



# UTM

UNIVERSITI TEKNOLOGI MALAYSIA

**COURSE: TECHNOLOGY AND INFORMATION SYSTEM (SECP1513)**

**DESIGN THINKING ASSIGNMENT**

<b>MODULE / SECTION</b>	SECP 1513 / 08
<b>ASSIGNMENT TYPE</b>	GROUP
<b>TITLE OF ASSIGNMENT</b>	The Dimenzio
<b>CHAPTER</b>	Chapter 2: The Internet, the Web and the Electronic Commerce
<b>PREPARED FOR</b>	Dr. Zuraini Binti Ali Shah
<b>PREPARED BY (GROUP 1)</b>	1. Adam Haqiem Bin Abd.Rahim (L) 2. Brendan Dylan Gampa Anak Joseph Dusit @ Dusit 3. Dzakinin Asyraff Bin Zamsari 4. Eunice Lim Xian Ni
<b>DUE DATE</b>	15/11/2020

**YouTube Link:**

<https://www.youtube.com/watch?v=IAIZ7EihKMQ&feature=youtu.be>

## **TABLE OF CONTENTS**

ABSTRACT	2
INTRODUCTION	2
PROBLEM BACKGROUND	3
DESIGN THINKING PROCESS	4
EMPATHISE	4
IDEATE	7
PROTOTYPE	10
TEST	13
TASK ASSIGNMENTS	17
THE PROPOSED SOLUTION	21
ACKNOWLEDGEMENT OF SIMILAR PRODUCT	21
FEATURES OF THE PROTOTYPE SOLUTION	23
USERS FEEDBACK	24
FUTURE WORKS AND IMPROVEMENTS	24
REFLECTIONS AND CONCLUSIONS	25

## **ABSTRACT**

Apparel sizing error has caused an amount of loss in online businesses. Therefore, we decided to conduct a project that can aid the manufacturers and sellers in solving this problem by applying what we had learnt from this course. Hence, we created a prototype by surveying the interviewee' issues in online shopping and analyzed their comments. The finished prototype was tested with our interviewees to see their response. By using their feedback, we strategized a plan to market the product by analyzing its advantages, disadvantages, opportunities, and threats to different group ages. Thus, we believe that our prototype will make such an impact especially in e-commerce.

## **INTRODUCTION**

E-commerce is the abbreviation of “electronic commerce” which describes the buying and selling of goods on the internet. Sellers will display their products on a site which acts as a platform for promoting goods and services to buyers. The most popular ones are Shopee, Lazada and Taobao. Over the last decades, e-commerce sales have been increasing rapidly as compared to physical retail store. Forward-thinking online merchants begin to foresee the opportunities available in online shopping and are making their way into the world of e-commerce. To survive in this competitive virtual market, they have to unleash the most innovative way to attract customers online. One of the ways is to focus on understanding different generations, especially Millennial and Generation Z as they consist the largest population among online shoppers. Hence, online retailers have to fully optimise and cater these customers. Dynamic contents have to be delivered to attract young customers and provide them a wholesome enjoyable shopping experience.

## PROBLEM BACKGROUND

The online fashion market is experiencing unprecedented growth these days. Most of the people now opt for purchasing fashion items online due to its various benefits. In online shopping, a plethora of choices of clothes can easily be found by customers with just one simple click of button on the search bar. It is so convenient that people can also compare the prices of specific clothing from different online stores anytime.

However, it appears that this stigma has been keeping this niche market from growing to its peak.

Table 1 is the problem statements as follow:

Problems	Descriptions
1. The inaccuracy of sizes and measurements in apparels	It is a common problem and should be solvable, yet they persist. Many customers are unable to wear their newly bought clothes comfortably and appropriately due to sizing error.
2. The quality of clothes is not the same as in the description	Customer reviews can only provide the people assurance but are not always reliable because there are no guarantees that the quality of apparels they bought online would be at its finest. Customers are still afraid that the clothes would turn out not as accurately portrayed as in the description. It might be due to some selfish sellers who are trying to cut material costs and used a low quality and cheaper fabric instead.

