

Usability Evaluation: User Testing

INST 631, fall 2022

University of Maryland app

(Listed in Playstore as: University of MD)

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1 - Usability Study Methods

1.1 - Procedures

Describe your methods, whether the testing was moderated/unmoderated and remote/in person, how the usability testing environment was set up for participants, and the tools and devices used during the evaluation.

For the second half of my evaluation of the University of Maryland campus app, I conducted remote, moderated usability testing with five participants. I collected consent forms from each participant via email and then asked each person to download the University of MD app on their phone. Each participant received an email with a link inviting them to a usability session which I set up using the UserZoom Go platform.

After clicking on the link, participants were prompted to download the Validately app required by UserZoom Go. They completed a quick mic and video check and were then admitted to the session.

At the beginning of each session I thanked the participant for their willingness to participate in the study and let them know how the session would be structured. I emphasized that our goal was not to test their skills or abilities as a user, but to test the app interface and its ease of use. With their permission I started the session recording and prompted them to share their screen.

While screen sharing, participants were able to hear my voice but not see me. This allowed me to give instructions without distracting the participants or making them feel too self-conscious about being watched. As the moderator I was able to see the participants' screen as well video from their front facing camera so that I could watch their facial expressions and body language.

I presented the tasks verbally, one at a time. I decided against using the chat feature to communicate tasks since the testing was conducted using smartphones and I did not want participants to have to navigate away from the UMD app to view each task. For the most part I remained silent as participants attempted each task, only providing help when they ran into a bug and did not know how to get back on track. I utilized the timestamped note taking feature within the UserZoom Go interface to record start and stop times for each task as well as other notes and observations. After participants completed or abandoned each task, I asked them to share what they found helpful and what they found frustrating about their experience working through that particular task. At the end of the session I also asked each participant to share their overall thoughts about the most helpful/frustrating aspects of the app as well as which functions (if any) they would personally be most likely to use as a student. After each session I rewatched the recording, writing down key quotes from participants and making note of other observations such as navigational struggles and facial expressions.

1.2 - Recruitment

How were your participants recruited?

Participant recruitment for this study was driven mainly by convenience. I recruited participants from among my friends, family members, and roommates, however I did set certain participant criteria. I recruited only participants who are current undergrad or graduate students or who had graduated very recently.

1.3 - Participants

Describe how many participants were involved in the study and how your recruited participants differed from the typical users you mentioned in the previous assignment. Include a table detailing the date of each evaluation as well as participants' age, gender, education, job responsibilities, and technical experience.

All five participants involved in the study are current students or have graduated within the last six months (two as undergraduates and three as master's students), and range in age from 20 - 28. In that regard they match the profile of a typical user for this app quite well. Because none of the participants attended UMD, they approximate the knowledge level of students who are new to the university, either as Freshmen, first year grad students, or transfer students. The participants in this study are not representative of students who are already familiar with UMD, but new students are arguably the more important group to focus on at this stage. If a new student's initial experience of the app is negative, they are very unlikely to continue using the app during their time at UMD.

Participant	Date	Age	Gender	Education	Job Responsibility	Tech Experience
Pilot	11/4, 1pm	25	Female	Bachelor's	Marketing specialist	Proficient
P01	11/5, 11am	22	Male	Recent grad (Bachelor's)	Engineer	Highly Proficient
P02	11/5, 12pm	22	Female	Recent grad (Master's)	Data Analyst	Proficient
P03	11/5, 3pm	20	Female	Junior (undergrad)	Student	Proficient
P04	11/11, 1pm	25	Female	Recent grad (Master's)	Architectural consultant	Proficient
P05	11/14, 5pm	28	Female	Masters student	Seminary student	Proficient

2 - Usability Study Tasks

2.1 - Pilot Study

How was the task list tested before it was utilized? How did you refine the wording of tasks as a result of the pilot study? Provide an example or two of how you improved task wording or your overall usability study protocols.

I conducted a pilot study of the task list with one of my roommates before conducting the user tests. I gave her the tasks one by one, observing how she went about the tasks to make sure that all of the task goals were clear and not confusing. She did not have trouble understanding any of the tasks, however I did make an adjustment to the way I presented task eight as a result of the test. Task eight involved navigating to the lunch menu for the Yahentamitsi dining hall on a particular day and then providing the number of vegan options available from the Chef's Corner. The pilot test participant had trouble remembering all of the task instructions, so for subsequent user tests I prompted participants to navigate to the lunch menu, and then once they had found the correct page I asked them to tell me the number of vegan options available. Although this task was slightly more complex than the other tasks on my list, I felt it was important to include as it explored a task that users are likely to perform frequently.

The pilot study also uncovered the fact that the UserZoom Go study I had set up was not compatible with iPhones. Since my pilot test participant was utilizing an iPhone, we proceeded with an in-person test for the pilot study in order to evaluate the task list. After the pilot test I modified my recruitment criteria to include only participants with an Android phone. Because evaluating the UMD app is also part of my work as a graduate assistant, I will hopefully have the opportunity to conduct further evaluations with iPhone users as well. The app layout on iPhone has some significant differences from the layout on Android devices and should be explored further.

