UB Mobile App Redesign: Final Report

Farhan Ahmed, Lovepreet Singh, Isabel Matthei, Leeza Shultz

Industrial Engineering Department - University at Buffalo

Human-Centered Design for Interactive Systems

Dr. H.-Y. Winnie Chen

December 11th, 2022

Over the last half century, academia has slowly infused itself with technology. Using technology in the classroom has become a widely accepted practice. Along with the assistance that it has given to students and teachers, it has also brought hardships. One such hardship is keeping track of different software, websites, and tools that are used. To combat this difficulty, many schools have created mobile apps for their students to give them access to many of these utilities in one place. The University at Buffalo (UB) has one such mobile app. However, this app has not consistently kept pace with the growing use of different and new technologies on campus.

Many students and faculty at UB interact with UB affiliated technology daily. These include MyUB (university hub) and UB learns (learning management system) to access information and tools such as homework and schedules. These tools and other information can be accessed through the UB Mobile app, yet many students and faculty do not use it or are unaware of it. The app includes tabs for other utilities such as transportation, libraries, dining, maps, athletics, news, events, UB's social media, emergency contact, and UBIT. The app accesses these resources through hyperlinks. It takes the user to their default browser to open the web page. There is no added benefit to the user to use the app versus a browser. There is also a tab for feedback on the app, however, it is not clear if the feedback received is supervised.

The current research goal is to explore the following: the reasons that cause users to not utilize the app, the main reasons that users currently utilize the app, and the ways that the app falls short according to current users. We created a prototype of a redesign of the UB Mobile app based on user feedback gathered through semi-structured interviews and task testing. Another round of user testing was conducted with the prototype of the redesign.

Methods

Users

The two main user populations are students and faculty at the University at Buffalo. This includes 32,332 students and 5,467 professors. Amongst the students, 67% are undergraduate and 33% are

graduate students (UB Fast Facts, 2022). Furthermore 46% of the students are online exclusive students which makes them less likely to use the app because many of the features on the app are meant to aid students on campus. The average age range of UB students on campus is 18 to 35 years old. The nationality of this user group is very diverse as the University has students from all 50 states in the US as well as 103 different countries. We believe that the main user group for the UB Mobile app are the students as the app currently caters to aspects such as transportation, dining, maps, and libraries which are the main necessities for a student on campus.

We do acknowledge that faculty could make use of this app. This user group contains people from numerous ethnic backgrounds including White, Asian, Hispanic, and African American. Faculty are frequent users of technology but not all are experts at using it. The app currently contains a UBLearns tab which is the faculty's main use of communicating with students. However, the other features are much less useful for faculty. Going forward we plan to survey and interview both students and faculty alike to gauge both user groups' needs. Nevertheless, the focus will still be mainly on students' feedback.
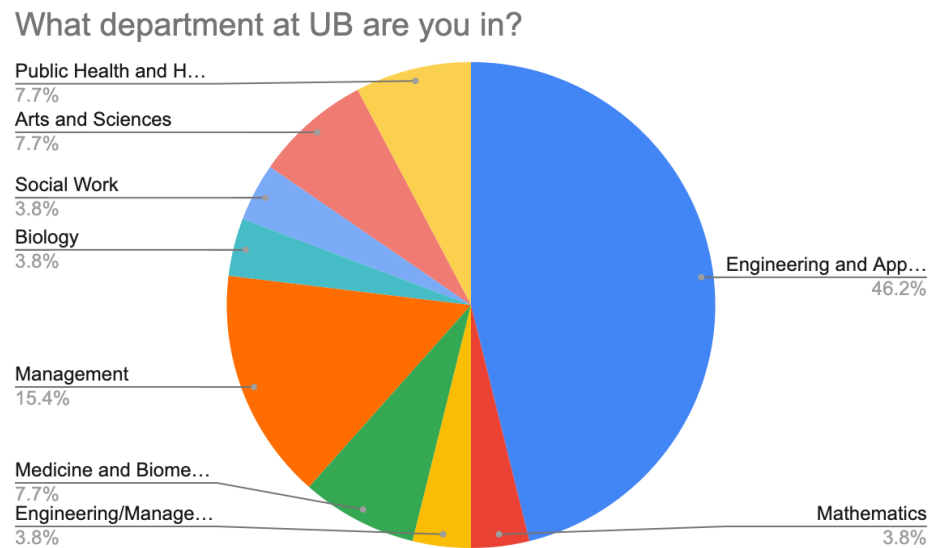
Design & Procedure

Survey

The current user research will begin with a general survey to narrow our research questions. By using a survey, we were able to gather a larger sample of participants because the participants can complete the survey on their own time. The survey first explored general demographics such as academic department and year/position. After demographics, the survey asked participants about the frequency of their use of the app, their use of other UB affiliated apps, what the participants mostly use the app for, what the participants think the app does well, what the participants think the app could improve on, and how the participants would describe the app. We recruited participants for the survey by posting it on the UB reddit page. We were able to recruit 47 participants for the survey.

Figure 1*: Respondents Year at University*
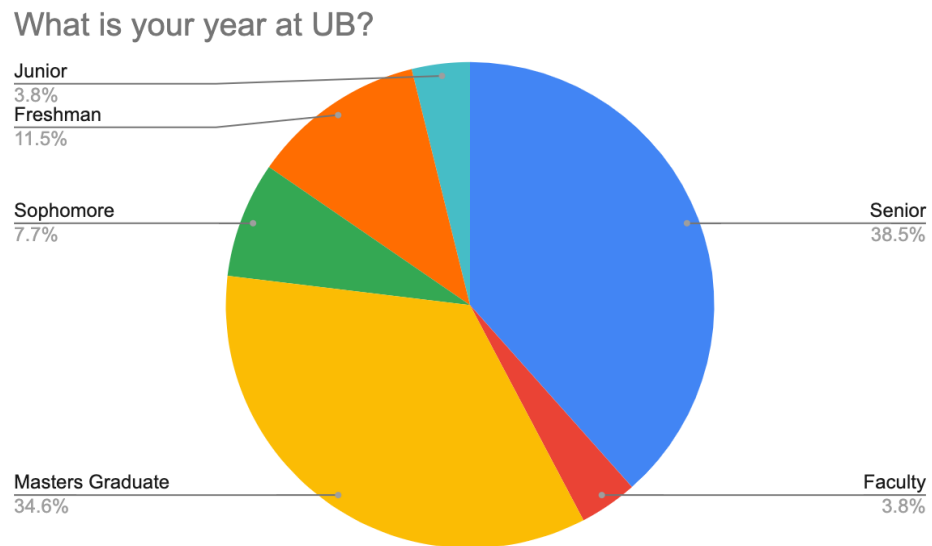
Note. In *Figure 1* above, we can see that 73.1% of survey respondents were of senior level and higher.

Only 3.8% of survey respondents were faculty.