*Table 1: Problem statements*

## DESIGN THINKING PROCESS

### EMPATHISE

Our group has conducted an interview session through Google Meet with three consumers who are believed to be actively involved in online shopping. We have provided two questions that needed to be answered by them based on their experience.

Below Table 2 are the questions that answered by interviewees:

No	Questions
1	As a consumer or seller, what are the problems you faced when purchasing or selling products online?
2	Are you mostly satisfied with the items you bought online?

*Table 2: Questions that were answered by interviewees*

The first interviewee is 19-year-old Shalom Seng Jing from Tawau, Sabah. She mentioned that her usual problems when buying online are mainly towards the authenticity of products bought. She can hardly recognize the materials viewed on the shopping website as well as determine the right size of her desired apparels. Other than that, she stated some measurements are different from the one she saw in the seller's description. Thus, she believed that the sellers only put the original picture of their products as it ended up giving her a fake one.

Next, our second interviewee is 19-year-old Muhammad Nafis from Kajang, Selangor. He also agreed with Shalom's point about the material shown by the seller. Moreover, he added his dissatisfaction towards the seller's clumsiness for not updating their stocks on the shopping website. As a result, when he paid the seller, they informed him that the product he ordered is out of stock. For most of the items arriving at him, he mentioned that the items do not meet his expectation since it is different from the one displayed on the website.

Our third interviewee is 19-year-old Phoebe Dolores Dora from Kuching, Sarawak. During the interview, she is mostly satisfied with the products she bought online. This is because the items' price on the shopping website is slightly lower than the one, she

usually saw in the store. Her only worries are the parcels might be damaged upon arriving at her as well as the expensive shipping cost. Overall, she is mostly satisfied and has no issues with the sellers.

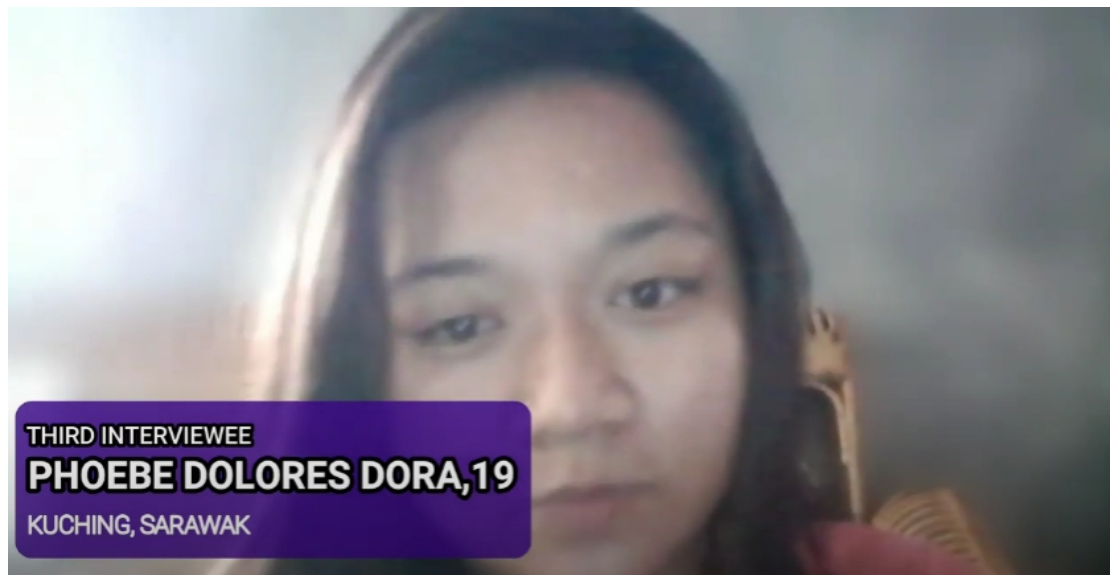
Throughout this interview session, we noticed that none of our interviewees mentioned their problems as a seller. However, that does not affect our research since we have detected one critical issue which is the inaccuracy of size and measurement of the apparels.



