LOCAWAY

TEAM

Felicia Chiang - Storyboarder, Project Manager
Rebecca Yuen - Scenario Developer, User Researcher
Grace Chen - Scenario Developer, Editor
Yen Lee - Storyboarder, Designer

PROBLEM AND SOLUTION OVERVIEW

Finding transportation in a foreign country can be tricky. Countries often have local transportation options that are unknown to tourists, and people have different priorities when it comes to picking forms of transportations. Lack of Wi-Fi and/or cellular data access in foreign countries can also make it difficult to find transportation on the spot. Our goal is to provide optimal local transit suggestions to travelers based on their priorities. Our proposed solution is to place interactive boards in local public transit areas. The interactive boards will display different routes and transportation options based on a traveler's input of current location, destination, and priorities. From user research, we found that the most common priorities from travelers are time, price, and safety. The interactive board will not only provide travelers a transportation option, but also display reviews from previous travelers that took the suggested transportation. The reviews are submitted by travelers who inputted their email in the interactive board to take a voluntary survey after their trip.

INITIAL PAPER PROTOTYPE

Our paper prototype features two parts: an interactive display and a mobile device. The interactive display is used to accomplish the first task of finding and filtering transportation options by priority, and the mobile device is used to accomplish the second task of providing ratings and feedback via email.

OVERVIEW


Welcome to Tokyo
Help others by rating our transportation system!
ex. amy@email.com
Start
FROM Sky Tree
TO Disneyland
PRIORITY
$
Click on an option!
¥200 1 hr 30 min
¥600 36 min
¥1725 26 min
3hr 10 min
1 hr 30 min
36 min
$$$
$$$$$

Task 1: Find and filter transportation options from one place to another based on priority(i.e. safety, price, etc.)

Figure 1.1: Interactive display welcome page

Figure 1.2: User is required to input their email before starting to interact with the board. To finish, user can tap area outside keyboard or press the Enter button on the keyboard.

Figure 1.3: User can press on the Start button to start using the interactive display.

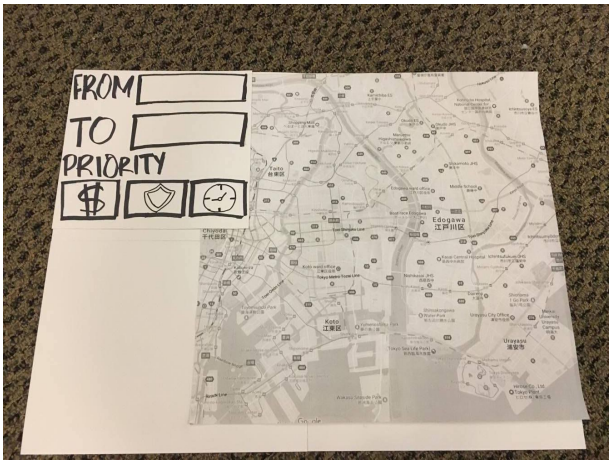


Figure 1.4: User will see a map of the current area as well as two input boxes and some filter buttons on the left.

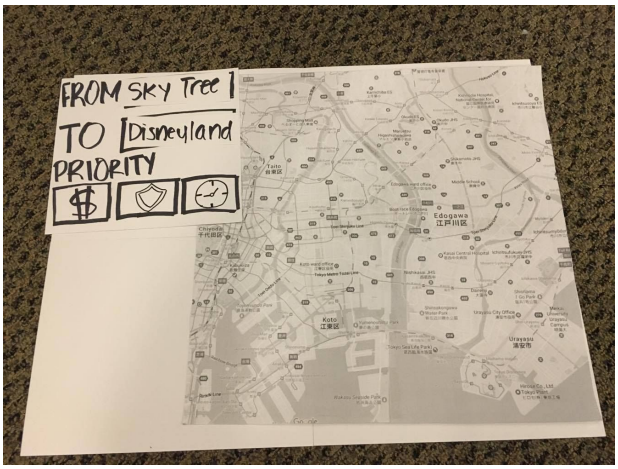


Figure 1.5: User can input the locations they wish to travel from and to in the top left corner input boxes.

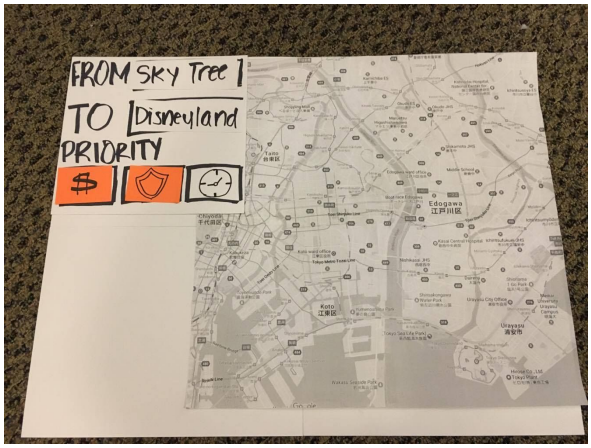


Figure 1.6: User can click on the up to three priority filter buttons to filter their transportation options.

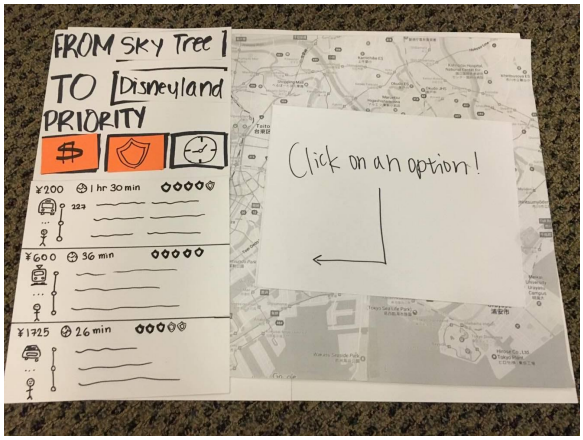


Figure 1.7: Different transportation options will be displayed on the left side of the screen, and the user will be prompted to choose one.

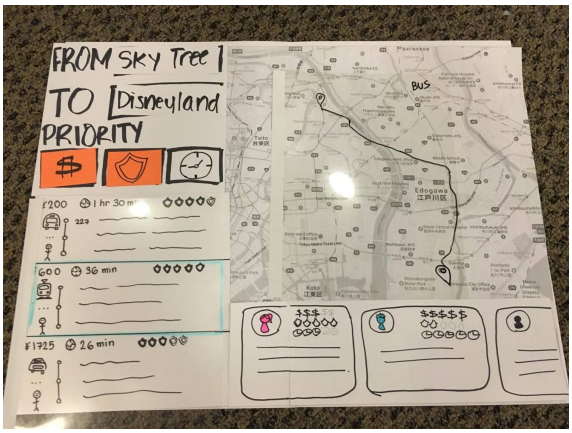


Figure 1.8: After the user selects an option, a route will be displayed on the map, and the user will be able to see other peoples' reviews and comments at the bottom of the screen.

Task 2: Rate transportation options based on the user's own experiences and provide feedback

Figure 2.1: User receives an email alert requesting feedback on their recent transit experience.

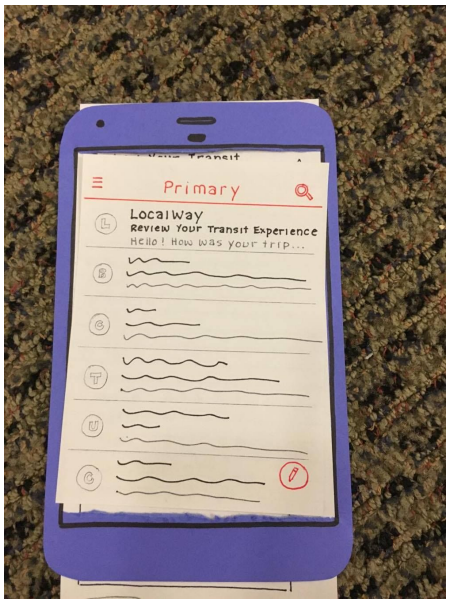


Figure 2.2: User sees the unread email in their inbox and clicks on it.

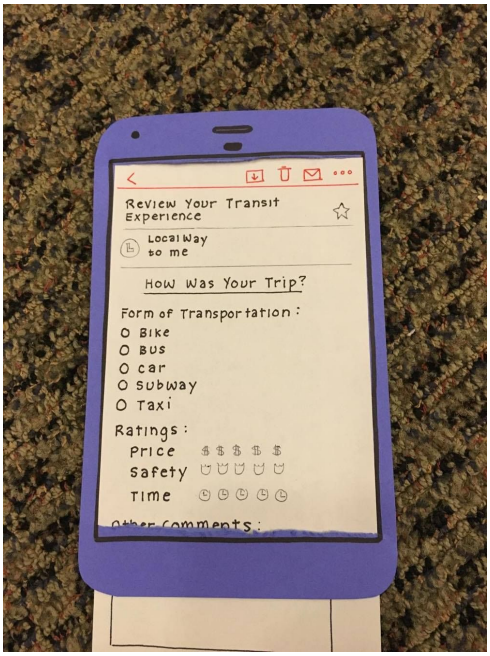


Figure 2.3: User can select the mode of transportation he/she used and can rate his/her experience based on several different factors.

