

The ideas and research that went into  
creating our team's Student  
Navigation system

# Student Navigation

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## Introduction

We were tasked with providing Edinburgh Napier with the option of creating an interactive map for each of their campuses. To accomplish this, we will provide them with an additional "tile" on the MyNapier app, which will include features such as options for each campus, routes to the most common spots on campus, and a little bit of history about each building. We will also provide templates so that the client may see what the product will look like and make modifications as needed. The University understands the difficulties of a new student and agrees that making navigation easier for each student will encourage more on-campus presence. I am the project manager for this project, and my teammate is also a member of the project team. We collaborated to build the greatest prototype we could, including both of our concepts to produce the most useful programme for our client. I closely collaborated with the customer as the team manager to understand their particular needs and to meet their objectives. I then gave my partner this list of requirements, and together, we came up with our team plan. We started with a plan before we started anything. We had a list of projected goals within this plan; our main goals were to ensure that our client was involved throughout the process; we also wanted to hear what the students had to say, as the students are our real clientele; and we wanted to make sure that every concern and opinion we could gather was factored into our design. We wanted to pick data collection techniques that we could use the most effectively, so we went with questionnaires, interviews, and usability testing. This allowed us to process a lot of student answers quickly and in confidence via email and other social media. We had intended to employ focus groups as our final method of data collecting, but after evaluating how much information we learned through the questionnaires and interviews, we changed our minds and decided that this was a better approach.

I will be serving as project manager for this project. It is my obligation to see that our project is completed successfully. My responsibility is to guarantee that the project is completed within the stipulated time frame and budget while meeting its objectives. The day-to-day management of the project and ensuring that I was proficient in handling the six parts of a project, namely scope, schedule, finances, risk, quality, and resources, were my key responsibilities as the project manager. Along with managing relationships with contributors and stakeholders, I had to make sure the project had enough resources.

My responsibilities include the following:

- Making a project plan
- Managing deliverables in accordance with the plan
- Recruiting project personnel
- In charge of leading and supervising the project team
- Choosing the methodology for the project
- Creating a project schedule and identifying each step

# Data Gathering Techniques

## OBJECTIVE

Questionnaires served as our first tool of data collection. Because questionnaires provide a quick, effective, and affordable way to collect copious amounts of data from huge sample sizes, we think they were a great study approach. This technique was very useful for assessing the behaviour, preferences, intentions, attitudes, and views of our client.

## METHOD

Before deciding on the questions we would enter for our data collecting, our team went through a number of stages. Choosing "what is the data we need to know from the respondents in order to satisfy the clients objectives" was the first stage. These were activities we carried out as part of the planning and research phases. We both agreed that while we might already have an understanding of the type of information to be gathered, secondary data and exploratory research can be used to supplement our knowledge. We must consider what elements have not previously been looked at, how the current survey questionnaire can add to what we already know, and how to maximise its value. Prior to developing any questions, we conducted many steps as part of the design stage. Some of the processes were as follows: determining the information required, establishing the target responders, determining who we need replies from, assuring relevant question content, designing question language, and arranging the questions in a sensible order and format. These stages were critical in ensuring that we got the most out of our questionnaire.

## RESULTS

In terms of the entire research, I believe that the procedure was a success. There were some flaws in the process, but the questions included in the questionnaire appeared to be quite simple for the responders to understand. The study of the responses revealed that the close ended questions were easily filled by the respondents, whilst the open ended questions were not so readily filled by the respondents. We also discovered that questions with a drop down list were more valuable to our research than ones with a written answer, as we discovered that most respondents - when behind a computer screen - do not feel the need to take the survey seriously. The majority of respondents (57%) felt that the campus frequently lacks effective directional navigation on sight, despite the fact that the average Napier University student did not necessarily find navigating the buildings to be difficult, scoring a 2.57 out of 5 on a difficulty scale. This led us to the conclusion that a navigation or map system would be very helpful for both new students and visitors to the university to help them feel more comfortable around campus. We discovered that using questionnaires was beneficial for us because the respondents were already familiar with the procedure. The directions were clear for individuals who had never used a questionnaire before. Surveys also give us an advantage in gathering more private data and opinions because respondents don't feel under pressure or judged because of their discretion and individualism when responding. One drawback we observed was that some respondents chose to skip several questionnaire questions. Additionally, the replies were remarkably similar, which made us doubt the validity of questionnaires as a means for gathering data. We came to the conclusion that most respondents answered based more on what they believed we wanted to hear than on the reality. We also took into account the fact that one

questionnaire would not provide us with sufficient data. We discovered that, despite being able to get a rough sense of students' perspectives on navigation, we were unable to get many thoughtful, opinionated comments because the majority of our questions were closed-ended. This prompted us to consider how we might have handled the initial data collection differently. Prior to the creation stage, perhaps an interview or anything more intimate could have provided us with more useful data. I believe that we could have received the proper responses for our data gathering if there had been a little more human interaction. A more open question may have been, "What remedy would you propose to a student having trouble navigating the campus?" in my opinion. or "How do you recommend the institution resolves the issue of students finding it difficult to access campus?" These questions should have been more helpful to us, but I do think it's difficult to gather useful responses from an online poll when they're this opinionated.

