TransLoc Usability Test Report

Prepared for TransLoc, Inc.

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Executive Summary

This report documents our findings, analysis, and recommendations after the usability test for the app TransLoc. To start, Kennesaw State University (KSU)'s bus system, the Big Owl Bus (BOB) is strongly dependent on TransLoc as it is the only app that tracks these bus routes. Furthermore, this gave us researchers greater traction to study the usability of the app as it is noticeably lacking in basic functionalities such as tracking, estimated bus time arrivals and departures, and more which inhibit students from reaching their destinations on time. Using our prior experiences as momentum, this encouraged us to conduct a usability study on how effective the app is for all KSU students.

To continue, the overarching goal of the study is to understand how reliable the TransLoc app is for KSU students as the app and buses are used by many to get around. To add, it is important to know how students' different perspectives impact their experience while using the app and discover what improvements could be made to enhance the user experience more.

For the recruitment portion, we recruited three qualifying participants in the age ranges between under 18 to 18-24, freshmen to senior, male, and female, with varying degrees of expertise with the TransLoc app and bus usage. To acquire our qualifying participants, we first developed our representative persons for the target audience of the TransLoc app then sent out a survey through a Microsoft Form link on platforms GroupMe and Reddit and received 30 responses. In addition, the usability participants were given $10 Starbucks cards each for their participation.

During the usability testing, the data collected was in the form of quantitative and qualitative research methods. These methodologies included were T.A.P. (Think Aloud Protocol), S.U.S. (System Usability Scale), Likert scale, and a closed card sort. We conducted the testing in quiet, spacious study rooms and gave them clean phones with new downloads of TransLoc before each session and tested them individually.

As a result of the tests, there were varying results between two out of three of the participants. For example, some stated how confusing the map layout was and how they felt like they second guessed themselves while attempting the three out of the four user tasks. On the other hand, one participant had a breeze going through the tasks and understood the layout quite well and gave it a

positive review throughout. The summarized evidence demonstrates the inconsistencies between user experience between users and how most had a negative experience while using the app.

Among the varying negative feedback we received, this empowered us to develop a static mockup featuring improvements that could be made to the app, specifically the homepage and search page. These suggestions include removing the sign-in/sign-up wall, adding labels to bus routes, adding a brighter color palette, and so on.

Despite our success with the testing, we did encounter some limitations and flaws such as the Hawthorne Effect, incentives, issues with user tasks, and tracking bus arrival and departure times.

In summary, this report chronicles the overall study of TransLoc as it is a flawed app and features plenty of pain points according to participants and us researchers. Furthermore, we provide these insights as an encouragement to improve the app for KSU students and other users.

Introduction

The purpose of this report is to present our findings through a usability test report for TransLoc, a public transportation app with the main purpose of tracking bus routes, to the app developers, TransLoc, Inc. We decided to conduct this usability test as many students have issues tracking their buses to accomplish daily tasks such as getting groceries on Fridays, traveling quickly from one side of campus to another, or traveling to a sister campus in another city. The app is relied on by many Kennesaw State University (KSU) students, including us researchers, yet the functionality has been lacking for several years based on our firsthand experiences. To add, TransLoc is the only mobile app that allows KSU students to track the Big Owl Bus (BOB) routes, so this gave us an incentive to improve the app.

Furthermore, from a relatable yet frustrating standpoint, we decided that conducting this test was essential to understanding what positives and negatives stem from the app and what improvements could be made for a better user experience.

As usability testing is one of the most prominent research methods in technical communication, we decided this would be a great fit in understanding in-depth the varying pain points associated with the experience in a candid, one-on-one session. This ensures the usability and satisfaction of the product by having participants explain their navigation journey and provide context regarding the app's quality. To do this, we gave them various tests such as T.A.P. (Think Aloud Protocol), S.U.S. (System Usability Scale), Likert scale, and a closed card sort.

Before getting into the methodologies, this section of the report will give an overview of the beginning techniques we used to identify the overarching goal of the usability test such as who the app's audience is, how the target audience represents the diverse KSU student body, personas, demographics of our testing participants, and how we performed a heuristic evaluation to understand issues with the app's interface and functionality.

Goals

To restate, the goal of the usability test report is to provide an understanding of how usable the TransLoc app is for KSU students as the app is relied on by many to get their tasks done quickly. Additionally, considering that TransLoc is the only app to provide students the option to track bus routes, the inconsistencies inhibit students from reaching their destinations on time.

By using our target and representative audience of busy KSU students, we will provide data from real students on their thoughts on the app and their opinions on what works and what does not to further understand the typical student's user experience.

Target audience

The target audience for this test was to be as representative as possible of the huge student population on KSU's campuses with students who attend classes in-person or hybrid. TransLoc is used by many college students and even presents itself as such when the app shows the first welcome screen. Further, the target audience of TransLoc is primarily college students, which matches well with our target audience for accurate results for the usability report.

Ideally, as the app is used to track bus routes and to make usability testing simpler and relevant to KSU students, we eliminated the following from the target audience:

- Commuter students who drive, carpool, Uber, or use other methods of transportation that may or may not require separate apps to track.
- Full-time and part-time professors for usability testing scheduling difficulties.
- Students who do not ride BOB often or at all.
- Non-KSU students.

Instead, the target audience should be representative demographically to KSU by including:

- Students under 18
- International students
- Students over the age of 35
- Graduates pursuing further education.
- Veterans
- Disabled students

Overall, the target audience of the TransLoc app and for the usability test is an occasional to frequent bus rider for KSU's BOB, and a representative college student who attends classes in-person or at least hybrid.