2.2 - Task List

1. What time does the South Campus dining hall close on Saturday, November 19? (9pm)
2. What is the non-emergency contact number for the University police? (301-405-3555)
3. What day does the season end for the women's 4x4 intramural volleyball team? (Nov 17)
4. Customize the menu so that the "UMD Dining" page and "Shuttle - UM" page show in "My menu".
5. What is the start time for the Cosmic Bowling event happening on Friday, November 11? (8pm EST)
 - Task was modified for P05 since the event had already passed when the testing occurred: What is the start time for the Crocheting for a Cause event happening on Tuesday, November 15? (7:30pm)
6. Is a reservation required to use the huddle rooms in the ESJ building? (yes)
7. What is the location of the third stop on the Silver Spring shuttle? (University Boulevard and Tulane Drive)
8. Look up the lunch menu for the Yahentamitsi Dining Hall on Wednesday 11/16. How many vegan options are available from the Chef's Corner? (4)

9. What is the closest parking garage to the Hornbake Library? (Regents Drive Garage)
10. What is the name of the student group that provides 24 hour walking escorts on campus? (Student Police Auxiliary)

2.3 - Task List Rationale

Describe how tasks were chosen for inclusion in the task list, and why they were judged important enough to evaluate.

I chose tasks based on two main factors: I wanted to test features that I thought students were likely to use most frequently, as well as less frequently used but important functions such as contacting the University Police. One of the tasks involved customizing the app menu settings and the other nine tasks were centered on information seeking. I focused especially on tasks that students are likely to perform as they walk around campus (looking up dining hall information, finding study spaces, requesting a walking escort, etc.) Several of the tasks involving questions about intramurals and campus events were deliberately included to explore areas where I had identified potential problems in the heuristic evaluation.

3 - Usability Study Results

3.1 - Task Results

Describe the overall results of the user-based tests. Include duration of study sessions, summaries of overall tasks, summaries of overall participant behaviors, and discussion of notable outliers.

Usability sessions ranged from 22 - 30 minutes in length, with an average length of 25 minutes. Each task attempt was timed and given one of three performance ratings: S for a successfully completed task; U for tasks that were completed unsuccessfully (participant completed the task, but gave the wrong answer); and A for tasks that were attempted but then abandoned (participant started the task, but did not complete it).

Task List	Performance	P01	P02	P03	P04	P05	Averages
Task 01 - Dining Hall hours	Task Performance	S	S	S	S	S	S 5/5
	Time Performance	28s	36s	41s	40s	43s	37.6s
Task 02 - Police contact	Task Performance	S	S	S	S	S	S 5/5
	Time Performance	1m 31s	34s	22s	21s	1m	45.6
Task 03 - Intramural dates	Task Performance	S	A	S	S	S	S 4/5, A 1/5
	Time Performance	1m 19s	3m 31s	1m 56s	1m 42s	2m 11s	2m 8s
Task 04 - Customize menu	Task Performance	S	S	S	S	S	S 5/5
	Time Performance	53s	17s	22s	22s	36s	30s
Task 05 - Cosmic Bowling event	Task Performance	S	A	A	S	A	S 2/5, A 3/5
	Time Performance	2m 26s	2m 31s	1m 46s	1m 44s	3m 32s	2m 24s
Task 06 - Huddle room reservations	Task Performance	S	S	S	S	S	S 5/5
	Time Performance	24s	1m 29s	24s	1m 28s	17s	48.4s
Task 07 - Shuttle stops	Task Performance	S	S	S	S	S	S 5/5
	Time Performance	1m 14s	14s	25s	15s	17s	29s
Task 08 - Options on lunch menu	Task Performance	S	S	U	S	U	S 3/5, U 2/5
	Time Performance	2m 51s	1m 28s	1m 17s	1m 34s	1m 9s	1m 40s
Task 09 - Parking garage on map	Task Performance	S	S	S	S	S	S 5/5
	Time Performance	36s	38s	1m 29s	38s	1m 34s	59s
Task 10 - 24hr walking escorts	Task Performance	S	A	A	S	S	S 3/5, A 2/5
	Time Performance	24s	2m 48s	2m 23s	1m 55s	4m 11s	2m 20s

Legend

S = Successfully completed task

U = Completed task unsuccessfully

A = Attempted, but did not complete

0-30s	0-30s	0-30s
30 - 60s	30 - 60s	30 - 60s
1 - 2m	1 - 2m	1 - 2m
2 - 3m	2 - 3m	2 - 3m
3+ m	3+ m	3+ m

Task 1 (looking up dining hall hours) was completed successfully by all participants in an average of 37 seconds. All participants were able to navigate through the correct sequence of screens on the first try. P05 commented on the fact that she “had to do several different clicks to get to hours.”