## OBJECTIVE

We determined that conducting interviews would be the best option for our second mode of data collection. We were able to gather information about the feelings, thoughts, and experiences of a small group of clients through the use of a qualitative interview. We realised that we wanted to increase our access to the information from our respondents, so we chose to conduct a combination of structured and unstructured interviews. We discovered that doing interviews would be the most straightforward technique for us because they offer far more individualised information than many other methods of gathering data.

## METHOD

There was a lot of preparation that would need to be done in the beginning, prior to the conduct of any interviews. As an illustration, we sought to determine what the consumer wanted to see using the data from our prior survey. I was tasked with creating a basic sketch sample of how our app would look. In the interview, we wanted to use this to "fast-forward" and graphically demonstrate to the respondent what the app would look like. We were interested in the users' perceptions of our design decisions as well as how they generally interacted with the prototype. In order to avoid pressuring the client, I wanted to have an open mind throughout the interview while also seeming easygoing and humorous. After discussing with my teammate what we would like to learn and what we thought would be beneficial to the creation of our product, I conducted some of the questions I would like to address during the interview stage. The user's perspective on the product and their suggestions for how they would like to see an app similar to ours developed were the key issues we sought to address at this stage of development.

## RESULTS

We'll start with my teammate's interview, where I acted as a spectator and took notes as the interview was taking place. My partner began the conversation with friendly welcomes and acquainted himself with the client. He then handed the interviewee a copy of our hand-drawn prototype in order to help the customer better visualise our product. He then presented a brief summary of our task as well as the eventual product, before delving into how our prototype will function. To learn the dislikes and likes of our plan, the first questions asked were things like "what do you think of the layout of our app?". The answer we received was absolutely favourable, as we were told how simple the design felt, which meant that the client immediately understood the product and how to utilise it. The client understood all of my partner's inquiries and would initially respond in a brief manner until he questioned them further, encouraging them to open up. The gist of their responses were all good and meaningful, and I could see they were quite passionate about the subject. Once the client felt more at ease, they continued to tell us about how, when they initially started at the university, they had a difficult time acclimating to campus and frequently found themselves getting lost or confused, leading them to become too scared to attend numerous classes. We appreciated hearing about this because it motivated us even more to create a fantastic solution that would help all of these individuals who were in similar situations. As an observer, I found that the interviewer did a good job of keeping the client's attention while also allowing them to freely express themselves throughout the conversation. I also found that they managed to keep the candidate at ease during the

interview and created a good rapport with the candidate. The interviewee had a high level of confidence in their use of facial expressions and mannerisms. They had also prepared the required equipment to record the interview processes for further analysis. Being an observer during this allowed me to specifically pick up on what I would do better in the future interview. For example, to obtain as much valuable information as feasible, a more structured question set could be used. Moving on, I acted as an interviewer for a different client. Once more, I started with a friendly greeting and got to know the customer. However, I believed that for this interview, I should concentrate more on design modifications and potential improvements to our software as a whole. By also watching the candidate engage with our prototype and ask questions, I was able to successfully gather the necessary data. They appeared interested to learn more about how we want to completely develop this product. I evaluated my interviewee's actions, including their posture and body language. Importantly, as the interviewer, I was able to disguise any signals of disapproval or impression from the candidates in order to keep as neutral a stance as possible. Some of the questions I asked in the interview were closed-ended and demanded concise responses, such as "do you believe this app is something you would personally use?" I did, however, include several open-ended and hypothetical questions that required the applicant to explain, for example "Do you believe there are any other features we could add to this app? If so, please elaborate."

## OBJECTIVE

I opted to undertake some usability testing as our final data collection approach. A usability test involves the researcher working closely with clients, monitoring how they interact with a working prototype when given a list of tasks. In this case, usability testing was performed to detect any problems, uncover any potential opportunities, and learn about the target users' behaviour and performance.

## METHOD

This stage in design was a critical turning point for us, and it was a stage with many highs but also a few lows. When we originally discussed doing a usability test, we had to first create a working prototype. I set aside some time to create a clear and functional prototype that appropriately depicted the product that we are creating. After reaching a point in the prototype where I felt it was ready for testing, we decided to create a survey with detailed instructions for our clients as well as feedback spots throughout to give the impression that we are truly engaging with the client. Our usability-testing survey included instructions and an evaluation of the ease of each activity, as well as opportunities for the customer to voice their comments.

## RESULT

After distributing the survey and collecting replies, we began to review the responses. We discovered that the majority of open-ended questions were being skipped over by respondents, and we concluded that this technique was not going to serve us as a team any longer, and that we would need to change our tactics. We determined at this point that we needed to do an in-person usability test. We decided that the most effective way to do this would be for me to act as a facilitator and set up an in-person 1 to 1 usability test. My client's screen displayed our working prototype, while mine displayed the initial usability test questions we created for the survey. We felt that because this was in person, I could establish a connection with the consumer, resulting in more relevant input and ultimately improving our product. I felt that my job should be professional, but also objective enough to elicit correct and informative responses from the customer. While following the processes, the client was providing formative input and demonstrating a thorough comprehension of the prototype. The customer even recommended adding a new feature to the product: a timetable link, so that users could easily link their university timetable to the app and receive directions to each of their classes via the app. This was a great concept that I saved for later. The customer also commented on how clear and reader-friendly our design was, particularly the usage of the "you are here" pinpoint position that our map depicts. Overall, this stage of data collection got off to a rocky start, and we thought we were going to struggle to get a good understanding of what the client wants, but after conducting multiple in-person usability tests (switching the roles of facilitator between my team), we both believe that this helped us greatly improve our design and build a lot more potential for our app. The main disadvantage of this stage was the lack of involvement we could achieve while performing remote unmoderated testing. We discovered that asking the client to "think out loud" and verbally explain each step they take was far more helpful and valuable.