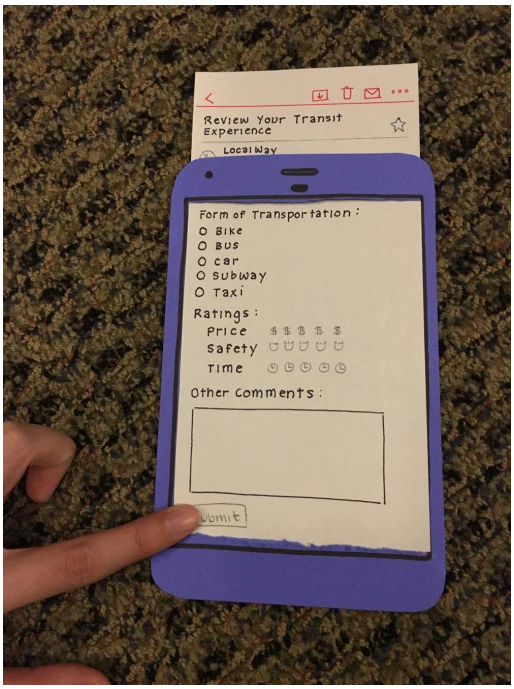


Figure 2.4: User can scroll down to see the rest of the form, leave comments if he/she desires, and submit when finished.

TESTING PROCESS

OVERVIEW

For each usability test, we began by providing the participant with some background information about our project and the overall problem we are trying to solve. We told the participant that our goal is to improve transit experience for people who are travelling in a foreign country, and that we are testing the system that we designed, not the participant's ability. We provided some background information about where our design would be located. Then we gave each participant two tasks to complete:

1. Imagine that you are in Tokyo, and you want to get from DisneyLand to SkyTree. Find a route that is cost-efficient for this trip.
2. After choosing a route and taking it, you have received an email to review the trip. Provide some feedback and rate your experience.

While the participant was exploring and completing each task, we continuously prompted him/her to think out loud. For some of the usability tests, we asked for feedback after each task, particularly when the participant seemed to have a lot of comments. Other times, we waited until both tasks were completed before asking questions about our design and debriefing the participant.

USABILITY TEST #1

Our first participant was Raquel Van Hofewegen, a female college student who occasionally travels. She is a third-year student at UW studying computer science. Throughout the test, we continuously prompted Raquel to speak her thoughts. At the end, we asked her several questions about our design. Raquel was confused about why she needed to input an email address, because she wasn't sure what it was asking her to rate. She also suggested that we display step-by-step directions for the selected route.

Roles: Facilitator: Felicia Chiang; Computer: Grace Chen; Observer: Yen Lee

USABILITY TEST #2

Our second participant was Karen Altergott, a senior at UW who travels often and enjoys traveling to go hiking. When beginning the first task, Karen was confused as to whether or not an email address was required. She didn't want to type in her email, so she just pressed the Start button. After selecting a route, she assumed that the review cards would be in Japanese, so she didn't bother looking at them. Later when both tasks were completed, she expressed concern about the text that we initially had on the welcome screen. She felt like our interactive display was going to ask her to rate something as soon as she clicked on the Start button. With the second task, Karen had assumed that the time rating was quantitative (i.e. 3 "time" symbols = 3 hours).

Roles: Facilitator: Rebecca Yuen; Computer: Grace Chen; Observer: Yen Lee

USABILITY TEST #3

Emerson Matson is a male college student who enjoys traveling alone to different countries. When going through the task, he would always tap on the screen elsewhere to remove the keyboard after

he finished with it. He was unsure if he needed to input his email, so he was very tempted to press start. He was confused by the review cards but made the correct assumption. The directions in the guide didn't match the map since the guide showed transfers and the map was a straight route. He was unsure of whether the results would show up after typing in destinations or if he should first choose the priority.
Roles: Facilitator: Rebecca Yuen; Computer: Grace Chen; Observer: Yen Lee

USABILITY TEST #4
Our fourth participant was Irving Chen. He is a male college student who travels occasionally with family or alone. When going through task one, he was confused when the map showed up and there was no pin showing where he was. There was no clear reason for the email so he decided not to put it in. The review cards and safety rating caused some confusion, since the safety icon wasn't intuitive, and the review cards were not clear at all (he thought this was an option to choose a driver). When doing the second task, Irving noticed that the survey was missing some key points like gender/anonymity and options that were in the first task.
Roles: Facilitator: Rebecca Yuen; Computer: Grace Chen; Observer: Yen Lee

USABILITY TEST #5
Kimm Lee is a twenty-four year old female who frequently travels to Asian countries. When going through the test, the participant didn't have any problems when going through most of the tasks. She would voice out what she was thinking throughout the entire section, and even if she stumbled upon something, she would solve it by herself right away. Even though Kimm didn't struggle through the process, she did provide a lot of helpful suggestions at the end of the section. She said we can potentially add a lottery system into our survey so it would motivate more people to take the survey. Also, she suggested adding the logo to the interactive board and survey so when reading the survey, it is easier to recall who the survey was from.
Roles: Facilitator: Yen Lee; Computer: Grace Chen; Observer: Felicia Chiang

RETROSPECTIVE SUMMARY
During the first two usability tests, we would sometimes forget to prompt the participant for their thoughts as they were going through the tasks. We focused more on their physical actions and facial expressions. For the last three usability tests, we asked more questions about the participant's thought process, and we prompted them if they paused during a task. We also reminded the participants more frequently to think out loud. Additionally, during the first usability test, we waited until both tasks were completed to ask debriefing questions about what the participant had thought, or if anything was confusing. We changed this for the later tests and instead paused between the two tasks so we could write down any discrepancies while the task was still fresh in the participant's mind.

TESTING RESULTS

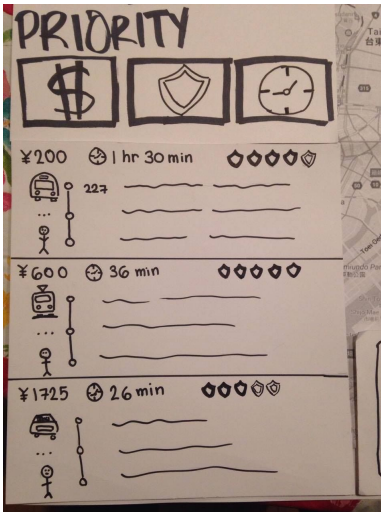
HEURISTIC EVALUATION

1. Icon Labels

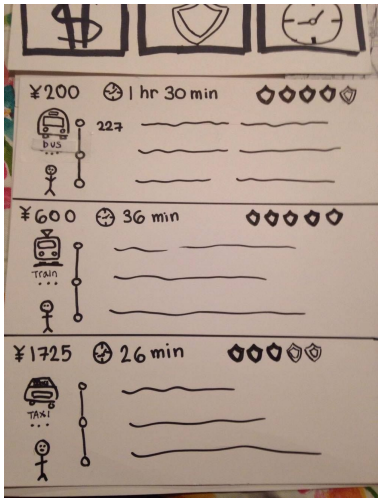
Our initial design only displayed icons for the transportation options. Users had a hard time identifying which icon corresponds to which form of transportation.

Heuristic Violated: Consistency and standards
Severity: 1

Before



After



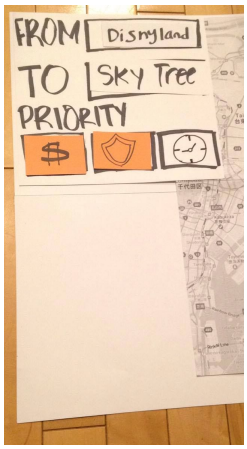
We added labels to all the different transportation icons to help users identify and understand what the options are.

2. Unknown Locations

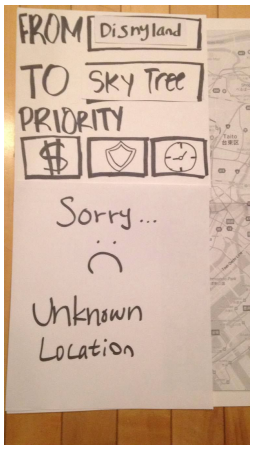
In the first task of finding transportation options from one location to another, our evaluators asked what would happen if they had typed in an invalid or unknown start or end location.

Heuristic Violated: Error Prevention
Severity: 2

Before



After



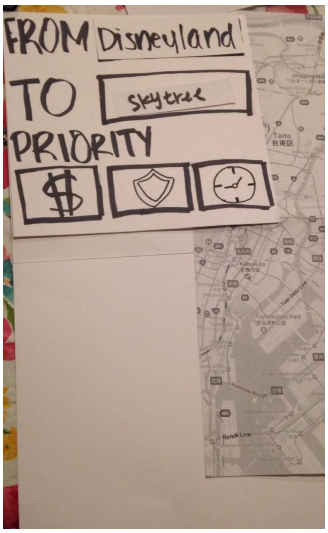
We added an error message that will be displayed over the map if this happens.

3. Route Not Found

Our initial prototype did not handle the case where a route cannot be found between two locations that a user inputs.

Heuristic Violated: Error Prevention
Severity: 2

Before



After

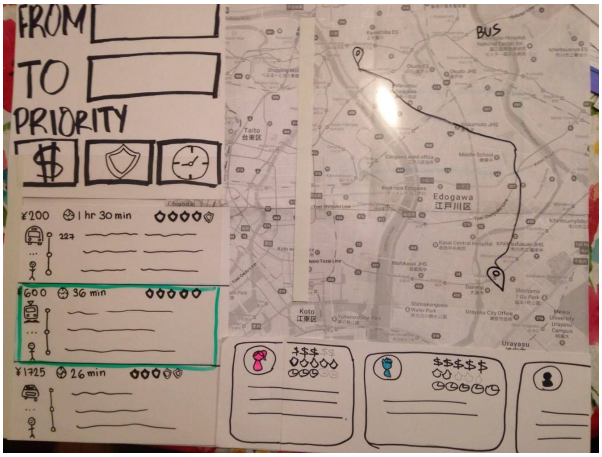
We added an error message to display on the screen if this happens.