Participants

For this section, we will go over the process we did to create our personas to match our target audience. Next, we explain the demographics of each participant we tested and how they fit the

representative molds of KSU students who frequently or occasionally use the TransLoc app to take the bus.

Personas

To understand who the target audience is for the app, we created three diverse personas to give us an idea of a KSU student's potential wants and needs. Overall, we wanted the personas and their user stories to be representative of the variety of KSU students like international students, older students, graduate students, and more. Besides, we wanted the personas to be different from each other so that the data would be unbiased and representative of varying perspectives.

Below, will provide brief examples of our personas. However, the full versions will be available at the end for further review (see Appendix).

Personas		
Dante Williams	**Crystal Young**	**Mark Stamper**
Age: 25 **Ethnicity**: Nigerian **Marital Status**: Single, no children **Education**: exchange student studying MS in Civil Engineering, just started 5th year **Languages**: Igbo, English, French **Job**: Works part-time for McAllister's on Mondays, Tuesdays, Wednesdays, and Thursdays, currently looking for a nearby internship or co-op to do in Kennesaw or Marietta instead. **Interests/Hobbies**: Tech, reading, building Legos, watching Seinfeld. **Expertise**: Digital native, uses TransLoc a few times a week for commutes **User goal**: After a long day, wants to know when the next bus is coming so he can get home quickly. **Quote**: "Hard work pays off."	**Age**: 20 **Ethnicity**: Filipina American **Marital Status**: Single, no children **Education**: Sophomore, undeclared **Languages**: Tagalog, English **Job**: Intern at a digital marketing agency called WebFX. **Interests/Hobbies**: Reading, cooking, shopping, camping, running. **Expertise**: Used TransLoc a few times, doesn't know how the tracking system works **User goal**: Find transportation to get between destinations. **Quote**: "Changing lives one connection at a time."	**Age**: 21 **Ethnicity**: Latino **Marital Status**: Single, no children **Education**: Freshman, pursuing BS in Biology **Languages**: some Spanish, English **Job**: None **Interests/Hobbies**: Reading, sustainability, playing video games. **Expertise**: Digital native, doesn't know bus routes very well **User goal**: Be able to get to class on time with accurate routes. **Quote**: None

Table 1: Personas table.

To continue, using our personas, Dante Williams, a 25-year-old Nigerian male foreign exchange graduate student, Crystal Young, a 20-year-old Filipina American undeclared sophomore, and Mark Stamper, a 21-year-old Latino freshman male pursuing a BS in Biology helped guide us in deciding

the target audience and the likely expertise of the users. Moreover, the personas gave us perspective on the many needs and wants of busy college students.

Participant 1

Using the personas as a template, we will give a brief overview of each participant and how they related to the target audience while maintaining anonymity.

First, the participant was a female freshman under the age of 18 who had plenty of experience with TransLoc prior to testing. She also stated in her results that she used the app at least five or more times within the past 30 days while riding the BOB for the same amount of time, five or more. We can conclude that she uses TransLoc frequently while using the KSU BOB. During the usability test, participant 1 chose to work on user tasks 2, 3, and 4.

Participant 2

Next, the second participant for this test was a bit of an outlier from the previous two as he was a senior between the ages of 18-24. In contrast, participant 3 had not used TransLoc or rode the BOB bus in the past 30 days. He mentioned using the app and bus routes before but not in the last 30 days, so there was some familiarity but not as strong as participants 1 and 3. Meanwhile, participant 2 decided to do user tasks 1, 2, and 3.

Participant 3

Finally, the third participant shared a similar experience with participant 1 by being a freshman under the age of 18 yet male. Participant 3 also used the TransLoc app and BOB buses five or more times within the last 30 days that the survey was recorded. So far, participants 1 and 3 shared the same frequent experiences. Overall, participant 3 completed user tasks 1, 2, and 4.

In summary, using the target audience, personas, and participants to draw connections allowed us to understand and narrow down our research to be as comprehensive as possible. This part of the research was extremely important as irrelevant participants would've ruined the accuracy of the results.

Heuristic evaluation

Following the personas we created, we individually evaluated the app's interface from a typical student's perspective. Afterwards, we came together to compile our results then assorted them based on severity rankings ranging from cosmetic, minor, major, to catastrophic. Altogether, our primary issues with the app and their rankings were:

Heuristic Evaluation Results and Severity Rankings		
Major	Minor	Cosmetic
• Inaccurate bus routes / bus arrival and departure times • Confusing, overwhelming map and bus route layout	• Too many options • Confusing labels • Missing bus information such as capacity, inability to filter bus routes, etc.	• UI has dull colors.

Table 2: Heuristic evaluation results and severity rankings table.

This part was essential as it gave us a direct understanding of what to focus on when developing the user tasks for the usability test. Additionally, the evaluation provided us improvements we could focus on in the static mockup like:

- Adding clear labels.
- Including additional information about buses (capacity info, and more).
- Creating a clear, uncongested map.
- Changing UI palette to be colorful and better representative of routes and labels.

Moreover, the evaluation allowed us to understand how a user would operate the app to achieve their goals of finding a bus route, checking bus times, and more. This evaluation aided us in developing user tasks for the usability test and focusing on common improvements to make for the static mockup revision of the app.