## Conclusion

Our main goal for this project was to provide Edinburgh Napier exactly what they requested. Our primary goal has been to please our client while also creating an operational and effective interactive map design in accordance with the standards and scope provided during the development process. Being open and honest with the customer, and presenting every potential opportunity or danger, benefits both of us. This project has taught me a lot about my various data collection skills, and I believe it has also taught me a lot about how I can improve. I now understand that performing a data collection without sufficient planning can result in unanticipated findings, necessitating an immediate change of strategy. I've also learnt how effective certain strategies are based on the type of data you're looking for.

During the interview stage, I believe I received the most comments and useful information. Personally, I believe this is because of the informality with which an interview may be conducted, which made it feel like a casual conversation, resulting in the greatest views exchange. In the future, I'll pay more attention to arranging my questions in advance, delivering them in a more organised order, and giving the interviewee a chance to really stand out.

## APPENDIX

### Ethics Form

Application Number	000
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#### Application for Cross-University Ethical Approval

##### 1. Research Details

Name of Researcher(s):	Aimee Bell
School or Professional service department:	Edinburgh Napier University
Email:	N/A
Contact number:	N/A
Project Title:	
Start Date:	
Duration of Project:	
Is anybody funding this research? (Amount and Source)	
Type of Research: UG/Taught PG/Masters/Doctoral Student/ Staff	

##### 2. Screening Questions

Please answer the following questions to identify the level of risk in the proposed project:

If you answer 'No' to all questions, please complete Section 3a only.

If you have answered 'Yes' to any of the questions 6-16 please complete Section 3a and 3b.

If you have answered 'Yes to any of the questions 1-5, complete all of Section 3.

	You Must Answer All Questions	Yes	No
1.	Is the research clinical in nature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	Is the research in a health care setting?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.	Is the research investigating socially or culturally 'controversial' topics (for example pornography, extremist politics, or illegal activities)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.	Will any covert research method be used?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.	Will the research involve deliberately misleading participants (deception) in any way?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.	Does the Research involve staff or students within the University?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7.	Does the Research involve vulnerable people? (For example people under 18 or over 70 years of age, disabled (either physically or mentally), those with learning difficulties, people in custody, migrants etc).	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8.	Is the information gathered from participants of a sensitive or personal nature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9.	Is there any realistic risk of any participants experiencing either physical or psychological distress or discomfort?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10.	Have you identified any potential risks to the researcher in carrying out the research? (for example physical/emotional/social/economic risks?)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11.	Is there a possible conflict of interest between researcher and participant that would affect the voluntary nature of the participation, e.g. managerial influence, Research using current students as participants?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12.	Will the research require the use of assumed consent rather than informed consent? (For example when it may be impossible to obtain informed consent due to the setting for the research – e.g. observational studies/videoing/photography within a public space)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13.	Is there any risk to respondents' anonymity in any report/thesis/publication from the research, even if real names are not used?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14.	Will any payment or reward be made to participants, beyond reimbursement or out-of-pocket expenses?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Application Number	000
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15.	Does the research require external ethics clearance? (For example from the NHS or another institution)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
16.	Does the research involve the use of secondary datasets?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 3A. Details of Project

In this section please provide details of your project and outline data collection methods, how participant consent will be given as well as details of storage and dissemination.

#### Please give a 300 word overview of the research project

I have been asked to work on developing a student navigation system to be used on each Edinburgh Napier campus. It will have a full map of each campus from a birds-eye-view and will give new students an easier way of navigating the buildings. The students can link their university email which will then link their entire timetables through Outlook. This means that students can click on this tile (which will be situated in the myNapier app) and it will give them the option to choose which campus they are on, then it will come up with the map of each area of the university and it will show them where everything is situated, including cafeterias, help desks, fire exits and more. I will interview current students of Napier University and see their opinions on how they found navigating the campus' as a new student.

#### Data Collection

1.	<b>Who will be the participants in the research?</b> Students of Edinburgh Napier University
2.	<b>How will you collect and analyse the research data? (please outline all methods e.g. questionnaires/focus groups/internet searches/literature searches/interviews/observation)</b> Questionnaires, interviews, focus groups or personas
3.	<b>Where will the data will be gathered (e.g. in the classroom/on the street/telephone/online)</b> Classroom, and online
4.	<b>Please describe your selection criteria for inclusion of participants in the study</b>
5.	<b>If your research is based on secondary data, please outline the source, validity and reliability of the data set</b> N/A

#### Consent and Participant Information

7.	<b>How will you invite research participants to take part in the study? (e.g letter/email/asked in lecture)</b>
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	Email, asked in lecture
<b>8.</b>	<b>How will you explain the nature and purpose of the research to participants?</b> I will explain why I think this additional service will be helpful for participants
<b>9.</b>	<b>How will you record obtaining informed consent from your participants?</b>
	Allowing participants to complete a privacy form
<b>Data storage and Dissemination</b>	
<b>10.</b>	<b>How and in what format will data be stored? And what steps will be taken to ensure data is stored securely?</b> Data will be stored locally
<b>11.</b>	<b>Who will have access to the data?</b> Me, the researcher
<b>12.</b>	<b>Will the data be anonymised so that files contain no information that could be linked to any participant?</b> Yes
<b>13.</b>	<b>How long will the data be kept?</b> Until the project is completed
<b>14.</b>	<b>What will be done with the data at the end of the project?</b> Disposed of correctly
<b>15.</b>	<b>How will the findings be disseminated?</b>
<b>16.</b>	<b>Will any individual be identifiable in the findings?</b> no

### 3B. Identification and Mitigation of Potential risks

This section is designed to identify any realistic risks to the participants and how you propose to deal with it.