USABILITY TESTING

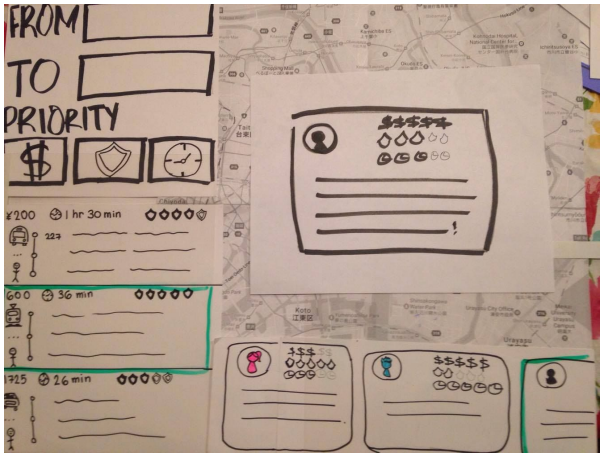
1. Clicking on Review Cards

We decided to include a pop-up when users click on a review card. This way they are able to focus on one single review card and see the complete review if the review has a really long comment. Also, most users expect to be able to click on the review cards.

Before



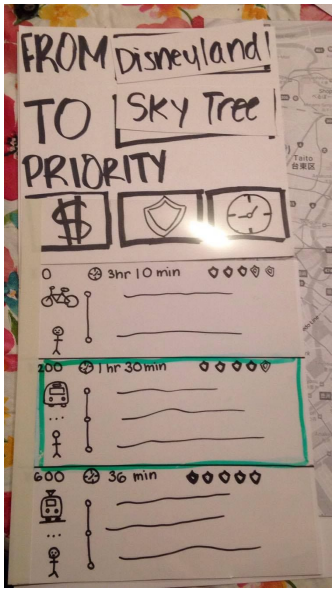
After



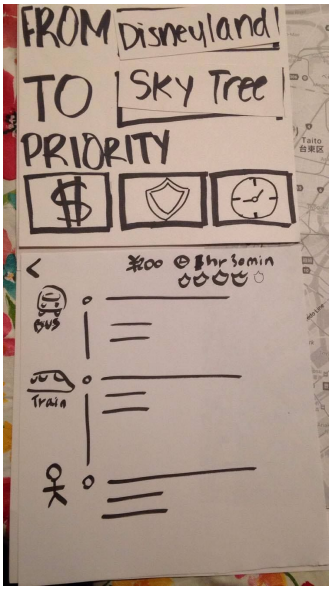
2. Detailed Directions

Instead of only showing what transportations to take, we decided to include a guide for how to get from one transportation to the next one. When a user clicks on an option, the screen will show a more detailed explanation of the direction. Not only will know which option is being selected, but they also can take a screenshot of the direction guide if they choose to use this option.

Before



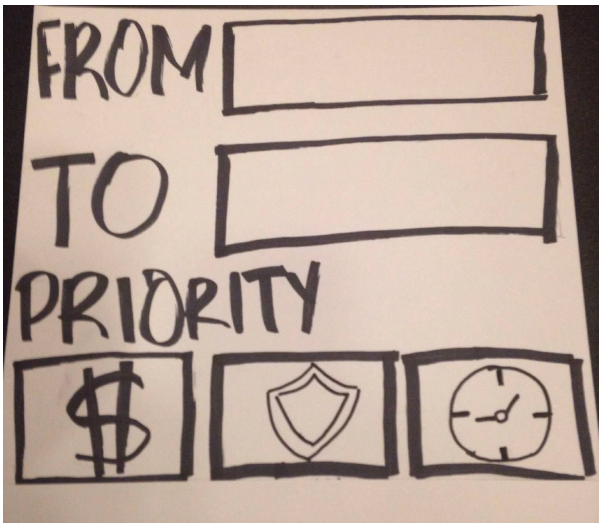
After



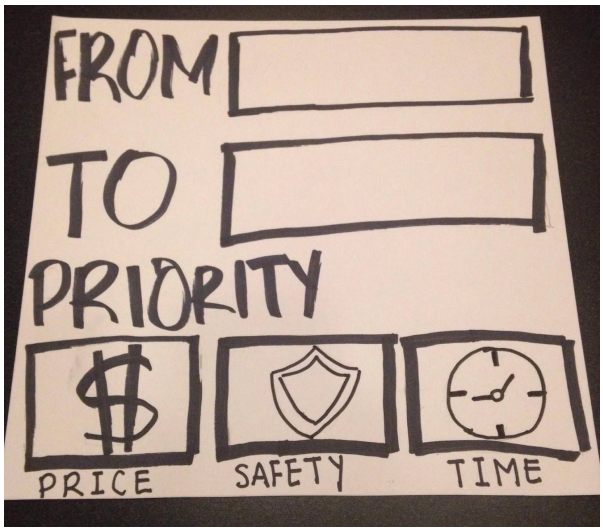
3. Labeled Priority Icons

When trying to decide which priority to choose, users often had to guess that the shield icon symbolizes safety because we told them that there's a safety option and the other two icons are clearly price and time. However, many users said that without knowing there's a safety option, it's hard to tell the shield icon represents safety. Therefore we decided to add a text label for each of the priority icons.

Before



After

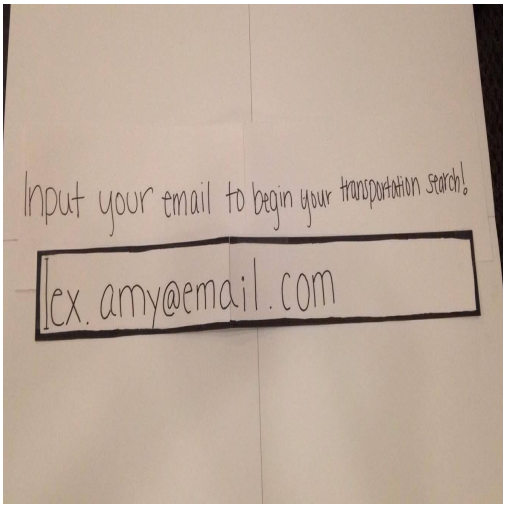


4. Modified Text Description for Email Box

There were multiple instances where people didn't understand why they were asked to input their emails. We want to let users know that they are inputting their emails to use our service - searching for a transportation option.

Before

After

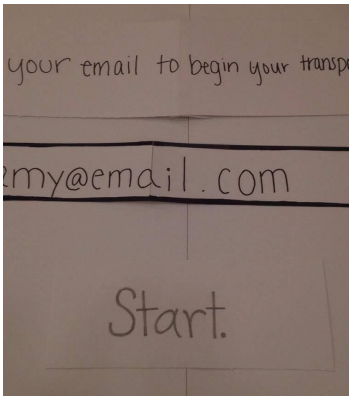


5. Start Button Disabled Before Inputting Email

Most of our participants either did not understand the purpose of inputting emails or didn't want to. We wanted to make the email box a requirement before letting the users start using the interactive board. However, having the green start button seem to make people think that they can just skip the email box. We decided to make the start button disabled by using a white button.

Before

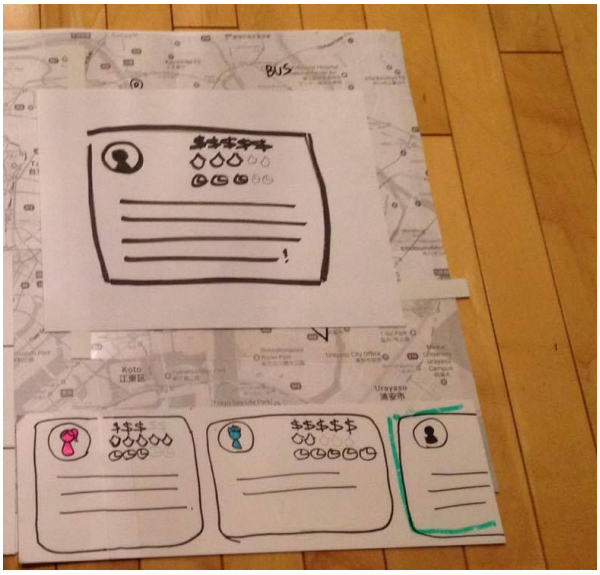
After



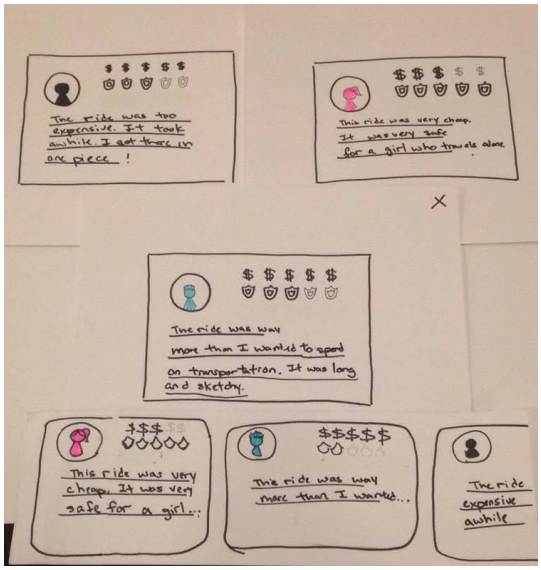
6. Added Real Text Reviews

Our users were confused by the review cards and they did not know what they were. We ended up adding text for each of the review cards to avoid any confusion that users might have.

