning Tools aims to empower users by providing them with the knowledge and guidance they need to confidently navigate the world of training. Workshop Learning Tools aims to offer users a comprehensive and interactive platform for honing their training skills, knowledge, and abilities. Working with the application can be divided into several key components. A variety of processes and interactions allow users to effectively use the application Workshop Learning Tools.

The initial screen provides a simple user interface with intuitive navigation options such as menus and tabs, allowing users to explore various application sections. One of the most important sections is the detailed tool catalogue, which allows users to look up a variety of tools that are commonly used in workshops. The application's ability to access tutorials and guides is an important feature. Users have access to a wealth of tutorials that provide step-by- step instructions for effectively using a wide range of tools. These tutorials frequently include both textual and visual information to help users understand and apply effective techniques.

In addition, the application may provide guidance on specific projects, as well as inspiration and creative ideas to help the user put their newly acquired skills to use. The application includes video demonstrations to help you learn more effectively. Users can watch these movies to see tools in action in real-world scenarios and gain a better understanding of the techniques and applications used in the real world. These video demonstrations serve as visual aids to supplement the application's text and graphic information. Safety is an important aspect of classroom learning, and the application addresses this by providing precautions and comprehensive security plans for each tool. In addition to this information, users have access

to tool details, tutorials, and videos to ensure they have the knowledge they need to maintain a safe work environment and minimize risks.

To summarize, the Workshop Learning Tools application provides an important platform for participants to improve their skills and knowledge throughout the workshop. The application allows users to learn, practice, and grow in a workshop setting, with an easy-to-use interface, tool details, tutorials, video demonstrations, security policies, and personalized recommendations.

4.1.4 Operation of Product Feature

4.1.4.1 Tool detail

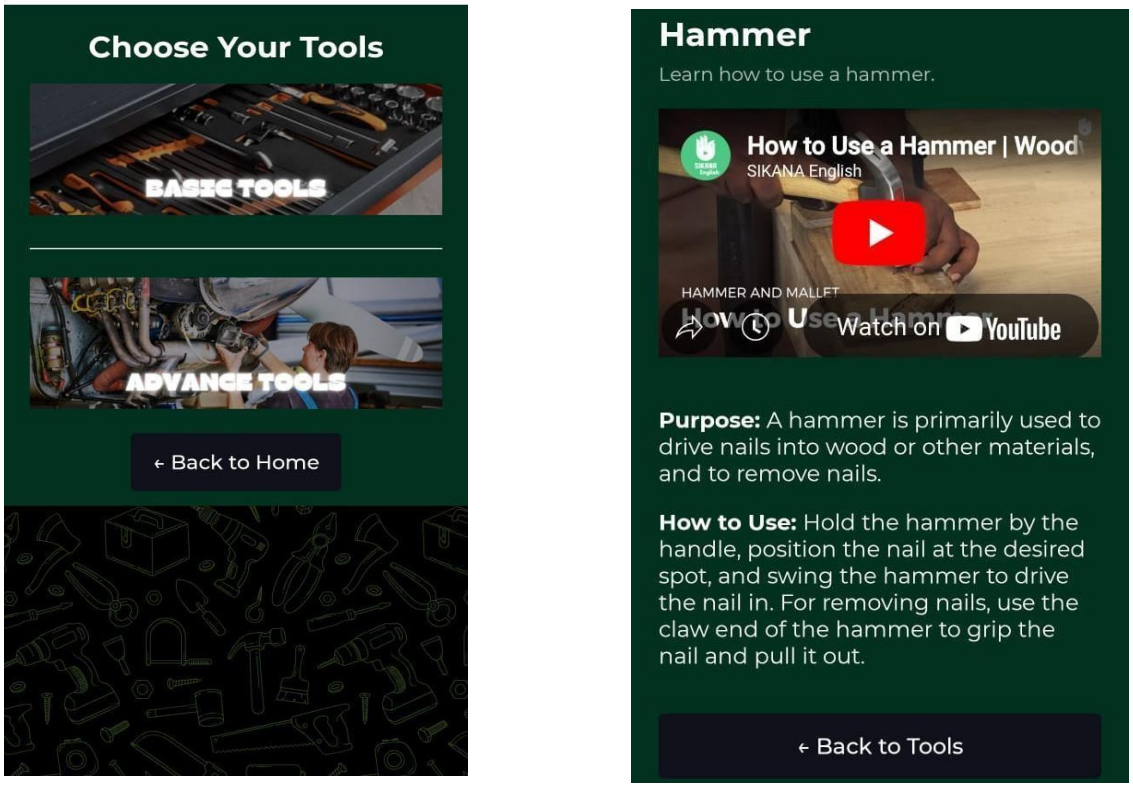

Figure 4.1: Tool Detail of I-TOOLS

The tool details menu in the training application serves to provide comprehensive information and details on each tool available in the training. enables users to access detailed information about the tools, including their specifications, user guides, maintenance requirements, and illustrations and diagrams.

