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UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING

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TECHNOLOGY & INFORMATION SYSTEM

DESIGN THINKING REPORT

TITLE: TRAVEL ASSISTANCE

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1. INTRODUCTION

1.1 WHAT IS DESIGN THINKING?

Design thinking is a mindset and approach to problem-solving and innovation focused on human-centered design. It aims to serve and understand people's need and finding out some creative ways to solve their problems. The five phases of Design Thinking are - Empathize, Define, Ideate, Prototype and Test which can lead and guide us through this journey of problem-solving.

In the Empathize phase, we collected our data through survey using Google Form to find out the challenges that the people faced. During Define phase, we identified the problems faced based on data collected in our survey. After that, we came out with brainstorming ideas and choose the most creative and effective solution to address the problems during Ideate phase. In Prototype phase, we developed a demo version of our application to solve user's need. Lastly, in Test phase, we find several users to test our prototype to provide feedback as it can use to optimize and modify our application.

2. DETAIL STEP

In this task, we are required to do a Design Thinking Project based on the theme Big Data and Artificial Intelligence New Innovation. After we setting up a group and discussing, we found that tourism seeing rapid growth in recent years, more and more people have been travelling all around the world. One of the many headaches faced by people when planning their vacation is the perfect time to visit a spot. More often than not, tourists tend to face unfavourable weather or natural disasters when travelling.

With that in mind, we thought of a solution in the form of our application, Travel Assistance. Travel Assistance is a travel application that is geared towards aiding our users in making better decisions about their trip. Using predictive AI, Travel Assistance will formulate a percentage based on various factors to determine the feasibility of the trip. Our app will use weather data and past reports of natural disasters from various sources to provide our users with a general idea of what to expect during their trip in terms of the weather. This will give our users a peace of mind or as a precaution in case of bad weather.

EMPATHIZE	Firstly, we did surveys using the Google Form to find out some challenges faced by the tourists where our target audiences are mostly undergraduate students from University Teknologi Malaysia with the age between 20 to 30 years old.
DEFINE	After we gathered all the data and challenges faced by tourists, we found that most tourists are influent by weather condition when going on a trip. It is due to inaccurately prediction of weather condition.
IDEATE	After knowing the clear problem from the previous phase, we managed to discuss and come out with a brainstorming ideas and solutions to improve and solve the existing problems.
PROTOTYPE	After finalize the user's needs, we started to discuss the features in our application to create and design our prototype in this phase. We started by sketching the user interface using Clip Studio Paint. Then, we divided our task wisely in this phase to ensure all features fully meet all user's requirement.
TEST	Lastly, we test our prototype to ensure that all functions and features works properly and smoothly. We will find several users to test running our application to detect errors. It is useful to us as they can provide us the user's experience and real feedback.

3. DETAILED DESCRIPTION

3.1 PROBLEM

Nowadays, traveling is an activity to be enjoyed. There is a time for leisure and time to see other cultures. Therefore, the unpredictable and extreme weather has turned into an issue for tourists and travellers, upsetting schedules and lowering the general quality of tourist experiences. Sudden changes in the weather, like thunderstorms, extreme heat, or heavy rains, which can lead to cancellations of events, flights, and roads, resulting in a waste of time and loss of money. These are particularly worse for those who need to travel according to tight schedules or on lower budgets. Secondly, most tourists are not able to obtain current and location-specific weather reports concerning their destinations or routes to take. They only rely on general forecasts, which are mostly already outdated. Unable to obtain this information, tourists cannot adapt themselves to the rapid changes that occur, increasing the likelihood of cancellations and unsafe situations.

Furthermore, it is also very difficult to understand the time of travel, as climatic influence has become quite unpredictable. Tourists often miss the best travel time or arrive during the most unfavourable conditions, such as the monsoon season or extreme heat. This issue is compounded by a lack of accessible, user-friendly tools that provide insights into seasonal trends or historical weather data. Moreover, hurricanes, snowstorms, and floods can turn out to be very fatal for tourists unaware of the conditions and how to behave in such eventualities, getting them into life-threatening and dangerous situations.