Before



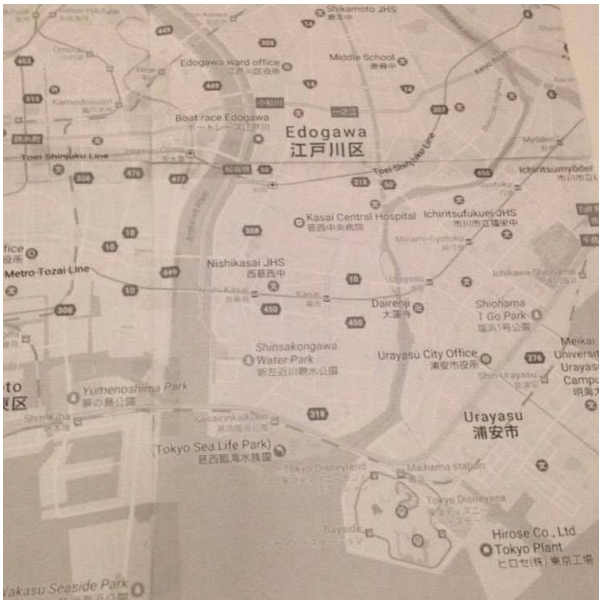
After



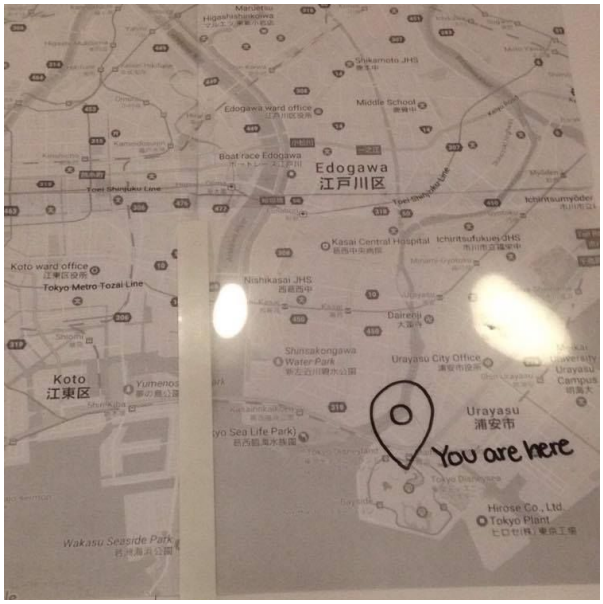
7. Added Location Pin for Current Location

When the map appeared after the initial welcome screen, one of our participants looked at the screen for a moment and was confused. He looked at the map, didn't see a pin showing his location and commented that he had expected one.

Before



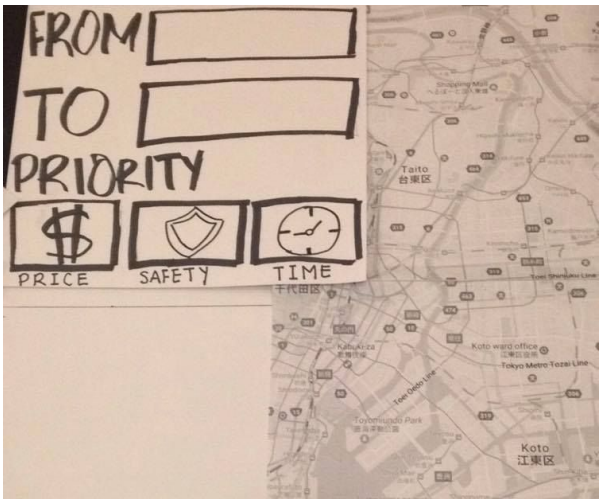
After



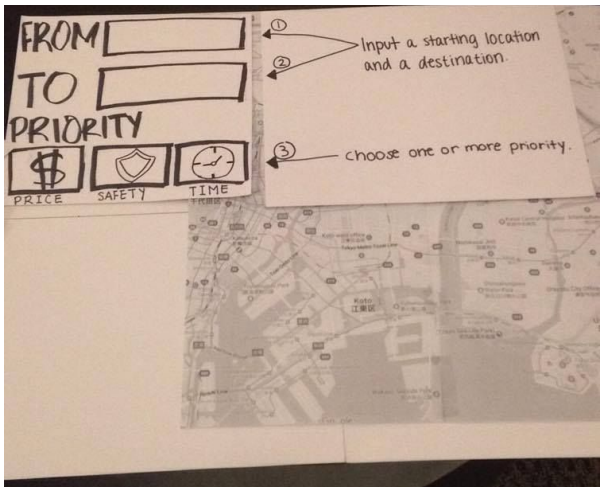
8. Added Step-By-Step Instructions

We had previously had some feedback that we could add step-by-step instructions since we had some instructions already. This also made sense after we conducted a few usability tests and people were confused as to whether they needed to choose a priority to make results show up. Having instructions made it very easy for Kimm who was the participant in our final usability test.

Before



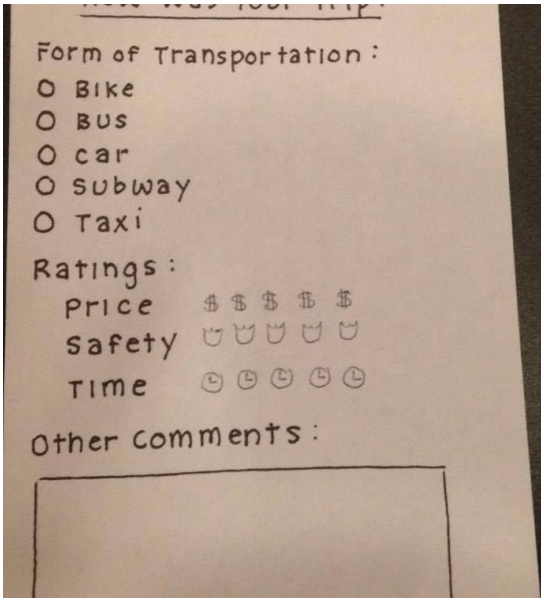
After



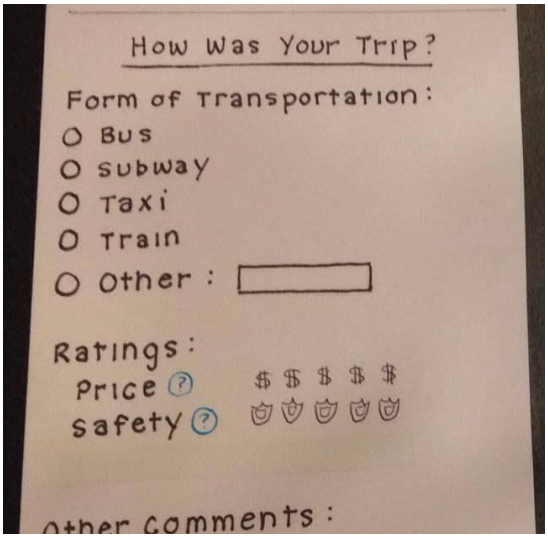
9. Added Tooltip for Rating System

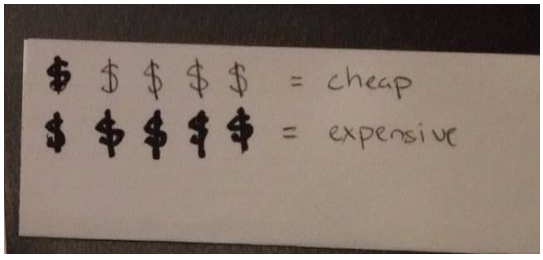
Almost all the users commented that it wasn't obvious how the rating system would work. When asked to rate on price and safety, most users had to think about what the 5 price and safety symbols mean and how exactly they would rate the transportation. We decided to add a tooltip for the ratings, allowing the users to click on the (?) symbol if they are not sure about how to rate the price and safety.

Before



After

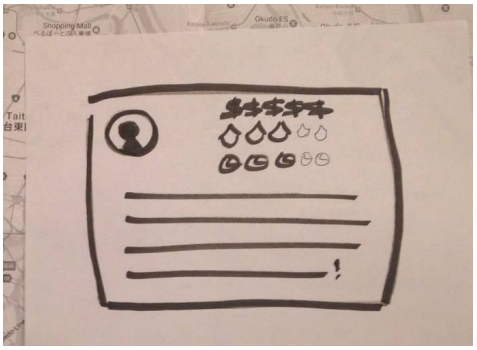




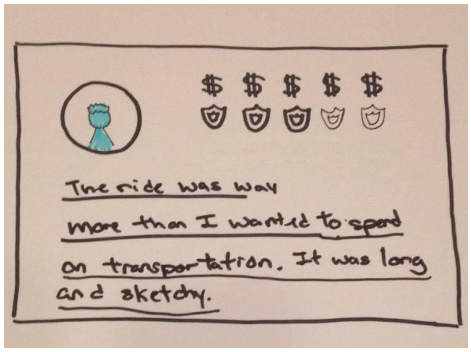
10. Removed Time Rating

The time rating that we had originally was very confusing for users. We realized that the time rating wasn't very clear and could not be consistent. We toyed with the idea of making the time rating into an efficiency rating, so a low rating showing it was slower than the average ride should be, or a high rating meaning it went faster than expected. These ratings only work within a specific group of transportation, and that the symbol did not match the time we were prioritizing, since this that time symbol filters which transportation option takes less time. Therefore removing the time rating was the decision that we agreed on.