Figure 2: Breakdown of Respondents' Departments

What department at UB are you in?

Public Health and H…
7.7%

Arts and Sciences
7.7%

Social Work
3.8%

Biology
3.8%

Engineering and App…
46.2%

Management
15.4%

Medicine and Biome…
7.7%

Engineering/Manage…
3.8%

Mathematics
3.8%

Note. In *Figure 2* above, the majority of survey respondents were from the Engineering and Applied Sciences department. The second largest group of survey respondents were from the School of Management. The third largest group is tied amongst Public Health, Arts and Sciences, and Medicine.

One-on-One Interviews

The next step in our research was to conduct 6 one-on-one semi-structured interviews with participants to garner a further understanding regarding the app's current functionality and ease of use. However, the first interview conducted was done with all 4 interviewers to set a consistent understanding among us on how to conduct the interviews. We recruited participants through word of mouth/asking around. The one-on-one interview consisted of providing tasks to the participants that required them to go through with the UB Mobile App. We planned to voice and screen record these sessions for future reference and further analysis. During the interview, we asked participants for verbal consent and provided a brief introduction of the interview's purpose. We did not provide any sort of feedback in terms of issues or errors they faced since that might affect the way they navigate through the app for future tasks. Before diving into the tasks, we asked their general thoughts on the app. As for the tasks

themselves, they consisted of 1 dashboard task, 2 event tab tasks, 1 schedule tab task, 2 dining tab tasks, and 2 library tab tasks. In each task, whether they were able to complete it or not, we asked follow-up questions about their thoughts on the specific feature we asked them to interact with. Also in each task, we asked them from a scale of 1-10 (1 being extremely easy and 10 being extremely difficult) how difficult the task was. In some tasks, we asked how often they would plan to use this feature in the app (1 being never and 10 being very often). The list of all the interview tasks and questions are below:

Interview Tasks & Questions for Review of the UB Mobile App

Instructions for interviewer: Ask interviewee if it's okay to record screen and audio. Record time taken to complete tasks and record answers to questions following tasks. Take a semi-structured interview style (ask written questions but allow interviewee to elaborate if desired).

Initial Interview:

- What are your general thoughts on the app?

Dashboard Task (1):

- Find Lovepreet Singh's email address in the directory.
    - On a scale of 1-10 (1 being never and 10 being very often) how often would you use this feature?
    - On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how simple was this task?
- What are your thoughts on the dashboard?
    - What do you think about the way that the dashboard is set up?
    - Do you think it can be improved upon? If so, how?

Events Tasks (2):

- Find the event "Spring Recess 03/24/2023"

- ● On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how simple was this task?

- Find an event from Engineering and Applied Sciences department

  - ● On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how simple was this task?

- What are your thoughts on the events tab?

  - ● What do you think about the way that the events tab is set up?

  - ● Do you think it can be improved upon? If so, how?

  - ● On a scale of 1-10 (1 being never and 10 being very often) how often would you use the events tab in the app?

Schedule Task (1):

- From the UB Mobile App, find your schedule

  - ● On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how simple was this task?

- What are your thoughts on the UB learns and my UB tabs?

  - ● What do you think about the way that these tabs are set up?

  - ● Do you think it can be improved upon? If so, how?

  - ● On a scale of 1-10 (1 being never and 10 being very often) how often would you use these tabs in the app?

Dining Tasks (2):

- From the UB Mobile App, find your campus cash balance.

  - ● On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how simple was this task?

  - ● What are your thoughts on the GET app?

- From the UB Mobile App, find Champa Sushi's Location/hours.

- ● On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how simple was this task?

- What are your thoughts on the dining tab?

    - ● What do you think about the way that the dining tab is set up?

    - ● Do you think it can be improved upon? If so, how?

    - ● On a scale of 1-10 (1 being never and 10 being very often) how often would you use the dining tab in the app?

Library Tasks (2):

- From the UB Mobile App, book a room in Silverman's Library study room.

    - ● On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how difficult was this task?

- From the UB Mobile App, find the book 'interaction design: beyond human computer interaction 2nd edition' and begin requesting it (Don't actually request it).

    - ● On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how difficult was this task?

- What are your thoughts on the library tab?

    - ● What do you think about the way that the library tab is set up?

    - ● Do you think it can be improved upon? If so, how?

    - ● On a scale of 1-10 (1 being never and 10 being very often) how often would you use the library tab in the app?
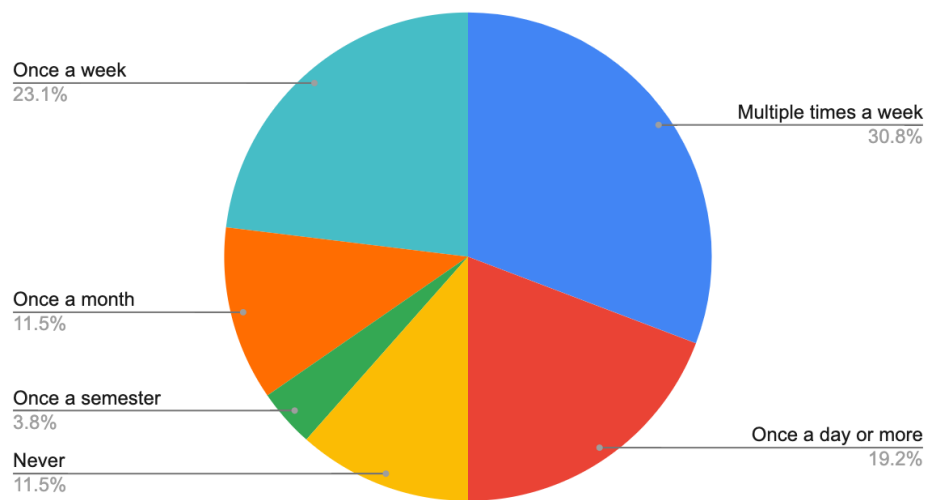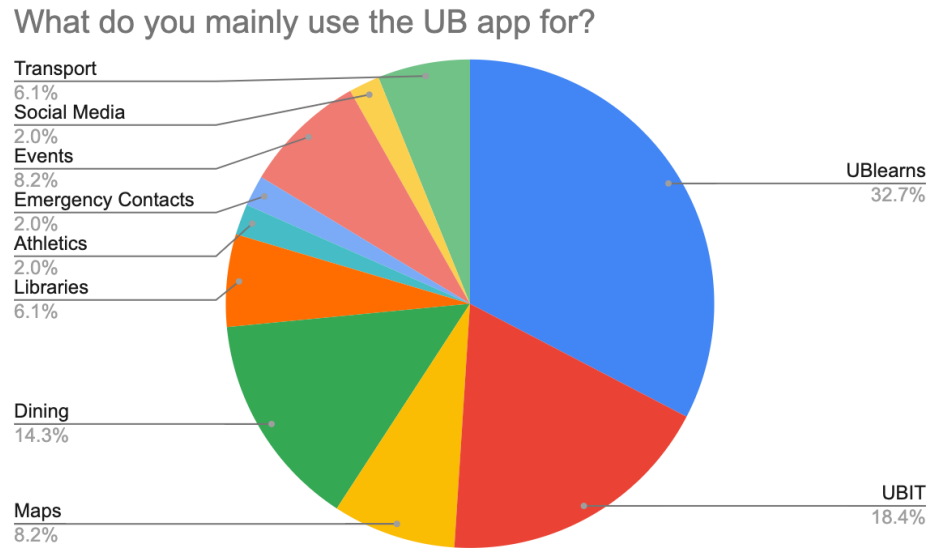
Data Analysis

