UTM STUDY SPACE

Group 6

Michelle Huynh
Xiaoqi Xu
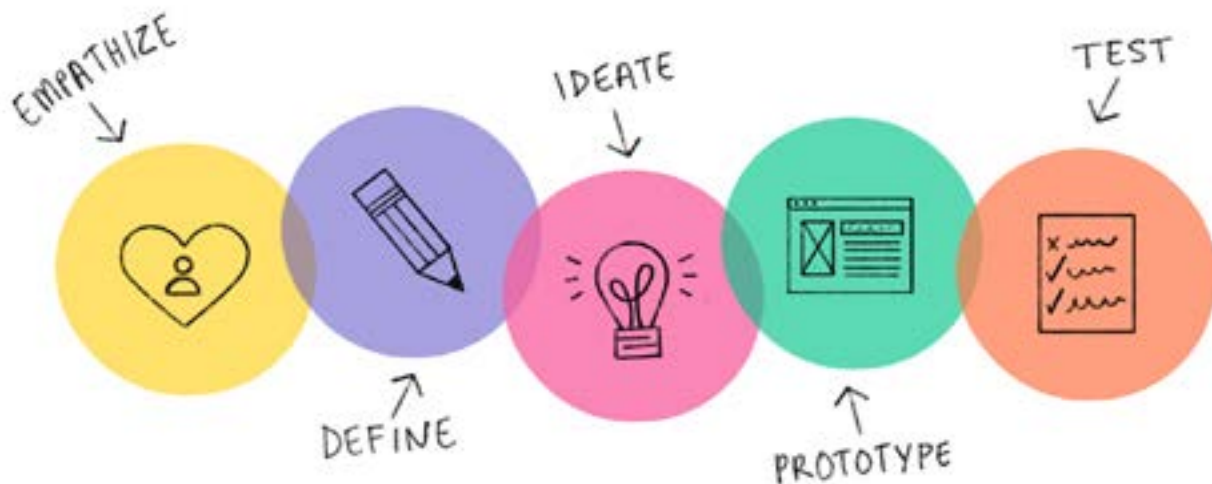Hongye Liu
Man Yang
Xin Liu

UTM STUDY
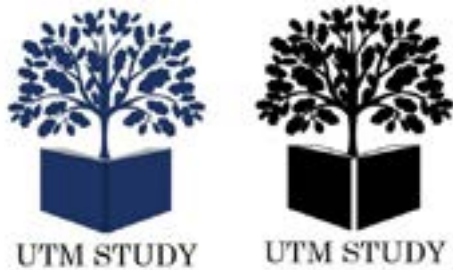
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Executive Summary

UTM STUDY

For the final project, our group designed an app aimed at helping college students find study locations on campus quickly involving several stages. In the Discovery Stage, we conducted research to understand the problem space and identify potential opportunities. In the Empathize Stage, we gained insights into the needs and pain points of the target users. The Define Stage involved synthesizing the information collected in the Empathize Stage to define the problem statement and the user's needs. The Ideate Stage generated as many ideas as possible to address the problem statement and the user's needs, while the Prototype Stage created a low-fidelity prototype to test the viability of the ideas generated. The User Testing Stage tested the prototype with target users to gather feedback and validate the design ideas. Finally, in the Assess / Implement Stage, we refined the design based on user feedback to create a final design that meets the needs of the target users and addresses the pain points identified in the Empathize Stage. The resulting app provides a user-friendly interface that allows students to search for available study locations in real time and book a spot if necessary. The app's design also takes into consideration the importance of a conducive study environment and provides information on the amenities available in each location.
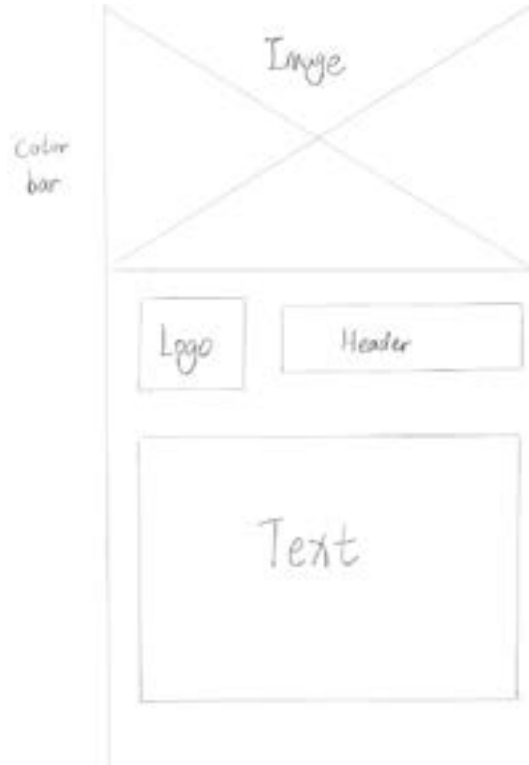
EMPATHIZE IDEATE TEST

DEFINE PROTOTYPE

Brand Guidelines

Logo

UTM STUDY

UTM STUDY

Typography

Title

- Arial Rounded MT Bold, Size 48pt

Subtitle

- Bradley Hand ITC TT, size 30pt

Body Text

- Arial, size 12-14pt

Colour Palette

#EAA52D RGB:234, 165, 45	#80AFC7 RGB:128, 175, 199	#013161 RGB:1, 49, 97
#81878B RGB:129, 136, 139	#3B4951 RGB:59, 73, 81	

Layout & Shapes

Section Page

Image

Colour bar

Logo   Header

Text

Information Page

Header

Image   Text

Image   Image   Image

Text   Text   Text

UTM Incoming class

DISCOVERY STAGE

UTM STUDY

Framing the Project

In the discovery stage, we started framing the project by sharing our struggles that we would like to see addressed at the University of Toronto Mississauga campus. Most of us agreed that it was difficult to find available study space on campus, and we decided to dive deeper to figure out the root cause and potential solutions to the problem.

