

# Design Thinking : AI-Powered Mental Health Support for UTM Students

## Group 8

Members:

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## **Introduction**

Design thinking is a process that requires critical thinking for developing solutions to problems faced by users. Design thinking requires collaboration among students, innovation of ideas and creative design so that the solutions for the problem are effective and satisfactory. In design thinking, there consists of five stages of processes which are empathy, define, ideate, prototype and test. For a design thinking to give the best solution to a problem, these five stages have to be thoroughly explored.

Mental health problems are frequently faced by students in university. According to a study in Malaysia, among university students, there are about 27.5% who had moderate depression, while 9.7% had severe or extremely severe depression; 34% had moderate anxiety, while 29% had severe or extremely severe anxiety; and 18.6% had moderate stress while 5.1% had severe or extremely severe stress. (1) This statistic shows that mental health problems among university students are very serious and a solution has to be made to overcome this problem.

For this design thinking, the focus will be on mental health problems faced by students at Universiti Teknologi Malaysia (UTM). Design thinking will be conducted to produce a solution (product) to overcome mental health problems faced by students and the process of each stage, which are empathy, define, ideate, prototype and test were explored by our group so that our solution from this design thinking may solve the problem of mental health problem faced by UTM student.

# **Design Thinking**

## **Empathy**

In the empathy stage, this stage required us to gather views from those that are facing problems which are going to be the users of our product. With the views obtained, we may then understand the needs or requirements from users so that the solution or product made can fulfil the needs of users.

For the empathy stage of design thinking, views from users which are UTM students on mental health problems are required to be obtained to understand the needs and requirements of users for the solution to the problems faced by users.

Hence, to gather the views of UTM students on mental health problems faced by students, we decided to prepare a questionnaire and conduct interviews with UTM students to obtain their thoughts and opinions. We had prepared some questions before conducting the interview which are as followed:

- 1) How often do you face mental health problems as a student?
- 2) Can you as a student identify if you have a mental health problem?
- 3) Why do you think mental health problems continue to exist among students?
- 4) Do you think it is important to overcome mental health problems?
- 5) If you know that you are facing a mental health problem, will you ask a professional? Why?
- 6) Are you concerned about others knowing that you may have mental health problems?
- 7) If there is an app that can help monitor and give support to overcome your mental health problems, would you use it?

With the questions ready, we had conducted an interview with a UTM student where these questions were asked and their responses for the question were recorded.



Picture 1 & 2: Interview with student

Interview response:

Name: WAILD ALI		
Age: 24	Faculty: Computing	Major: Software Engineering
How often do you face mental health problems as a student?		
<p>Honestly, it depends on what's happening in my life at the moment. For example, during exam periods or when assignments pile up, I feel overwhelmed and stressed more often. Sometimes, it's just a bad day where everything feels too much, and other times, it can last for weeks. I wouldn't say I face mental health problems every day, but they definitely come and go depending on how much pressure I'm under and how well I'm managing things like sleep, friends, and self-care.</p>		
Can you as a student identify if you have a mental health problem?		
<p>It's not always easy to notice right away. Sometimes, I just think, "I'm tired" or "I'm stressed," and brush it off. But when I feel anxious for no clear reason or find it hard to enjoy things I usually like, I start to wonder if it's more than just a bad mood. Other signs, like being tired all the time even with enough sleep, having no motivation, or feeling hopeless, make it clearer. But honestly, it takes some self-awareness, and sometimes I only realize it when things get really tough.</p>		

Why do you think mental health problems continue to exist among students?

I think there are a lot of reasons. First, students deal with so much pressure to perform well academically, which can make them feel like failures if they don't meet expectations. Then there's the social pressure—trying to fit in, make friends, or handle relationships—which can also take a toll. A lot of students don't talk about their struggles because they're afraid of being judged or misunderstood, so the problems build up. Plus, sometimes there's not enough support, like counselors or people who genuinely listen. The fast pace of life and constant comparison on social media don't help either.

Do you think it is important to overcome mental health problems?

Absolutely. Mental health affects every part of your life—your studies, relationships, and even how you see yourself. When you're struggling, it's harder to concentrate, and it feels like small problems are huge. Overcoming mental health challenges means not just surviving but actually living a happier, healthier life. It also helps you become stronger and more capable of dealing with tough situations in the future.

