SECP 1513 REPORT 1

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School of Computing

Faculty of Engineering

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1.0 INTRODUCTION

 Design thinking is a problem-solving principle which focuses on the need of a person. It is concerned with the requirements and behavior of a person and also the feasibility of the technology and the business to find new and creative ways or more possibility to solve the problem. It is different from analytical thinking, which is solving problems based on rational analysis, the design thinking is more focused on the sensibility for thinking.

In chapter "communication and networks", we have learnt about the evolution of the communication network. Communication is divided into the "physical connection" and the "wireless connection". Communication and networks are important, it transfers the data with the high transfer rate. It can make us communicate with other people no matter where he is. The networks enable us to share resources and information with a communication system that links multiple computers.

Therefore, with the process "design thinking" we are going to create a router based on the knowledge of "Communication and networks". The details of this process will be further discussed below.

2.0   PROJECT OVERVIEW

Design thinking process utilizes emphatic, creative, innovative, and analytical skills to provide solutions from a problem. This process keeps user in mind and also can be a cycle that be implement repeatedly. There are 5 steps that included in Design Thinking process, those are:

1. Empathize
    This first step to understand problem from end user, to grasp the situation and better comprehend what needs to be observed, engaged, and immersed.

2. Define
    Is to create a plan on how to address the solution "your point of view" a guiding statement that focus on specific users created based on your discoveries. "Focus" rather than "flaring"

3. Ideate
    To determine innovative solution. In this step, research conducted to create reality of imaginary solution and to explore a wide solution space. It is "Flaring" rather than "focus".

4. Prototype
    This step is applying our creativity, getting ideas out of our head into physical model in a real world.

5. Test
    When prototype is reviewed, feedback is gathered, and adjustments maybe made. Finalizing the solution that will be provided to end user. A chance to refine solutions and make them better.
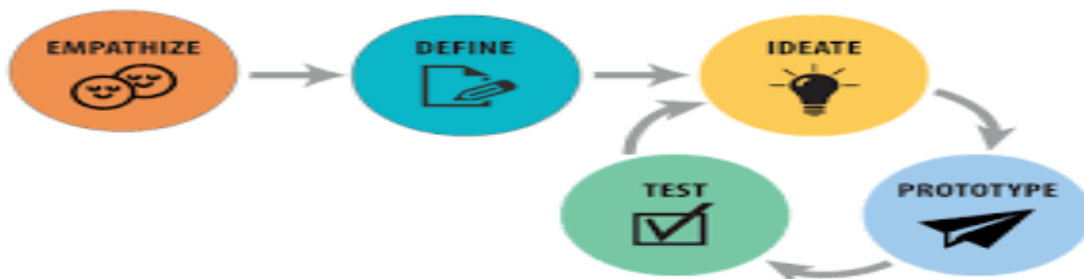

Figure above shows the 5 steps in design thinking process

3.0 PROJECT DETAILS

In this project, we have been assigned to implement design thinking steps to provide our solution to some proposed problems. We identified these problems by conducting an interview with experts in their perspective field. Since we are assigned to a chapter that is related to network and communication, we interviewed Mr Mohd Zahari, one of network admin in UTM.

Mr Mohd Zahari told us that some problems regarding network that we are facing currently are affordability of networks in village area and the budget to implement the network. We also recognized that these problems are vital and need to be solved. We started to work on these problems, and we came up with an idea and product.

The idea is that we have to make a wide-range network in village area so that it could be accessed throughout the community the product of this is a router that is waterproof and build quality to suitable for this condition. For the budget problem, we can make a paid promote advertisement on every connection to generate money, from there we can decrease our expending.

Because we are not together and not living in the same area, we conduct all of our meetings online. The first meeting we used google meet application. In that meeting we first introduced ourselves just to get to know each other before beginning our work and then talked about how we are going to approach this assignment. It took about 30 -40 minutes until the meeting ended.