More importantly, disruption to travel due to bad weather not only affected the economy, tourists also suffered emotionally from disrupted vacations that might lead to increased stress, disappointment, and dissatisfaction.

3.2 SOLUTION

After we specify the problems, we try to find the best solution after the brainstorming process. We propose an AI-driven weather-based trip planning application that can assist tourists and travellers to prepare for journeys. This application will be based on real-time, location-based, and accurate weather data from trusted meteorological services. In turn, this will facilitate accurate forecasts for the destinations they travel to and prepare them in the best possible ways, minimizing the risk of disruptions. Furthermore, the AI system will use historical trends to give the most accurate information to travellers based on their decisions on when and where to travel.

The application will be designed with the latest algorithms in AI so as to provide dynamically and adaptively generated travel plans. Users will automatically be alerted and provided with some suggestions based on the weather conditions. For example, suppose a day intended for outdoor activities is forecasted to rain, the system will suggest indoor activities. This adaptability will enable tourists to maximize enjoyment while minimizing the impact of disruptions caused by inclement weather.

Safety should not be left behind on this platform. When disasters happen at the user's current location, the system will display the warning message to give alerts to the user such as hurricanes, snowstorms, or floods caused by heavy rain. Such a platform shall be supported with safety tips for each destination and any particular weather evidence so that tourists are better prepared for any emergency. The system will also provide collaboration tools for group travellers, making it easy for multiple users to coordinate plans. This can easily allow groups to adjust together in case of changes in weather, rather than having to make last-minute adjustments.

3.3 TEAM WORKING

DATE	TASK DESCRIPTION
3 January 2025 to 8 January 2025	Firstly, we created a Telegram group to make our conversation easier. After that, we started to discuss and do the research. We realized that bad weather has become a big challenge for the tourism industry because extreme weather events like big storms, floods around the world are disturbing it. Then, the effects of climate change are becoming obvious, such as seasonal uncertainty on tourists and operators. Therefore, we are discussing a solution to solve this problem.
9 January 2025 to 10 January 2025	Furthermore, one of our group members, Jun Yang, brainstormed that we can create an application to predict the weather accurately. We all totally agree with this idea, so our leader Jian Xin started to distribute the task for each member after we finalize our topic. Jun Yang and Shan Neng will focus more on doing video and prototype while Jian Xin, Yee Heng and Sivaraj are focusing on doing report and presentation slide.
11 January 2025 to 14 January 2025	After that, we have done a survey to know what is the problem become a main cause to the tourists through the google form. It is useful for us to understand what is the main feature that users need and we want to focus on. Finally, our prototype had successfully developed and started to test.
15 January 2025 to 16 January 2025	With good teamwork, we all have a good collaboration and everything goes smoothly. Therefore, we are able to finish and submit our report on time.

4. DESIGN THINKING ASSESSMENT

This assessment challenges us to think out of the box with the given themes. It helps us improve our teamwork capabilities as we are able to pool our ideas together to create a design that fits all of our ideas. To kick start our journey in this project, our TIS lecturer taught us about the 5 phases in design thinking that will be elaborated upon in the following paragraphs.

The first step in our process is to empathize with people on a certain issue. One such case that came to mind was the weather in relation to travelling. As such, we created a google form that helped us better understand and gather data on people's thoughts on the matter. Next, we enter the Define phase of the process. From what we have gathered and analyzed, encountering bad weather conditions when travelling can cause a lot of headaches. With this in mind, we began our next phase. After empathizing and defining the situation, we began our Ideate phase. This is the part when we began to brainstorm ideas that allowed us to help people overcome the issues of having bad weather that affect them while travelling. There are a lot of factors related to weather that we considered that may affect people, such as natural disasters or heavy rain. On top of that, we also wanted to include other features that may also help people in the 'trip' aspect. Factors such as recommended locations or whether it is a peak season.