Summary

In summary, TransLoc is a transportation app that is heavily aimed at students as it features many school campuses nationwide and their bus routes alongside OnDemand features. However, the functionality of the app is lacking as it hinders many students from tracking their routes effectively. Therefore, the goal of this usability test is to highlight the varying pain points from participants, precisely KSU students through techniques such as T.A.P., S.U.S., Likert scale, and closed card sort.

To understand the target audience, we developed three personas to represent the diverse student body of KSU. Using the personas as a guide, we explained who the three participants were, while maintaining their anonymity, their demographics, and why they were a good fit for the test.

Lastly, we performed a heuristic evaluation, independently discovered some issues with the app, then came together to assort our findings using severity rankings ranging from major to cosmetic. Completing this evaluation was essential to us creating our user tasks and developing improvements and recommendations for the static mockup such as improving labels, color palette, and more.

Methods

In this section, we will go over the recruiting process, testing setup, and methodologies we used to conduct the usability tests, data metrics, and user tasks. Altogether, we used multiple methods of testing such as providing a survey to gauge how many KSU students use the TransLoc app, posttests such as T.A.P. (Think Aloud Protocol), S.U.S. (System Usability Scale), Likert scale, and a closed card sort. Additionally, the incentive for each participant was a $10 Starbucks gift cards each. Overall, the purpose is to demonstrate what the recruiting and setup process were like, the results of our participants and any pain points they encountered while using the app.

Recruiting process

To do our usability test, we first had to find compatible participants. Our team created a survey that we sent out to our peers in GroupMe chats and the KSU subreddit via a Microsoft Form link. The survey asked respondents a series of questions created to find specific participants that had experience with the TransLoc app as well as the ability to fit within our testing schedule.

Once participants were selected, we scheduled the testing dates. Initially, a participant dropped out at the last minute, and we had to pivot to a new participant with less experience with TransLoc. We also had a limited testing window as we reserved popular private study rooms on Kennesaw campus to conduct our tests. However, we felt this would not negatively affect our results nor the testing integrity as this participant was also a KSU student.

Lastly, as an incentive to entice participants to join our usability study, we each offered $10 Starbucks gift cards totaling $30.

Testing setup and user tasks

Regarding the setup, we conducted our usability test over the course of 2 different days in sound-proof study rooms located on the Kennesaw campus. We chose this location because of its ease of access for not only the participants involved but also for our team. These study rooms provided an ideal testing environment because the doors locked from the inside and the room itself was spacious enough to accommodate our testing needs.

After participants signed the consent form, an iPhone from one of the researchers with a clean download of the TransLoc app was set in front of the participant, we then asked them to complete 3 out of the 4 tasks on the instruction sheet while using the app. These provided user tasks were:

User Tasks	
Task 1 1. Find the KSU campus on the TransLoc app. 2. Tap on the Big Shanty bus route. 3. Switch to the Kennesaw/Marietta bus route.	**Task 2** 1. Find the KSU campus on the TransLoc app. 2. Tap on the Town Center bus route. 3. Check the info for the bus. 4. Check when the next estimated arrival will be.
Task 3 1. Find the KSU campus on the TransLoc app. 2. Look through the list of bus routes. 3. Find the bus number for the West Campus bus route.	**Task 4** 1. Go to Settings. 2. Find Agency Preferences. 3. Select an Agency from the list. 4. Turn off Visibility and Receiving Alerts.

Table 3: User tasks table.

Before testing, we urged our participants to think aloud and explain their thought process as they complete the tasks. Each member of our team was assigned roles of a proctor, a notetaker, and a videographer. Since there were only 3 members of our team and 3 participants, we all rotated on taking these roles. The proctor's role was to ask questions to the participants and encourage them to share their thoughts aloud while remaining unbiased. The notetaker recorded important highlights, pain points, and whether participants succeeded in completing a task or not. Then, the videographer recorded each session for later review.

Once the T.A.P. step was completed, we gave our participants 3 more posttest exercises to better understand their experience with the TransLoc app. The first exercise was an S.U.S. sheet, the second being a Likert scale sheet, then the final exercise being a closed card sort. Finally, after

completing the exercises we gave them their incentive, a $10 Starbucks gift card, and the test was complete.

Data metrics

In this section, we will explain the data we collected during the usability tests in the order we administered them starting with the survey to the closed card sort.

For the sake of reducing clutter, we condensed the survey table to summarize the most relevant data, however, the full responses will be provided at the end of the report (see Appendix).

Survey

TransLoc Usability Test Survey Results					
Questions	**Responses**				
What is your current year?	**Freshman** 33%	**Sophomore** 23%	**Junior** 23%	**Senior** 20%	**Graduate** 0%
How old are you?	**Under 18** 10%	**18 to 24** 86%	**25-34** 0%	**35-44+** 3%	
Have you ever used the TransLoc app?	**Yes** 76%		**No** 23%		
In the past 30 days, how many times did you use the TransLoc app?	**1-2 times** 10%	**3-4 times** 13%	**5+ times** 50%	**I have not used TransLoc in the past 30 days.** 26%	
Do you ride the Big Owl Bus (BOB)?	**Yes** 83%		**No** 16%		

In the past 30 days, how many times did you ride the Big Owl Bus (BOB)?	1-2 times 10%	3-4 times 16%	5+ times 53%	I have not ridden the Big Owl Bus (BOB) in the past 30 days. 20%

Table 4: TransLoc Usability Test survey results.