Target User + Service

The board area that we wanted to dive deeper into was the interaction between UTM students and study spaces. As a result, our target users for this project are UTM students who study on campus. In doing so, the service that we wanted to focus on is figuring out a system that enhances students' experience with study rooms to further facilitate their study activities.

UTM Library on Twitter

EMPATHIZE STAGE

UTM STUDY

Design Research

In the empathize stage, we conducted primary and secondary research to gather insights into the users' needs, solutions, goals and problems. Using different techniques, such as fly-on-the-wall observation, interviews, empathy map and conducting secondary research. Data is collected to understand users at a psychological and emotional level, to ensure a better understanding of users' encounters with the problem and to focus on the problem with the relevant users in mind.

Secondary Research

A research study by Beckers et al. (2016) notes the different factors that influence students' experience with the study rooms. The research expresses how the users' experience with the study room was dependent on different factors. Factors included the type of activities, users' study preference and their perception of the effectiveness of the space in conducting those activities. Contrastingly, Adedokun et al. (2017) illustrate how space that allows flexibility and adaptability plays a significant role in student motivation and correlates to Beckers et al. (2016) study of the perceived effectiveness of the space in conducting their learning.

Pixabay: Library High Angle Photro

Pixabay: Three People Sitting Beside Table

UTM: Library

UTM Library on Twitter

" Learning space preferences are particularly related to whether students perform study activities individually or collaboratively" (Beckers. et al., 2016). Thus, the type of activities greatly impacts users' experience with the study room.

Experience in the study room is dependent on the different study preferences. Some perceive effectiveness in a close setting, while others may find an open space more effective than a closed space.

In doing so, with the combination of these two factors. It plays a role in the perception of the effectiveness of the study room. Being flexible and adaptable allows a space to conduct activities that match users' study preferences, and there is a greater and more positive experience in using the room.

Primary Research

User Interview

One of the primary research conducted was users interview. I have gathered data and interviewed 15 UTM under-graduates. Out of fifteen students, eight identified as female, and seven identified as male.

One of the questions asked was, "How was your experience using the study room?"

> " *Overall, I have a decent experience with the study room. I find that you need to book in advance to secure a seat on a specific day and time. Otherwise, it is most likely will be booked* "

As a follow-up question, we asked, "What are some things that annoyed you about the study room?"

Many of the responses have similar issues with referring to the booking system.

> "*I find the booking system frustrating as it is always booked and does not help me find a space. Sometimes, if I am lucky, there will be no one in the room, and I either stay until I finish what I need to do or until someone who booked the room comes in. - CCIT male student* "

Pixabay: People Shaking Hands

Primary Research

Pixabay: Crop businessman giving contract to woman to sign

The next question was, "Do you think it is difficult to find an empty room or study space?"

In which the CCIT major female student explains,

"*I have to make a reservation for the library room a week in advance. If I make an appointment only one day in advance. The room might be free, but the time when the space is free does not match when I need the room. Especially during the midterm*"

A commerce specialist male student says,

"*Sometimes yes. During the final period, I have to look around for seats in the library or study rooms, and sometimes there is no space in the library, and I have to walk to the IB building to find a seat.*"

Lastly, we asked students about their general thought about the sizes of the room. We asked, "In your opinion, what do you think about the size of the study rooms"? There were mixed responses.

Some suggest that the rooms can be bigger, while others suggest that the room size is fine the way it is.

A female economic student expressed,

"*I think the school could increase the number of study rooms of different sizes. I often have a six-person group discussion, but the school study rooms have one or two students occupying one study room. This makes it awkward for people like us who need a larger space to study.*"

Primary Research

UTM- Looking for a space to study

Fly-On-The-Wall

Another primary research method was to observe UTM undergraduate students in the different study spaces. Study space includes the library, IB study room on the second floor, and the MN first floor.

In doing this method, one common finding was that when it was not busy, students came in and sat in whatever space was available. However, during a busy period like midterms. When it was more packed, a common theme was that students kept walking and walking until they found a study space. If there weren't any, they left that area and tried the other side or left the areas entirely.

This research allowed us to discover that one of the awkward situations many UTM students face when studying at school is that they cannot find a place to study.

Many students were in a hurry when they entered the library. They were eagerly looking for a study space. During rush hours, the library was so crowded that they would keep wandering around the library looking for a seat. Some students saw an unoccupied seat, but when they walked over, they would find other people's personal belongings on the desk and not be able to use that seat to study. They had to leave the library to find a study space in another building.

UTM: RBC Learning Commons

Empathy Map

Empathy Map

After conducting design research and gathering qualitative data on users' needs and behaviour to better understand users on an individual level. Thus, an empathy map is used to visualize and articulate what we know about our targeted users.

The empathy map below deconstructs and synthesizes the key findings of the prior primary research to bridge the understanding of the end users to come up with a possible solution that is user centred and fits their needs and behaviour.