**1. Does this research project involve working with potentially vulnerable individuals?**

Group	Yes	NO	Details (for example programme student enrolled on, or details of children's age/care situation, disability)
Students at Napier	<input type="checkbox"/>	<input type="checkbox"/>	
Staff at ENU	<input type="checkbox"/>	<input type="checkbox"/>	
Children under 18	<input type="checkbox"/>	<input type="checkbox"/>	
Elderly (over 70)	<input type="checkbox"/>	<input type="checkbox"/>	
Disabled	<input type="checkbox"/>	<input type="checkbox"/>	
Migrant workers	<input type="checkbox"/>	<input type="checkbox"/>	
Prisoners / people in custody	<input type="checkbox"/>	<input type="checkbox"/>	
Learning difficulties	<input type="checkbox"/>	<input type="checkbox"/>	

## Questionnaire

Navigating Campus

01/12/2022, 06:49

# Navigating Campus

## 1. Thank you very much for agreeing to participate in this survey.

The information provided by you in this questionnaire will be used for research purposes. It will not be used in a manner which would allow identification of your individual responses.

Anonymised research data will be archived at the UK Data Archive in order to make them available to other researchers in line with current data sharing practices.

Do you consent to taking part in our study?

- Yes
- No

## 2. How old are you?

**3. What is your gender?**

- Woman
- Man
- Non-binary
- Prefer not to say

**4. What is your course name?****5. are you a napier student?**

- Yes
- No

**6. how long have you been an edinburgh napier student?**

- 0-6 months
- 6-12 months
- 1-3 yrs
- 3+ yrs

**7. how often are you on-campus?**

- Daily
- Weekly
- Monthly
- Seasonal
- Yearly
- Never

**8. How difficult do you find navigating the campus?**

5 being very difficult

1	2	3	4	5
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**9. do you believe your campus has adequate navigating systems? ie.  
arrow signs**

- Yes
- No
- i'm unsure

**10. Did you prefer online learning to on-campus learning?**

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11. would you like to see a live-map of your campus with directions to your next class from the convenience of your mobile device?

- Yes
- No

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## DATA from Questionnaire

11. would you like to see a live-map of your campus with directions to your next class from the convenience of your mobile device?

[More Details](#)

- Yes
- No

13  
1



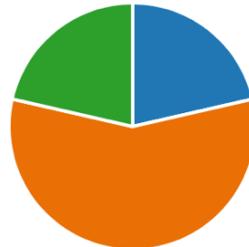
9. do you believe your campus has adequate navigating systems? ie. arrow signs

[More Details](#)

Insights

- Yes
- No
- i'm unsure

3  
8  
3



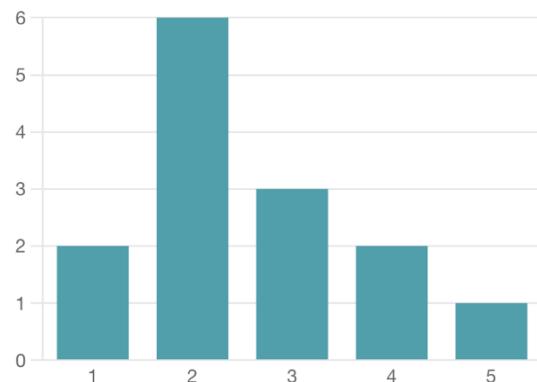
8. How difficult do you find navigating the campus?