This is a short snippet of the survey results from the participants we recruited for the usability test. We administered the online survey through a Microsoft Form to 30 participants using random sampling for the period of a week. Altogether, there were 8 questions structured in a questionnaire format. Upon deciding who we would test, we selected only the participants who wanted to participate in the usability testing and used random sampling to choose a random participant from the group.

T.A.P.

T.A.P. and User Task Results			
	Task 1	Task 2	Task 3
Participant 1	Fail Notable Note: Frustrating - describing the overall process of completing this task.	Success	Success
Participant 2	Success	Fail Notable Note: A lack of clear navigation and labels was the biggest hindrance.	Success
Participant 3	Success	Success	Success Notable Note: Completed all tasks relatively fast.

Table 5: T.A.P. and user task table results.

Prior to testing, we asked participants to think aloud while completing their chosen tasks so that we could better understand their journey and what they thought of the app. During the test, the

notetaker recorded whether the participant had success in completing a task or not. The purpose of this aspect of the test was to get a better understanding of the experience of the users as they are going through the app in real time.[1] For clarification, participant 1 worked on user tasks 2, 3, and 4 while participant 2 worked on user tasks 1, 2, and 3, and participant 3 completed user tasks 1, 2, and 4 for the duration of this process.

S.U.S.: Qualitative Results

S.U.S. Results: Qualitative			
Participants answered by marking boxes 1, 2, 3, 4, or 5	Participant 1	Participant 2	Participant 3
I think that I would like to use this product frequently.	4	3	5
I found the product unnecessarily complex.	3	2	1
I thought the product was easy to use.	3	2	5
I think that I would need the support of a technical person to be able to use this product.	4	2	1
I found the various functions in this product were well integrated.	2	2	4
I thought there was too much inconsistency in this product.	3	4	1
I would imagine that most people would learn to use this product very quickly.	4	4	5
I found the product very awkward to use.	3	4	1
I felt very confident using the product.	2	2	5
I needed to learn a lot of things before I could get going with this product.	4	4	1

Table 6: Qualitative S.U.S. table results.

S.U.S.: Quantitative Results

S.U.S. Results: Quantitative				
Participants' S.U.S Scores	**Status**	**Acceptability**	**Net Promoter Score**	**Grade**
Participant 1: 45	Poor	Not Acceptable	Detractor	F
Participant 2: 42.5	Poor	Not Acceptable	Detractor	F
Participant 3: 97.5	Best Imaginable	Acceptable	Promoter	A+

Table 7: Quantitative S.U.S. table results.

[1] For reference, Table 6 is to represent the 3 tasks participants chose and if they failed or succeeded in completing them and any notable pain points.

S.U.S. is used to determine whether a system in a product is usable and if it is worth promoting. We presented each participant with 10 questions, asking them their thoughts on the app's functionality. For the grading process, there are 5 criteria the system must score above a certain number to be seen as usable. In Table 7, the first is the S.U.S. score, which is done by assigning values to each participant's score and following an equation. Then we multiplied the score by 2.5 to get our status, acceptability, net promoter score, and grade.

Likert scale: Qualitative Results

Likert Scale Results: Qualitative			
Participants could answer **agree (1), neutral (2), disagree (3)**	Participant 1	Participant 2	Participant 3
I trust that the bus arrival times are accurate.	Disagree	Agree	Agree
There are too many route options featured.	Neutral	Neutral	Disagree
I can understand what every label and piece of information meant.	Disagree	Disagree	Agree
The route map is inconsistent and confusing.	Agree	Agree	Disagree
I feel confident that I would be guaranteed a seat on the bus.	Disagree	Agree	Disagree
The product has a dull and unappealing design.	Neutral	Agree	Disagree
I am satisfied with the overall usability of the product.	Agree	Disagree	Agree
I would not recommend this product to others.	Disagree	Disagree	Disagree

Table 8: Qualitative Likert scale table results.

The Likert scale is used to further illustrate the usability experience of the participants who were tested. The questions are designed with half of them having a negative lean and half of them having a positive lean, so the user knows there are no right or wrong answers. Table 8 shows the questions that were asked and how each participant responded.

Likert scale: Quantitative Results

Likert Scale Results: Quantitative			
	Participant 1	Participant 2	Participant 3
Mean	2.1	1.6	2.25
Median	2	1	3
Mode	3	1	3

Table 9: Quantitative Likert scale table results.

In Table 9, we show the quantitative data from the results of our participants. We calculated the mean, median, and mode to show what the participants' average feelings towards TransLoc were after using the app as 3 represents a positive experience while answers closer to 1 represent a negative experience.

Closed card sort

Card Sort: Participant 1					
Menu	Search Bar	Navigation	Bus Routes	Labels	Maps
Readable	Predictable	User-Friendly	Frustrating, Unexpected, Overwhelming	Understandable	Trustworthy, Hard to read

Table 10: Closed card sort table for participant 1.

Card Sort: Participant 2					
Menu	Search Bar	Navigation	Bus Routes	Labels	Maps
Frustrating	Ineffective, Clunky	Unexpected, Understandable, Hard to use	Predictable, Logical, Easy to use, Efficient	User-friendly, Confusing, Bare	Overwhelming, Sleek, Hard to read

Table 11: Closed card sort table for participant 2.

Card Sort: Participant 3					
Menu	Search Bar	Navigation	Bus Routes	Labels	Maps
Readable	Efficient	Understandable	User-friendly	Logical	Easy to use

Table 12: Closed card sort table for participant 3.