*Picture 1: First Interviewee*



*Picture 2: Second Interviewee*



*Picture 3: Third Interviewee*

## IDEATE

On 1<sup>st</sup> November 2020, we conducted an in-depth meeting through Discord to brainstorm and discuss ideas that may become our project prototype. All of us took turns to propose our ideas to the members based on the problem stated. Each of us had given our creative ideas on how to tackle the problem:

Table 3 shows the problem and the members' respective solutions:

Problem	Suggestions
The inaccuracy of sizes and measurements in apparels	- A handheld mini scanner that acts as an electronic measuring tape
	- A mobile application that is used to detect the authenticity of items
	- A pair of spectacles that can measure a specific part of clothes through the lenses
	- The Dimenzio, a device that can automatically measure the lengths and sizes of clothes

*Table 3: The problem faced and members' respective solutions*

The problem we have decided to tackle is the inaccuracy of sizes and measurements in apparels as it seemed to be the critical stigma that caused many customers expressing dissatisfactions on this online fashion market.



Below Table 4 shows the suggestions and descriptions of the prototype:

Suggestions	Descriptions
Handheld mini scanner	<p><u>Functions</u></p> <ul style="list-style-type: none"> <li>- Acts as an electronic measuring tape.</li> <li>- When we place the scanner on a piece of cloth and mark the first point, it will automatically set the first marking as “0cm”.</li> <li>- As we mark the second point, the scanner will help us to measure the length between first marking and second marking.</li> </ul> <p><u>Drawbacks</u></p> <p>The scanner must be held 90° from the surface to scan accurately. It means that parallax error might happen when scanning.</p>
A mobile app that can detect authenticity of items	<p><u>Functions</u></p> <ul style="list-style-type: none"> <li>- Acts as a mini scanner</li> <li>- When users place the scanner close to the logo of a certain fashion brand, it will detect immediately whether it is a counterfeit product or an authentic brand.</li> <li>- Can take pictures of a specific fashion product and the app will help to calculate the raw materials that made up of this product.</li> </ul> <p><u>Drawbacks</u></p> <p>Does not solve the problem of the inaccuracy of sizes and measurements of apparels which encountered by online shoppers.</p>
A pair of eyeglasses that can measure a specific part of clothes	<p><u>Functions</u></p> <ul style="list-style-type: none"> <li>- Applies scanning technology</li> <li>- Turn on automatically the moment a user wears it and scans the image that goes through the lenses.</li> </ul>

	<ul style="list-style-type: none"> <li>- Help to calculate the measurement of clothing and later displays the measurements on the lenses.</li> </ul> <p><u>Drawbacks</u></p> <p>Since it's a complicated device, it may be bulky which could be uncomfortable for the user to wear. Besides, everyone has their suitable frame size and shape for spectacles, thus it makes it harder to create a general frame size and shape for everyone.</p>
The Dimenzio - a device that can automatically measure the lengths and sizes of clothes	<p><u>Functions</u></p> <ul style="list-style-type: none"> <li>- It functions when users hang the apparel on top of a bar. There will be two sliders attached to the bar that will read the lengths and height of the apparel.</li> <li>- Each slider have a scanner where each of them will measure the length of a specific part.</li> <li>- Has a LED monitor fixed at the bar facing the users. Customers who are buying clothes online then can read the sizes of apparel very accurately and precisely.</li> <li>- Useful and practical to online fashion retailers as it may help to improve their online businesses.</li> </ul>

*Table 4: Suggestions and descriptions of prototype*

At the end of our brainstorming process, we decided to go with the fourth idea. This is because the fourth idea seemed to be the most effective prototype that can solve the inaccuracy of sizes and measurements in apparels.

## PROTOTYPE

Before we started building our prototype, we had to decide what kind of approach and which materials will be the best. We further discussed and came up a few ideas.