Link to Empathy Map! https://miro.com/app/board/uXjVMc4t8pM=/?share_link_id=480077629948

The empathy map is based on our user target Jane Lee for which we created a persona. The four quadrants represent key traits that demonstrate what we observed during the primary stage. These included; what the user thinks, feels, does and says. This is to ensure that we create a design that meets users' goals, do goals and motor goals. In doing so this will allow us to move onto the define stage, where we converge from the research and define the root cause problem to frame the problem statement we want to focus on.
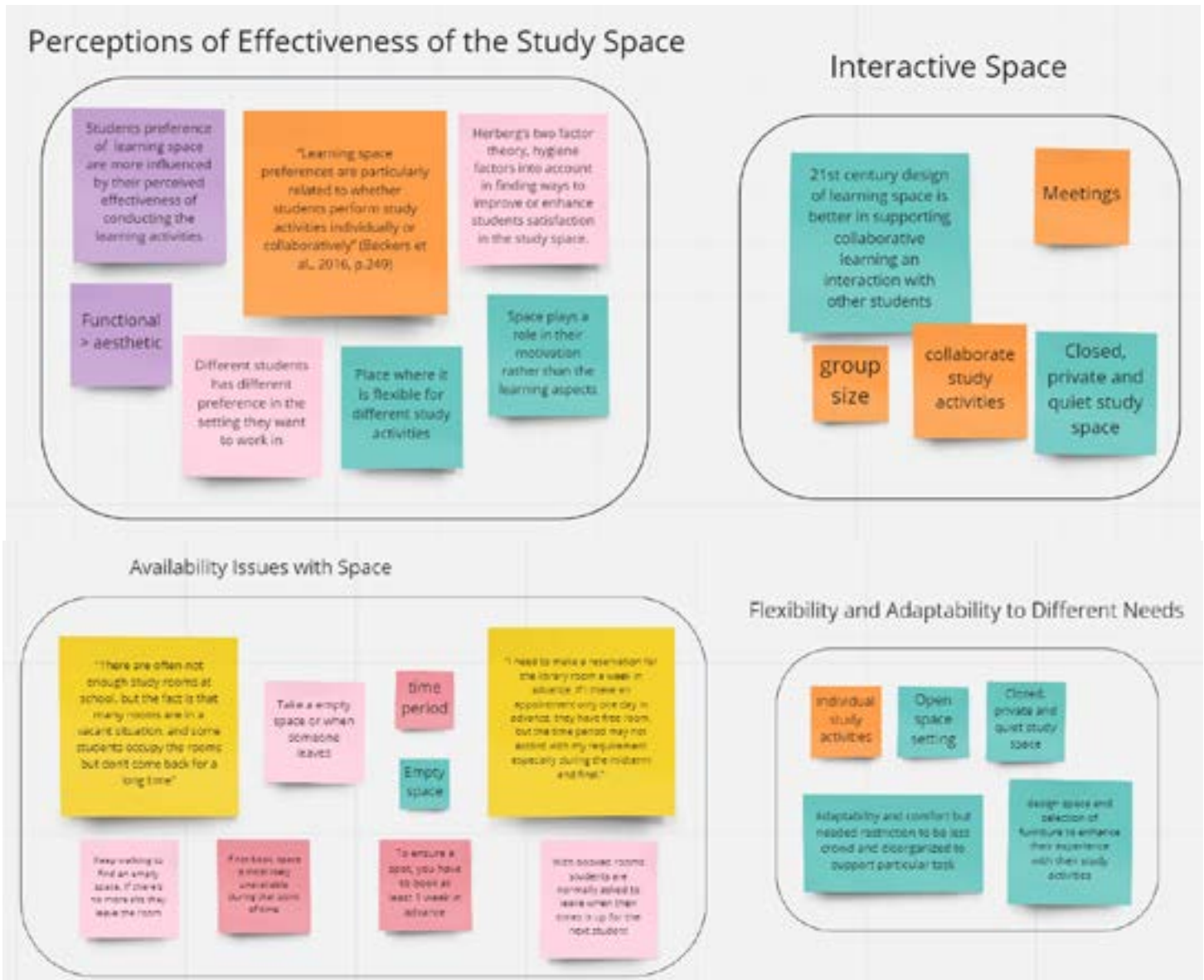
DEFINE STAGE

UTM STUDY

Sythesize Research

In the define stage, we converaged and synthesize our research from the empathy stage to figure out our problem statement, user goals, and define the problem for the project. In doing so, we use methods such as problem statements, personas, affinity diagrams, and how-might-we statements to help visualize our problem and user needs.

Design Method

Affinity diagramming

We categorized the information using Miro and the Affinity Diagramming method. Based on the fly-on-the-wall observation during the empathy stage, we grouped observations to determine how many people faced the problem of finding an empty study spot on campus. By grouping these categories, we gained insights into the most important needs and pain points of our target users. Based on the divided group of problems, we decided to focus on the availability issue with space, as it was a common problem noticed during the observation stage.

Design Method

Personas

User Persona

About

Name: Jane Lee

Gender: Female

Age: 20

Majors: Economics & Mathematics

Bio Data

Jane Lee is a student of economics and mathematics. Her schedule is very busy and she has to balance school and her professional life. It takes her an hour to get to school by bus.

Pain points

- My schedule is very tight and I don't have a lot of time to spend looking for available space in a study room.
- The school study room is far from my house, and I waste too much time coming to school.
- Some people put their personal belongings in the study room which occupy the room, but they don't come for a long time.