We had our second meeting in the next few days. We talked about each task's requirements and its process. After that, we agreed upon who are going to take responsibility of each task. Because we only consist of 3 people in this group instead of 4, everyone needs to work extra hard to complete this assignment. Our main jobs are Kemal doing the prototype, Adnan and Samuel doing interview. This meeting was held for about 1 hour long.

The last meeting was just us doing brainstorming and ideate process through webex application. This meeting also took about 60 to 90 minutes. We talked about how are going to write the project report in this last meeting too.

4.0 DESIGN THINKING EVIDENCE

  4.1 Empathize,

The first stage of design thinking helps one to get a clearer understanding of the needs of customers through our research or inquiries. Therefore, instead of drawing our own assumptions, we can have a real viewpoint on the needs of clients, then we can figure out where the real problems lie and develop a way to solve them efficiently.

1. Users are adults and at similar ages but living in different places. Here are the questions and answers given during the interview.

   i) Samuel : Did you have any problems using the Internet when you were in rural areas?
   Jeane Luk : obviously yes, the internet in village is poor and unstable, it make me always cannot attend the class and receive the information promptly.
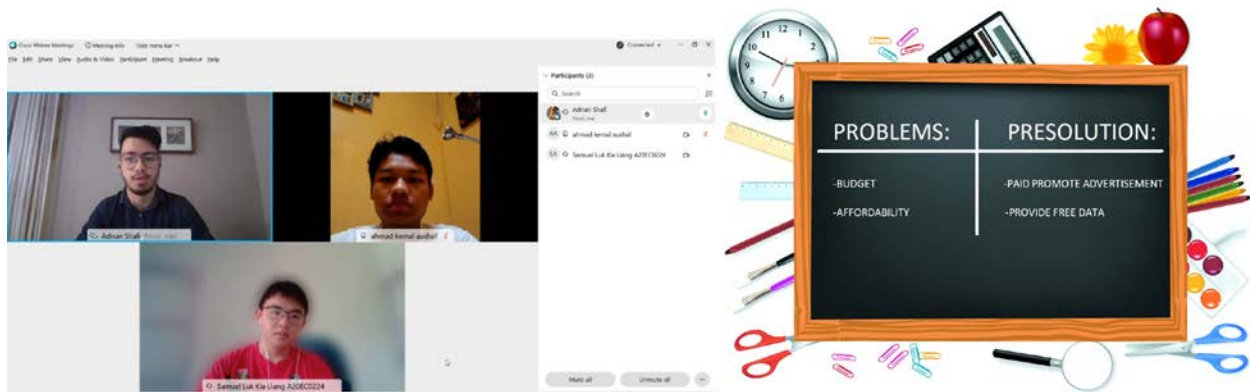
   ii)Adnan : Do you face any internet problems when you visit the village?
   Amber : To be honest yes, because especially now during mco time we all were student and we have to go back to our village and being quarantine there. I saw some of my cousins who really in the village all the time they do not even attend the online class because they say that they could not afford the internet , wifi and everything so it's kind of sad to see our internet is not really good in village area.

4.2 Define,

At this point, we gather the data gathered during the interviewing sessions. To define the key challenges found out by our team, it is important to analyze and summarize the problems. A discussion was then carried out to identify and begin to understand the challenges encountered by the people we interviewed.

During our discussion, we realized that our main problems are budget and affordability. However, in the rural area, there is not enough infrastructure for broadband connection because the distance between rural areas and the nearest data center is too far. It is possible to provide the internet, but it will cost a lot of money. This is affecting people in rural areas especially during this pandemic time. The main complaint from the people is that they cannot attend online classes properly and some places don't even have network coverage to use mobile data plans. Hence, there is lack of internet accessibility in rural parts of a country and the people are suffering because of this, there has to be a way to solve this problem.