Task 2 (finding the non-emergency Police phone number) - Four of the five participants found the correct phone number within 22-60 seconds by navigating to the Contact Us page. All four participants first checked under the Services toggle, and then looked under Campus where they found the correct number. P03 commented, “I feel like it’s not immediately obvious that police is under campus.” P01 was the only participant who found the number through the UMD Police page. Because he searched around before finding the UMD Police page, the task took him 1 minute and 31 seconds, a longer completion time than any other participant.

Task 3 (finding intramural season end date on RecWell page) - P02 abandoned the task after searching unsuccessfully for the information on the Calendar and Get Involved pages for over 3 minutes and 30 seconds. While looking for information for a later task, she clicked on RecWell and realized that it was the page she had been looking for previously, and commented, “Oh I didn’t know that RecWell was like the intramurals.” The other four participants completed the task successfully, but all struggled to find the correct page. P04 commented “I don’t know what this is. Maybe recreation?” before clicking on the RecWell page.

All four participants who found the RecWell page had trouble reading the small text, bringing the screen closer to their faces to read better. P01 and P04 both zoomed into the area of the page they were interested in. P04 commented, "It's really small and I accidentally clicked on a bunch of things I didn't mean to. This would be easier on a computer." P05 remarked several times on the "weird, outside Google ads." P04 and P05 also expressed frustration about the amount of time the page took to load. P05 stated, "My phone hated it and wouldn't load it for like three minutes. If I had not been doing it for this study, I think I would have given up."

Task 4 (customizing the menu) was successfully completed by all participants in an average of 30 seconds, but was accomplished in three different ways. Two participants navigated to the Customize page through the Menu in the bottom right corner and one user found the Customize option through the Settings page under the profile icon in the upper right. The other two users went to the hamburger menu in the upper left corner and customized from there. (The hamburger menu is discussed further under section 4.1 - Problems and Improvements.) After customizing the menu, P01 and P05 both expressed uncertainty about whether their customization choices would be saved automatically. P01: "I don't know if I need to save this or if I just go back." P05: "Hopefully it saved it? We're gonna just assume it saved it and go back to home and then go to menu and make sure it saved. Okay, yeah it seems like it did."

Task 5 (information on Cosmic Bowling event) was the task that users struggled with the most. Three participants gave up on the task and the other two participants were only successful after searching through several different pages and links. All five participants first looked for the event information on the Calendar. All participants eventually navigated to the Get Involved page, but P02 and P05 both looked for the event under the ecalendar link before giving up. P05 explained: "I'm going to tap out of this one. I'll tell you what I would do though... I would open my computer and I would google "[event name]" and then I'm assuming the internet would tell me. Trying to find it on the app is not working for me." Participants P01 and P04 successfully found the event by following the link labeled TerpLink, however when asked for feedback after completing the task, P04 admitted, "I don't remember how I got to it. I had to click on too many things to get there."

Task 6 (finding out if reservations are required for the ESJ huddle rooms) was successfully completed by all participants. Three participants selected the Find a Space page right away, completing the task in less than 25 seconds. P02 and P04 both took around 1 minute 30 seconds to complete the task because they did not notice the Find a Space page immediately. P02 first navigated to the Help Desk page, explaining, "I'm gonna do Help Desk because I feel like that might be frequently asked questions." P04 tried to use the search function on the slide out menu, but when she hit enter the app suddenly closed and had to be restarted.

Task 7 (finding the third stop on the Silver Spring shuttle) was fairly easy for all participants, with an average completion time of 29 seconds. P01 took 1 minute and 14 seconds because he was confused that the link took him to the middle of the shuttle page. He scrolled to the top of the page immediately, and only later realized that the link had taken him directly to the schedule section part way down the page which he was looking for. He commented, "Seems kinda weird that it opens in the middle of the page."

Task 8 (looking up vegan options on the lunch menu) - All five participants thought they had completed the task successfully, but two participants provided answers that were not correct. Participants were asked to count the number of vegan options available from the chef's corner, but P03 and P05 mistakenly counted vegetarian options (denoted with a "v"), rather than vegan options (denoted with "vg"). The menu includes a legend, but it is located at the very bottom of the page, requiring users to scroll past a lengthy menu to see it. P03 and P05 did not scroll down far enough to even notice the legend. P03: "This is an unnecessary amount of scrolling. There should be a pulldown bar or something." The three participants who found the correct information utilized the filter option at the top of the menu to limit the choices to only vegan options. P04 commented that "the page where you pick your filters was really tiny, and trying to click on the boxes was hard." Two participants (P01 and P02) also had trouble locating the menu page, going first to the Dining Website link, rather than directly to the Menu link which was located slightly farther down the list.

Task 9 (finding parking garage near the Hornbake Library) was fairly straightforward for all five users, however P02 and P05 ran into issues with the map not loading, requiring them to close out and retry. Once on the map page, four out of the five users utilized the search bar at the top of the screen to navigate to the Hornbake Library, and then panned around the map to find the closest parking garage. While all participants were successful, P04 did note, "the search box is a little too small, smaller than I would expect."