Wants

- I would like to be notified in advance if there is space available in the study room.
- I can know which study room people are leaving soon.
- It would be better to have a voice alert to remind those who are occupying the study room to leave.

This persona is based on the data collected from user research and can help create pathy for the target audience and guide design decisions. The results of creating personas may include a set of personas that represent different groups of college students who need to find study locations on campus quickly.

Point of View Statement

University students need to find a study space on campus efficiently because there are often not enough study rooms at school, and the space is more likely unavailable during that point in time if not booked. Moreover, according to secondary research, the area plays a role in their motivation rather than the learning aspects. As a result of creating a problem statement could include a clear understanding of the key challenges that the website needs to address, such as the difficulty of finding available study locations on campus.

Design Method

How - Might- We Statement

> " How might we redesign the booking system to help UTM students find a study space?"

In summary

Generating a How Might We statements can help us generate a range of potential solutions to the problem statement.Using affinity diagramming, personas, problem statements, and How Might We statements can help us organize and analyze the information gathered during the empathy stage of a website design project aimed at helping college students find study locations on campus quickly. These methods can help us identify user needs, pain points, and motivations and generate ideas for potential solutions.

Brainstorming : Concept board

IDEATE
STAGE

UTM STUDY

Ideas Brainstorming

In the ideate stage, we diverge from our research and the data collected to come up with multiple potential solutions for solving our how-might-we statement. Some of the methods that we used were sketching, specifically Crazy 8's where we each come up with eight different ideas in 8 minutes, and using a brainstorming graphic organizer to help generate ideas to solve the problem by clustering potential issue together.

Ideate Stage

Brainstorm Graphic Organizers

Link to the Brainstrom Organizer
https://docs.google.com/document/d/19F4JG5_h1pm6FO1V-EeHqGcDvBHpFlOJUObBJRt0zJU/edit?usp=sharing