5 being very difficult

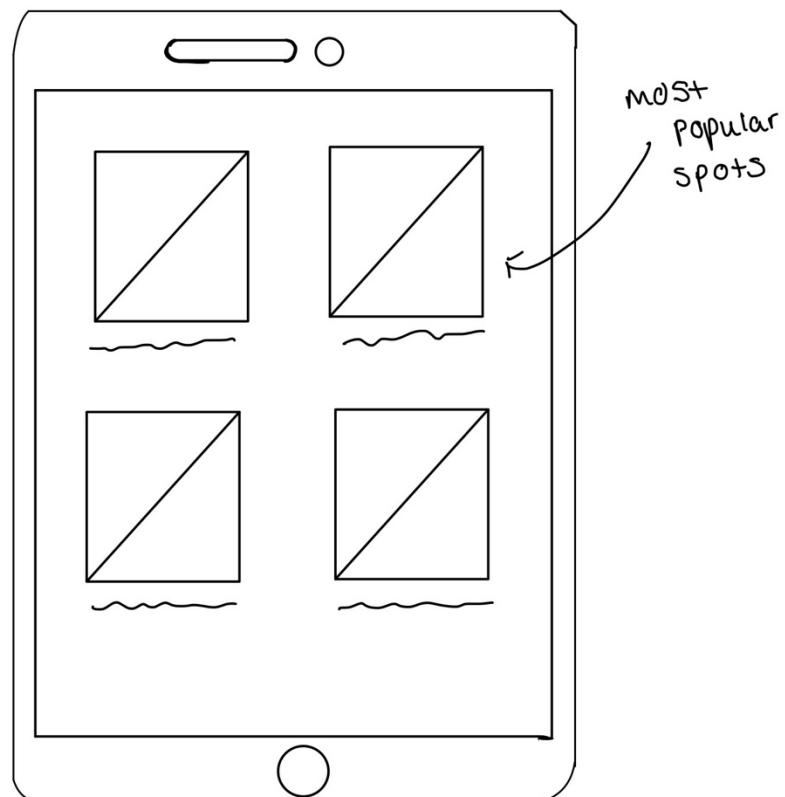
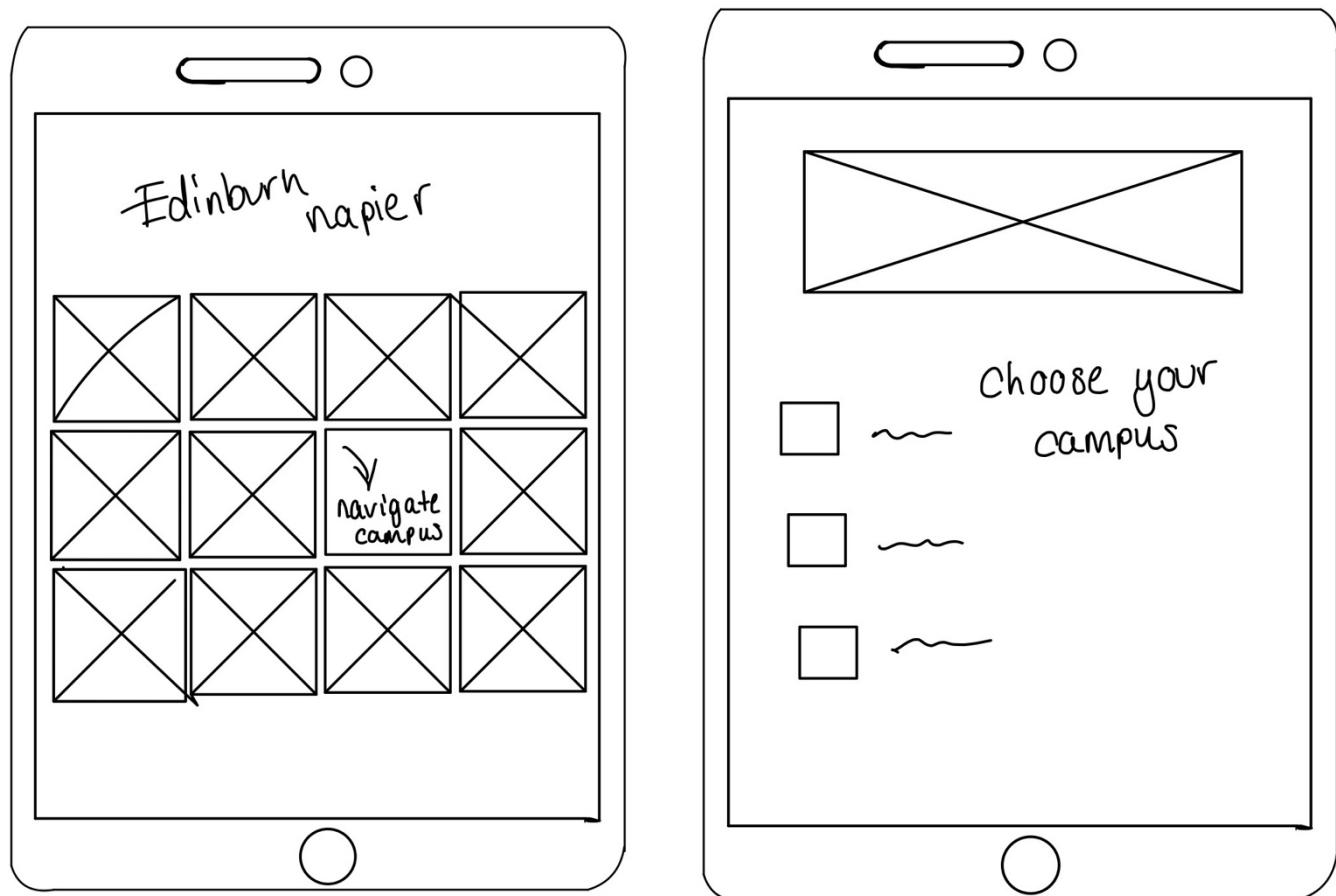
[More Details](#)