Wrapping up our Ideate phase, we began to prototype an application that addresses the issues presented. Our application will use weather data from multiple sources around the world to determine the general weather of a location at specified dates. Aside from that, we also decided to include a feature that also informs users if the date they picked is during a peak season. This way, users can decide if they want to select a different day to avoid crowds of tourists. The last phase is the Test phase. We gave the prototype to various people to test. The general reception is positive. However, there were some concerns with regards to the oversimplification of the UI. As we had assumed that having less statistics would be enough to give our users a peace of mind and a general idea of the circumstance. Some users have stated that having more detailed statistics would greatly benefit the app.

5. DESIGN THINKING EVIDENCE

5.1 EMPATHY PHASE

In this phase, we discuss and think about some questions about weather-related when travelling issues by using Google Form.

Here is our link for our Google Form survey: <https://forms.gle/yteweb2BfFnsSnd39>

The image shows a Google Form titled "Travel and Weather Planning Survey". The form is divided into two columns. The left column contains the title, a description of the app being developed, the creator's email (tanharry252@gmail.com), and a "Switch accounts" link. The right column contains four questions. Question 1 asks how often the respondent travels for leisure in a year, with radio button options for 1-2 times, 3-5 times, 6-10 times, and more than 10 times. Question 2 asks if they usually check the weather forecast before planning a trip, with radio button options for Yes and No. Question 3 asks if they have ever had a trip ruined by unexpected weather conditions, with radio button options for Yes and No. Question 4 asks what factors are most important when planning a trip, with checkbox options for Weather conditions, Destination popularity, Budget/affordability, Seasonal events or festivals, and Ease of transportation.

Travel and Weather Planning Survey

"We are developing an innovative app that combines advanced weather prediction with travel planning to help tourists decide the best times and places to visit. Your input is invaluable in shaping this project! This survey will take only 3–5 minutes to complete. Thank you for your time and feedback!"

tanharry252@gmail.com [Switch accounts](#)

Not shared

1. How often do you travel for leisure in a year?

☐ 1–2 times

☐ 3–5 times

☐ 6–10 times

☐ More than 10 times

2. Do you usually check the weather forecast before planning a trip?

☐ Yes

☐ No

3. Have you ever had a trip ruined by unexpected weather conditions?

☐ Yes

☐ No

4. What factors that most important to you when planning a trip?

☐ Weather conditions

☐ Destination popularity

☐ Budget/affordability

☐ Seasonal events or festivals

☐ Ease of transportation

5. How often do you change your travel plans due to weather forecasts?

☐ Rarely

☐ Sometimes

☐ Often

6. Would you be interested in an app/website that combines weather predictions with travel planning recommendations?

☐ Yes

☐ No

☐ Maybe

7. Would you prefer the app/website to suggest alternative plans if the weather changes unexpectedly?

☐ Yes

☐ No

8. What features would you find most useful in such an app/website?

☐ Accurate weather forecasts for destinations

☐ Recommendations for the best travel dates based on weather

☐ Alternative destinations if weather conditions are unfavorable

☐ Real-time weather alerts during a trip

☐ Localized tips and event recommendations based on weather

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Google Forms

Figure 5.1.1 shows the list of Question

5.2 DEFINE PHASE

After a week, we successfully gathered about 40 respondents about weather-related when travelling issues. Then, we gathered all the data and convert to charts and diagrams as below:

1. How often do you travel for leisure in a year?

36 responses

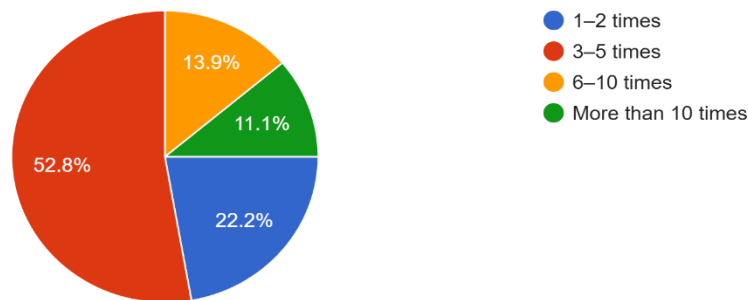


Figure 5.2.1 shows that majority of the respondents travels 3 to 5 times in a year

2. Do you usually check the weather forecast before planning a trip?

36 responses

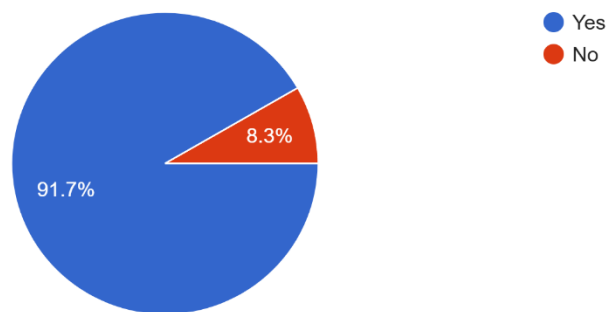


Figure 5.2.2 shows that most respondents will check the weather forecast before planning a trip

3. Have you ever had a trip ruined by unexpected weather conditions?

36 responses

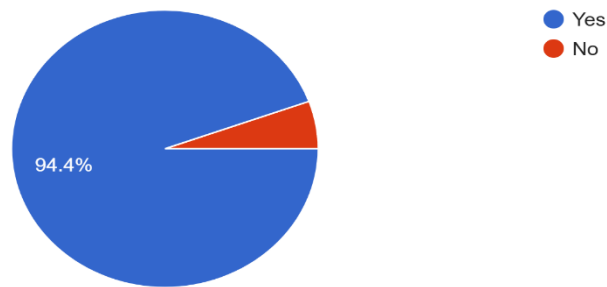


Figure 5.2.3 shows that 94.4% of respondents had a trip ruined caused by unexpected weather condition

4. What factors that most important to you when planning a trip?

36 responses

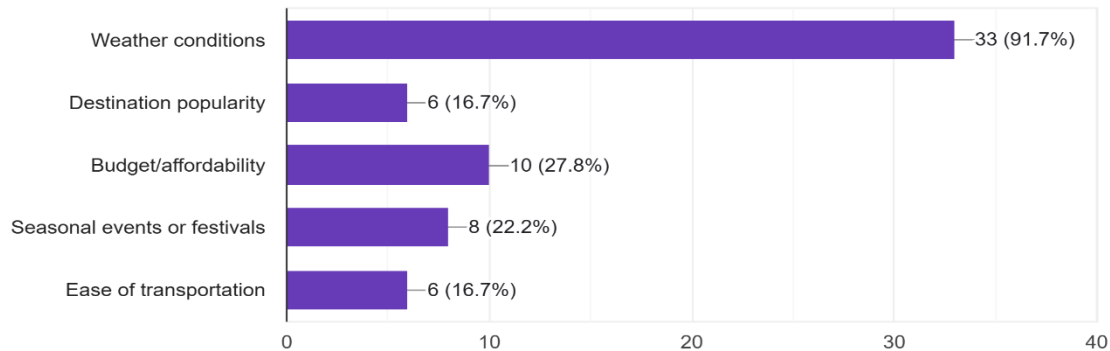


Figure 5.2.4 shows that weather condition is the most important factor when planning a trip