      As we mentioned we have 2 main forms of data collection, a google forms survey and 10 one-on-one interviews. We provided some descriptive analysis through Google forms and additional distribution tables made through Google spreadsheets.
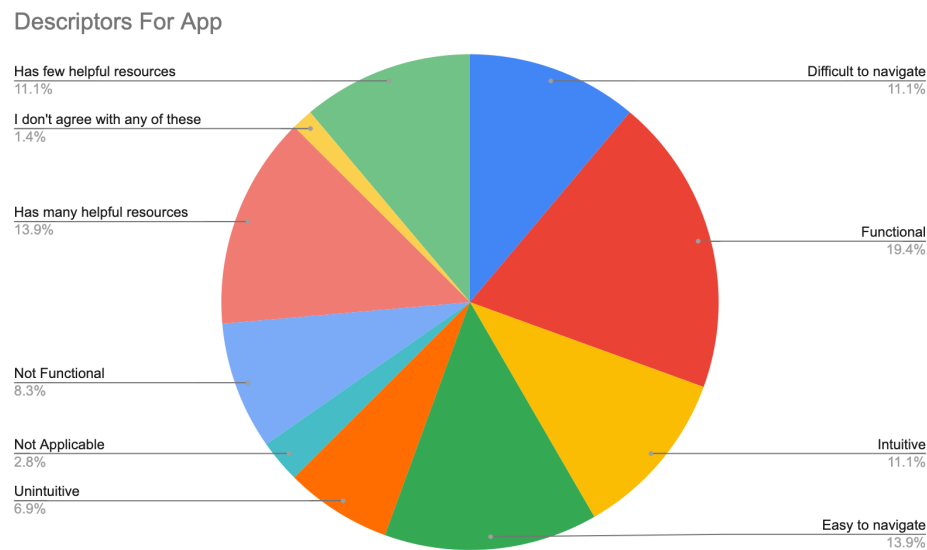
Figure 3: *Frequency of app usage*

How often do you use the UB mobile app?

Once a week 23.1%
Multiple times a week 30.8%
Once a month 11.5%
Once a semester 3.8%
Never 11.5%
Once a day or more 19.2%

Note. In *Figure 3* above, you can see our responses to the survey question "How often do you use the UB mobile app?". According to the responses 73.1% of the respondents use the app a minimum of once a week and 50% of the respondents use the app multiple times in a week. This shows that students/faculty do make use of the app on a normal basis therefore it's important that the app is user-friendly. Surprisingly only 26.8% of the respondents use the app infrequently, that being once a month, semester or never.

Figure 4*: Primary Use of App*

What do you mainly use the UB app for?

Transport 6.1%
Social Media 2.0%
Events 8.2%
Emergency Contacts 2.0%
Athletics 2.0%
Libraries 6.1%
Dining 14.3%
Maps 8.2%
UBlearns 32.7%
UBIT 18.4%

Note. In *Figure 4* above, you can see the responses for the question "What do you mainly use the UB app for?". Amongst the respondents the most popular were UB Learns, UBIT, Dining and Maps. Within the app, the first three are not integrated into the app and are simply hyperlinks. Whereas the maps section is built into the app. From this we learned that it's important to integrate those top three sections into the app for ease of use.

Figure 5: *Descriptors for Current UB Mobile App*

Descriptors For App

Has few helpful resources
11.1%

I don't agree with any of these
1.4%

Has many helpful resources
13.9%

Not Functional
8.3%

Not Applicable
2.8%

Unintuitive
6.9%

Difficult to navigate
11.1%

Functional
19.4%

Intuitive
11.1%

Easy to navigate
13.9%

Note. In *Figure 5* above, the responses to our survey question where we listed multiple common descriptive terms for the current app and allowed participants to select all that applied are displayed. The options consisted of: Intuitive, Unintuitive, Easy to Navigate, Difficult to Navigate, Functional, Not Functional, Has Many Helpful Resources, Has Few Helpful Resources, I Don't Agree with Any of these, Not Applicable.

For one-on-one interview analysis, we used an issue prioritization method called *task criticality x impact x frequency = severity.* This method prioritizes issues that users face during user task flows, and we gathered this information through our one-on-one interviews. This method uses 3 primary means to prioritize issues or in this case called, *severity*. *Task criticality* is how important the task is to the user. An example in our case would be a student having difficulty navigating through the app to find their schedule. We then took a scale to measure this task's criticality, 10 = critical and 1 = low. Similarly, we used the same structure for *impact* except impact is how much of an impact an issue would have on the users task. Going back to the schedule example, if the student interviewee was not able to navigate through the app to the schedule, we would rate that a 10 which would be 10 = blocker. If they were able to

find their way, it'd be 1 meaning 1 = complete. Lastly, *frequency is* the occurrence of this issue among all participants of our interviews. We would take the decimal value of this meaning if 2 out of 6 interviews faced this issue, it'd be .3 occurrence. Along with a description of each issue, an id associated with the task, type of issue (navigation, usability, information layout, misc), we multiply the scores from *task criticality, impact, frequency* and ultimately get a score of the *severity*. With the severity score, we were able to rank each issue that our users face and prioritize issues that need to be addressed sooner than later. This method of data analysis is useful because it allows us to keep track of issues that users run into but also to provide a reason as to why we made the design decision as we did when we reached the redesign portion of the project. The table below shows our analysis of the interviews.