Task 10 (finding information on the 24 hour walking escorts provided by the University Police) was the second most challenging task for users. P02 and P03 gave up after searching for over 2 minutes. Neither participant was able to find the police page (accessible from the menu page, but not the homepage). P02 commented, "I think at this point I'd probably just google it."

P05 almost gave up, but then realized that the menu page contained additional options that the homepage did not. She was able to find the police page and the requested information, but the task took over 4 minutes to complete. P01 had found the police page previously when looking for the non-emergency number, so was able to complete the task in 24 seconds, although he couldn't initially remember where he had found the police page before.

3.2 - Follow up Questions/Feedback

Describe the data from any satisfaction questions (survey or interview).

After participants had worked through all ten tasks, I asked two follow up questions to elicit feedback about their experience:

What aspects of the app were frustrating?

P05 wryly stated that "the quantity of app crashing was not particularly ideal." All five users experienced the app spontaneously closing or getting stuck on a blank, gray screen at least once (often more than once) during the testing.

P01 felt that it was “kinda goofy that they (the icons) are all just links to websites. I feel like they could just open in chrome and it would probably work better in chrome. But I guess the app makes it a little easier to find the links.”

Participants also expressed frustration about specific tasks that were not intuitive or easy to complete. Task 3 (intramural dates), task 5 (cosmic bowling event), and task 10 (walking escort info) were mentioned most frequently as being very frustrating.

If you were a student at the University of Maryland, what features (if any) would you use?

P01 stated that he would likely have the app on his phone, but wasn't sure if he would actually use any of the features. He explained that when he was a student at Michigan Technological University and needed information, “I would just google ‘McNair dining hall menu MTU’ and the first thing that popped up on google was the link to the dining hall menu at MTU. It's faster than going through all these menus in here.” But he also added that having preset pieces of information displayed directly on the app homepage might be helpful. “If I could just open the app and the first thing that was displayed to me was the dining hall menu or the event calendar for the day or where the bus goes, maybe I would use it.”

P02, P03, and P05 all indicated that they would definitely use the dining hall menu page. P04 was slightly less enthusiastic, but also commented that “the dining hall information is nice. Especially when you have that many options.” P02 and P04 both said they would use the interactive map, and P02 also commented that having access to indoor maps “would be helpful for freshmen to find their room, because sometimes that's really challenging.”

In addition to the dining hall menu, P05 also said she would definitely use the shuttle page for finding out the timing of campus transportation. She also commented, “I probably would not use the intramural app, even if I played intramurals. I would not use it as currently designed.”

4 - Discussion

4.1 - 4.2 - Problems and Suggested Improvements

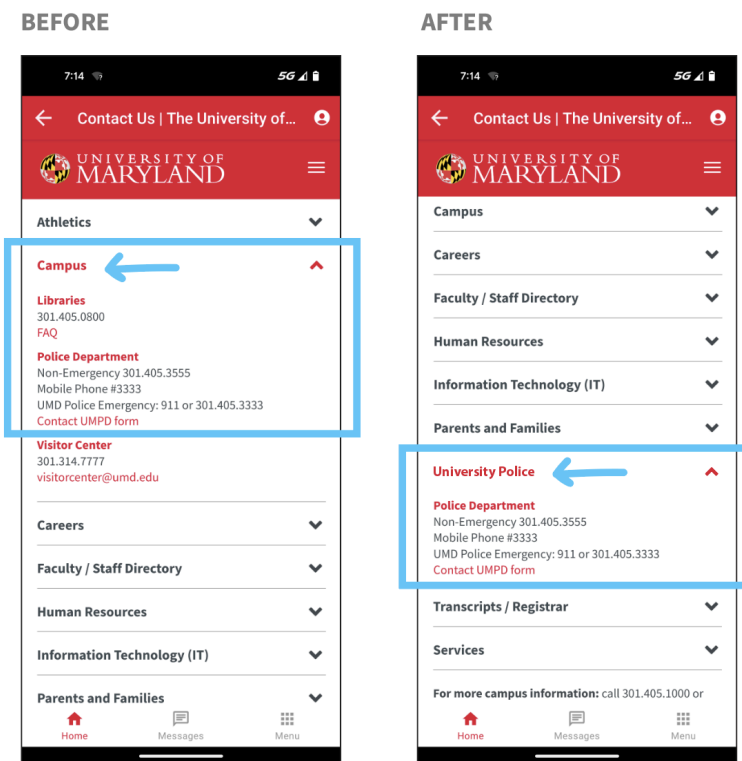
What interface problems did you discover, and what suggestions do you have to improve each of these problems? You must include screenshots or wireframe sketches of possible improvements, and your sketches or wireframes must have callouts that highlight the problems identified and improvements made.

The usability testing uncovered a number of issues within the app which resulted in frustrating user experiences. One of the biggest issues, running into a blank gray screen which requires the user to restart the app, looks to be a technical issue. Two participants also experienced the app spontaneously closing when they tried to utilize the search bar. Both of these issues can

hopefully be resolved by the developers so that users don't run into these situations in the future.