5. How often do you change your travel plans due to weather forecasts?

36 responses

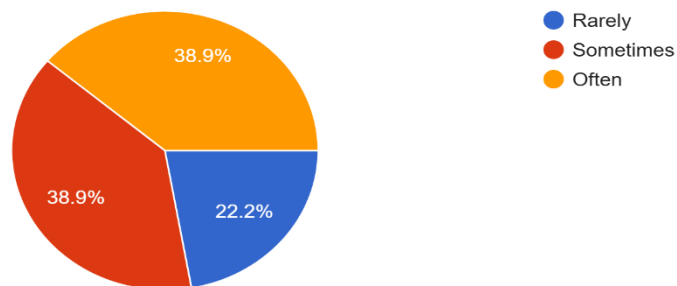


Figure 5.2.5 shows that 38.9% of the respondents often and sometimes change their plans due to weather forecasts but 22.2% of them rarely do that

6. Would you be interested in an app/website that combines weather predictions with travel planning recommendations?

36 responses

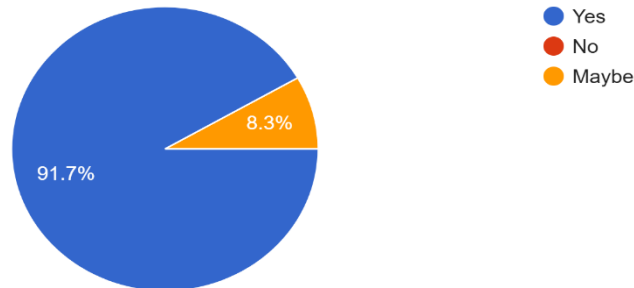


Figure 5.2.6 shows that majority of respondents are interested to our application

7. Would you prefer the app/website to suggest alternative plans if the weather changes unexpectedly?

36 responses

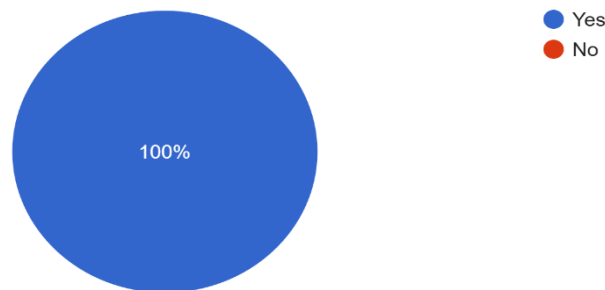


Figure 5.2.7 shows that all of the respondents prefer an application that suggest an alternative plans when the weather changes unexpectedly

8. What features would you find most useful in such an app/website?

37 responses

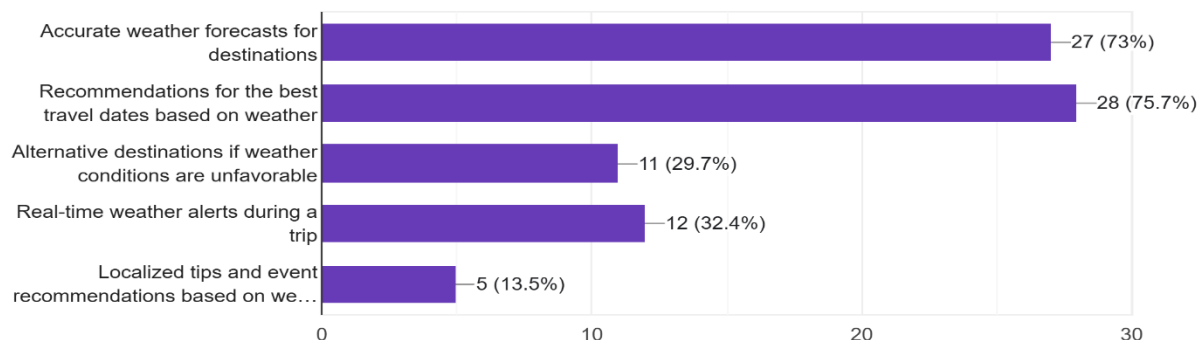


Figure 5.2.8 shows that recommendations for the best travel dates based on weather is the most popular features in our application

5.3 IDEATE PHASE

5.3.1 PROBLEM UNDERSTANDING

In this phase, our group members come out with some brainstorming activities. All members are involved in this activity.