Key Function:

1. **Tool selection:**
   The "Details of the Tool" menu typically displays a list of all the tools available in the workshop. To view their detailed information, users can choose a specific tool from the list.

2. **Detailed information:**

When choosing a tool, the menu displays a dedicated screen or section that provides a detailed general description of the selected tool. This information may include the tool' name, an identification number, or other identifying information. Include a description that serves as a brief summary of the tool's purpose, characteristics, and capabilities.

3. **Visual and Diagram:**

The tool's details menu may also contain visual aids, such as images and diagrams, to help users better understand the tool's components, structure, and proper use.

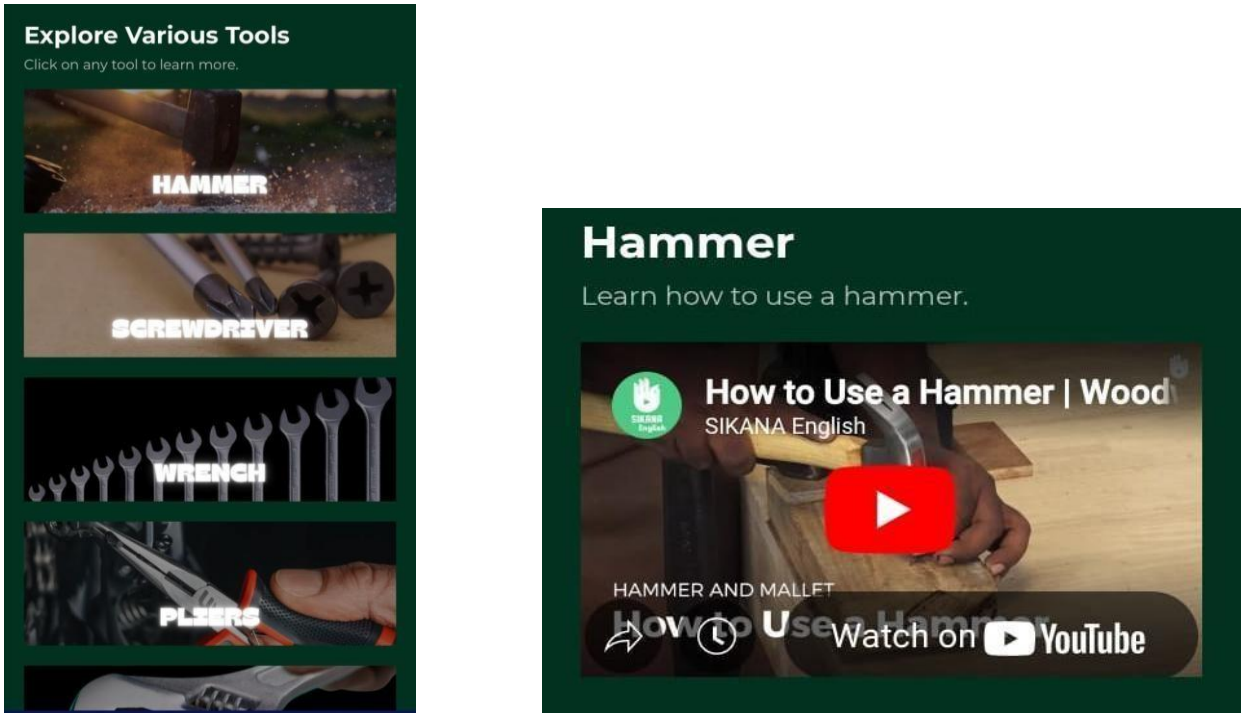

Figure 4.2: Video Demonstration of I-TOOLS

Users will benefit from this because it will broaden their knowledge. The "Details of the Tool" menu ensures that users have access to accurate and comprehensive information about each tool, allowing them to make informed decisions and effectively use the tools provided in the workshop. The menu's interface is simple to use. The intuitive menu design and easy navigation allow users to quickly find the information they need about the desired tool, improving the overall user experience and increasing classroom productivity. In general, the tool's Details of the Tool menu serves as an indispensable resource when using the tutorial. Providing users with critical tool information allows them to work effectively, efficiently, and safely.