Table 1: Prioritization of Issues Example

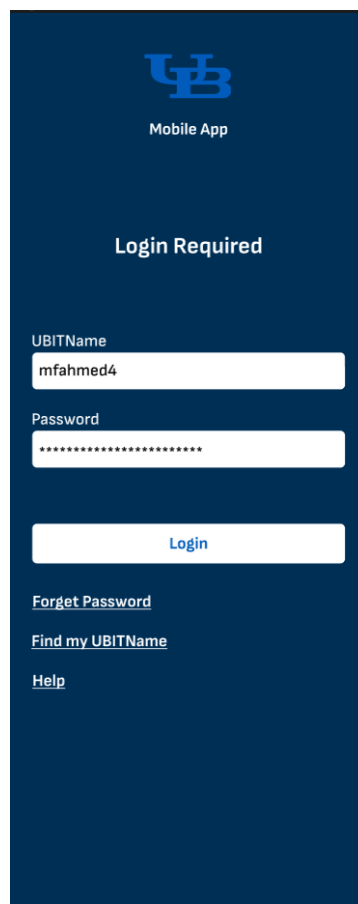| ID	Task	Type of Issue	Description of Issues	Task Criticality	Impact	Occurance	Frequency	Severity	Solution 1
1	Dining - Locations around campus	Layout	Didn't realize there's a section for North and South campus under the dining section	4	4	3/6	0.5	8	Make it more clear that there's 2 different dining options
2	Events - Find an event from Engineering and Applied Sciences department	Layout	Initially went to department page too look for events instead of events page. Had a hard time navigating where the events information was. Information layout confused the participants. Missed the icon for the search button (too small).	3	4	3/6	0.5	6	Search, Calender icons should be a lot more noticable.
3	Dining - Find your campus cash balance	Layout	(Commuter, participant never had to look for campus cash) Could not find how to find campus cash balance. Could not find GET app link. Instead, went to myhub from app and looked for icons that has some relation to campus cash.	4	4	3/6	0.5	8	
4	Library - Booking a study room in Silverman's Library	Navigation	While they found how to reserve a video recording room, could not find anything on how to book a study room. Went through multiple menus but could not find it.	4	4	1/6	0.16	2.56	
5	Overall - Constant Login	Usability	Participant hated that they had to constantly login while using the app. Going to UBLearns, Myhub, loaning a book, all required constant logins even though they had already logged in once before.	5	5	3/6	0.5	12.5	One time login
6	Events - Find when Spring break is	Layout	Participant took a while to find the spring break, didn't use any built in functions but went manually week by week until they found the date (already knew the date)	3	5	1/6	0.16	2.4	More intuitive layout of menu on the events tab
7	Library - Booking a study room in Silverman's Library	Navigation	Participant couldn't find how to book a room at all, looked and searched all tabs, needed help to complete the task	5	5	1/6	0.16	4	Labeling categories and menus better
8	Overall - Browser issues	Usability	Participant was struggling with the browser constantly refreshing and resetting the location they were at, also when typing the screen kept moving which caused more issues	4	5	4/6	0.66	13.2	Integrating into app therefore browser doesn't have to be used
9	Overall - Redundancy	Misc	Participant consistenly said that they would just use a web browser and that the app added no real value to the experience. It is just redundant	5	3	3/6	0.5	7.5	Making the app customizable and designed for mobile so that it isn't the same as the websites

Method of Prototype Creation

We utilized a collaborative design tool called Figma to make a semi-functional prototype. This tool was chosen because it's a free, online platform that allows us to work collaboratively without needing to meet in person. This convenience saves time because we didn't have to schedule in-person meetings around all of our varying schedules. We can all access the prototype whenever we need to work on it instead of passing around a physical copy. The tool itself was a clean and simple way to create our design. We could make changes to specifics without having to remake the surrounding design choices like a paper prototype would have us do. The user testing also benefited from the prototype being digital instead of handwritten as there was not a problem of legibility. Additionally, since we are redesigning an existing application, and did not need to do as much initial brainstorming, a computerized version was more useful in creating an optimal design. Overall, Figma was the best choice to create our prototype.

Design Process of Prototype

Design of Login Page

        We designed a login page that will show up when the app is first downloaded and when the user

logs out. This was included so that the user only has to login into their UB account once. Then they can

access all of the different tabs with their information instead of having to login separately for every tab

like the current app requires. This allows easier navigation and reduces the chance that the user will

become frustrated and disinterested in using the app. The login page design can be seen in *Figure 6*

below.

Figure 6: Login Page

Design of Homepage

The overall redesign of the homepage is to simplify, reduce options, and provide a quick menus of important information. We realized through our interviews and surveys that most students enjoyed the overall simplicity of the homepage on the current UB mobile app. However, a lot of them did mention that there are too many options, and they only use 2 to 3 options consistently. We decided to tackle this issue 2 ways: the hamburger menu situated top left and Quick Links under the search button. In the hamburger menu, we added 10 sections that are currently present throughout the current UB mobile. As we know, hamburger menus nowadays are often to condense information in another tab, but this also inadvertently hides away information that users could potentially miss. In our case, this feature works perfectly because most of our participants don't want to see this many tabs. Quick Links is our other form of condensing information tabs where we limit to 4 icons and to the user's choice. The users are able to add and remove what icons they'd like to see through the 'Edit' button. Next to the hamburger menu, we have the Profile button where we plan to add information such as the user ID, if they are logged in. The search button that's situated directly under the UB logo is essentially the same as the current design of the mobile app. Instead of having 2 search buttons we combined into one and the users are able to change the category of what they are searching for through the drop down menu. The gap that is there between the search button and Quick Links is meant to have a picture of UB, which would give it a more welcoming look. Under Quick Links, we have Classes, Dining, and Events. All these tabs are meant to be quick views for the users on the dashboard. We know that a lot of students avoid certain sections, but if we are able to cater the information towards them, they are more inclined to view them. We do this through features such as "nearest open" under the Dining tab. We also noticed that certain students would like to know some quick information such as their class times or events that are upcoming without having to go through too much of a hassle. The classes and Events tab both provide this feature where a quick preview of their class schedule is shown and "featured" events that are happening that day.

Figure 7: *Homepage of the App*
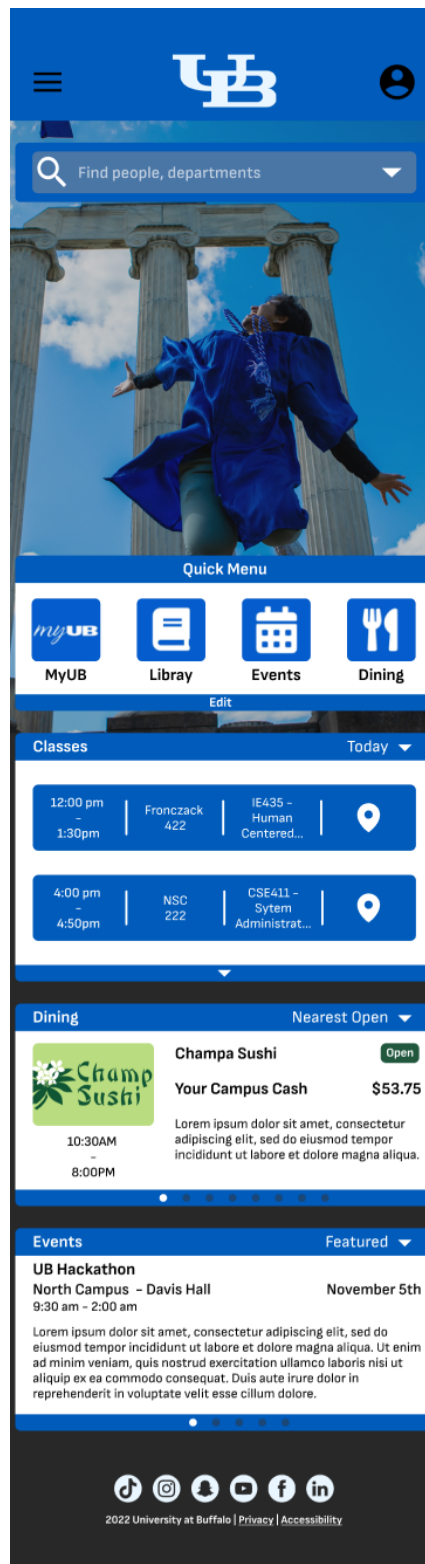
Design of Menu/Profile