A closed card sort is when the participants are given a set of cards with adjectives on them, both negative and positive. Then, they were told to sort the adjective cards underneath the categories they think best fits. We chose to add a closed card sort to our usability test because we felt it would further illustrate the experiences and thoughts of our participants while using TransLoc.

Summary

Overall, our findings presented show the data we collected from our various testing methodologies starting with a survey to recruit our participants then using usability tests such as T.A.P., S.U.S., Likert scale, and a closed card sort to follow and interpret their processes and opinions while using the app. In the results, we will explain further what this data truly means.

Results

In this section, we will be explaining what the data we collected from the usability test means and how this impacts the TransLoc app. Further, we want to highlight the audience and the negatives and positives of the user interface and functionality through answers provided by the participants using T.A.P., S.U.S., Likert scale, and a closed card sort.

Summary of findings

Survey

Before performing the usability testing, we sent out surveys through our school's subreddit on Reddit and through our GroupMe chats for our academic courses. Among our 30 survey participants, there was an overlap with them being between the ages of 18 and 24 (86%), being a fair range of all grade levels (minus graduate students) with freshmen being the most (33%), and a majority being occasional to frequent users by using the app at least 1 to 2 times in the past 30 days (73%). This section of the survey shows the typical demographics of the user base and how often they use TransLoc for their transportation needs.

Another factor we were looking for in criteria for the usability test was whether the participants rode the school's Big Owl Bus, or BOB for short. During the survey period, 83% stated that they rode the bus at least once in the past 30 days. This part was also crucial as the typical user of the app is more than likely a bus rider; specifically, one who travels between one of KSU's campuses, Kennesaw and Marietta, to different parts of a singular campus, or to use the shopping route on Fridays and the weekends to get groceries.

Overall, the survey gave us an idea of how many and how often people rely on TransLoc to ride the BOB to get to their destinations, the demographics of those riders, and who would be able to do the usability test. In short, among our 30 participants, 86% are in the age range of 18-24 with freshmen being the highest number of bus riders at 33%. Regarding TransLoc, 73% stated that they had used the app at least once in the past 30 days which corresponds to 83% stating that they rode the BOB at least once in the past 30 days as well.

T.A.P.

Participant 1

For the beginning of the usability test session, participants were asked to use T.A.P., a method that encourages participants to speak their minds as they use an app as this gives real-time feedback

about the product. The participant attempted user tasks 2, 3, and 4. For the more notable notes, participant 1's session during task 2 was described as frustrating. When attempting to find the town center, participant 1 ended up zooming in and out a lot, staring at the map, and second-guessing every move. Participant 1 noted the lack of images for the buildings ended up being a hindrance. The lack of detail regarding the building's location also played a role in the failure to complete the task. Other factors include the route times being inaccurate, the route navigation, and lack of labels. Generally, one quote from participant 1's highlighted her experience well:

"I can't tell if I'm overthinking it or not." – Participant 1

Participant 2

In the case of participant 2, they attempted tasks 1, 2, and 3 during T.A.P. For task 2 they also stated how the navigation was not user-friendly, noting that the lack of clear labels affected their experience. Their quote highlights their experience for attempting to complete user task 2:

"Navigation is not great for the routes." – Participant 2

Furthermore, the participant emphasized how the bus route lines on the map should have labels to reassure them that they have selected the bus they wanted. This aided us in understanding what details or elements were missing that could be implemented in the mockup revision.

Participant 3

Unlike the first 2 participants, participant 3 had a breeze getting through tasks 1, 2, and 4 and was the only one to complete all of them. The participant did not say much as they were completing the tasks besides one notable quote highlighting their overall experience:

"The tasks are pretty easy." – Participant 3

To elaborate, we would not say that user rushed through the tasks, but it was very evident that he uses it daily and has no issues getting to his destination. Participant 3 was an outlier compared to the previous 2 participants; however, we can interpret that the maps and bus routes could use some rework as some participants are confused by its layout compared to others. In this case, uniformity and consistency are important for a good user experience.

S.U.S.

Moving on from our T.A.P. step, we went into our posttests starting with S.U.S. After calculating the scores, we found that both participant 1 and participant 2 had an overall negative experience in the

mid-40s using TransLoc compared to participant 3 in the high 90s. These scores provide a clear indication that the usability of the app is not acceptable for all users.

It also means that TransLoc received poor status as a usable product and the system in use is not acceptable. Both participant 1 and 2's S.U.S. scores reflect a detracting net promoter score. This means that with the current system, it would detract from customers and keep people away from the product. However, participant 3 gave a S.U.S. score of 95 which means they had an overall good experience with the app. This score is an outlier but still gives valuable data. It shows that to some, TransLoc needs no change. But we argue that 2 out of 3 of the participants had an overall negative usability experience and recommend that changes be implemented to improve overall usability experience.

Likert scale

In Table 8, we see that participant 1 did not think bus times were accurate. However, participants 2 and 3 both agree in thinking the estimated bus times were accurate. So, this aspect of the app could be left alone and would not negatively impact the usability of the product. But participants 1 and 2 both disagreed that every label and piece of information was understandable. This aspect of the app should be changed to improve the usability experience of future users. Participants 1 and 2 also agreed that the route map is very confusing. This aspect of the app should also be changed to improve overall usability experience for future users of this app.