4.1.4.2 Video Demonstration

The Workshop Tools application's video demonstration feature is intended to provide users with guidance and direction on how to use various tools safely and effectively in a workshop. Enhance the learning experience by incorporating visual representations of tool, technique, and best practices.

Key Function :

1. **Visual guide:**

   Users can access a library of step-by-step videos demonstrating how to use different tools. Each video focuses on a specific tool or technique and includes clear visual demonstrations of how to use it.

2. **Tool Features:**

   The movies highlight the tool's characteristics and demonstrate how it can be used for specific tasks or workshop goals. Users can see the tool in use and understand its purpose and potential applications.

3. **Technique demonstration:**

   The video shows how to use the tools effectively and efficiently. Users learn proper tool handling, positioning, and movement techniques, ensuring that they have the skills required to work effectively in the workshop.

4. **Slow-motion and first-person views:**

   Demonstrations on video may include slow-motion or first-person views of specific tools in use or techniques. This feature enables users to see subtle details, useful movements, or precise manipulations that are essential for mastering particular skills.

5. **User-friendly controls:**

   The application's built-in video player offers easy controls for pause, resume, fast forward, and reproducing specific segments of the film. This feature allows users to review specific procedures and techniques at their own pace.

6. **Access without a connection:**

   This app allows users to watch previous video demonstrations without a connection, even when offline. This ensures constant access to priceless visual learning resources in the classroom. Users can learn and improve their workshop skills by following the proper methods and techniques demonstrated in the videos. This hands-on approach promotes skill development and mastery of workshop tools.

4.1.4.3

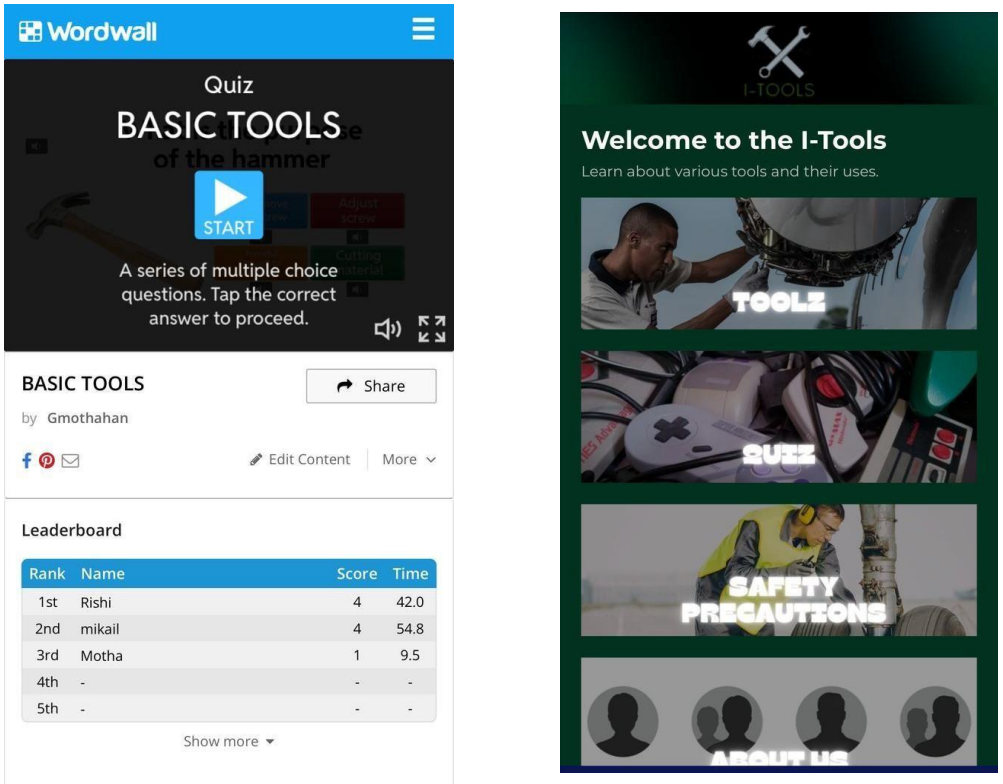

Figure 4.4: Quiz of i-TOOLS

This app Quizzes section serves an engaging feature designed to assess users' knowledge, advance their learning, and dig a deeper understanding of the concepts covered in the workshop. This quiz offers a number of tools, function, safety practice, or other related to the practical, test and evaluations.