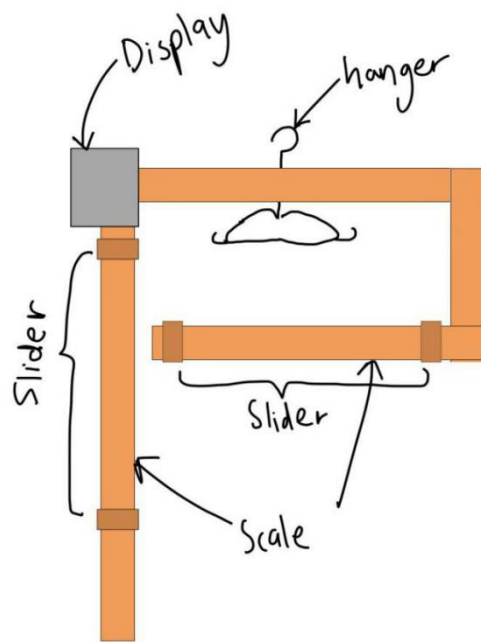
Table 5 is the ideas to build the prototype:

No	Ideas
1	Using the desktop application to design and create the 3D model
2	Using cardboard and other recycled materials

*Table 5: Ideas to build the prototype:*

Our final decision was to use the cardboard and other recycled materials as we were not familiar with the designing software that is used to design and create 3D models in desktop. Since the pandemic was still ongoing and spreading rampantly, unfortunately we were unable to meet each other to build the prototype together. Hence, Dzakhirin Asyraff was assigned to create the prototype and it was named The Dimenzio.

The concept of The Dimenzio was based on the design of vernier calliper as well as a barcode scanner. Firstly, Dzakhirin Asyraff sketched the prototype layout using Adobe Photoshop. Below Picture 1 is the sketch for prototype layout. He then proceeded in preparing the materials which were few pieces of cardboard and piece of white plain paper. The rectangles that were cut out from cardboards were glued together as seen in Picture 1. They will represent the Dimenzio's bar. The square-sized white paper pasted at the right corner of bar will represent the LED screen that can display the accurate measurement of apparels. Since this is a prototype, we also decided to build in form of 2D and not 3D.



Picture 4: Sketching Prototype layout



Picture 5: Actual Prototype



*Picture 6: Building Prototype*



*Picture 7: Building Prototype*

## TEST

There are 2 ways to use this product, horizontally and vertically. The testing used horizontal method by laying down the clothing item first before the product on top of it. The difference with vertical method would be to hang the product and the clothing item from a hanger. The following step would be the same for both methods, which is the measuring part. This is done by sliding all of the sliders to its correct place corresponding to the clothing item. The up and down slider should be slide to measure the length meanwhile the left and right slider should be slide to measure the width. After everything is set, the display screen will show the final measurement in cm as an output for the user.

Below Picture 8 - 15 are prototype demonstrations:



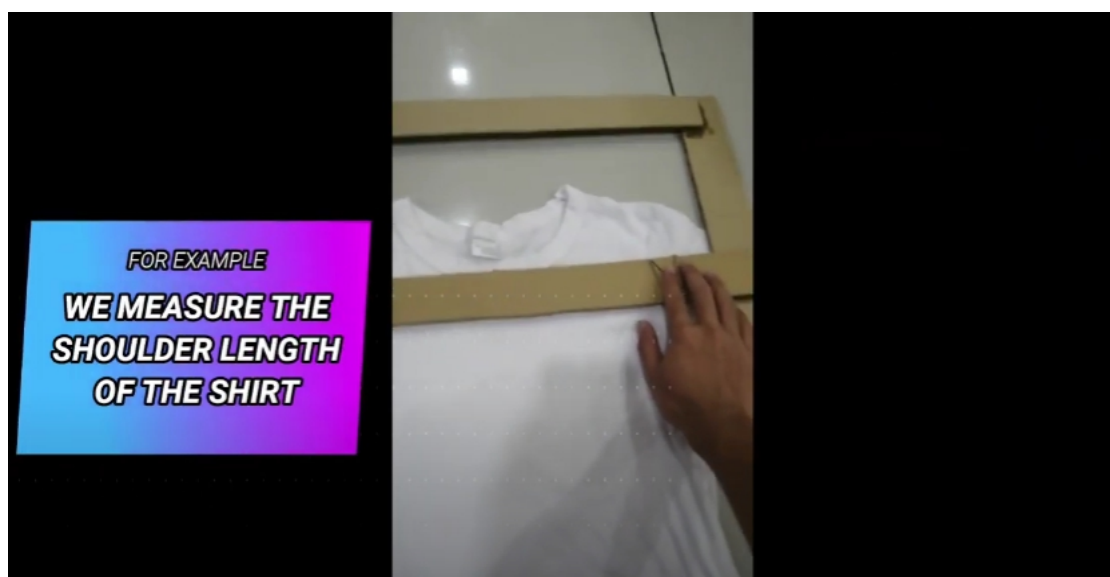
*Picture 8: First step*



*Picture 9: Second step*



*Picture 10: Third step*



*Picture 11: Fourth step*



*Picture 12: Fifth step*

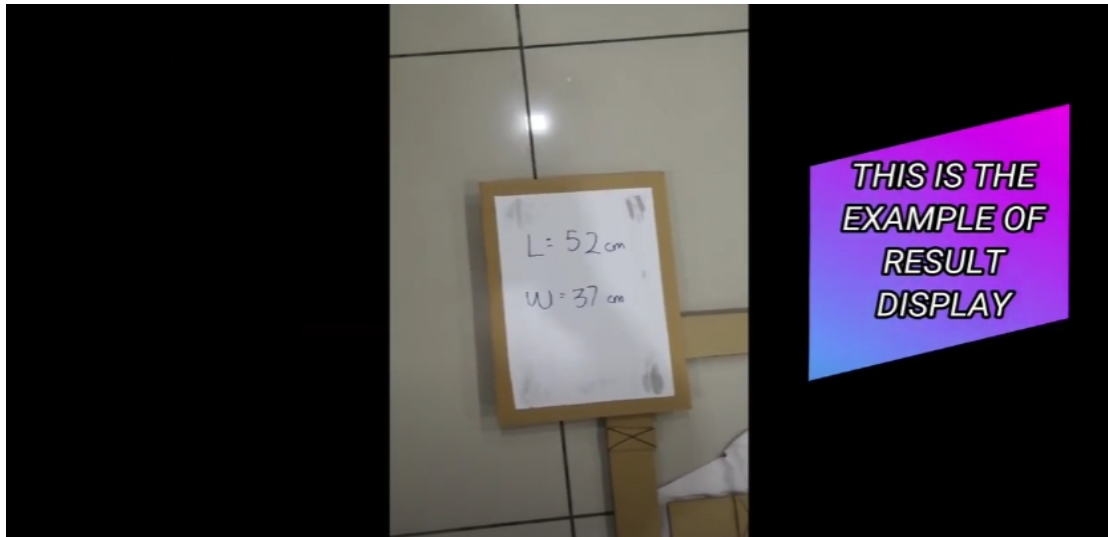


*Picture 13: Sixth step*



*Picture 14: Seventh step*





*Picture 15: Eighth step*

## TASK ASSIGNMENTS

With the ongoing Covid-19 pandemic in Malaysia, our movements are strictly inhibited thus we are forced to stay home while completing this project. With that being said, our meetings and interviews were all conducted online.

Table 6 showing the tasks assigned to each member:

<b>Names</b>	<b>Task Assigned</b>
1. Adam Haqiem Bin Abd.Rahim (L)	<ul style="list-style-type: none"><li>- Make sure members are working accordingly</li><li>- Mark attendance during each meeting</li><li>- Help out in writing the report</li></ul>
2. Brendan Dylan Gampa Anak Joseph Dusit @ Dusit	<ul style="list-style-type: none"><li>- Record the meeting sessions</li><li>- Compile the videos and edit them using Filmora Wondershare</li><li>- Help out in writing the report</li></ul>
3. Dzakirin Asyraff Bin Zamsari	<ul style="list-style-type: none"><li>- Sketch the prototype layout</li><li>- Create the prototype</li><li>- Looking for testers to test prototype</li></ul>
4. Eunice Lim Xian Ni	<ul style="list-style-type: none"><li>- Write the report</li><li>- Assign tasks to members</li></ul>

*Table 6: Task assignments to each member*

Our first meeting began on the 27<sup>th</sup> October 2020 where we met informally through Discord. We introduced ourselves and discussed the topic that we were assigned to present. After that, we decided to have e-commerce as our main theme for the design thinking project. We kept throwing ideas from time to time as we constructed a plan that allows us to detect the problems that arose in e-commerce by conducting an interview session with random users.