Before

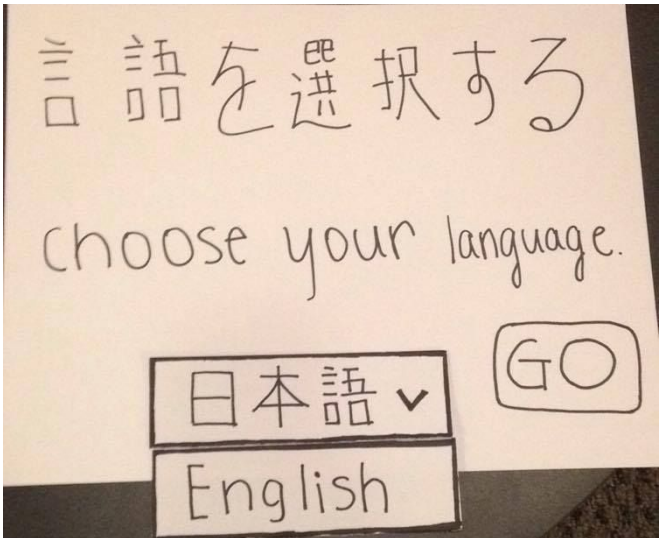


After



11. Added Language Options and Default Language

At the end of the usability testing, many participants asked if they could choose a different language or what default language is. We wanted to include English as an option but also making sure that people who actually live in the country can read and use the board. Since our interactive display is placed locally in different countries, we thought it would make sense to include a language selection where the default language is the language used in that country. In this case, we made Japanese the default language and allow users to select English if they want to.



FINAL PAPER PROTOTYPE

OVERVIEW

Task 1: Imagine that you are in Tokyo, and you want to get from Disneyland to SkyTree. Find a route that is cost-efficient for this trip.

Figure 1.1: Interactive display welcome screen. User can choose a language option by selecting the drop down arrow.

Figure 1.2: After selecting a language and pressing GO, the user will be prompted to enter their email. The start button is disabled at this point.

Figure 1.3: After entering the email, the start button will turn green, allowing the user to click on it.

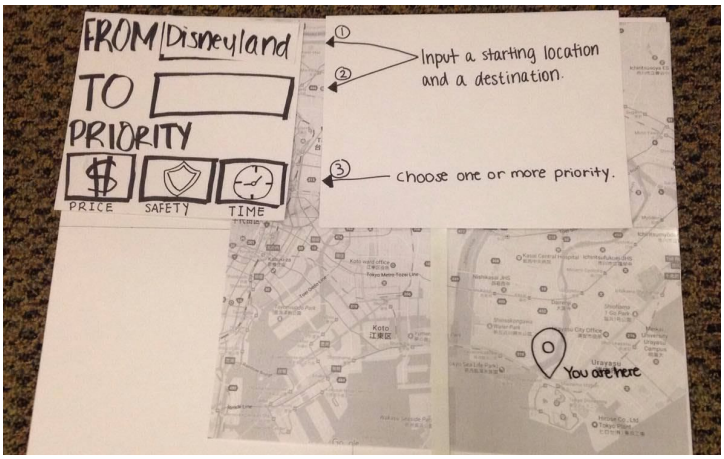


Figure 1.4: User will be guided to enter a starting/ending location and one or more priority options.

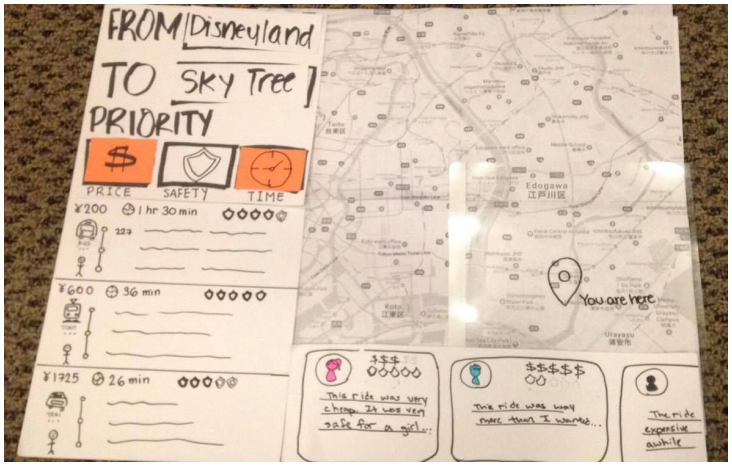


Figure 1.5: Once the user has selected their location, destination and priority route options will appear on the screen. The user will be prompted to choose an option.

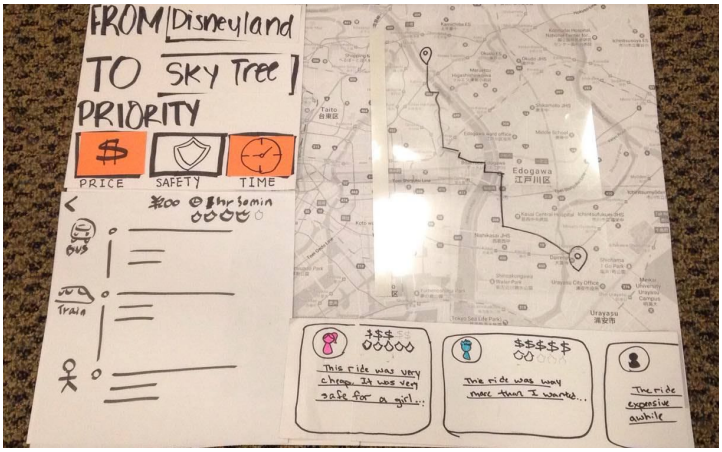


Figure 1.6: After choosing an option, the user will see a route chosen with information about their transfers. The route will be displayed on the map with pins marking the start and end locations. At the bottom right of the screen, review cards are displayed. The user can swipe left to see more review cards.

Task 2: After choosing a route and taking it, you have received an email to review the trip. Provide some feedback and rate your experience.

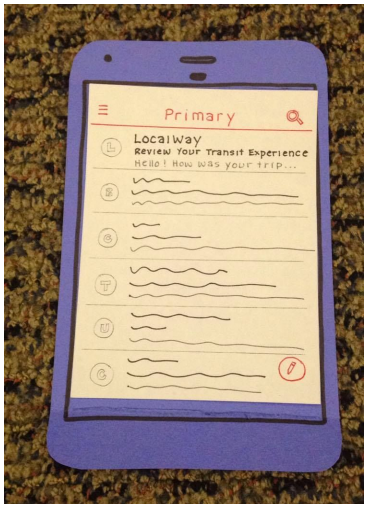


Figure 2.1

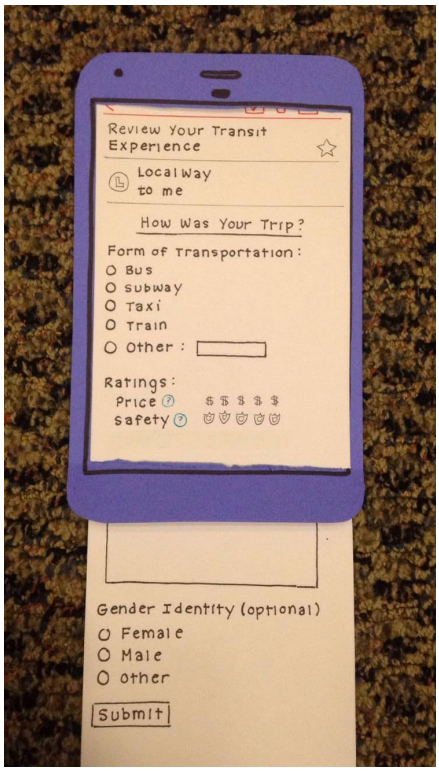


Figure 2.2

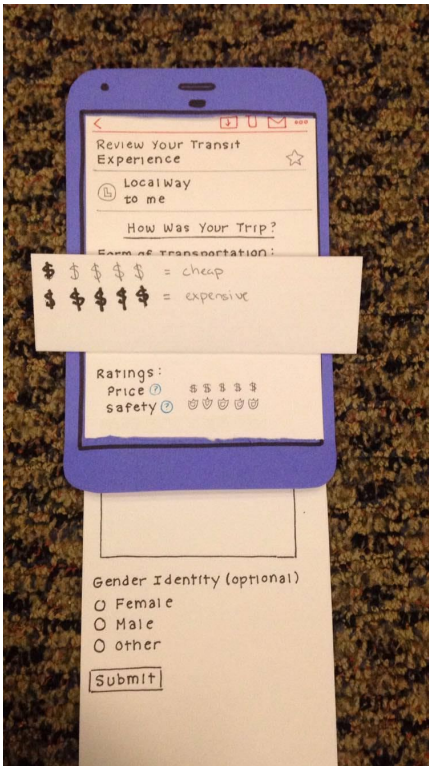


Figure 2.3

Figure 2.1: After using the interactive display and riding the selected transportation, the user will receive an email from LocalWay.

Figure 2.2: The email will include a survey asking the user to input their travel experiences.

Figure 2.3: User can click on the tooltip mark to see the rating scale for price and safety.

DIGITAL MOCKUP

Task 1: Finding a transportation option from one place to another based on different priorities.

Figure 1.1: Interactive display welcome screen. User can choose a language option by selecting the drop down arrow.

Figure 1.2: Interactive display welcome screen after user has selected the arrow.
It now shows a drop down menu of the language options.

Figure 1.3: After selecting a language option and pressing GO, the user will be prompted to enter their email address. The START button is disabled until an email address has been entered.