The primary goal of the quizzes is to evaluate the user's understanding. The application includes questions that encourage users to engage with the content and apply.

Their knowledge in real-life situations. The question serves as a tool for self-evaluation, allowing users to assess their understanding, identify areas for improvement, and reinforce their learning outcomes. The quizzes section usually includes a variety of question types, such as multiple-choice and "Yes" or "No" options. These various questions allow users to gather information, apply concepts, and analyze scenarios related to the workshop's activities, as well as find subjects and put thinking skills into use.

Furthermore, the test section frequently provides immediate feedback to the user once the test is completed. This feedback could include correct answers, explanations, or other information to help users understand the reasoning behind each response. Immediate feedback mechanisms can improve learning experiences by removing misunderstandings, reiterating accurate information, and encouraging a deeper understanding of the subject. Additionally, the questionnaire section may include progress tracking features that allow users to monitor their performance over time. These characteristics monitor and display a user's test result, test completion progress, and overall test question progress. The progress tracking helps users set goals, follow up on improvements, and stay motivated while continuing on the workshop's learning path.

4.1 PROJECT IMPACTS/ PURPOSE OF PRODUCT

1. **Make it easier for students to understand how to do their task during the class**

The Workshop Learning Tools application was created to help students understand how to complete tasks during a workshop. This application helps students learn independently and complete assignments by offer detailed tutorials and instructions, also video demonstrations. This lessens the user's reliance on their lecture's constant instruction, allows them to work at their own pace, and gives them confidence in their own abilities. The application's comprehensive resources and user-friendly interface give students access to the information they need to comprehend and successfully complete their tasks.

2. **Conferences do not always require a thorough explanation of tool fundamentals**.

The Workshop Learning Tools application eliminates the need for instructors to repeatedly explain the tools' fundamental principles. This application is an essential resource for students to use when looking for basic information about different tools. This application provides students with the information they need to understand the capabilities and applications of the tool they require, including detailed descriptions, video demonstrations, and safety precautions. This saves valuable time for all lectures and instructors and allows them to focus on more hands-on instruction, thereby increasing the effectiveness of the training sessions.

3. **The student can grasp fundamental concepts independently, without relying heavily onlectures.**

The use of Workshop Learning Tools allows students to self-learn fundamental concepts while reducing their reliance on lectures. Students can independently explore and comprehend the fundamental concepts of the tools using interactive tutorials, educational films, and easily accessible tool details. Users can study at their own pace, go over the material as needed, and take notes on their own. This allows students and users to take responsibility for their own education and develop a sense of independence. This application helps students gain a solid understanding of the fundamentals of learning by providing extensive resources and encouraging self-directed learning.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 ACHIEVEMENT OF AIM AND OBJECTIVES OF THE RESEARCH

5.1.1 General Achievement of the Project

Our product performed exactly as expected in terms of our goals and objectives. The app interface options allow users to easily access any of the features available within the app. The app was successfully designed to provide engineering students with easy access to information about workshop tools. We also successfully designed it to be user-friendly. The interface is simple to use, allowing students to quickly find the information they require without any unnecessary complications. The app is also compatible with a variety of devices, making it easier for students to learn about workshop tools.

5.1.2 Specific Achievements of Project Objectives

5.1.2.1 Product Structure

Our goal was to create an app that would allow engineering students to gain early and easy access to workshop tools. To complete this, we must first identify the students' workshop tool problems. Our product was designed to be user-friendly and to provide students with new learning experiences via mobile applications.

5.1.2.2 Accessories and Finishing

Our app's market value is user-friendly, which expresses how easy it is for users to understand how to use our product, which is why we created an app in the simplest way possible. Thus, the app's features and interface were finalized at the end of our project. We use Canva for the app interface, Website to APK, and WordWall for the quizzes because these applications and software can add value to our app.

5.2 CONTRIBUTION OR IMPACT OF THE PROJECT

Our project contributes to our society by providing engineering students with opportunities to learn about workshop tools at any time and from any location. Next, the app was created to make it easier for the public to learn more about workshop tools. Our app's impact on society is to reduce the number of engineering students who do not understand how tools work or how to use them properly.

5.2 IMPROVEMENT AND SUGGESTIONS FOR FUTURE RESEARCH

5.1.3 Product Structure

Our goal for the future is to improve our product's coding version. It must require someone who knows how to code, such as a programmer. Many features can be added if the coding goes well. Suggestions for future research include developing an app with social features such as Direct Messages, which were used on Instagram, so that students can communicate with their instructors via our app.