On 31<sup>st</sup> October 2020, we held an interview session with our selected users through Google Meet. The assigned member who is in-charged of this meeting had given them

the questions a night before to allow them to prepare for their respective answers. Another reason we did this is to ensure that the session went smoothly. During the session, we met and greeted one another as we mentioned our purpose organizing the interview with them. All three of our interviewees managed to answer our targeted questions successfully as we also added side question asking on their preferred shopping website.

Moving on to our next activity, we held an in-depth discussion by analysing the problems faced by our users the next day which was on 1<sup>st</sup> November 2020 via Discord. During that session, we proposed a few ideas that might potentially become our prototype for the project based on Table 2. At the end of our discussion, we finally made up our mind by creating a prototype proposed by Dzakirin Asyraff which is The Dimenzio, a tall and sturdy device that will auto-measure the sizes and lengths of attires by hanging them.

Once the prototype layout had decided, Dzakirin began to focus on building it. He prepared the materials, measured them and cut out all the wanted sizes from the cardboard and glued them together. He also drew on the cardboard using a black marker so that some important parts can stand out. While building the prototype, Dzakirin had recorded the whole process and later sent to Brendan to be edited. On 9<sup>th</sup> November 2020, he sent us the link of videos and photos. Later, all the members proceeded to write the report, compile and edit the videos.



*Picture 16: Discussing Task Assignments and Questions for Interviewees*



*Picture 17: Discussing Prototype*



*Picture 18: Reviewing Prototype*

## **THE PROPOSED SOLUTION**

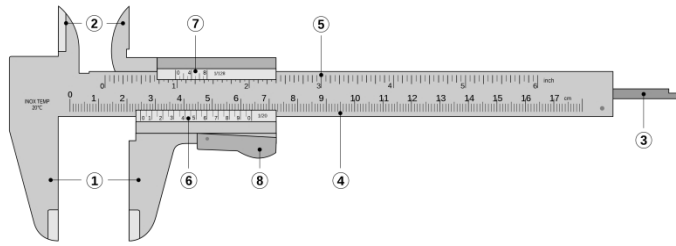
### **ACKNOWLEDGEMENT OF SIMILAR PRODUCT**

The Dimenzio is invented by combining several basic products that we used to see in our daily life which are vernier calliper and the barcode. These two devices have given a massive impact on humanity as well as overcoming our limitation.

Firstly, a vernier calliper is considered one of the tools with high sensitivity when measuring an item. It has an upper-scale that can measure minimum of 1 mm while the lower scales with minimum of 0.1 mm. The sensitivity itself is good enough to prove that it can measure small objects accurately with low syntax errors. To apply the same concept with our prototype, we will ensure that the slider has a minimum value of 0.1 for any units depends on the length of the apparels. This is to ensure a more accurate result as well as to satisfy our customer's need when they want to pick their sizes.

Next, a barcode scanner is usually been used mainly in supermarkets, shops or any outlets that require one to scan the barcode. The scanner consists of photoconductor that translates optical impulses into electrical energy. Furthermore, the decoder circuit inside a scanner is used to analyse the image data provided as it sends the barcode content into output. Therefore, we apply the same concept to The Dimenzio especially the sliders as they contain the same mechanical function as the barcode scanner. The difference is that the prototype can scan various cloth materials instead of barcode.

Hence, we believe that The Dimenzio will be well-marketed as we apply the basic feature of vernier calliper and barcode scanner into it.



*Picture 19: Concept of Prototype - Vernier Calliper*



*Picture 20: Concept of Prototype - Barcode scanner*

## FEATURES OF THE PROTOTYPE SOLUTION

It is a device created where users who mostly are online fashion sellers, they can hang their apparels on the bar. One of the Dimenzio's feature is that there is a LED monitor fixed at the left corner of bar which is used to activate the device, store data, compute the apparels' measurements and display the measurements on the screen so that buyers can read them and be made clear with the clothes sizing. The LED monitor acts like the "head" as it plays the most important role in running this device.