Figure 5.3.1.1 shows our meeting conducted at M01

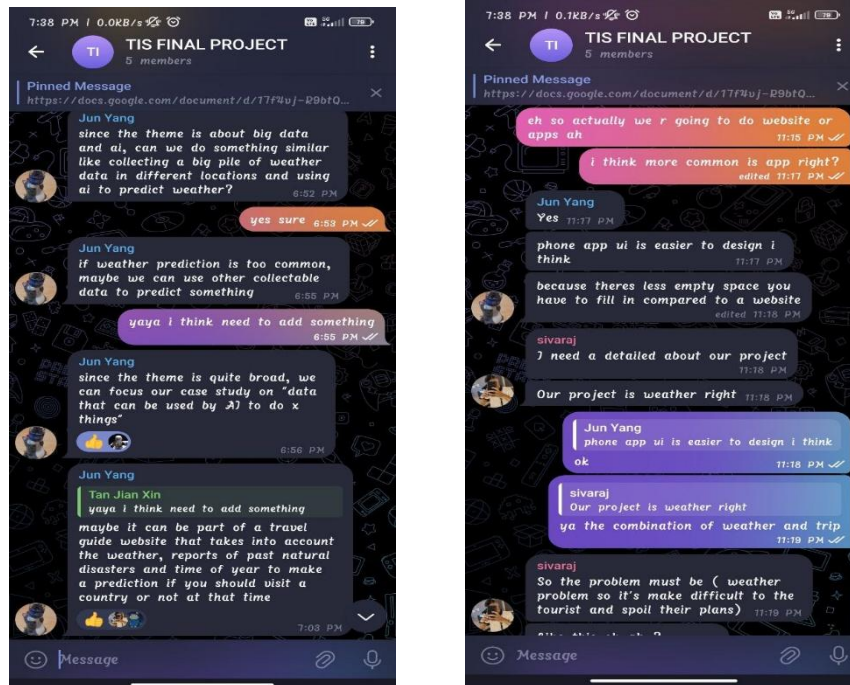


Figure 5.3.1.2 shows our conversation on Telegram group

5.3.2 CREATIVE BRAINSTORMING

During our discussion, we brainstormed a few solutions to fix that problem. For example, we focus on how to create an application to predict the weather and improve travel convenience.

5.3.3 CONCEPT DEVELOPMENT

We can use the AI to collect data and analysis from the weather report database, then predict the weather conditions at the chosen time.

5.3.4 IDEA VALIDATION

We can present a simple prototype like a basic app interface to gather feedback on essential features.

5.4 PROTOTYPE PHASE

In this phase, we try to create our application after collect all the information by starting to draw the draft of our application which include the interface, menu, location, etc.



Figure 5.4.1 shows our user interfaces design for our application

5.5 TEST PHASE

In this phase, we ask several users to test our prototype. During these sessions, we also provided thorough explanations about our application functionalities, encouraging participants to explore and provide feedbacks. The responses were overwhelmingly positive.