The addition of both the menu and profile tab is to provide access to the whole directory of the

app in an easy manner. As seen in *Figure 8 ,*the menu is located on the top left section of each page and

allows users to jump from page to page without needing to go back to the home page for navigation. The

menu section ultimately provides a central location for users to access the different features and

functionality of the app. The profile section is there to be a digital wallet for UB students. Electronic

events pass is commonly used throughout UB for any sort of events and oftentimes need the student's

corresponding UB card. Having to pull out events pass/UB card from different websites of UB (i.e. UB

Navigation) can be a hassle. By providing students with this feature, they have an easy to access place in

order to retrieve required information, which simplifies the whole process.

Figure 8: *Menu/Profile*
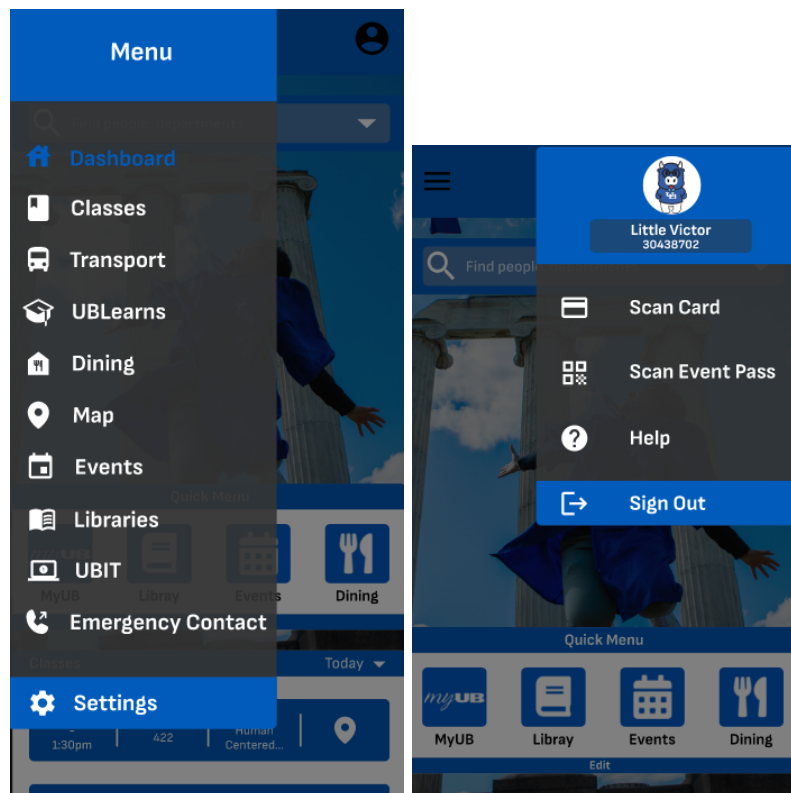
Design of MyUB HUB

      One of the key icons that most students use on the current mobile app is MyUB. From the mobile

app icon, MyUB takes students to the browser version of the HUB. This is one of the key features that

bothered many of our participants during the interview, where most icons just led them to browser

versions of the app. At the same time, when the students arrived at the HUB tab on the browser they liked

the simplicity that it provided through large icons. This allowed us to narrow down the issue to integration

of the HUB to the mobile app. We decided that keeping the structure of the HUB student center on the

mobile app will create familiarity with the user (seen in *Figure 9*).

Figure 9: *HUB Student Center Tab*
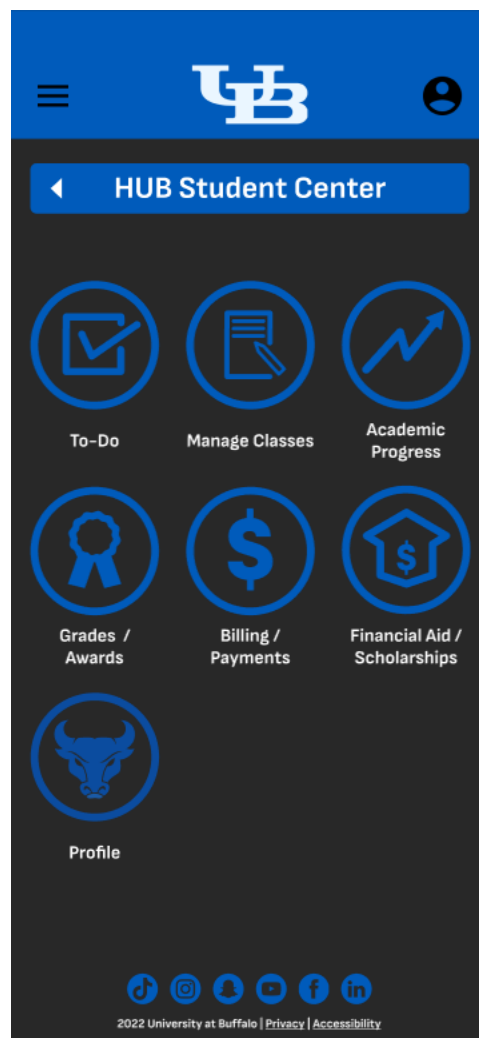
Design of View My Classes Tab

From the HUB tab we decided to go one step further with one of the icons. Since the icons are the same as the ones found on the browser, if they were to click one that would say "Manage Classes" it could take them to *Figure 10*, where they would have a "View My Classes" tab. As we know from the information architecture on the "Manage Classes" tab, there are multiple tabs within it. To integrate that feature, we added a drop down menu under the current tab which would allow them to switch between all the tabs that exist within that section.