In Table 9, we see that participant 1 had a mean score of 2.1 meaning their average experience using the app was neutral. Participant 2 had a mean score of 1.6 meaning they agreed with most of the questions on average. Participant 3 had a mean score of 2.25 meaning their average experience using the app was also neutral. Participants 1 and 3 had a mode score of 3 and participant 2 had a mode score of 1. This shows participants 1 and 3 disagreed with most of the questions and participant 2 agreed. This shows that overall, there are improvements to be made to the app that would improve the usability experience for future users.

Closed card sort

As displayed in Table 10, participant 1's major pain point came from the bus routes. The words picked for this feature were "frustrating, unexpected, and overwhelming." This pain point is a huge factor in the app's usability. The bus routes are a key asset to the app's overall usage. If the bus routes are confusing, this makes the overall app difficult to use. Other pain points included are the map which was deemed "hard to read" for participant 1. The maps are also a key asset since the

routes are presented on the maps. While the other factors of the app did not present huge pain points, they affected the overall experience.

Participant 2's card sort, as shown in Table 11, presents more pain points as she deemed the menu as "frustrating" while ranking the map as "overwhelming", "sleek", and "hard to read." These are just some of the many negative words used to describe participant 2's experience. That indicates that TransLoc has many areas of approval. These factors do connect. If one is ineffective, others will be as well.

Table 12 displays participant 3's card sort. All the words used to describe any factors of TransLoc were positive. Zero pain points were found in participant 3's experience using the app. While this does not match with the other card sorts featured, this is important to mention.

Discussion

In this section we will be discussing the aftermath of the results and how they played a role in us designing our mockup and suggesting recommendations. Equally important, we will go over the flaws we encountered during testing and the limitations that may or may not have impacted the usability testing results.

Recommendations

Through the various feedback we received from participants during the testing and heuristic evaluation, they have allowed us to develop a static, low to mid mockup to represent ways in which the app, more specifically the homepage and search page, could be improved. Furthermore, we will explain the reasons for these suggestions for improvements to the labels, bus routes, and supplementary content, why they are needed, and how they can be improved. Furthermore, images for the mockup will be included in the documentation later in the report (see Appendix).

Labels and bus routes

The labels for the bus routes and generally for the navigating around the app were a common frustration among two out of the three participants so, this was a pain point. For example, participants 1 and 2 agreed with the sentiment during the S.U.S. test that the bus routes felt inconsistent and confusing whereas participant 3 disagreed. To help combat the inconsistencies, we suggest that the number of lines on the map be reduced to 3 to 4 routes with the option to switch as the user loads more routes. This will help the user not feel overwhelmed with the number of choices they are presented with and complies with the Chunking principle by breaking up

information into smaller parts would work well to make highlighting or making the selected route stand out among the unselected bus lines.

According to participant 2's comment about it being hard to navigate to one of the bus routes, improving the bus routes by labeling the selected route on the map would be extremely helpful. Furthermore, we added a label to a main bus route that the user has selected and included a label for added understandability. Here is an example of what the potential improvement could look like:

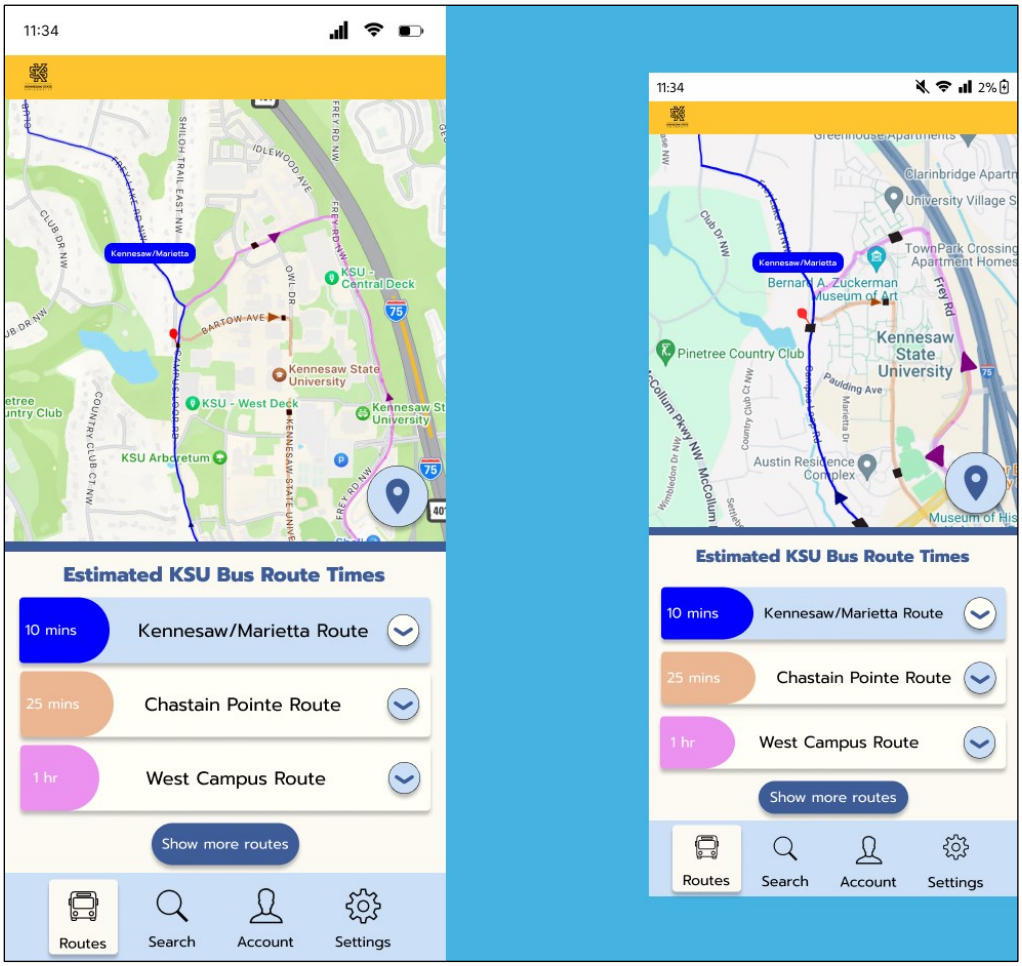

Figure 1: iPhone and Android revision static mockups for homepage on TransLoc.