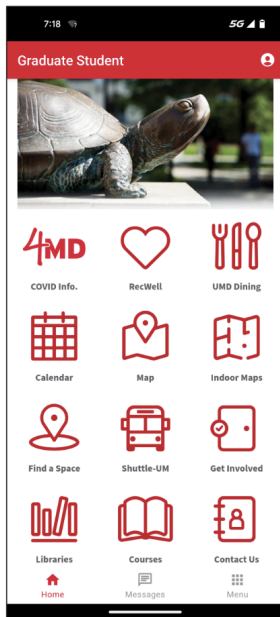
In addition to these technical problems, there are also many interface issues, which if addressed could significantly improve the user experience:

1. As described above, several users struggled to find the non-emergency number for the University Police. It is currently located under the Campus section of the Contact Us page, but I would suggest creating a section specifically for the Police Department so that users do not have to hunt for the information.

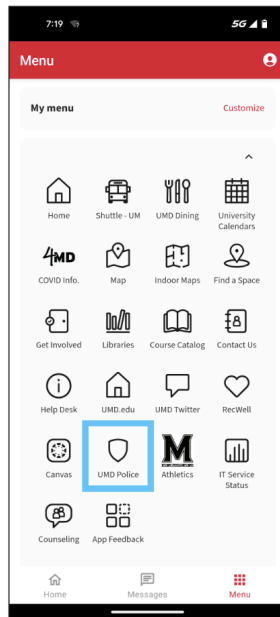


2. Users also struggled to find information on the 24 hour walking escort provided by the University Police. Right now the police page is only accessible through the menu page, and many users did not realize that there were additional options on the menu that weren't on the homepage (more on this under problem number x). It is important for student safety that users be able to quickly contact the police and access police information when needed. Because of this, I would recommend moving the police icon to the homepage where it is easily findable.

BEFORE

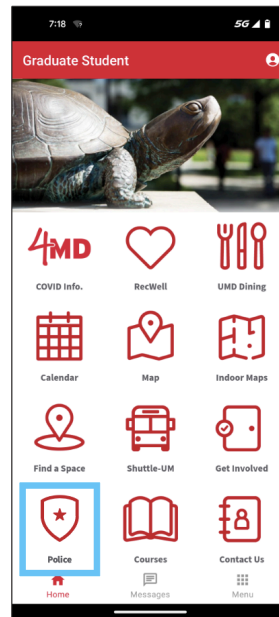


HOMEPAGE



MENU

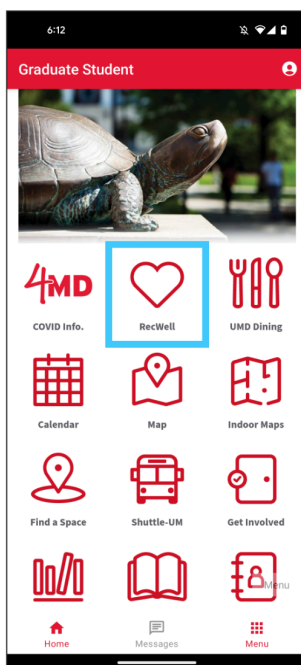
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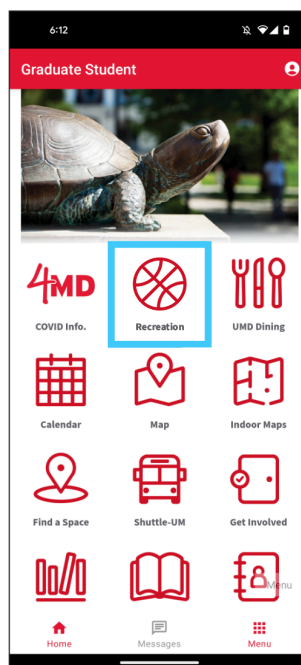
HOMEPAGE

- Participants' struggles to find intramural information validated the issues that I had previously identified in my heuristic review, namely that the meaning of RecWell was not immediately clear and the icon did not aid recognition. As suggested in my heuristic review, I would change the label to recreation and the icon to a basketball or something else more obviously sports related.