Ideate Stage

Crazy 8 Sketches

Ideate Stage
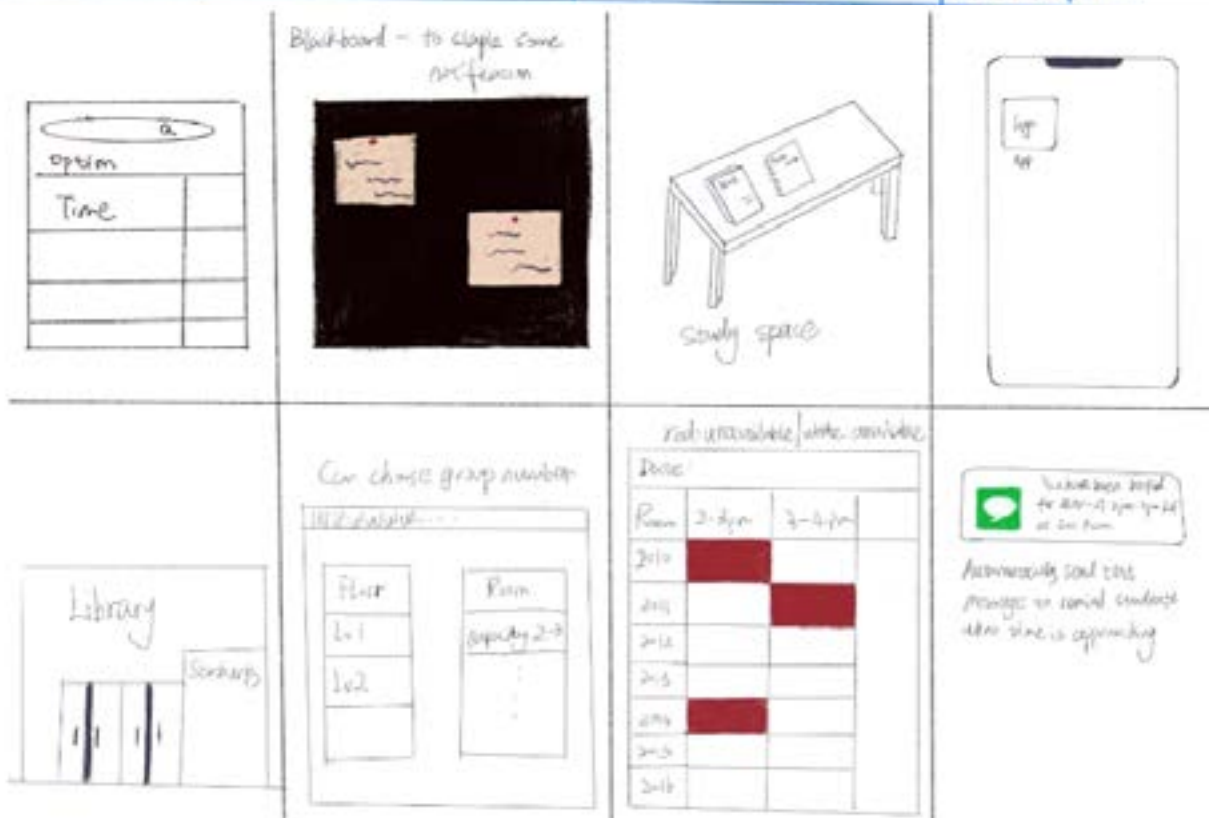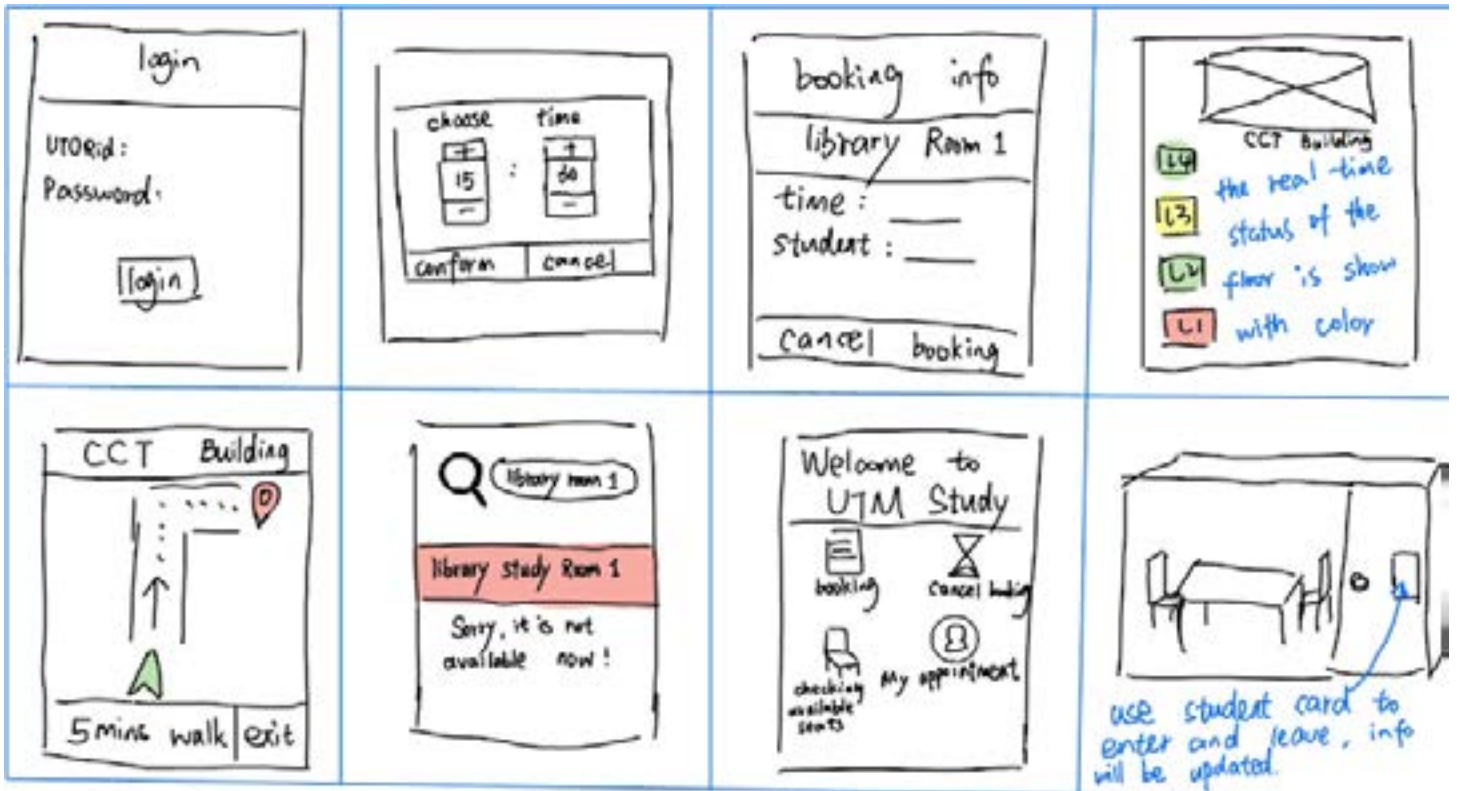
Crazy 8 Sketches

Ideate Stage

Crazy 8 Sketches

APP THAT SHOWS WHICH SPACE ARE RESERVED

FLOOR #
APP THAT TELLS YOU WHERE SPACE ARE AVAILABLE

MAP + TECHNOLOGY
TELLS YOU IF THE ROOM HAS SPACE BEFORE YOU ENTER

APP THAT DIRECT STUDENT TO THE STUDY SPACE LOCATION

QR CODE
QR CODE THAT TELL YOU SPACE AVAILABILITY OF THE ROOM

BOOKING INFO
ROOM
DIRECTION
MOBILE ONLINE BOOKING SYSTEM + DIRECTION

BOOKING SYSTEM THAT ONLY SHOWS ROOM AVAILABILITY ON THAT DAY

WEBSITE THAT SHOWS BOTH AVAILABLE + UNAVAILABLE ROOMS
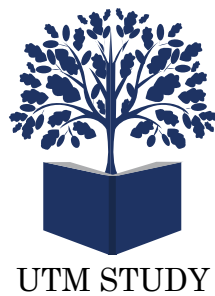
Based on the different ideas, we decided to create an app to help facilitate the booking system. An app allows for more efficient use, as students often have their phone with them. In addition, having an app allows users to locate, find, and book study rooms on the go instead of having to open up their computer.

PROTOTYPE STAGE

UTM STUDY

Prototyping

In the prototype stage, to further empathize with the target user, we created a storyboard to visually display the sequence of events for our persona, Jane Lee. Jane is looking for a study space nearby after her lecture and is using the UTM study app as a tool to help her locate and find a study room with ease. In addition, we created a quick sketch of the wireframe skeleton to plan out the app's navigation, which allowed us to create a rapid prototype with ease.