Insights

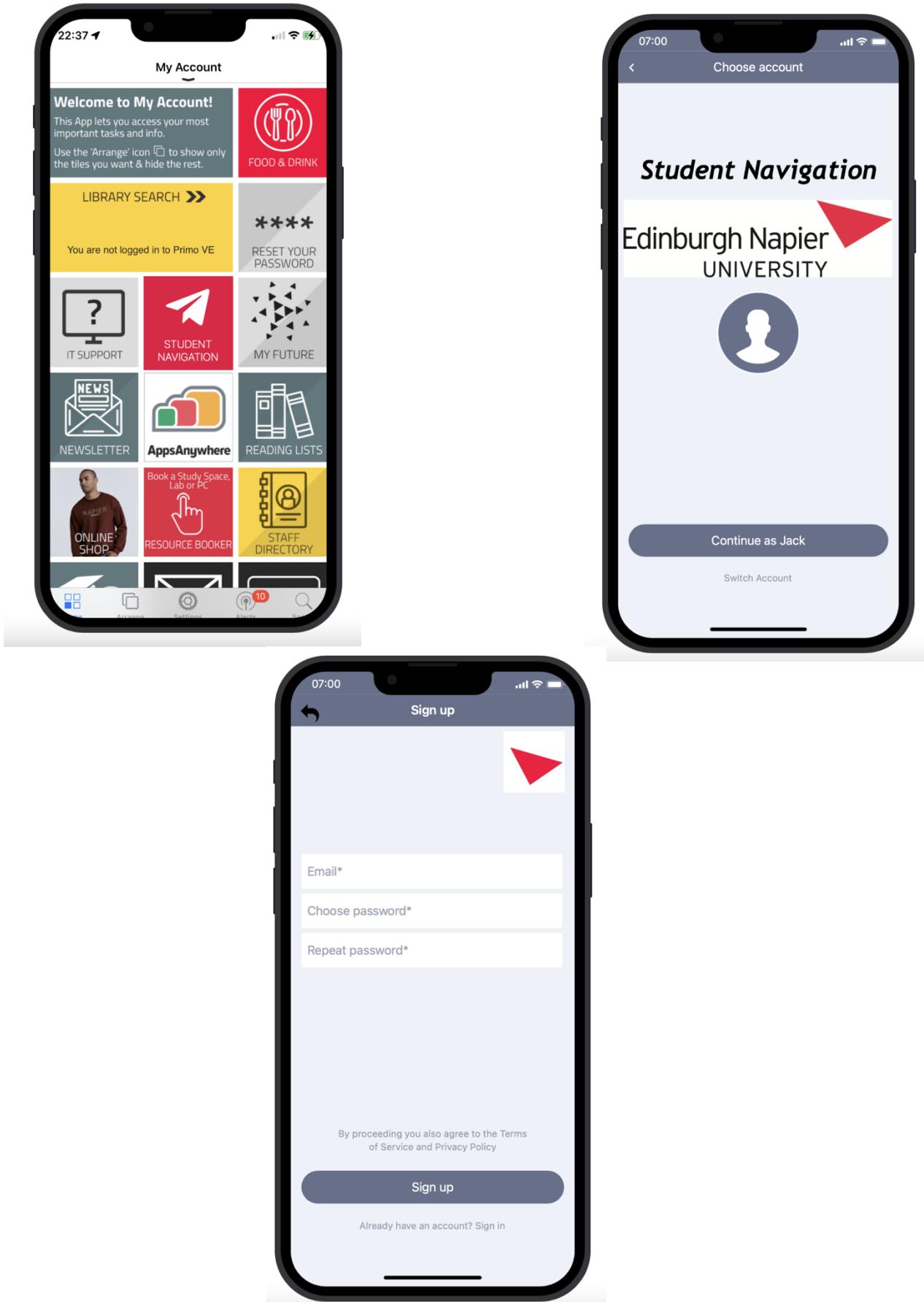
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Average Rating

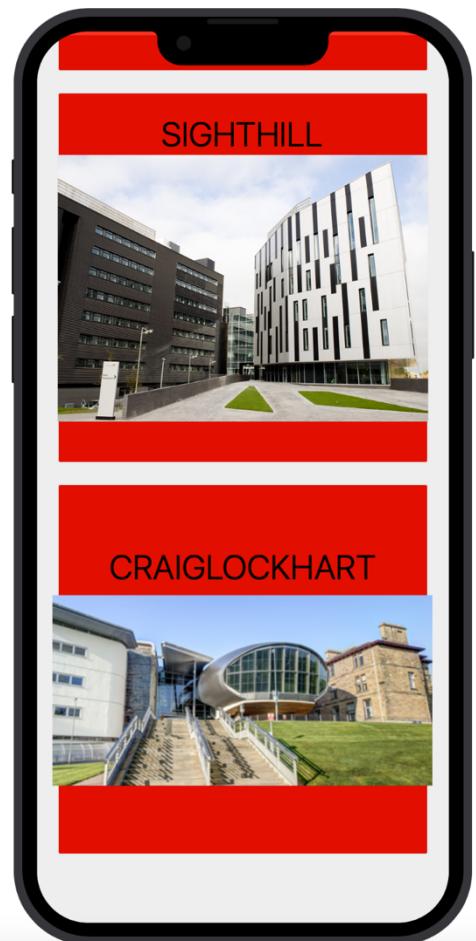
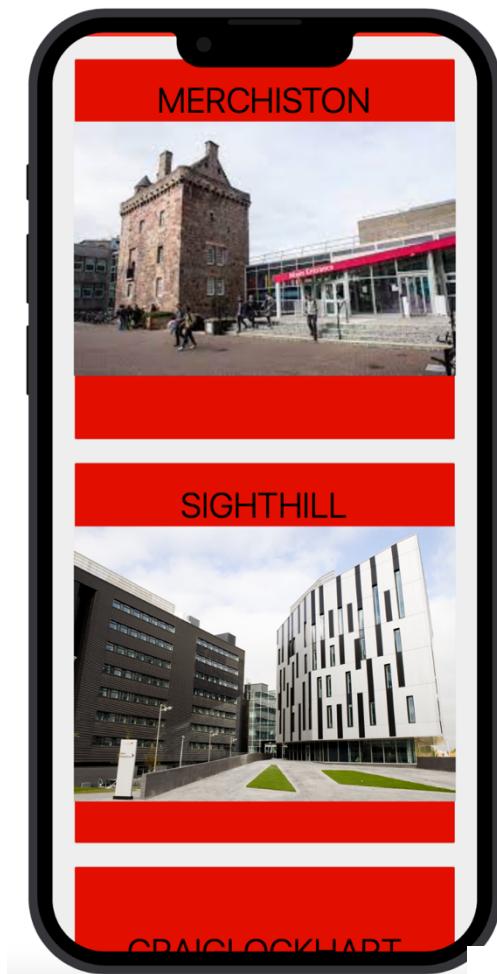