BEFORE

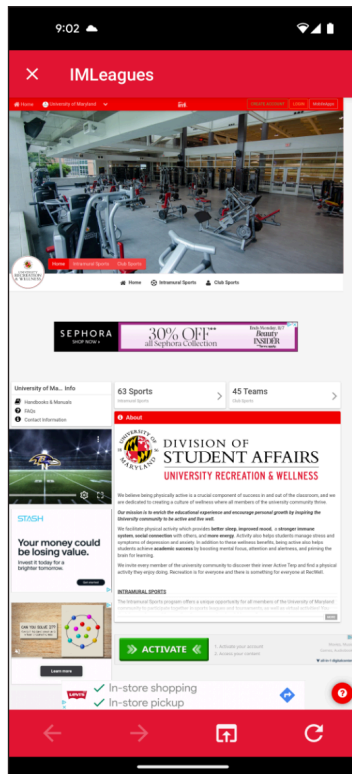


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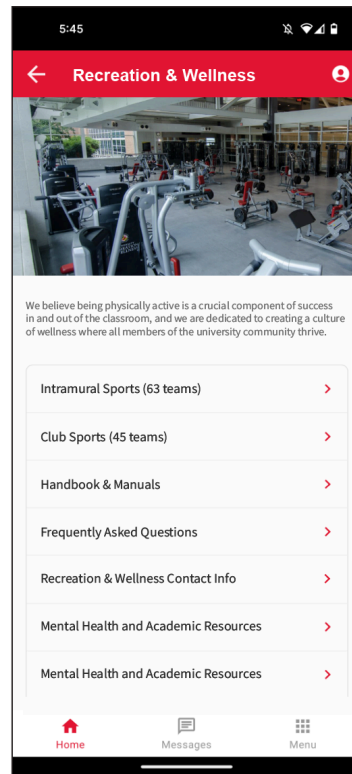


4. Participants also had trouble reading the small text on the RecWell page, and were distracted by the many video ads. As I suggested in the heuristic review, I would recommend cleaning up the content on the RecWell page and utilizing the layout that's already in use for the Dining and UMD Police pages.

BEFORE



AFTER

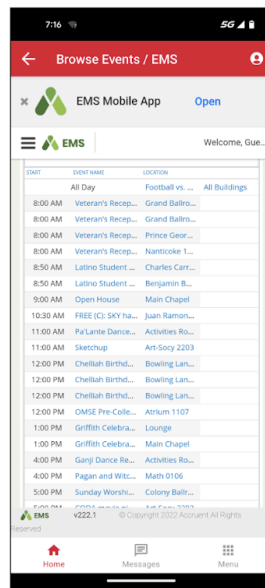


5. All five participants were repeatedly confused when they looked for information on events and found that the Calendar on the homepage was blank except for a few holidays. They were further confused by the fact that the Get Involved page includes an ecalendar as well as additional events under TerpLink. There may be technical challenges involved in collecting event information from across different departments and orgs, but for the sake of a smooth, intuitive user experience I would recommend putting all events on the main calendar and providing filters and a drop down menu so that users can narrow down the number of events they're seeing at once.

BEFORE



CALENDAR (BLANK)