Prototype Stage

Storyboard

STORYBOARDING

Panel 1: Jane Lee wants to find a study room after her lecture but is confused about where to go and does not know where the available spaces are.

Panel 2: She downloaded the UTM study app and open the app.

Panel 3: The app show all real-time avaibility, and she pick which space she wants.

Panel 4: She then booked the study room.

Panel 5: Based on the room she booked, the app directed her to the location.

**Panel 6**: By using the app, Jane lee is able to find, book and locate to the study room with ease!

Wireframes

Prototype Stage

Rapid Prototype

Using the wireframe as a reference, we created a high-fidelity and high-resolution prototype. We made some modifications to the confirm booking page. For instance, instead of having a pre-set booking page, users can now click on the date and time and select their own preferred time. Additionally, they can type in their own information during the booking process. This rapid prototype will be used for user testing to evaluate how users navigate and interact with the app.
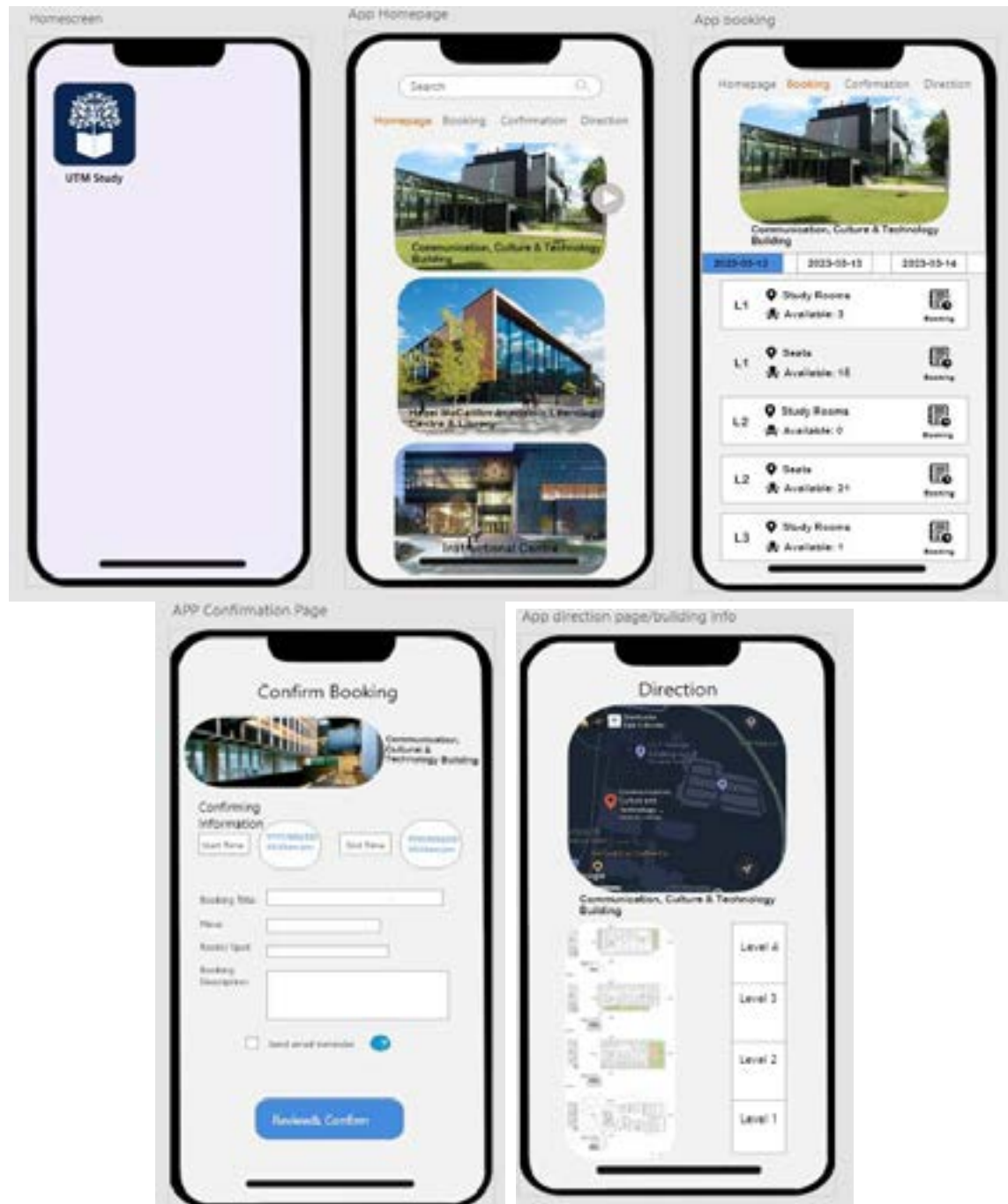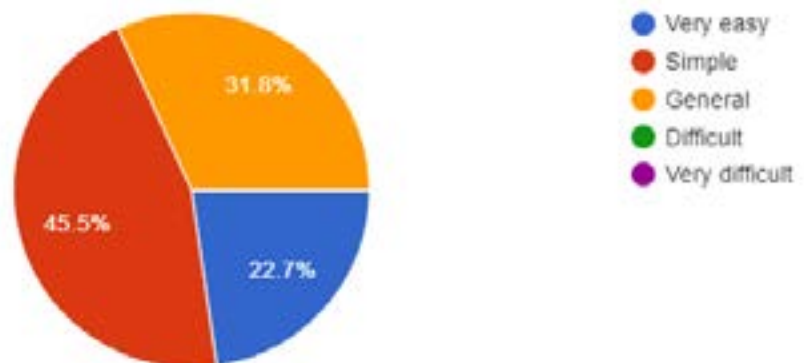
USER TESTING STAGE