Our online discussion on problems

4.3 Ideate,

In this step we need to gather ideas. Thus, the brainstorming begins. We need to come up with solutions that will benefit everyone.

These are the ideas that we have come up with

1) A device that will provide free internet access.
2) A device that will not get damaged easily and can survive in harsh condition. As it will be kept in public places, the effect of weather and vandalism will be very prevalent.

To conclude, our team has come up with the idea of having a router that meets with the requirements of the people and can solve the problems that our team found out.

-A picture from our online discussion that shows both router sketch and interface

4.4 Prototype

5.0 REFLECTIONS

a) What is your goal/dream with regard to your course/program?

Ahmad Kemal : I wish that with this project, I have now realized that there are not many people can access internet and I am lucky enough that be the one who have access internet whenever and wherever I am. Now I can implement my ideas related to and with the knowledge of this program and make it reality to help others.

Samuel Luk : I hope that I could learn and master the knowledge of this course. I can use our project to help to improve communication to make more people have a convenient life-style. Our project regarding this course can make more people in rural areas have a good connection. We hope that everyone would not have trouble with the internet when they need to communicate with each other.

Adnan Shafi : Rural areas have always been places where the internet was not available and even if someone uses mobile data, the speed is very slow and is tough to work with. Designing this router to make the internet available to the people living in rural areas opened up my eyes to the thinking and planning that goes behind a project like this. I hope that taking this course will aid me in planning and designing multiple projects in the near future.

b) How does this design thinking impact on your goal/dream with regard to your program?

Ahmad Kemal : This design thinking project really helps me acknowledge that there are paths and steps to solve a problem. As we know as in this program, I will face a lot of problem solving and brainstorming activities. With the knowledge of Design Thinking, I think I have enough basic knowledge on what I have to do.

Samuel Luk : The design thinking project helps me more understand and handle this chapter. I could discuss with my group members and to get the best solution when we have problems. I could use the knowledge in this chapter to design the project and overcome the problem we met.

Adnan Shafi : This project helped me realize that there are lots of steps and phases that go behind a single stage of a whole project and if each step is carefully planned, the overall project improves. This knowledge that I have gained will surely help in any full-scale project that I will get to be a part of in the near future.

c) **What is the action/improvement/plan necessary for you to improve your potential in the industry?**

Ahmad Kemal : As of right now, I think I have a lot of room for improvement and to make myself a better person and also for my potential. So for this moment, I just need to keep my head down, study hard, be curious about something that is related to my study, and lastly not forget to pray along the way.

Samuel Luk : I can do more research from a journal or the article to get the knowledge. Besides, i can create a daily plan and follow it to study efficiently. It will help me to handle this course. I will form a group of discussions with the same goal to improve together. This will help us to overcome the problems or study efficiently.

Adnan Shafi : I still have a lot of improvements to make on running and planning a project like this as there were a few bumps here and there whilst completing this project. So for now, I will focus on studying and doing more projects like this to perfect my craft. Also, I feel like I need to plan more group discussions as communication is key when it comes to projects like this.

6.0 MEMBER TASKS

a) Adnan Shafi (A20EC0255)
   i) Video Editing
   ii) Interviewing
   iii) Conclude the report
b) Ahmad Kemal Aushaf (A19EC3002)
   i) Prototyping
   ii) Report writing
c) Samuel Luk Kie Liang (A20EC0224)
   i) Interviewing
   ii) Report writing

CONCLUSION

From this design thinking project, we have discussed the development of the internet in rural areas. We came up with a solution that will help to ease the burden of internet problems especially to students during this pandemic and by doing this project we have faced many obstacles and challenges. Since it was a group work, those problems were easily solved by us. We hope that our idea, if implemented, will help the people living in rural areas have access to the internet allowing them to communicate with more people and study from their home. Afterwards, if someone needs more than 10 GB of data, they can get more data for a very cheap price. Although, we still believe that the concept of getting funds for this project can still be improved and worked on.