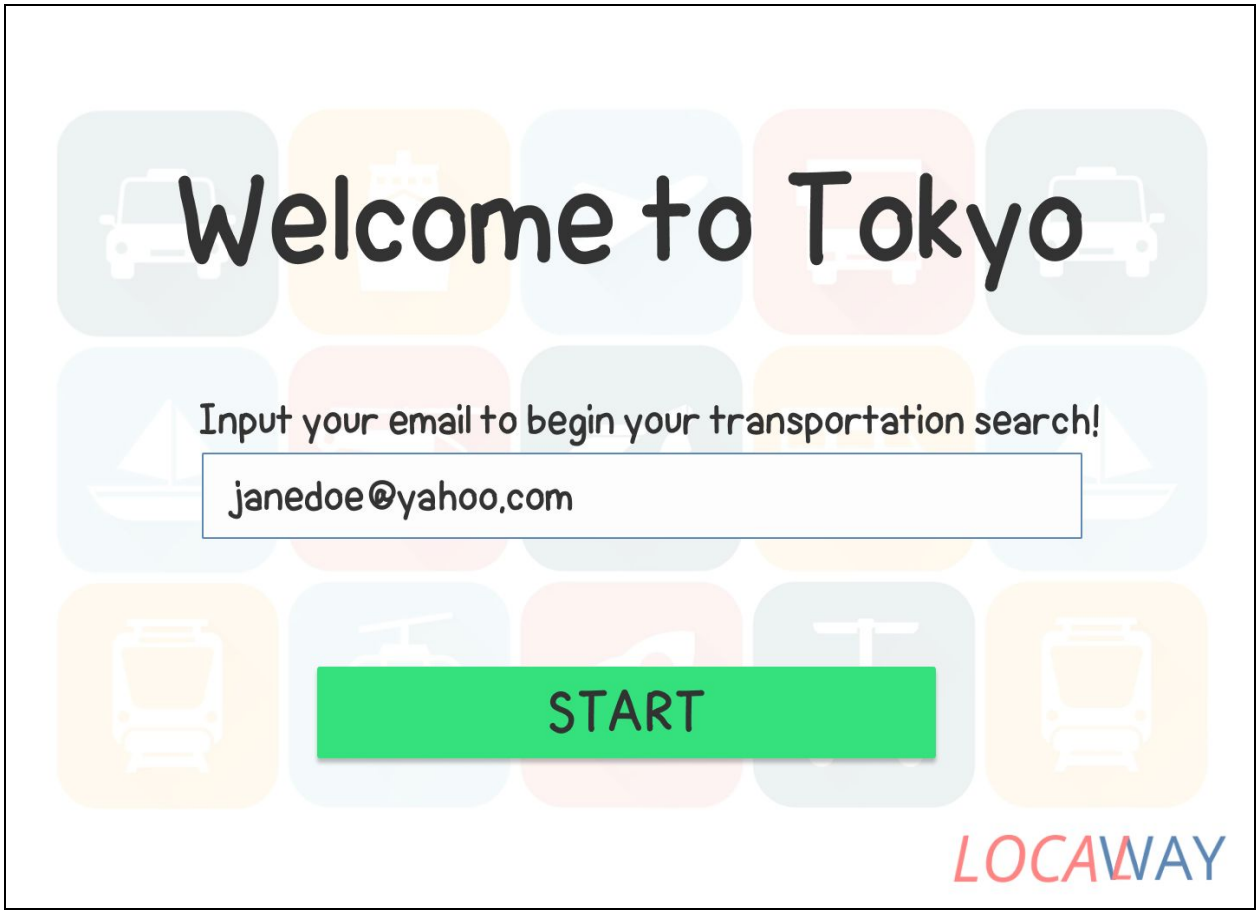


Figure 1.4: After entering an email, the START button turns green, allowing the user to press it.

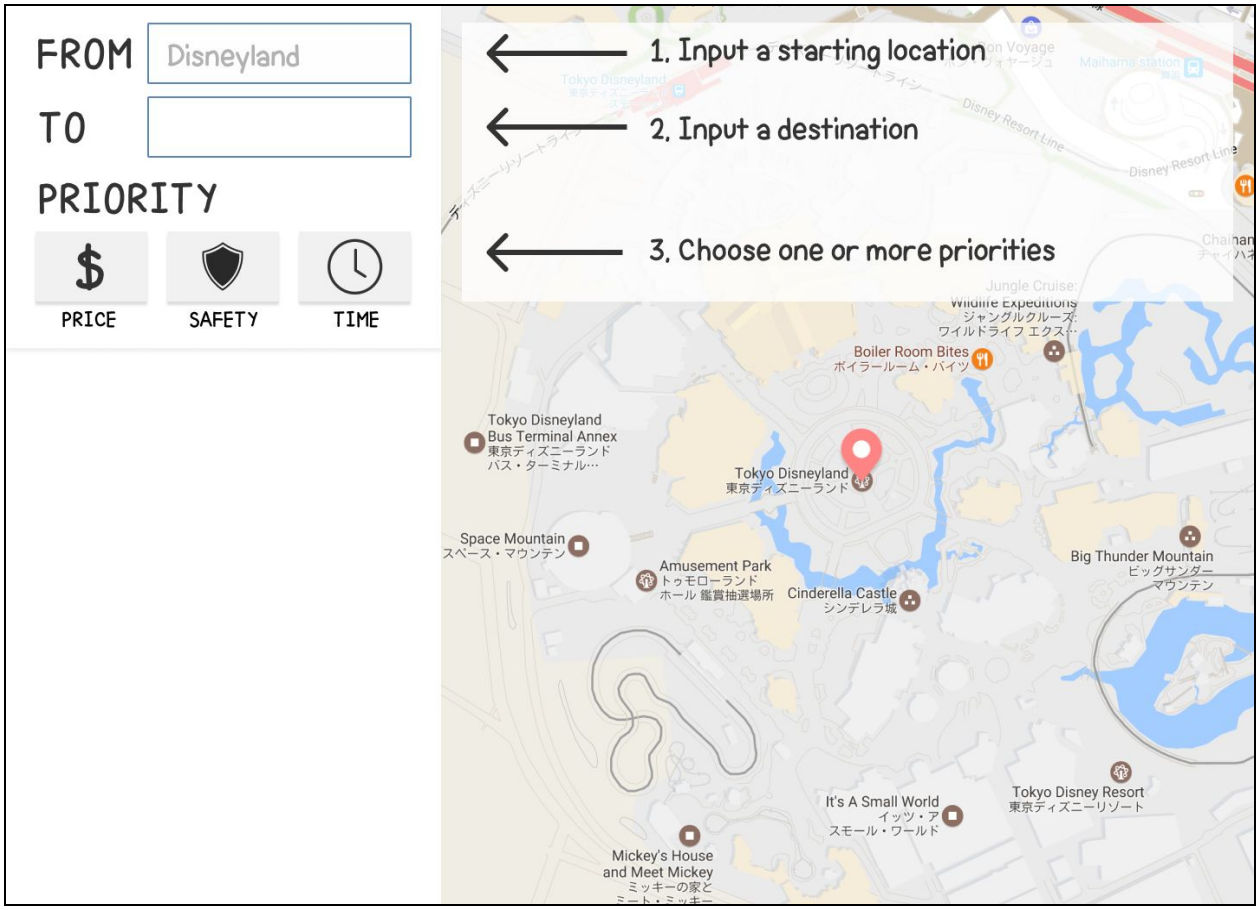


Figure 1.5: User will be guided to enter a starting location, ending location and one or more priority options.