UTM STUDY

In user testing, we used the Think Aloud Protocol and observation. According to the results of Think Aloud Protocol, many users told us that they were confused when operating the appointment interface. They said that because the interface of appointment time has too many buttons and overlaps with the text behind, the interface looks confusing. They don't know where to click to take the next step. We realized that our product was not simple to operate and required too many steps to complete an appointment, because after trying our prototype, most users indicated that they needed a guide. We also found that we overlooked the quicker route of using the search function to book a study room. When we give users the task of booking a study room, they will subconsciously look for the search button, which is different from our expected logic of finding study rooms according to teaching buildings and floors.

3. How easy are our products to use?

22 responses

31.8%

45.5%

22.7%

- Very easy
- Simple
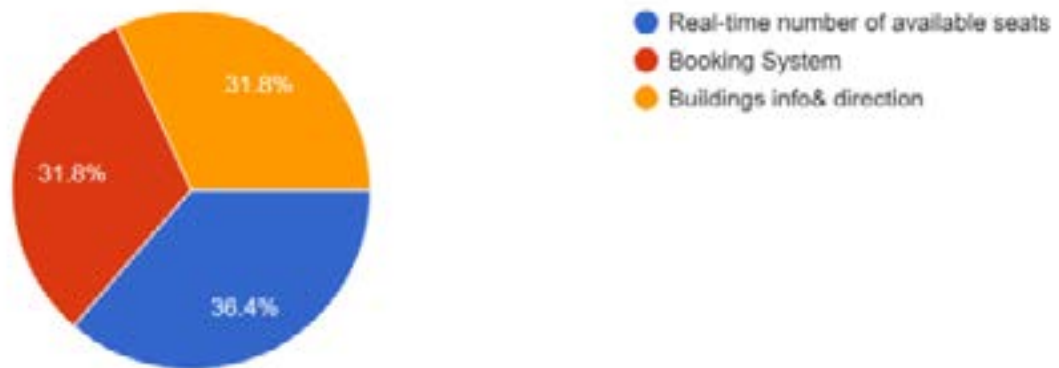- General
- Difficult
- Very difficult

User Testing Stage

We conducted a user test with 22 users and interviewed them about their experience. Nearly 73% of the users thought our product was better than the original UTM reservation site. They also said the product was useful for them and helped them find study room seats more efficiently. But at the same time, they also gave us feedback that our product could be improved in terms of interface.

6. What feature of our product is the most important to you?

22 responses

- Real-time number of available seats
- Booking System
- Buildings info& direction

31.8%
31.8%
36.4%

Do you have any thoughts or opinions for our design?

20 responses

I like that your app provides a directions system, however I think it would be better if it was an optional menu for students who are familiar with directions.

Possibly provide a button saying next to move on to the next step in the process

I had clicked the start and end times sometimes instead of the blue links. The low opacity for the time and date selection made it difficult to see the done arrow

It seems a little messy but overall was great because it shows everything it needs to.

The website loading is a little bit slow. But other things look good.

UTM Library | Study Space

UTM STUDY

ASSESS STAGE

User testing findings.

Overall, based on the 22 participants who user tested our prototype, we have gathered great insights on how to further improve the app to be more user-centric and better facilitate users' needs. About 46% of the participants found our app simple to use and did not have much difficulty navigating through the system. From the feedback we received from users, most of the participants described the prototype as useful and reliable for navigating and booking study rooms at the University of Toronto Mississauga.

On the contrary, there are some areas for improvement, such as simplifying the steps to streamline the booking flow and provide a quicker experience. It's essential to ensure that the system is not too busy or overwhelming. Since there were more steps, it was a little overwhelming at first and resulted in the page being "busy," leaving users unsure about how to navigate to the next steps. Additionally, the direction page was confusing for users due to the lack of signifiers and affordance of where to go next. Thus, users often stopped at the initial direction page when there were more features and information on the next pages.

Design Thinking Process Reflection

"Design Thinking 101: NNGROUP.

Through this project, one of the things we learned from the design thinking process was that it is not a linear process. Theoretically, when one stage is finished, you move on to the next stage. However, in reality, there were a lot of redefinitions of the previous stages before moving forward to ensure the design was user-centered and met all demands. For instance, when it comes to ideating and generating ideas, we had to go back to the problem statement, empathy, and define the stage to develop solutions that met the requirements of our target users
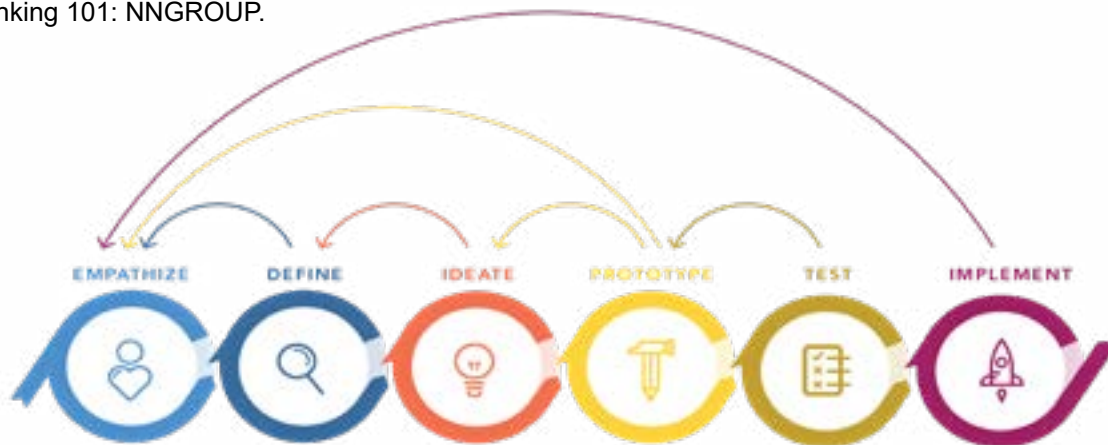