If you know that you are facing a mental health problem, will you ask a professional? Why?

Yes, I think I would. Professionals are trained to help people deal with these issues, and they can offer tools and strategies that I wouldn't figure out on my own. Talking to someone who understands what I'm going through without judgment is comforting. It's better to seek help early rather than letting the problem get worse. Even though it can feel scary to take that first step, I know it's worth it to start feeling better.

Are you concerned about others knowing that you may have mental health problems?

A little, yes. There's still some stigma around mental health, and I'd worry that people might see me differently or think I'm weak. But at the same time, I know that everyone has struggles, and asking for help is actually a sign of strength. I'd rather focus on getting better than worry too much about what others think. Over time, I've realized that it's okay to talk about mental health because it's a part of being human.

If there is an app that can help monitor and give support to overcome your mental health problems, would you use it?

Definitely. An app would be really helpful, especially because it's private and easy to access anytime. It could remind me to check in with myself, give tips to handle stress, or even connect me to resources if I need more help. Sometimes, taking that first step to talk to someone feels hard, so having an app to guide me would make it easier. It's like having a supportive tool in my pocket whenever I need it.

## Define

After the empathy stage, design thinking proceeds with the next stage that is the define stage. In this stage, findings from empathy are processed and analysed to get the needs of users for the solution to their problems. It is also the stage where we need to come up with the problem statement by looking from our own views after going through the views of users. Through this stage, the users, insight and needs can be specified to ensure that the solution is able to cater to the right group and effectively solve problems faced.

Hence, for this stage, we had held a discussion and meeting among members to analyse the empathy findings and to identify the problem statement.

Based on the analysis of the interview response, we had found out as followed:

- Students frequently faced mental health problem especially during exam period or during pile up of assignment
- Students cannot easily diagnosed whether they have mental health problem or not
- Students continue to face mental health problems due to academic pressure, social pressure and the lack of professionals.
- Students would get professional help if they are diagnosed with mental health problem
- Students are concern about others knowing they are having mental health problems
- Students would use an app that can monitor mental health problems and give mental health support, due to the convenience of an app

With the analysis of the interview response, our group had then identified the problem statement that we had to fulfil for our solution or product. The problem statement are as followed:

- Able to produce an app that have the function to efficiently and effectively diagnosed a student mental health problem
- Able to produce an app that have the function to continuously monitor mental health of students
- Able to produce an app that have the function to provide professional mental health support to students
- Able to produce app that are trustworthy and can store students mental health securely





Picture 3: Discussion for Define stage

# Ideate

With the problem statements that were obtained from the define stage, the design thinking process will now transition to one of the crucial stages which is the ideate stage. In this stage, ideas on ways and solutions to problem statements are being generated through discussion and brainstorming among group members. Brainstorming among group members allows many unique and outstanding ideas to be generated and from these ideas, the best ideas are being selected for the solution to the problem statement.

Hence, for this project, our group had a brainstorming session for this ideate stage by having an online meeting through Google Meet and using an online whiteboard, Mentimeter, to share our ideas. After brainstorming, we decide on the best ideas to be implemented in our solution.

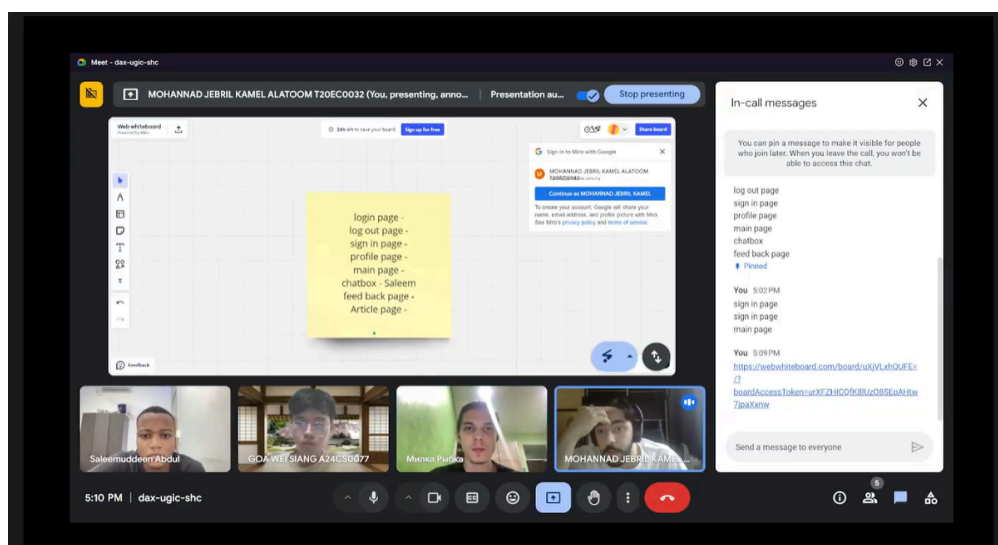
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Mentimeter