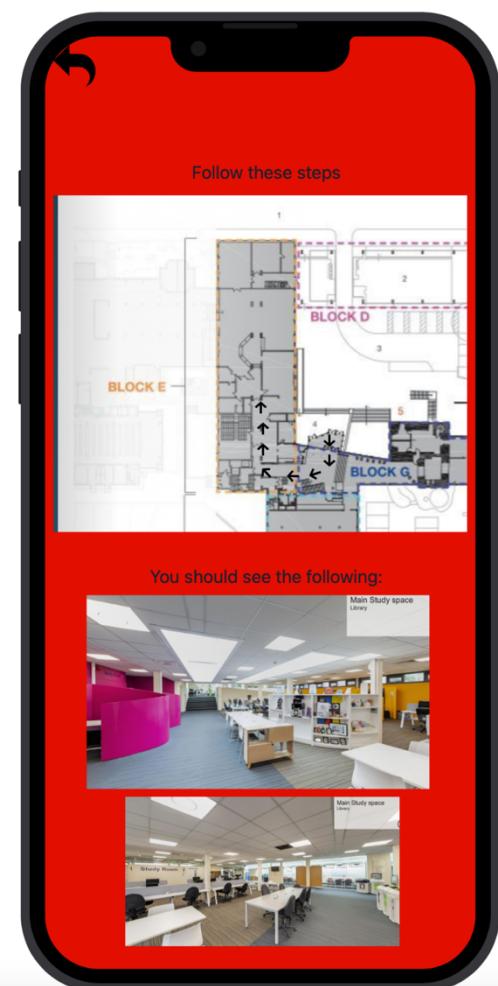
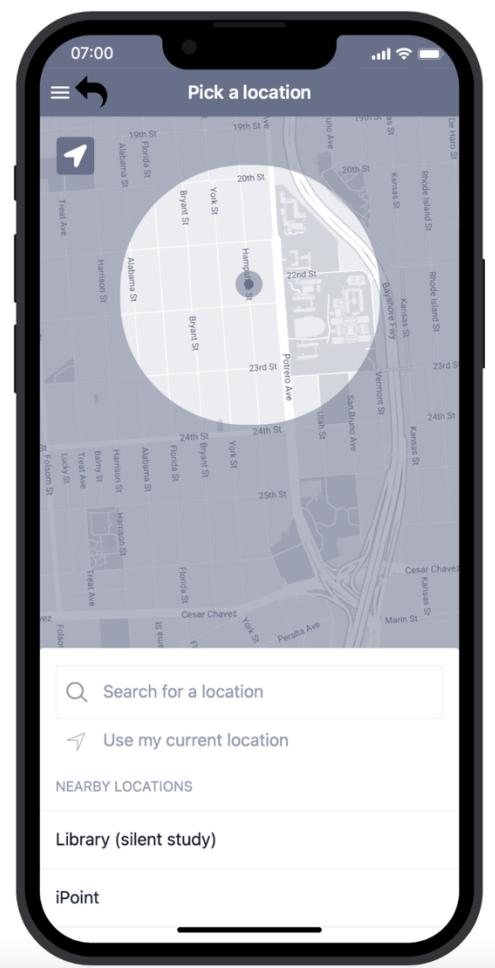
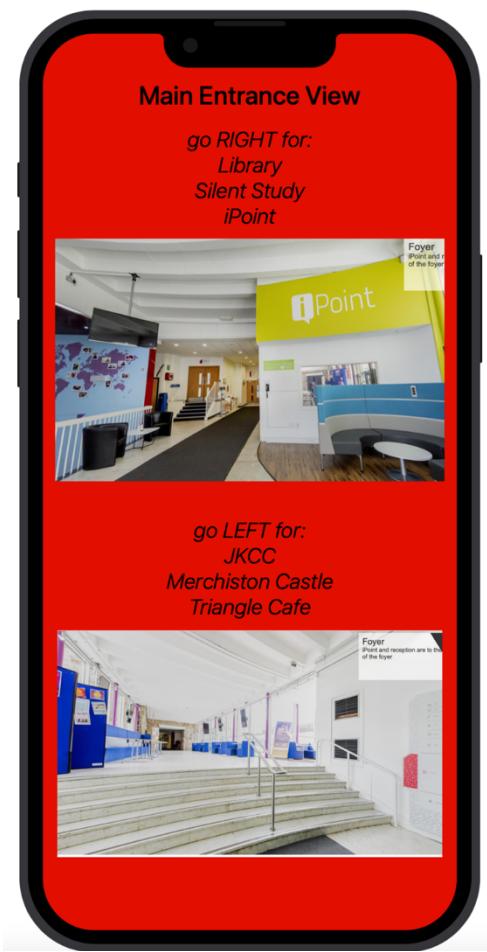
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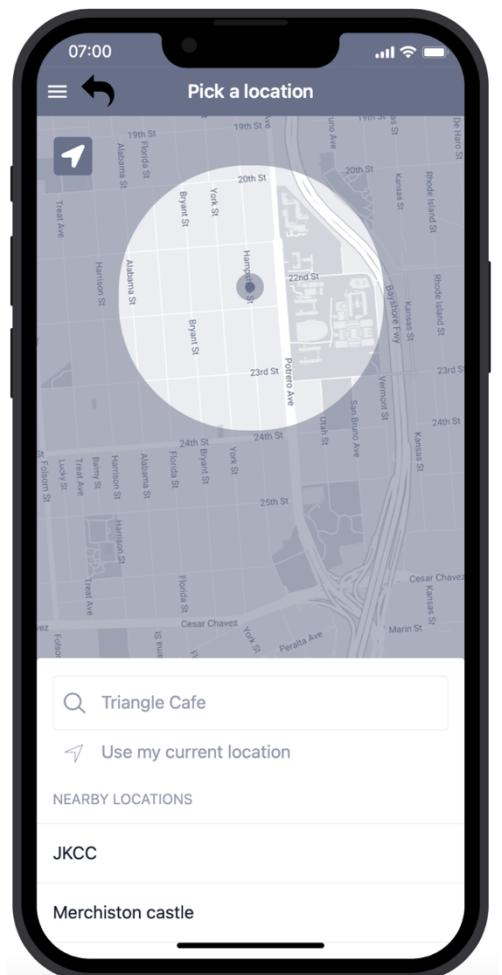
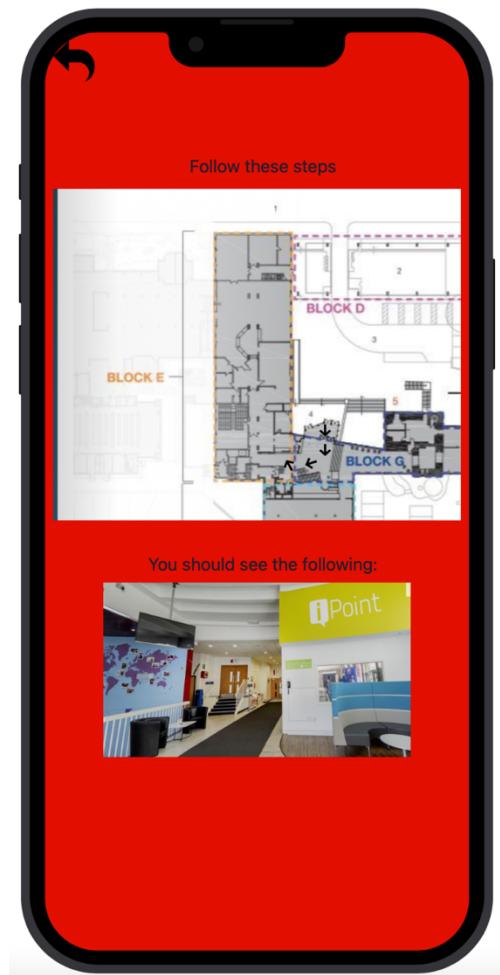