***Figure 10:*** *View My Classes Tab*
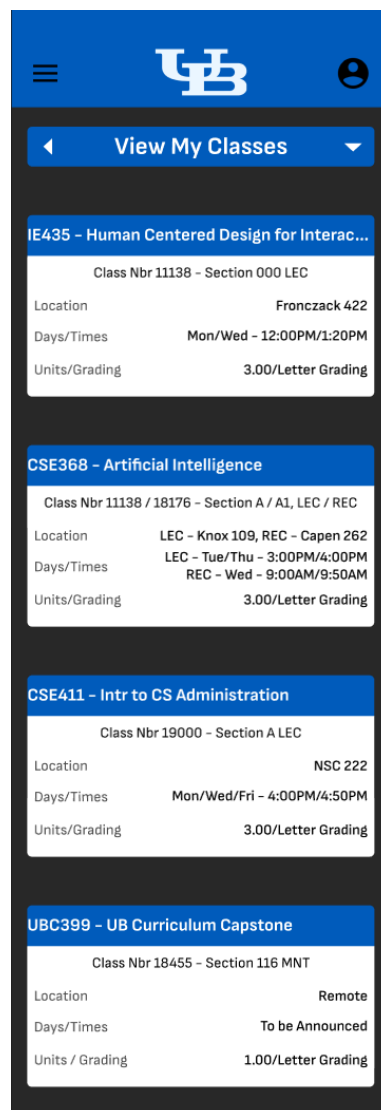
Design of Libraries Tab

Below, in *Figure 11*, is the newly designed library tab within our app. Currently the library tab on the app redirects to the main library webpage leaving the user to find what they want manually. We have updated the library tab to first be embedded within the app, it will be accessible from the master hamburger menu or it can be accessed from the home page of the app if the user has selected it as a quick link. We created three main tabs within the library tab, the reserve tab will allow students to reserve books, equipment or rooms with the libraries, the research tab will provide users with additional research tools, and the library information will include hours, locations and contact information for each library.

During our interviews we tasked the participants with using the current app to first book a room in the silverman library then reserve any book. We noticed most of our participants struggled with both tasks as they spent a lot of time on the library mainpage trying to navigate where to go. Even when they found where to go they struggled to book the room as scrolling through the time slots was not mobile friendly because it was on the web browser.

We created a severity scale of issues that our interviewees faced and we had two instances relating to the library task which were rated 7 and 8 out of the 9 total issues. Both issues related to the user getting lost within the library website so we tackled this issue by using two main methods - organization and simplification. As most students struggled booking a room, we decided to add a page that simplifies this process by showing the current month, week, day, and time slots that are available within each room. As shown in *Figure 12,* the page is broken down by each library that exists within UB, and further broken down by a clear hierarchy. This allows for a simple navigation for students while still providing all the information needed to reserve/book a room in each library. Furthermore, a confirmation pop-up was added in order to provide all the necessary rules and regulations that come with booking a room at UB.

Figure 11: *Libraries Tab - Homepage*
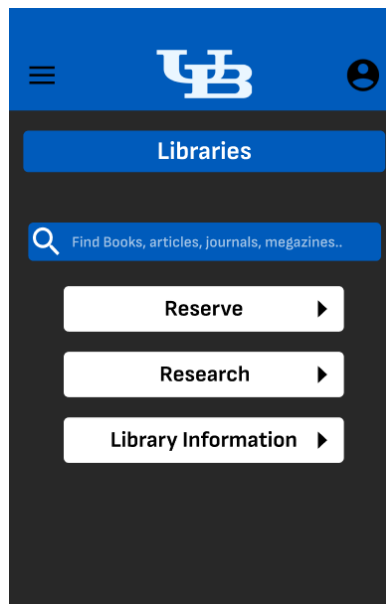
Figure 12: *Libraries Tab - Reserve*
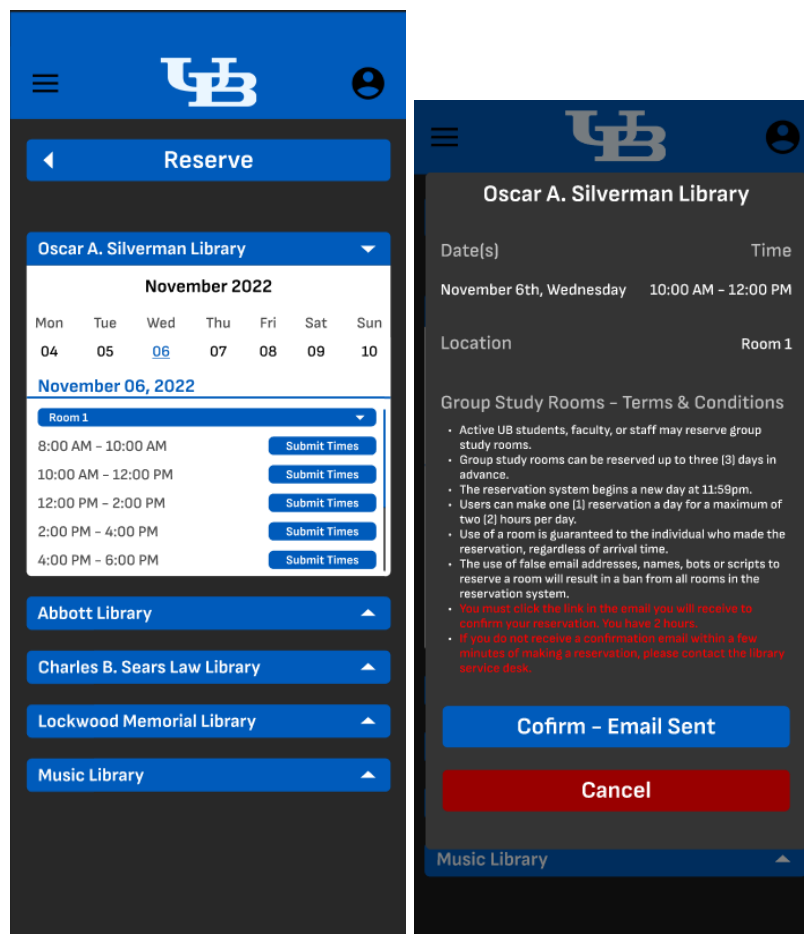
Design of Dining Tab

The screen shown below in *Figure 13* shows our initial prototype for our Dining Tab in our app redesign. Users will be able to access this screen in 2 separate ways. They can utilize the hamburger menu in the top left section of the screen and select the dining tab, or on the home page if the user has the dining tab selected as a Quick Link, they can access it there. On this screen, users will be able to find and control their balances available to be used for dining, similarly to the GET app. Additionally, the users will be able to see the dining locations available sorted by location. The current UB Mobile Dining tab is a hyperlink to the campus dining and shops webpage and displays various links regarding on-campus dining, but the navigation of this page can be confusing.