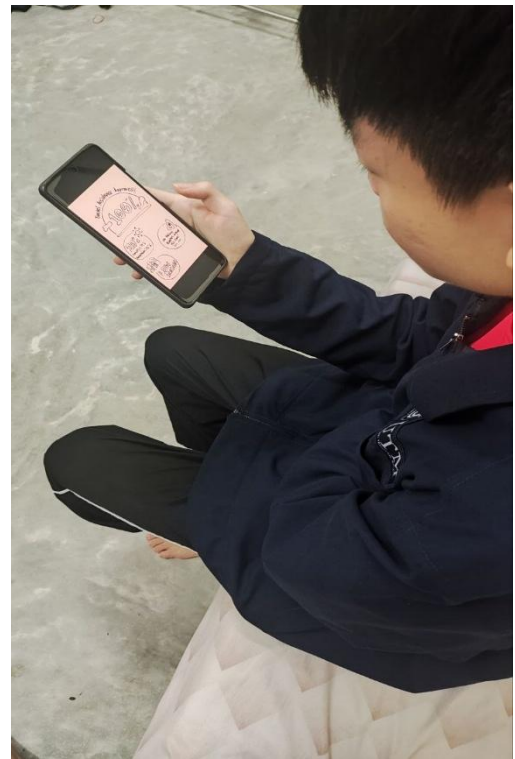
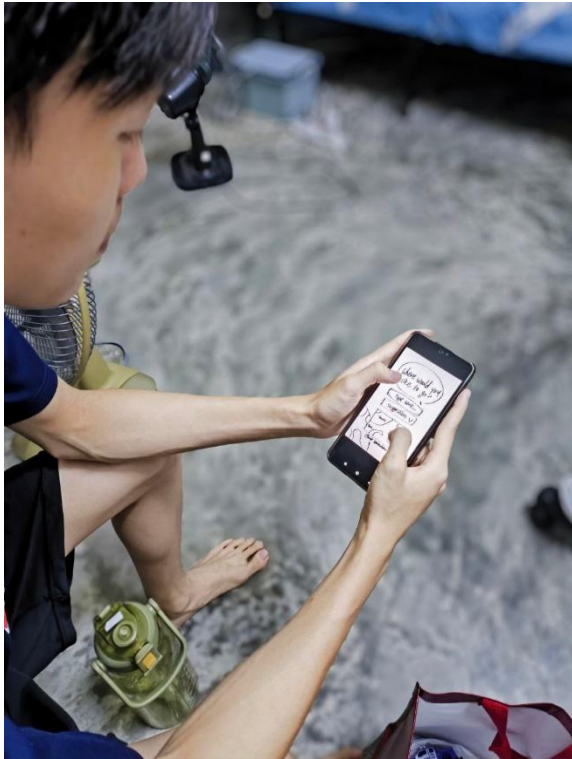


Figure 5.5.1 shows the users are testing on our prototype

6. REFLECTION

QUESTION 1: What is your goal/dream with regard to your course/program?	
TAN JIAN XIN (A24CS0303)	My goal with regard to my course is to learn more and master in programming with various languages such as C++, Python, Java etc. By learning deep into artificial intelligence and image processing, I hope I can contribute to meaningful applications that solve real-world challenges and improve the quality of life for others in the future.
SIVARAJ A/L SIVAKUMAR (A24CS0194)	My goal in the Graphics and Multimedia Software (Computer Science) program is to become a skilled developer who creates visually appealing and user-friendly software. I want to work in fields like gaming, animation, or interactive media, combining creativity and technology to design impactful solutions. I also aim to stay updated with new advancements and use my skills to solve real-world problems.
MOK JUN YANG (A24CS0269)	My goal with regards to this course is to improve upon my programming skills and enhance my critical thinking and problem-solving skills. I believe there is a lot to learn apart from the skills stated above that will help me in life in terms of mathematical prowess, technical proficiency, creative thinking and countless others. My dream when I have reached the end of this program is to be sufficiently equipped with skills to become a game developer. I want to be able to make visually appealing games that can both attract and inspire players.
LIEW SHAN NENG (A24CS0263)	My goal with regard to my course, Graphics and Multimedia Software, is to explore more programming languages, master them and become a full stack developer. By the end of this course, I hope to have the opportunity to use my knowledge, to develop some useful technologies that can enhance our daily lives or pursue a career as a game developer or animation creator, bringing fun and happiness to others.
KOR YEE HENG (A24CS0257)	My goal with regard to this course is to gain a deep understanding of all the concepts and knowledge from the program. I hope I not only master the theoretical aspects but also try to apply them in my real-life situations. By doing so, I hope I can improve my skills and make meaningful progress in my future life.