Search page and sign-in features

Next, to help with the additional bus and travel information, including content on the search page would help reduce the congestion on the home/main page and navigation tabs. During the heuristic evaluation, we noticed that the search page was very bland and did not offer much content that would interest a lot of users. In this case, we believe that adding tabs or categories such as a school

bus schedule, alerts, saved routes, and more would be useful if the app did not require user to sign in.

Compared to transportation app competitors, for example Moovit and Transit, these apps allow the user additional features of tracking their routes without signing in. We believe that effectively removing this option by providing up front features on the search page will help the app stand out and improve user experience as these other apps do not have these features. Moreover, considering that TransLoc provides many students with the option to track their buses, including features such as a bus schedule would make the app stand out even more to college students like the target audience for the report. Moreover, this example of our static mockup for the search page should help add usefulness to the bland page:

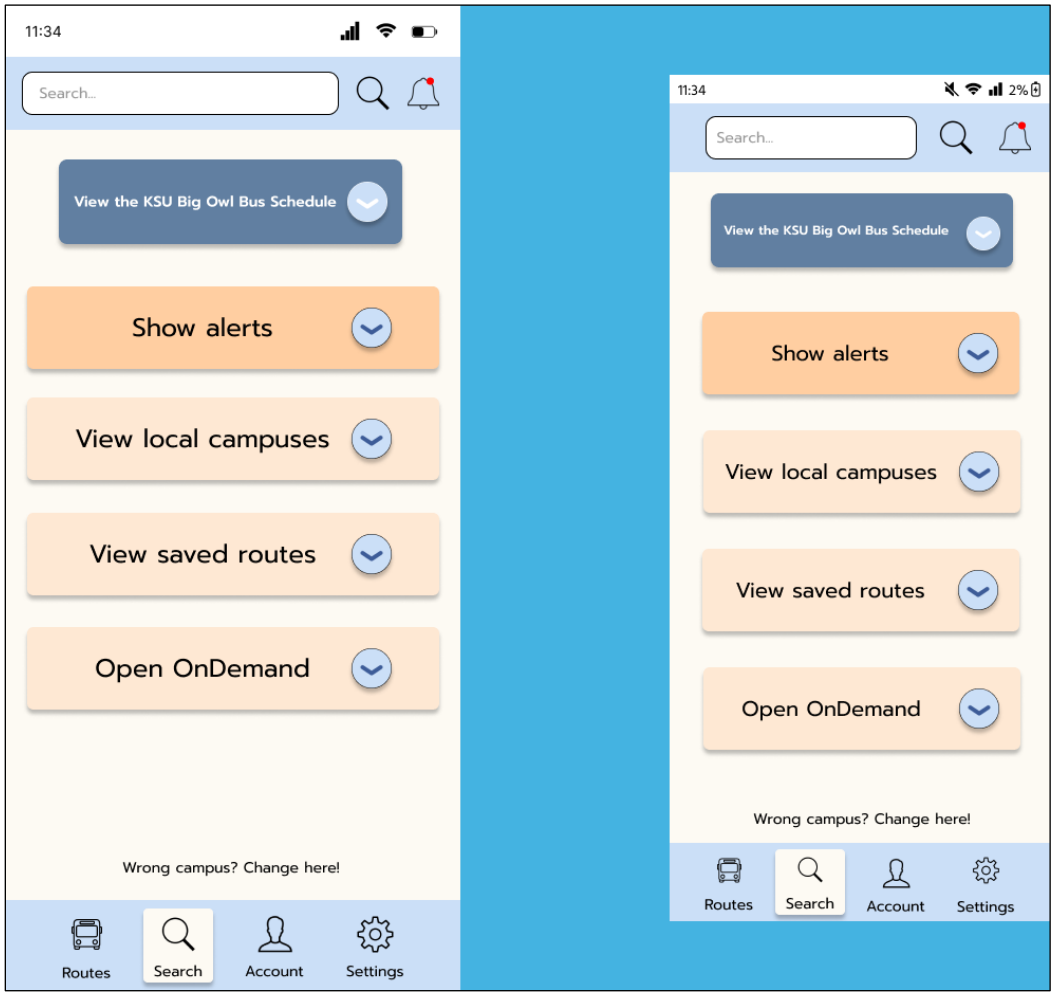

Figure 2: iPhone and Android revision static mockups for search page on TransLoc.

Further, we suggest that there should be additional content provided on the search page and adding information that would help users and reduce congestion on the routes page would be useful. In addition, making the content and features available without signing in like competitors would reduce confusion and allow users full access to the application. Considering that the app is primarily used by college students looking to track their bus routes, having this target audience alongside useful features such as a school bus schedule, saved routes, and more will help the app stand out even more.