Our primary feedback for dining from our initial interviews highlighted 2 major issues. Within our ranking of overall app issues, both dining problems received an 8 for severity score putting them tied for the third most important issues overall from our user testing. The first major issue users were having with the current UB mobile app was that there wasn't a clear distinction between where dining options were located and how those locations were named. Our solution was to separate the dining options out by their locations such as North Campus, South Campus, and Downtown. Some of our surveyed users also voiced their concerns regarding the decision to have Ellicott listed as a separate location from North Campus. To solve this concern, we listed all of the Ellicott dining options under the North Campus Tab and when users are looking for specific locations of dining within the North Campus, it will be listed as in the Ellicott complex. The second major issue that came to light during our interview process was that finding your current balance within the UB Mobile app was difficult. To reduce the user's confusion trying to find the balances and need to switch to the GET app, we included a link right at the top of the Dining tab for easy access. The link will lead the user to a new page where they can view and add funds to their three balances - Campus Cash, Commuter Dining, and Dining-Bill Me.

Figure 13: *Dining Tab*
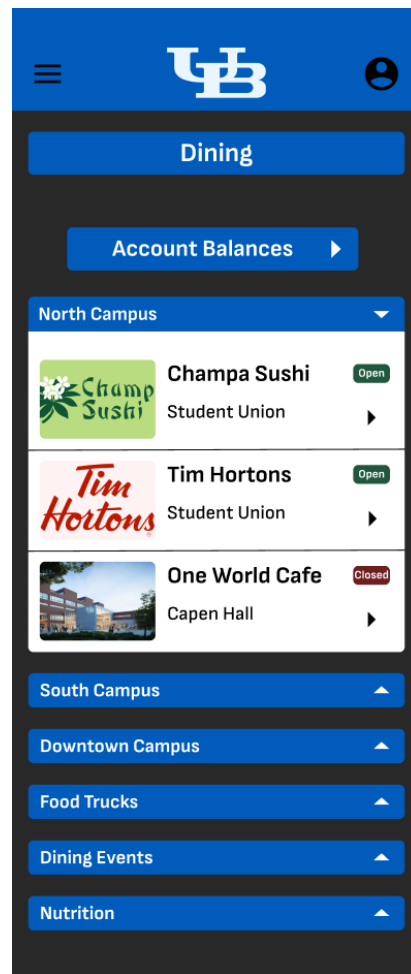
Design of Events Tab

The events tab, shown in *Figure 14*, has been redesigned to be integrated into the app instead of being a hyperlink to the website. It has been organized by date, so that the users can see all of the events of a particular day in a scroll down display. It allows the users to search for specific events, but also includes a filter option to search for specific dates, departments, and locations of events.

Participants had trouble navigating the dates in our interview tasks, so we made it simple to find the dates needed and to be able to scroll through different dates on the same page. The events tab just needed to be integrated into the app, better organized, and more searchable. This is what we have tried to achieve through our design.

Figure 14: *Events Tab*
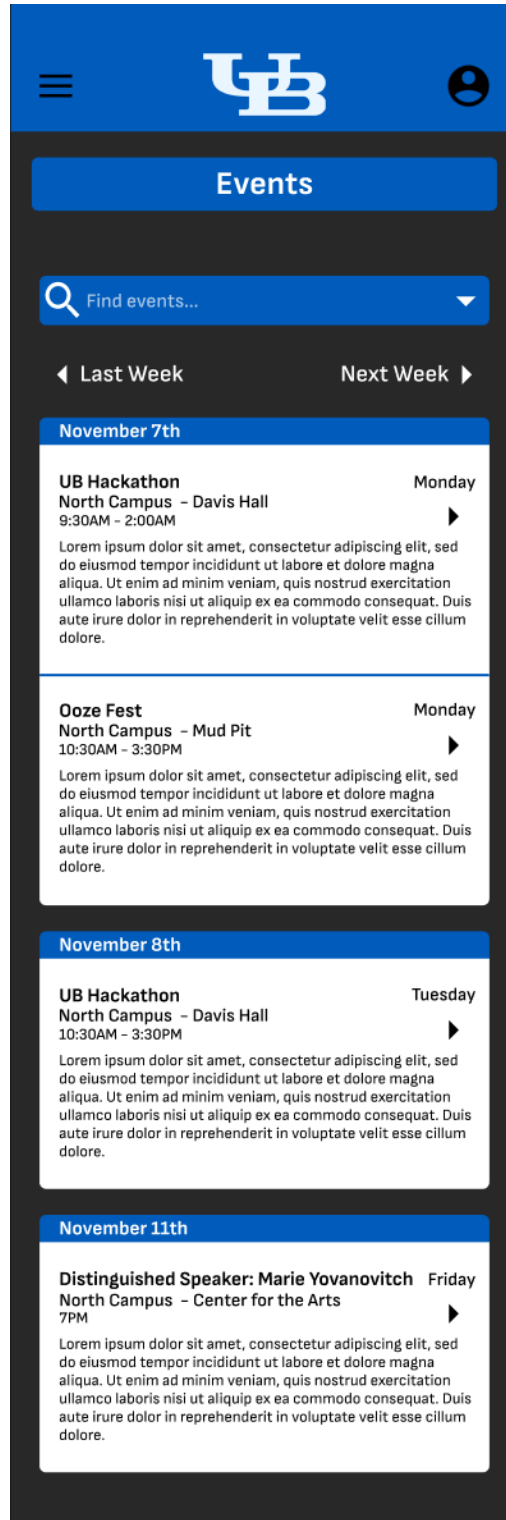
User Testing of the Redesigned App

Interview Tasks and Questions for Prototype

Instructions for interviewer: Ask interviewee if it's okay to record the screen and audio of the interview.

Record time taken to complete tasks and record answers to the questions following the tasks. Take a

semi-structured interview style (ask written questions and allow interviewee to elaborate and ask follow

up questions if desired.)

Dashboard Task:

- Find the drop-down menu for the directory

    - On a scale of 1-10 (1 being never and 10 being very often) how often would you use the

      directory feature?

    - On a scale of 1-10 (1 being extremely easy and 10 being extremely difficult), how simple

      was it to find the directory.

- What are your thoughts on the dashboard?

    - What do you think about the way that the dashboard is set up?

    - Do you think it can be improved upon? If so, how?

Events Tasks:

- Find the events tab

    - On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how

    - simple was it to find the events tab?

- What are your thoughts on the events tab?

    - What do you think about the way that the events tab is set up?

    - Do you think it can be improved upon? If so, how?

    - On a scale of 1-10 (1 being never and 10 being very often) how often would you

    - use the events tab in the app?

Navigation Task:

- From the events tab, find your way back to the main dashboard

    - On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how simple was this task?

Schedule Task:

- Find your schedule

    - On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how simple was it to find your schedule?

- What are your thoughts on the schedule tab?

    - What do you think about the way that the tab is set up?

    - Do you think it can be improved upon? If so, how?

    - On a scale of 1-10 (1 being never and 10 being very often) how often would you

    - use this tab in the app?

Dining Tasks:

- From the UB Mobile App, find your campus cash balance.

    - On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how simple was this task?

- From the UB Mobile App, find Champa Sushi's location.