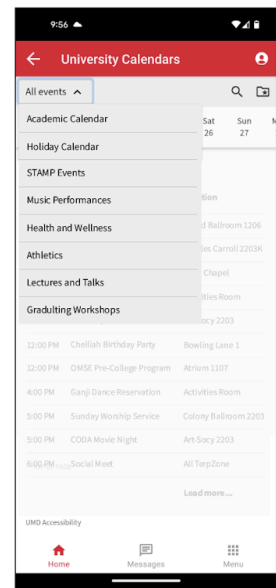


GET INVOLVED > ECALENDAR

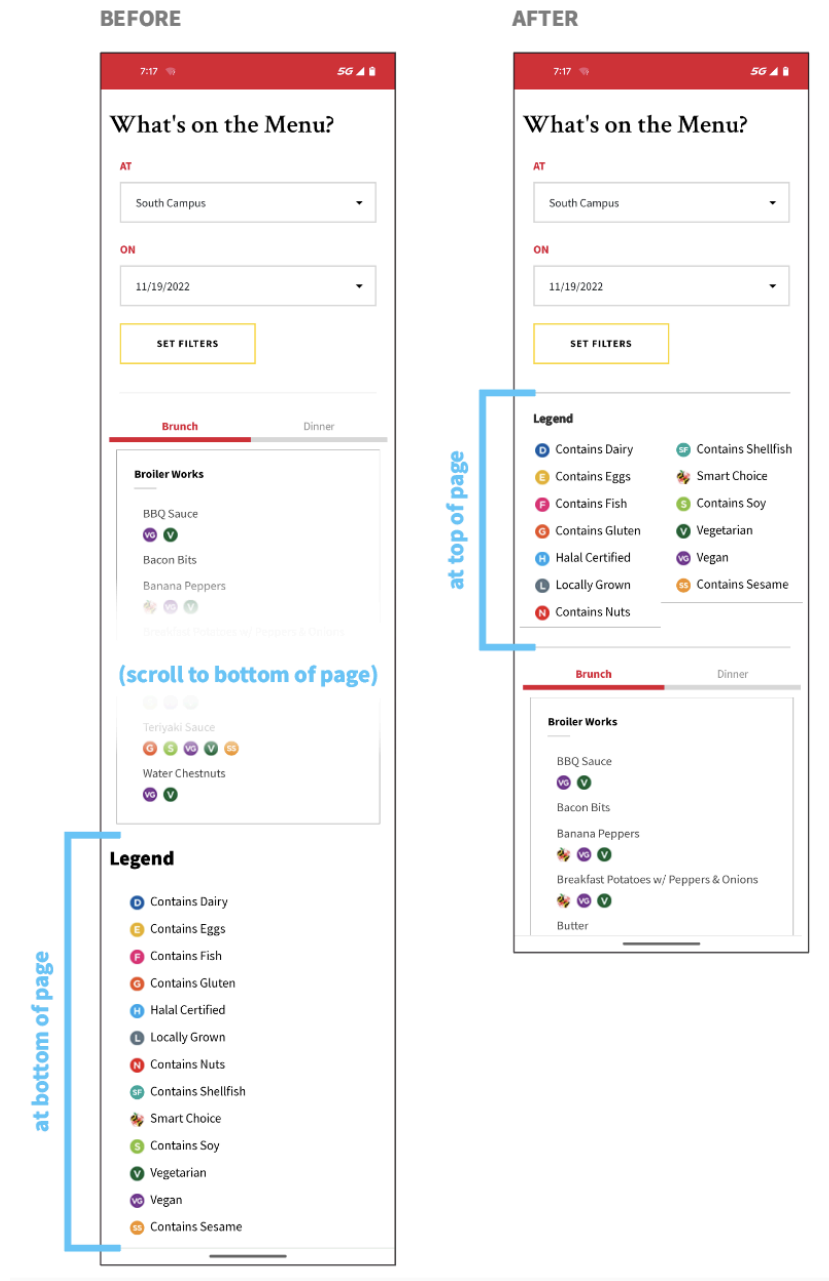
AFTER



CALENDAR

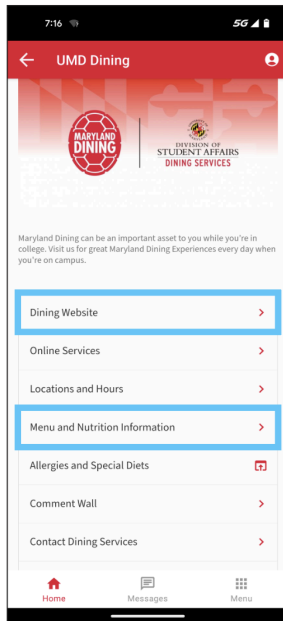


- In general, participants found the dining menu page to be a useful feature, but two participants were confused by the icons which indicate if the food item is vegan, vegetarian, contains dairy, gluten, nuts etc. They assumed that “v” indicated a vegan option (when in fact it indicated vegetarian), and never scrolled far enough down the page to find the symbol legend. Simply moving the legend to the top of the page would likely resolve this issue.

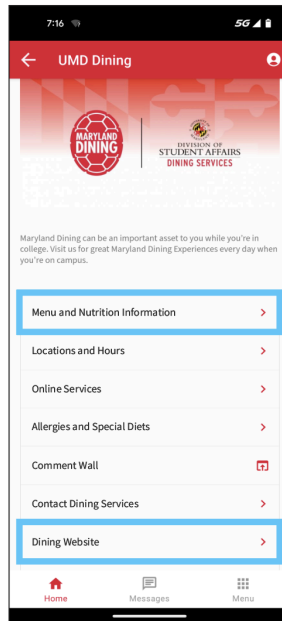


- Two participants also didn't notice the Menu option on the main UMD Dining page, instead clicking on the Dining Website link, which is the first option presented. I would recommend moving the Dining Website link to the bottom of the navigational menu. This way users will look through the more specific menu options first (including the dining menu), and the Dining Website link can serve as a catch-all for anything not directly addressed in the navigational menu.

BEFORE

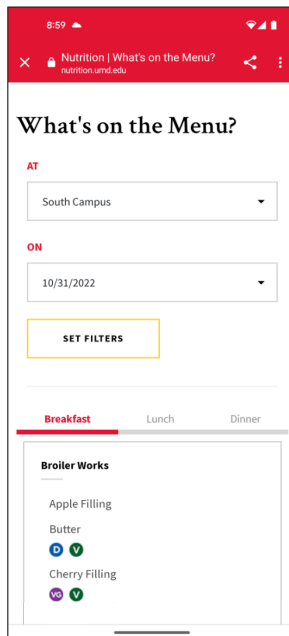


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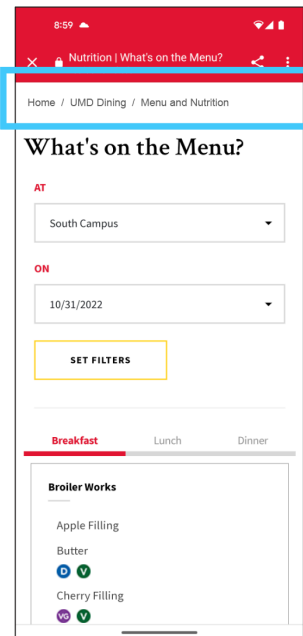


8. One of the issues I had identified in the heuristic review was the lack of navigational awareness for the user within the app. This potential issue was confirmed by P01. After navigating through several pages and links to find the dining hall information, P01 commented, "Now I'm lost. How do I get back?" He was able to find his way back to the homepage without too much trouble, but including a navigational tool like a breadcrumb trail would make it easy for users to know where they are within the app and return to previous pages quickly.