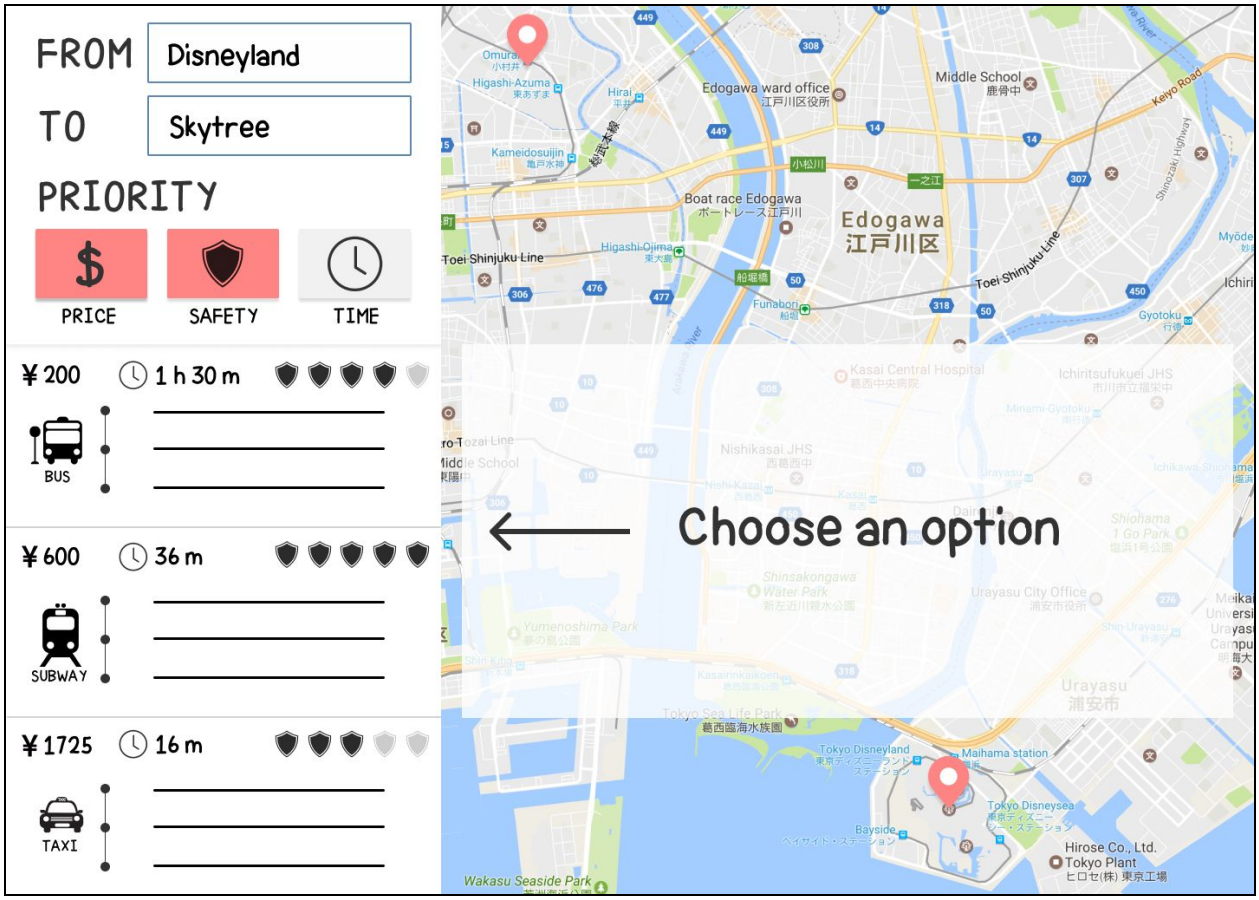


Figure 1.6: Once the user has selected their location, destination and priority route options will appear on the screen. The user will be prompted to choose an option.

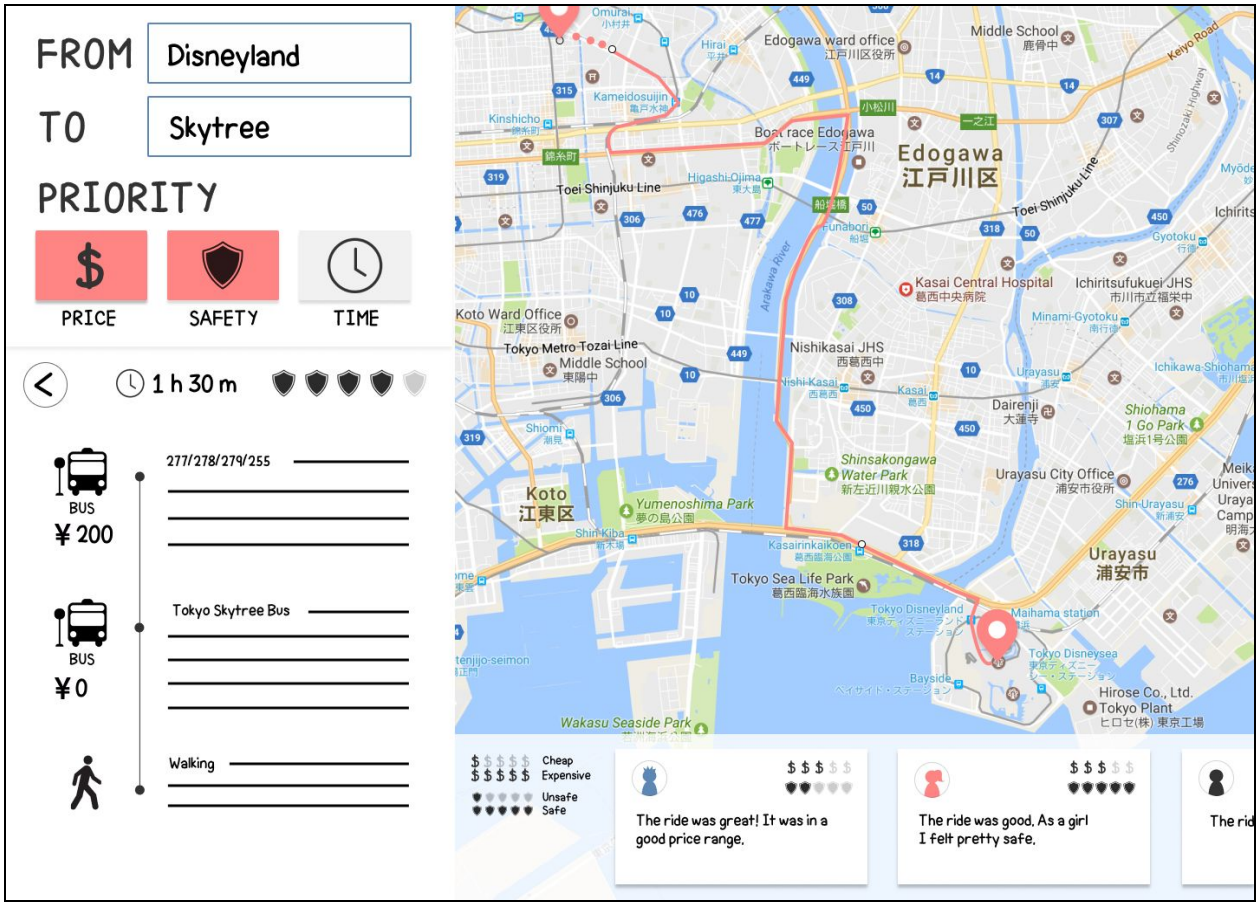


Figure 1.7: After choosing an option, the user will see a detailed view of the route chosen with information about their transfers. The route will be displayed on the map with pins marking the start and end locations. At the bottom right of the screen, a key is displayed explaining the rating system. Review cards are displayed as well. The user can swipe left to see more review cards.

Task 2: Rate transportation options based on the user's own experiences and provide feedback.

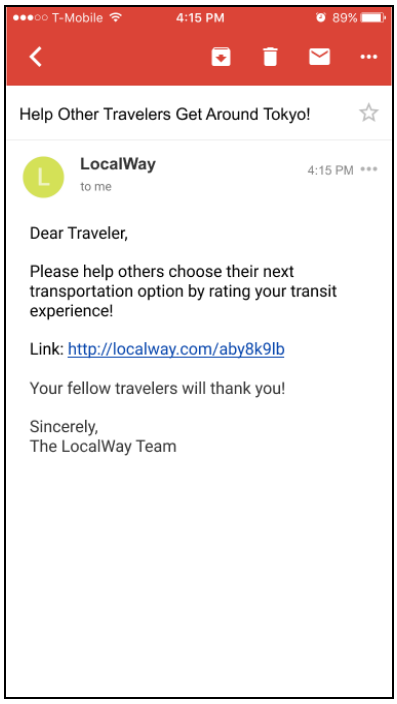


Figure 2.1

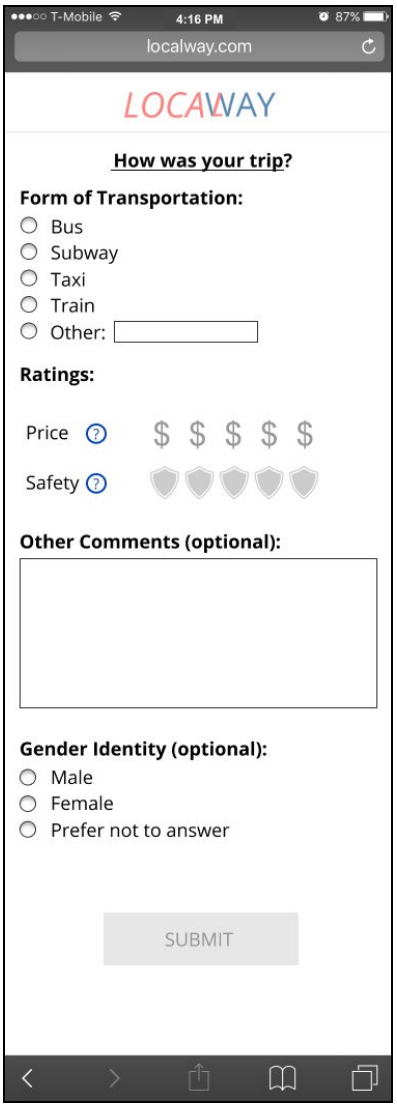


Figure 2.2

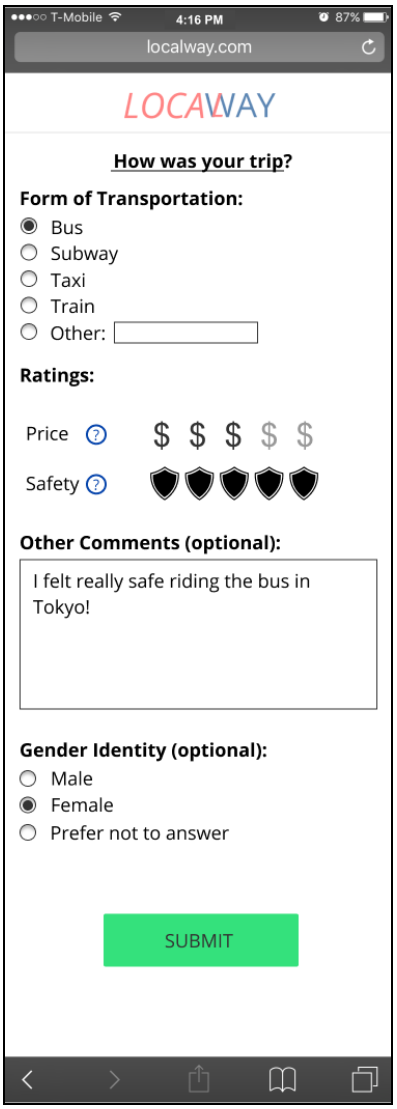


Figure 2.3

Figure 2.1: After riding the transportation, the user will receive an email with a link to a survey about their transit experience.