"Design Thinking 101: NNGROUP.COM"

Even with our finished prototype, after the user testing session, we still need to go back to the empathize stage and reanalyze the user needs with the new data gathered. In doing so, the design thinking process becomes an ongoing cycle of improving a problem to ensure that any usability issues with navigation and core features are redesigned to be more user-friendly and user-centric, developing the product in a way that appeals to the users.

Especially with the idea of 'Featuritis' and the fast rate of technology, there is a continuous need to improve a system or add new features to accommodate more requests and improve efficiency. This need must be carefully analyzed, or it can result in an overwhelming amount of information and lead to users being frustrated with the product. Therefore, the design thinking process journey must be an ongoing cycle to ensure the product meets the user's needs and continues to evolve over time.

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Next Steps!!

Moving forward, after the user testing session, there is a need to refine the prototype before finalizing and creating the actual app. The problem statement will remain the same as it targets our users' problem, and most of the app's features will also remain unchanged. However, based on the feedback given, there are some changes to the prototype that are needed to improve the app's user experience.

For example, we need to simplify some steps to avoid redundancy, such as combining the confirmation and direction page into one page instead of having two separate pages. Additionally, with the direction page, we plan to automatically direct users to the location they pick based on the room they input into the system, instead of having a general map and asking users to pick the location themselves.
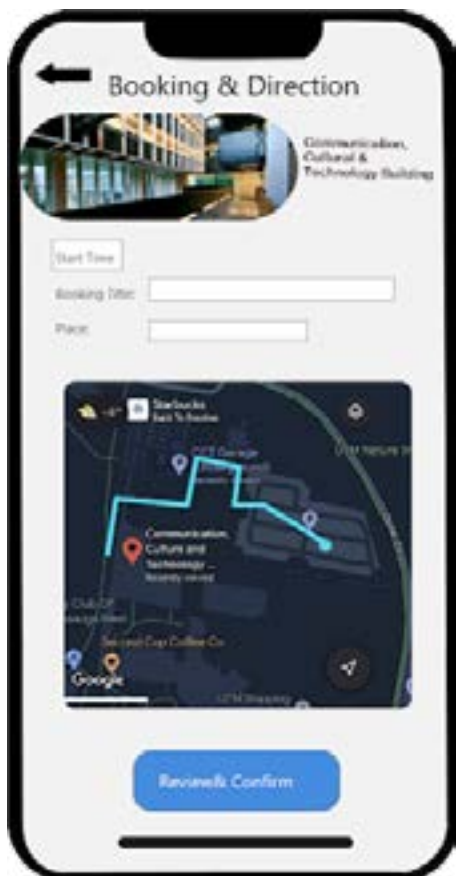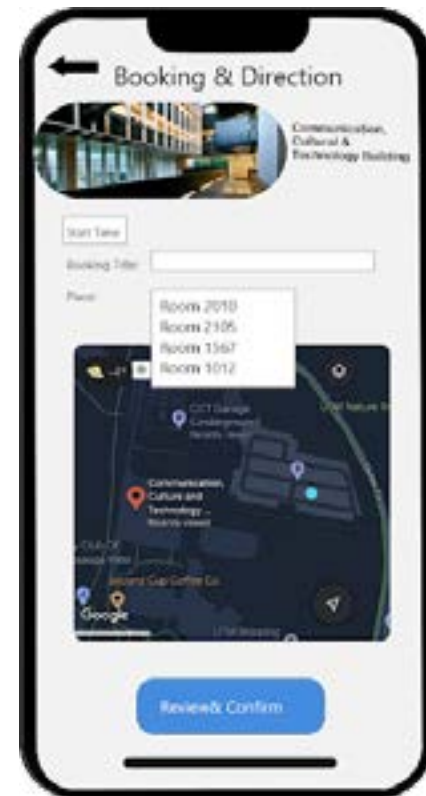
We also plan to introduce constraints to the set time frame instead of allowing users to pick their own time frame, simplifying the booking process and reducing the time spent on booking. The current prototype follows a waterfall methodology, where one step is needed before moving to the next step. In future steps, we plan to include a back button to the previous pages on every page of the app to avoid mistakes and not follow a linear approach.

Moreover, to enhance the booking page, we plan to ensure the transparency of the time slot is opaque to avoid overlapping texts. Additionally, providing a dropdown menu instead of typing allows more constraints for better utility of the system rather than having users type whatever they want. Lastly, to further utilize this system, there is a need for technology that allows real-time navigation/direction to the location of the room and real-time updates on the room availability to better facilitate users' needs.

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