### Brainstorming Process

12 responses

Login and log out system with password	AI chatbot to diagnose students	Page that show summaries of mental health status
AI chatbox able to give mental health support	Library of article on mental health generated by AI or suggest by AI	Library of books about mental health
App page to get help from professionals and counselor	Library of relaxing and calming audio and music suggested by AI	App with easy to navigate and user friendly UI
Profile page to let AI know about your personality and backaround	AI chatbox generated personalised response	Constantly update and improve the AI model

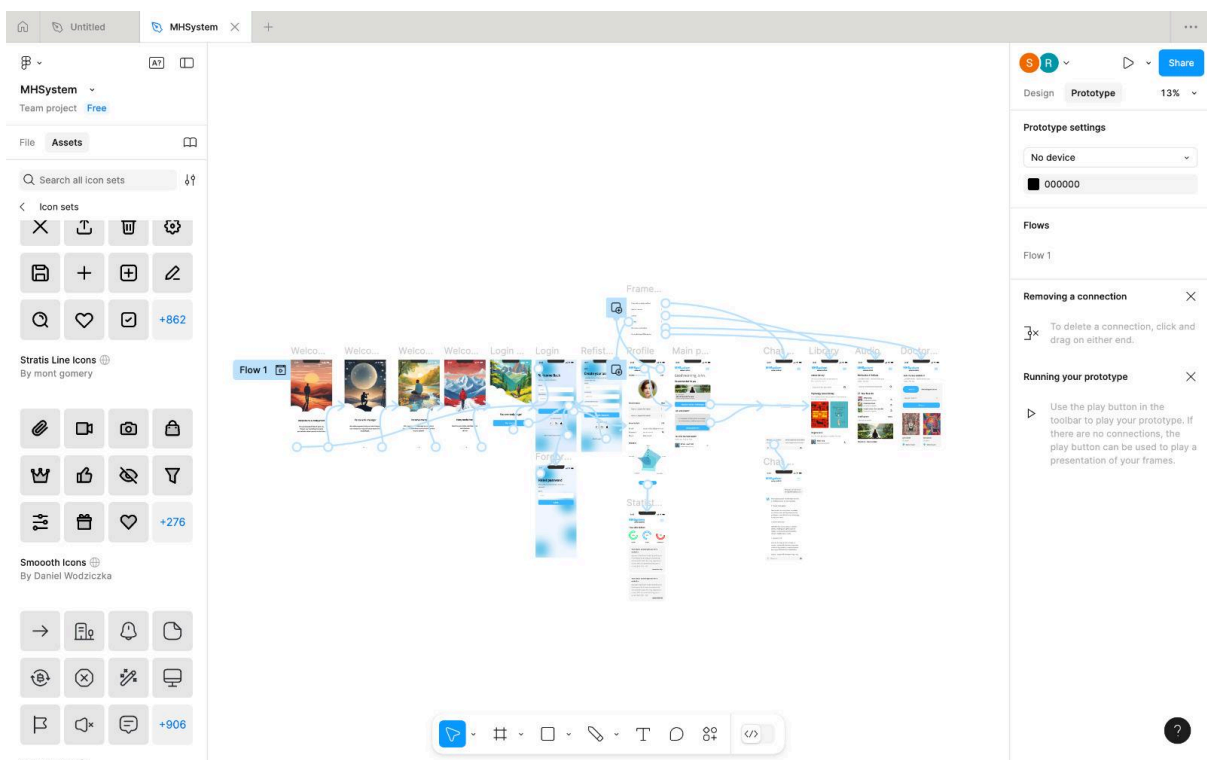


Picture 4 & 5: Brainstorming Process

# Prototype

After generating ideas and deciding on the best ideas to be implemented in the solution in the ideate stage, the design thinking process follows up with the prototype stage. In the prototype stage, a prototype is built based on the generated ideas that were chosen. A simple prototype can be made out of any materials that are suitable. It is important that the prototype built contains the features that can solve the user problems and problem statements that were defined.

For this stage, our group had designed the AI mental health support app interface through an online application that is Figma. The prototype design are as follows:

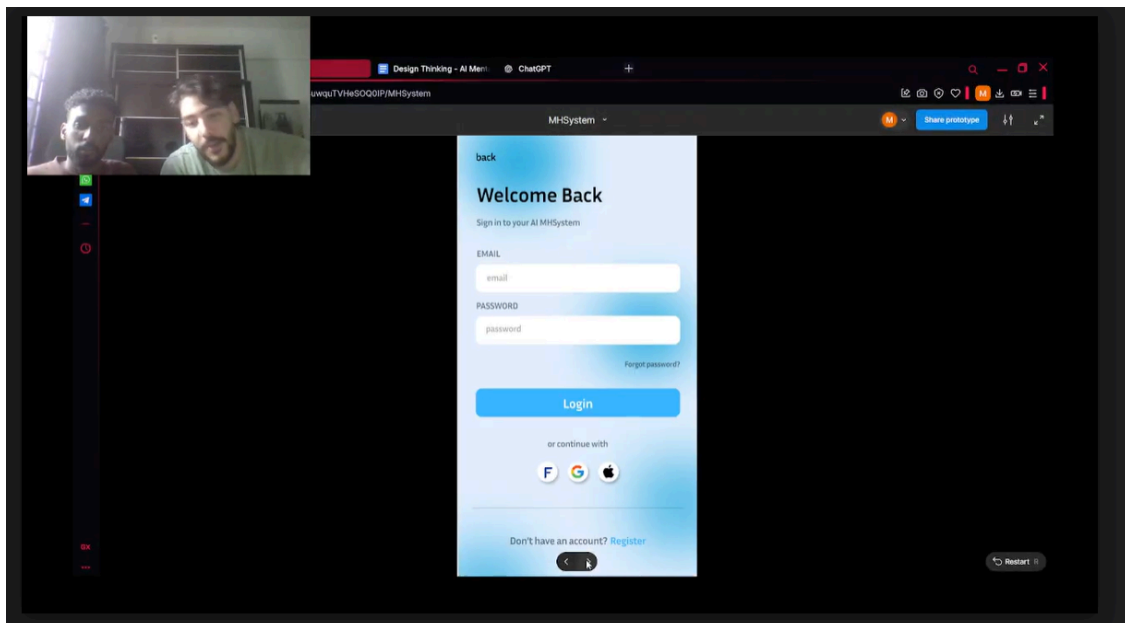


Picture 6: Prototype design on Figma

## Test

The test stage is an exciting stage of the design thinking process as this is the stage where the idea generated and prototype built will be tested by the user. During this stage, the prototype will be showcased to the user and tested by the user. The user may then give feedback and opinions on the prototype, which may give insight on further improvements for the prototype and ideas generated. With this stage, we may confirm if our ideas on solutions for the problem of the user are either a success or may need improvement in certain parts.

Our group had tested our prototype with the student we interviewed during the ideate stage. We had showcased our prototype and let the student have hands-on testing experience with the prototype. After testing the prototype, we had asked for feedback and opinion on whether the prototype solved the problem he had before on mental health problems.



Picture 7: Student testing prototype

## **Design Thinking Assessment Point**

After undergoing the five stages of design thinking that are, empathy, define, ideate, prototype and test, the design thinking process has come to the end. After conducting this design project, we have found that we are able to produce a product or solution to a problem easily and effectively because it involves the interaction between both users and the developer. We are able to satisfy our users which are UTM students with the AI mental health support app after having UTM students testing out our prototype app, thus they are able to use this app to monitor and gain support for mental health. Hence, we believe that many more problems in our daily life may be able to be solved by having a design thinking process for the problem and a solution is produced for the problem.