QUESTION 2: How does this design thinking impact on your goal/dream with regard to your program?	
TAN JIAN XIN (A24CS0303)	From this design thinking project, it enhances my ability to define the problems and find out the best solution to solve the challenges. Furthermore, it gives me a chance to collaborate and socialize with others to improve my communication skills.
SIVARAJ A/L SIVAKUMAR (A24CS0194)	This project makes a weather application using design thinking. It has taught me about solving issues by looking at what users want. My skills have gotten better in making solutions that work and look nice. Going through brainstorming, making prototypes, and improving the application has helped me blend creativity with technology, which is a step towards my aim of being a good developer in this field.
MOK JUN YANG (A24CS0269)	This project allowed me to think creatively about any given theme (in this case, about big data and artificial intelligence). It also fostered collaboration within our group as we discussed various ideas that we could incorporate into our designs. By honing my creativity and teamwork skills in this project, I can say that it has helped me in my path of creating interesting games and also gave me a general idea of collaborating with others to make something.
LIEW SHAN NENG (A24CS0263)	From this design thinking project, I gained some experience in collaborating in a team, to solve issues with our creativity and critical thinking skills. Looking back on this journey, we tried hard to brainstorm on how to make the user interface cleaner and easier to understand for all users. Through this process, I learned that user experience is one of the most critical aspects to focus on when developing software or mobile applications.
KOR YEE HENG (A24CS0257)	Through this design thinking project, I deeply realized that it is not only a task, but also an opportunity to improve my practical and problem-solving skills. I can improve my teamwork and communication skills through our discussions and by finding innovative solutions.

QUESTION 3: What is the action/improvement/plan necessary for you to improve your potential in the industry?	
TAN JIAN XIN (A24CS0303)	In order to improve my potential in the industry, I will attend more workshops and events in industry to gain extra knowledge. By actively networking and seeking sponsorship, it enables me to gain support to achieve my goal.
SIVARAJ A/L SIVAKUMAR (A24CS0194)	To boost my chances in the field, I plan to learn more about tools for graphics and multimedia, like UI/UX design programs and animation software. I will take on more projects to create a solid portfolio and get real-world experience through internships or partnerships. Meeting professionals and going to workshops will help me keep up with trends, and improving my communication and teamwork skills will help me work better on projects. These actions will support my goal of succeeding in the graphics and multimedia sector.
MOK JUN YANG (A24CS0269)	Computer science is a tough subject that requires a lot of discipline and hard work for someone to achieve desirable results. As such, I need to get my hands dirty and code as often as I can. Apart from that, I want to partake in events that allow me to work on projects that will both improve my skills as a programmer as well as to be listed as achievements that I can show to future employers in my resume. Following that, I also want to learn softwares such as Blender and Unreal Engine.
LIEW SHAN NENG (A24CS0263)	To improve my potential in the industry, I need to participate in workshops and do self-learning to gain extra knowledge beyond the knowledge which can be learned in my course. Besides, I also need to participate in events or competitions to increase my visibility and show my skills and abilities in different fields.
KOR YEE HENG (A24CS0257)	To improve my potential in the industry, I will plan to participate in workshops or industry talks. These experiences will help me to gain valuable practical insights from experts and network with professionals in the field.

7. TASK DISTRIBUTION

NAME		TAN JIAN XIN	SIVARAJ A/L SIVAKUMAR	MOK JUN YANG	LIEW SHAN NENG	KOR YEE HENG
TASK	Survey, Prototype and Testing	Make Google Form Survey			Finalize Result from Google Form	
		Producing and Testing Prototype				
	Presentation Slide	Do Presentation Slide				Do Presentation Slide
	Video			Video Recording and Editing		
	Report	Report Writing on Introduction, Detail Steps and Empathize Phase	Report Writing on Problem and Solution	Report Writing on Design Thinking Assessment	Report Writing on Define Phase	Report Writing on Team Working and Ideate Phase
	Discussion in all 5 Phases, Presentation, Reflection and Reference					

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