5.1.4 Accessories and Finishing

To add more features to our app, we can collaborate with quiz platforms such as Kahoot! and Quizizz to make the app more appealing to students looking to improve their knowledge of workshop tools.

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APPENDIX A: TASK SEGREGATION

	MOTHAHAN A/L GANESEN
1.1	BACKGROUND OF STUDY
1.2	PROBLEM STATEMENTS
1.3	PROJECT OBJECTIVES
1.3.1	GENERAL PROJECT OBJECTIVES
1.3.2	SPECIFIC INDIVIDUAL PROJECT OBJECTIVES
2.1	GENERAL LITERATURE REVIEW
2.1.2	EDUCATION INDUSTRY IN MALAYSIA
2.1.3	WORKSHOP EXPLANATION
2.1.4	TYPES OF ENGINEERING APPS
2.2	SPECIFIC LITERATURE REVIEW
2.2.1	STORYBOARD
2.3	REVIEW OF RECENT RESEARCH AND RELATED PRODUCT
2.3.1	RECENT MARKET PRODUCTS
2.4	COMPARISON BETWEEN RECENT RESEARCH AND CURRENT PROJECT
2.4.1	PRODUCT A VS OUR PRODUCT
2.4.2	PRODUCT B VS OUR PRODUCT
2.4.3	PRODUCT C VS OUR PRODUCT
2.4.4	PRODUCT D VS OUR PRODUCT

	RISHIKESAN A/L SRI SARAVANA KUMARAN
3.1	PROJECT BRIEFING & RISK ASSESSMENT
3.2	OVERALL PROJECT GANTT CHART
3.2.1	GANTT CHART FOR AEM
3.2.2	GANTT CHART FOR AEP
3.3	PROJECT FLOW CHART
3.3.1.1	OVERALL AEM PROJECT FLOW CHART
3.3.1.2	OVERALL AEP PROJECT FLOW
3.4	LIST OF MATERIALS & EXPENDITURES
3.5	INTERFACE LAYOUT
3.5.1	GENERAL PRODUCT INTERFACE LAYOUT
3.6	DEVELOPMENT OF PRODUCT
3.6.1	MATERIAL ACQUISITION
1.3.2.1	INTRODUCTION LAYOUT
1.3.2.2	INTERFACE LAYOUT
1.3.2.3	STORYBOARD
1.3.2.4	SOFTWARE DESIGNATION
	PRODUCT DEVELOPMENT SOFTWARE

	MUHAMMAD MIKAIL BIN RAZLAN HASHIM
4.1	PRODUCT DESCRIPTION
4.1.1	GENERAL PRODUCT FEATURES & FUNCTIONALITIES
4.1.2	SPECIFIC PART FEATURES
4.1.2.1	PRODUCT STRUCTURES
4.1.2.2	PRODUCT MECHANISM
4.1.2.3	INTERFACE LAYOUT
4.1.3	GENERAL OPERATION OF PRODUCT
4.1.4	OPERATION OF PRODUCT FEATURE
4.1.4.1	TOOL DETAIL
4.1.4.2	VIDEO DEMONSTRATION
4.1.4.3	SAFETY PRECAUTION
4.1.4.4	QUIZES
4.2	PROJECT IMPACTS/PURPOSE OF PRODUCT
1.4	SCOPE OF PROJECT
1.4.1	GENERAL PROJECT SCOPES
1.4.2	SPECIFIC INDIVIDUAL SCOPES
1.4.2.1	INTRODUCTION LAYOUT
1.4.2.3	INTERFACE LAYOUT
1.4.2.3	STORYBOARD
1.4.2.4	SOFTWARE DESIGNATION
1.5	PROJECT IMPACT

	MOTHAHAN A/L GANESEN
5	CONCLUSION AND RECOMMENDATION
5.1	ACHIEVEMENT OF AIM AND OBJECTIVES OF THE RESEARCH
5.1.1	GENERAL ACHIEVEMENT OF THE PROJECT
5.1.2	SPECIFIC ACHIEVEMENTS OF PROJECT OBJECTIVES
5.1.2.1	PRODUCT STRUCTURE
5.1.2.2	ACCESSORIES AND FINISHING
5.2	CONTRIBUTION OR IMPACT OF THE PROJECT
5.3	IMPROVEMENT AND SUGGESTIONS FOR FUTURE RESEARCH
5.3.1	PRODUCT STRUCTURE
5.3.2	ACCESSORIES AND FINISHING