Another feature of the Dimenzio is it has a scanner on the slider. When the slider is slid across the apparel, the scanner will read the measurements accurately. Then, it will save the data so that can be displayed on the LED screen.



*Picture 21: Actual prototype*



## **USERS FEEDBACK**

After undergoing several testings with the users, the responses are quite positive. Shalom Seng Jing Er commented that it helps to provide a clearer understanding of the apparel's size. As a buyer, she can now confidently purchase the clothes online without worrying whether the clothes will have measuring errors.

## **FUTURE WORKS AND IMPROVEMENTS**

The future work that can be done to improve the Dimenzio is we can use lightweight, high durability, strength and cheaper cost of materials to build the machinery parts for the Dimenzio. For example we can use aluminium, carbon alloys or plastics. The Dimenzio is planned to make sure it is lightweight so that users who mostly are online fashion retailers, they can easily move or carry it around. With that being said, we can add wheels on the Dimenzio's legs to make it portable. We can also install a pedal to lock all the wheels. It acts as a brake to fix the Dimenzio's movement. Whenever the user wants to move or adjust the position of the Dimenzio, the user can unlock the pedal and the wheel will function properly again.

Besides, to create the Dimenzio to be more user-friendly, its height should be adjustable so that can cater different people with different height. This makes the Dimenzio be more flexible and allow users to adjust freely the height of Dimenzio to the height they preferred and are comfortable with.

Besides, we can install a sound system to the Dimenzio where a mini speaker will be connected to the LED monitor. Thus, users can choose to set the sound system whether they want it to work or they prefer to mute it. This will cater the blind online retailers who are trying to sell clothes online.

Another creative improvement that can be made is we can create different versions of Dimenzio. For example we can come up with the standard version of Dimenzio which is the cheapest. Thus it can only carry out basic scanning and measuring. The upgraded version of Dimenzio is where the device looks luxury with addition of sliders and more advanced measurement features that users can experience. The upgraded version of Dimenzio can detect and measure the tiny details of clothes.

## REFLECTIONS AND CONCLUSIONS

One of the challenges we faced while completing this project is our movements were restricted due to the order of Conditional Movement Control Order (CMCO). We could not meet-up physically for discussions as well as having first-hand experience on creating the prototype. Secondly, we faced some technical issues especially the Internet connection. Since all the meetings were held online, we had to make sure the Internet was running properly. It happened during a meeting where one of our member was disconnected suddenly and found out it was because of the poor Internet connection. This caused the member to miss out some points that were being discussed and had to enquire in Whatsapp group for information.

My goal with regard to this course is I hope to learn more about information systems which encompasses various areas, namely software, multimedia, network, so that it may ease and benefit me when I am studying the other computer science courses. I also hope to gain hands-on experiences on managing hardwares and PC installation so that in future, I can maximise my knowledge by helping people in need.

This design thinking project had impacted me by instilling skills that are needed in work field such as organisational skill, teamwork and interpersonal skill. For instance, I learnt to be observant by noticing each members' fortes and assigned work to them based on their capabilities. Besides, interpersonal skill is important so that we can communicate effectively as we could not discuss face-to-face. When a member was stating his/her ideas, we would listen attentively and later discuss together to find mutual agreement. These skills are important as they prepare me in my future career. I will have to apply interpersonal skill while working with the other developers such as solving a network issue together. Besides, I have to apply organisational skill when planning out tasks and finishing them on time.

As far as I learn about this field, which is as a programmer, I have to constantly keep myself update with the latest technologies and programming knowledge. Hence, I will sign up for online programming classes such as SkillShare or edX. The purpose is to learn new programming language and also be able to solve complicated programming questions, which will boost my confidence when I am attending interviews for tech

company. Next, I will frequently read news and articles so that I am aware of the current issues faced by community. These will give me insights and ideas to develop a new application that may solve their problem.