    - On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how simple was this task?

- What are your thoughts on the dining tab?

    - What do you think about the way that the dining tab is set up?

    - Do you think it can be improved upon? If so, how?

    - On a scale of 1-10 (1 being never and 10 being very often) how often would you

    - use the dining tab in the app?

Library Tasks:

- From the UB Mobile App, find the library tab and reserve a room from 10am to 12pm.

- On a scale 1-10 (1 being extremely easy and 10 being extremely difficult), how simple

  was this task?

- What are your thoughts on the library tab?

    - What do you think about the way that the library tab is set up?

    - Do you think it can be improved upon? If so, how?

    - On a scale of 1-10 (1 being never and 10 being very often) how often would you

    - use the library tab in the app?

Closing Interview Question:

- What are your general thoughts on the redesign of the app?

User Testing Analysis

As discussed before, we used a similar structure for our post-prototype interview that was

previously used for our first round of interviews. The same scoring system was used where the

participants were asked to rate how easy or difficult a task was and how likely they are to use this feature.

The rating method was done to compare and contrast the results from our initial interviews and our

post-prototype interviews. By comparing the results of ratings before and after each session of interview,

we can quantifiably explain if our prototype improved and/or solved any issues our participants face with

the current app.

One of our scoring systems was how easy or difficult (1 being very easy and 10 being very

difficult) each task was. As mentioned in our methods, each task corresponded to a feature or function

that the participant had to interact with on the app and the prototype. In *Figure 15,* we used this scoring

system to construct a bar chart that shows the average ease of use of each task among all users. The bar

chart allows us to visually see the difference between the ease of use within the current app and our

prototype.

The result we have gained from our bar chart is that most users on average found our prototype to

provide a much easier experience in terms of completing the tasks rather than the current app. The tasks

that were used from our initial interview were mostly kept the same for our post-prototype interview,

minus some minor tweaks to better fit the testing. Not enough changes were made to each task to warrant

any sort of issue that might cause our prototype to be fundamentally easier. Along with verbal feedback

we gained during the post-prototype interviews, most participants' consensus was that the prototype

provides a much more fluid experience in terms of using the app and from our chart, we can say they also

had a much easier time completing most tasks. Furthermore, when we look at the average of all the tasks

in terms of easiness, our initial interview had a score of 2.63 (lower is better) while the average for our

prototype was 1.34. This means that we lowered the ease of completing each task almost by double.

While we can't completely conclude anything, we can say that most users found our prototype to be the

solution that they are looking for in terms of issues, features, and content found from our user research.

Figure 15: *Ease of Use Comparison*
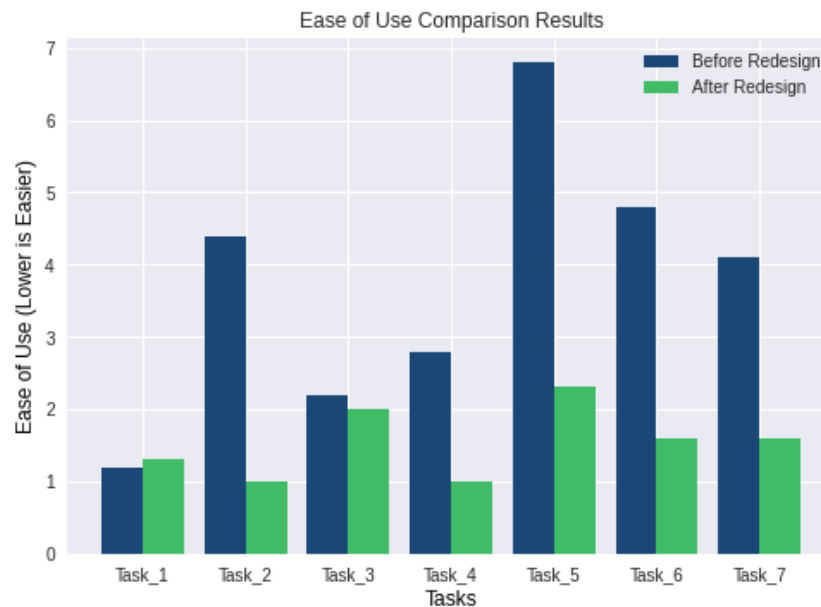
Conclusions and Future Work

Design Changes

For evaluating our prototype, we took both the ranking method mentioned above and the participants' verbal feedback moving forward. A common point of feedback from our participants was relating to the usage of user feedback, or lack thereof. One of our interview tasks included booking a study room in the Silverman Library and upon completion our participants noticed there was no user feedback to let them know that the task was complete. In our current prototype, once you finished the booking process you would return to the main menu of the application without receiving acknowledgement. Moving forward with our second iteration of our prototype we would include some sort of confirmation screen to let the user know that this task is done, completed and confirmed with the system.

Another common theme from our verbal user feedback pertained to navigation within the application. Once our participants completed their current task we would ask them to return back to the home page of the application. Upon doing this multiple times they noticed that the methods to return to the home page were inconsistent. In some screens we had a small arrow at the bottom of the page to indicate that it would return you back to the home page, however some screens lacked this arrow and instead the user had to click on the UB logo at the top of the screen to instead go back. These inconsistencies could eventually lead to frustration amongst the user therefore moving forward we would include an arrow at the bottom of the page at all times for easy navigation back and forth for the user.

Lastly we received feedback about customizability and filtering information within the application. These comments arose from the tasks which involved the users using the Events tab and viewing the Schedule tab. Currently the Schedule tab only shows the layout of classes in a vertical menu for ease of viewing because of the mobile screen. However we had participants stating they would like to view their schedule in a horizontal format similar to a weekly view that is on the UB Hub currently. Within the Events tab the participants noticed there were no filtering options, therefore if you were looking through events you were not able to filter out events from clubs, schools etc. that you did or

didn't want to view. Going forward, we would add more customizability options within both our Schedule

tab and Events tab which allow the user to change viewing and filtering options.

Challenges and Limitations

Throughout our design process we faced little roadblocks. The few that we encountered were

more recent and during our Prototype testing. We were only able to get 3 participants for our

testing/interview, this number being down from the 6 that we had earlier in our process. This occurred

because we conducted our usability testing later in the semester therefore students were reluctant to take

time out of their studying for final exams, projects etc. This caused us not to be able to create a table

including our Prioritization of Issues, having too few participants our results would be too skewed

therefore we relied on common verbal feedback that all three participants had when we created our list of

future design changes.

Works Cited

Turning Usability Testing Data into Action without Going Insane. (n.d.). Total Design Blog.

https://www.toptal.com/designers/usability-testing/turning-usability-testing-data-into-action

UB Fast Facts | University at Buffalo | Undergraduate Admissions. (n.d.). Admissions.buffalo.edu.

https://admissions.buffalo.edu/academics/about-ub.php