Summary

In summary, we believe that suggestions we made regarding the labels, bus routes, search page, and removing the sign-in feature would improve the app's interface and functionality tremendously. Moreover, our findings suggest that these improvements will greatly impact the app and give TransLoc an advantage over their competitors by:

- Reducing the number of bus lines given on a map to about 3 to 4 lines at a time.
- Highlighting the selected bus line along with a label indicating which bus is being selected.
- Adding more content to the search page.
- Removing the sign-in wall and making all features available.

Limitations

During the testing process, there were some limitations and flaws that impacted the results such as the Hawthorne Effect on the participants, incentives, user tasks, and testing capabilities on the app. Improving these areas would've greatly influenced the outcome of our results and believe that making these improvements are important for future testing.

The Hawthorne Effect

As we needed to conduct testing in a convenient location for the participants, we used our school's study rooms as they were quiet and provided us with enough space without being disturbed. However, those rooms had big windows with people walking around outside, often looking into the room. As there weren't any research labs available at the last minute, this restricted us researchers to being in the room with the participant while they were taking their tests; this is where the Hawthorne Effect came into play.

To explain further, the Hawthorne Effect is where the participant acts differently due to them being stared at or watched. Because of the rooms' set ups, this affected the results in a way by having the

researchers in the room with the participant while knowingly being watched and occasionally distracting the researchers and the participants.

In hindsight, redoing the setup to be as comfortable for the participant while non-distracting would be key in understanding any other issues, they may have with the app which is why this would help research in the future.

Incentives

For the recruiting and testing process, we decided that getting three participants would be best since we did not want to overspend for compensation. However, if we had a bigger budget, we would've had a more diversified report representative of the survey results. Three participants were a good number, but we felt a bit limited in the various perspectives we received as all of them were familiar with TransLoc and had used the KSU BOB before.

Furthermore, increasing the incentives would be beneficial during future research to bring in more diverse perspectives as we were limited in that area.

User tasks

During the usability test, there were a few times that the participants needed clarification on the task steps. It would be best to redo them in the future for better clarification and possibly represent the entire app such as the account page, OnDemand feature, and so on to get a better understanding of their usability even if they're underutilized. Moreover, confusion in the wording and interpretation could've impaired the accuracy of the results that we were looking for.

Testing for Time Accuracy

One of the biggest gripes with the app we received from user feedback was the inaccurate times presented for the bus routes. Providing a separate test would've been helpful to understand how accurate the bus times are for specific routes and actual arrivals versus departures. Due to our limited time schedule and insufficient incentive funds, making this an integrated part of the testing wasn't possible. Additionally, participants already had four tests to take, S.U.S., T.A.P., Likert scale, and a closed card sort, so adding another test would've more than likely overwhelmed them.

As the app's main function is to track transportational routes, having inaccurate times defeats the purpose. Conducting further research on the time accuracy would improve daily usage of the app and increase returning users.

Summary

Based on the limitations and flaws we mentioned, we believe that improving the rooms during testing, testing for bus time accuracy, incentives, and user tasks would've made the results more accurate. For reference, we present these ideas to improve future research on the TransLoc app.

Conclusion

Overall, TransLoc is a highly used app by KSU students of various backgrounds to track their bus routes for KSU's Big Owl Bus (BOB). However, the app's inefficient functionality impairs students from tracking their routes so they can reach their destinations on time. Moreover, as TransLoc is the only app KSU students can use to track BOB routes, we decided conducting a usability test was important to understand students' feedback on the app.

Furthermore, our findings conclude that TransLoc creates an inconsistent experience for users seeing that two out of three participants found the usability to be difficult. Through our various testing strategies such as T.A.P., S.U.S., Likert scale, and closed card sort, including a preliminary survey, we were able to perform a deep dive on what participants thought of TransLoc while attempting their user tasks. With the lack of labels, confusing navigation, and inaccurate times, these issues make TransLoc inferior compared to other transportation tracker competitors like Moovit and Transit.

As a recommendation, we suggest there should be enhancements to improve the overall user experience so all users can have a consistent experience regardless of expertise. Therefore, these changes will draw more students to the app and increase user retention against other competitors by:

- Reducing the number of bus lines given on a map to about 3 to 4 lines at a time.
- Highlighting the selected bus line along with a label indicating which bus is being selected.
- Adding more content to the search page.
- Removing the sign-in wall and making all features available.

Though we discovered great insights on improvements, we did encounter some limitations and flaws in our research. To summarize, we had issues with:

- The Hawthorne Effect during testing.
- Low budget for incentives.

- User tasks being difficult to understand.
- Not being able to test the accuracy of bus arrival and departure times.

Despite our limitations, they do not negate the fact that TransLoc could vastly improve by implementing our suggestions through our data collected from the usability tests and heuristic evaluation. In conclusion, TransLoc features errors yet has room for improvement therefore, as usability test researchers, we urge TransLoc, Inc. to act and make the app accessible for everyone as the app is essential for KSU bus riders to get around without other methods of affordable transportation.

Appendix

Survey data	
Personas	
Heuristic evaluation	
Figma static mockups	

Mockup wireframes	
Consent form	
Usability Test Forms	
S.U.S.	
Likert scale	
Closed card sort	
Usability test session videos	https://1drv.ms/f/s!AoqWEbtJ1q2ukiuwOiU55MwhDxZT?e=EK0Bl2