Figure 2.2: After the traveler clicks on the survey link in the email, they will be brought to an online survey. The traveler is required to select the form of transportation and rate the experience. Providing additional comments and selecting their gender identity are optional.

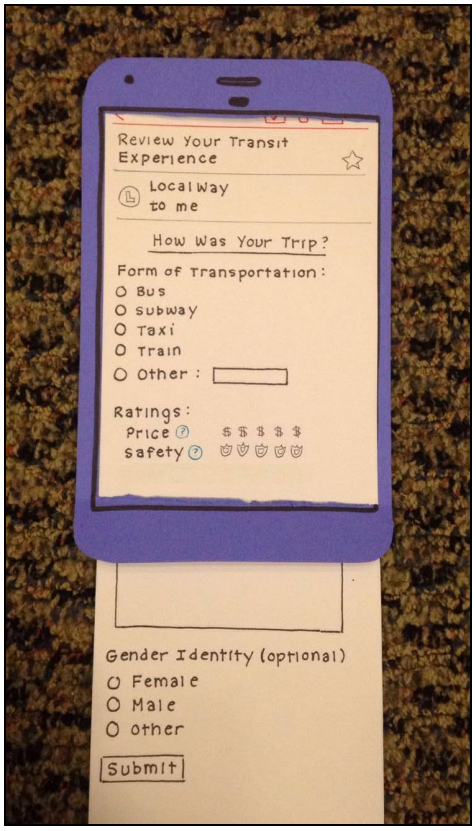
Figure 2.3: After completing the survey, the SUBMIT button will turn green to indicate that the survey is ready to be turned in.

Design Changes

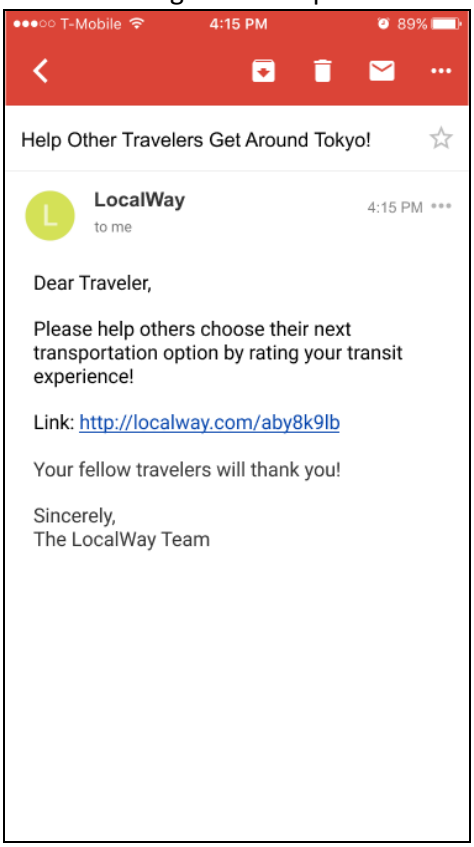
1. Adding an email link to the online survey

Instead of displaying the survey in the email we decided to provide a link to the survey. We realized that people cannot submit surveys through email so it does not make sense to have the survey in the email.

Paper Prototype



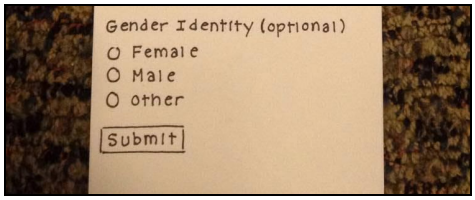
Digital Mockup



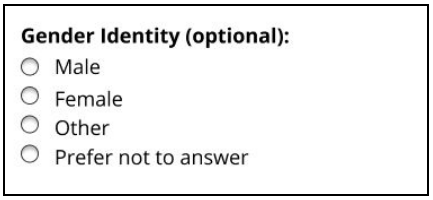
2. Adding an additional option to the gender identification question

We decided to add an new option to the gender identification option. It seemed best not to force users to choose from only 3 options.

Paper Prototype



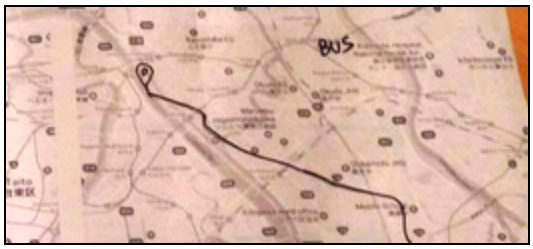
Digital Mockup



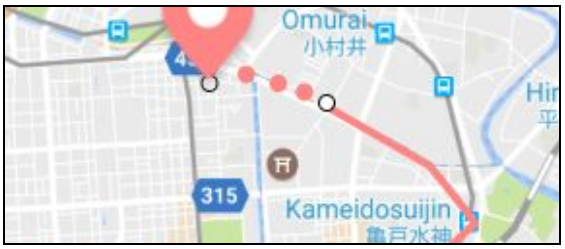
3. Adding detailed routing on map

We decided to display transportation changes on the map by adding different markings to show users where they need to walk and where they need to change forms of transportation.

Paper Prototype



Digital Mockup



DISCUSSION

From the process of iterative design, we learned that low-fidelity prototypes are a very effective starting point for testing. We quickly discovered that a single usability test could reveal many problems with a design, so it was important to make changes between each test and iterate often. Much of the feedback we received from our participants addressed aspects of our design that we had not even considered. By conducting usability tests, we were able to explore many different ways of improving our design. We realized that seemingly small changes can have a huge effect on a user's experience.

During the process, we discovered many issues with our design, both big and small. The feedback we received from each usability test allowed us to change aspects of our design that were confusing to our test participants. Our final design is a huge improvement from our initial one because we addressed many of the details that users noticed or were confused about. One of the biggest issues we discovered was the concept of a time rating. This came up in every usability test and heuristic evaluations. People were either confused about how to rate time or they had very different notions about it. This information allowed us to reevaluate the clarity of our survey questions, which ultimately led us to removing the time rating option from the survey entirely. The time ratings provided little value but added confusion to our interactive board. We also learned from the process of iterative design that using only iconography to display the priorities that users could choose from was risky. Instead of doing that, it made more sense to add labels to the icons so it was very clear for the users what each icon represented. Participants commented on the ambiguity of the rating system, since rating the price and safety of a particular form of transportation would be specific to a person. To help make this clearer, we added a key to the review cards and the survey. The different iterations also led us to adding a language page to our prototype. Many of our participants noted that it didn't make sense for an interactive display used in Japan to only support English. After receiving this feedback, we decided this was an important feature to include. Overall, the iterations led to good changes that made the prototype easier to use for each following participant.

After conducting the usability tests, we decided to keep our original tasks. Almost all the users found the two tasks clear and useful. We ended up changing only the design and structure of how each task should be completed. For instance, by adding additional features or rearranging the screens. Some users expressed concerns about how we can get people to answer the survey without any incentives. We haven't exactly addressed this issue, but we did make the survey as short and simple as we could. We also changed the email subject to encourage people to help other travelers, hoping this can draw more attention from the users.

Through the design process, we iterated our design after every usability test, based on participant feedback and in-group discussion. However, since most of the people we tested on are computer science students, the overall feedback might be biased. We conducted a good number of usability tests, but it may have been more effective if we had recruited people from diverse majors so that we could iterate our design based on feedback from people with different backgrounds, interests, and

priorities. Although our choice of participants was skewed, we feel that each iteration revealed very useful feedback, and our last usability test participant had no problems at all completing the tasks.

APPENDIX

Usability Test #1 Notes

Participant: Raquel Van Hofewegen
Facilitator: Felicia Chiang
Computer: Grace Chen
Observer: Yen Lee

She clicks START first. She inputs FROM and TO and uses the keyboard to input her desire locations. She's clicking on safety for priority. She's thinking about which options she should use. She's choosing the second option because the time doesn't take as long as the first one. When she sees the reviews, she expects that she can click on one of the reviews, the review would pop up and she can see the full review. She's wondering how she can get a full direction (written direction) for the route she chose.

- Didn't input her email at first because she was confused about why it's asking her to rate
- Confusion about whether she's rating for the display service or the experience
- Survey in the email (how to submit)
- Confusion about the email in the front page
- Confusion about what the reviews on the page is about (like for what route)
- She didn't think she would input her email if it were asked at the end

Usability Test #2 Notes

Participant: Karen Altergott

Task 1:

- Refuses to input email because she never rates
- After clicking on the option, she wants to take a photo of the route
- She's assuming the language of the review cards is in japanese
- She would probably write down the bus numbers for the option
- Safety sign doesn't make much sense

Task 2:

- Usually just ignore or mark the email as read
- Time rating was more quantitative

Confusion:

- It doesn't make sense that it's asking to rate beforehand
- It feels like the design is asking users to rate when they click on start

Usability Test #5 Notes

Kimm's Usability Testing Result

- **Observed Behavior**
  - **Task 1**
    - Successfully choose language and entered email with no question asked
    - Kimm pressed enter to close keyboard
    - Didn't click on review
  - **Task 2**
    - Clicked on the "?" for price
- **Kimm's Questions**
  - Wonder when did the screen started to generate result. Answered
  - Confused about the money icon (Think one line made more sense)
- **Kimm's Feedback**
  - Too little question! Should maybe ask about the usability of the interactive board?
    - Around 5 questions?
  - Similar to Google Map
  - Didn't think about taking a photo, thought it would be nice if the route chosen is sent to email
  - Should put logo on the interactive board (For later recognition when reading email)