## **Reflection**

### **GOA WEI SIANG:**

My goal or dream for this course is to be able to learn about technology in the digital world and to learn how the information system actually works in real life. I also want to be able to identify future career prospects in the IT field through this course and also be able to involve myself in design projects so that I am able to experience the process of designing a product based on the needs of shareholders/customers.

Design thinking may impact my goal in this program by exposing me in the process of generating ideas to produce a useful and innovative product that may be developed to help others to overcome problems faced by others in daily life. Through design thinking, I may also gain more experience on how development of product or ideas work as this experience is crucial for future career prospects.

To improve my potential in the IT industry, the necessary action that I should take is to generate and develop ideas into something that can be useful and leave an impression to the industry. This is because innovative ideas are crucial in the IT industry as these ideas are what drive development of products that may be used by everyone in their daily life. Other than that, I should also gain as much connection in the industry by working with others as a team as much as possible. This is because having greater connection with others may boost our recognition in the industry.

### **MOHANNAD JEBRIL :**

My objectives in the course are understanding how technology can help solve real-life problems and developing practical hands-on skills for impactful solutions. The current project on AI-powered mental health support taught me more about the need to truly understand the users and craft meaningful solutions with the use of design thinking. I learned so much from how to analyze feedback, brainstorm innovative ideas, and then work in a team to build and test prototypes. This helped me to visualize how technology can actually cater to realistic challenges, such as mental health disorders. Growth in the IT field requires one to update himself with emerging technologies like AI, and at the same time work as a team and improve communication skills. This project has given me the motivation to continue working on innovative solutions that make a difference.

**SALEEMUDDEEN ABDUL:**

My goal is to develop innovative and secure systems that address real-world problems in the IT field. Through the application of design thinking, I have gained a deeper understanding of user-centric approaches, enabling me to align my technical skills with practical and impactful solutions. This mindset has been particularly valuable in tackling challenges like addressing mental health issues through technology. To further enhance my potential in the industry, I plan to focus on improving my expertise in IT, staying updated on emerging trends, and actively applying design thinking in collaborative projects. These steps will help me achieve my dream and make meaningful contributions to the field.

**RUSLAN:**

My goal is to become a businessman in the IT field, and preferably to become a billionaire, but I see the initial goal as creating businesses in the field of Information Security and smart home systems, naturally for me the main criterion remains that initially I should strive to raise my state, so I want to start everything in Kazakhstan, but also in other countries, the main thing is that it helps my country, I plan to adopt the experience of studying after studying all subjects in Malaysia. For example, I really liked working in a team with you.

Design thinking has a strong influence, because when working with design, many things in the product can be revised, and you also need to look at user convenience, which once again forces you to reconsider some details.

I need more discipline, trying and effort in order to become the best in my industry.

## Task by Each Member

Task	Members	Date
<b>Introduction</b>	<b>Goa Wei Siang</b>	<b>31/12/2024</b>
<b>Interview with Student (Empathy)</b>	<b>Mohannad Jebril</b>	<b>1/1/2025</b>
<b>Determining Problem Statement (Define)</b>	<b>Goa Wei Siang Mohannad Jebril Saleem Ruslan</b>	<b>1/1/2025</b>
<b>Brainstorming Process (Ideate)</b>	<b>Goa Wei Siang Mohannad Jebril Saleem Ruslan</b>	<b>2/1/2025</b>
<b>Prototype Building (Prototype)</b>	<b>Goa Wei Siang Mohannad Jebril Saleem Ruslan</b>	<b>3/1/2025</b>
<b>Testing Prototype (Test)</b>	<b>Mohannad Jebril Ruslan</b>	<b>4/1/2025</b>
<b>Reflection</b>	<b>Goa Wei Siang Mohannad Jebril Saleem Ruslan</b>	<b>5/1/2025</b>
<b>Report Writing</b>	<b>Goa Wei Siang Mohannad Jebril Saleem Ruslan</b>	<b>31/1/2025 - 5/1/2025</b>



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