## PROTOTYPE DEVELOPED











## USABILITY TESTING QUESTIONS

Navigating Campus

01/12/2022, 07:21

# Navigating Campus

As seen below, there are a few questions and tasks about our Navigation system prototype. We want to observe the user navigating their way through our prototype, and take any feedback we can get on improvements, as well as general opinions. you will be asked to rate the ease of tasks 1 through 5, please take the time to play about with our prototype and give us benefitable feedback.

Our prototype can be accessed here: <https://pr.to/A89HF3/>

\* This form will record your name, please fill your name.

1. Thank you very much for agreeing to participate in this survey.

The information provided by you in this questionnaire will be used for research purposes. It will not be used in a manner which would allow identification of your individual responses.

Anonymised research data will be archived at the UK Data Archive in order to make them available to other researchers in line with current data sharing practices.

Do you consent to taking part in our study?

Yes

No

2. Please open our prototype, and find your way to the "Student Map" tile. Rate the level of ease. (1 being very easy, 5 being very difficult)

3. Please take a look at our log in page, continue as "jack" to go further. Rate the ease of this task

4. What was you reasoning for rating this? expand as much as you can

5. Click on "Merchiston" campus. Rate the ease of this task

6. Please explain your reasoning for this rating.

7. Please take a look at our map layout, and follow the steps given.  
Rate the ease of this task.

8. Please explain your reason for rating.

9. Take a look at our entrance info, read the different locations and click the direction you would like to go. Rate the ease of this task.

10. Explain your reason for rating

11. Please choose a location given at the bottom of the map. Rate the ease of this task

12. Explain your reason for this rate

13. From your current page, navigate back to the foyer area page.

Rate the ease of this task.

1	2	3	4	5
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14. Explain your reason for this rating.

15. How useful do you think this app would be for students?



16. Explain your rating

17. How would you personally rate this app



18. Explain your rating

19. Finally, are there any changes you would make to this app? please give reasoning

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