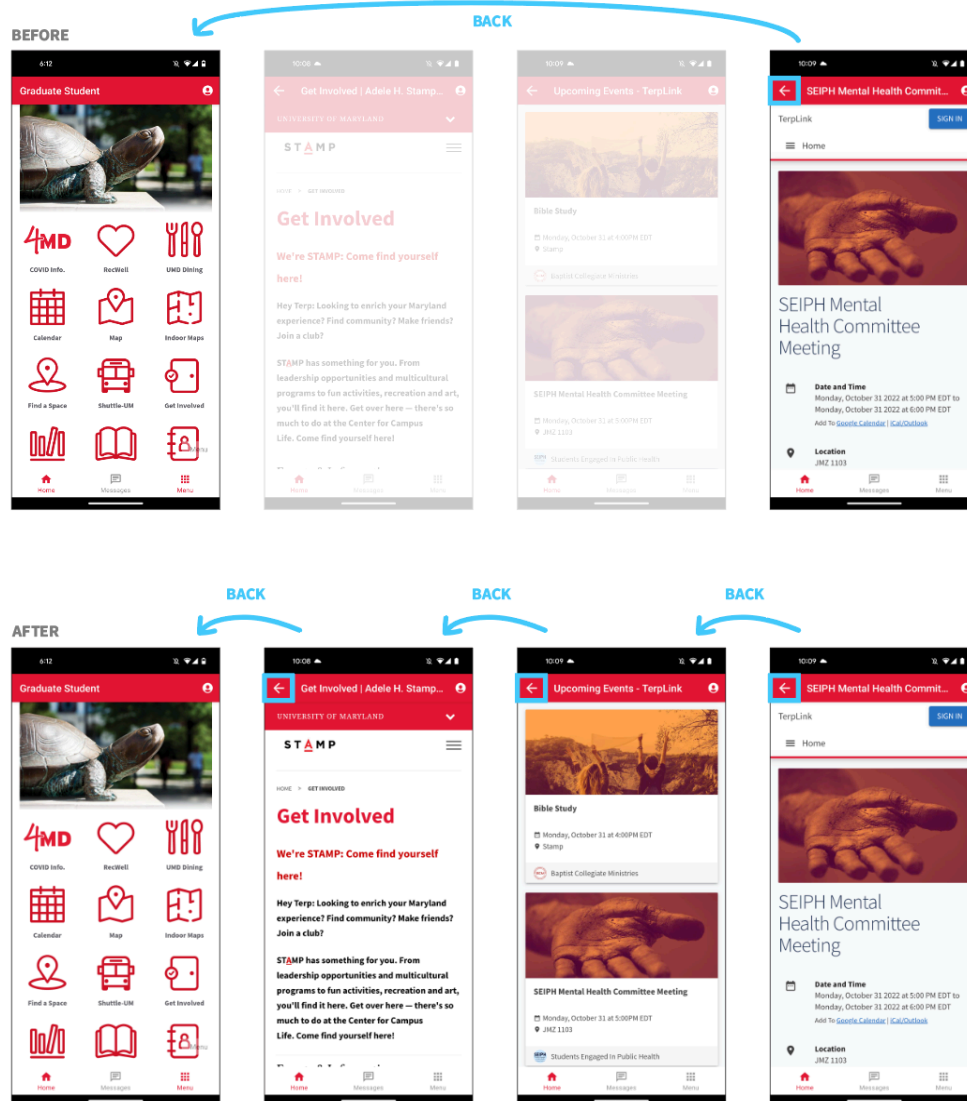
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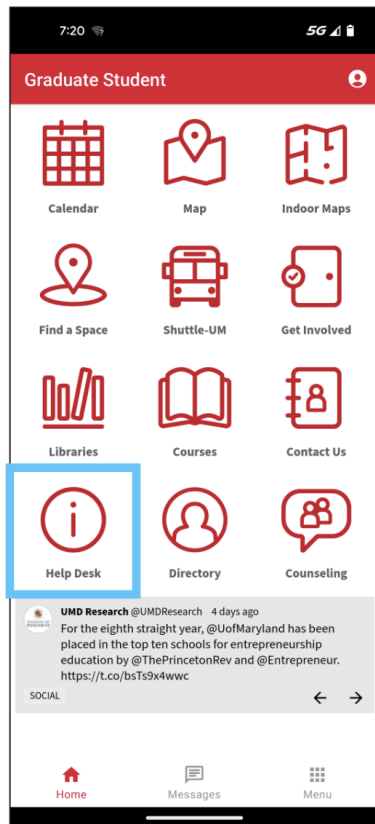
9. P01 also commented on another issue which I had identified as a potential problem in the heuristic review: the inconsistent behavior of the back arrow within the app. After navigating to the intramural page, P01 clicked the back arrow, expecting it to bring him back to the RecWell page, but instead he was brought directly back to the app homepage. He was surprised by this, commenting, “Oh, it just went right back.” This is not an insurmountable user issue, but making the behavior of the back arrows consistent across the app would give the user more control and avoid navigational surprises.



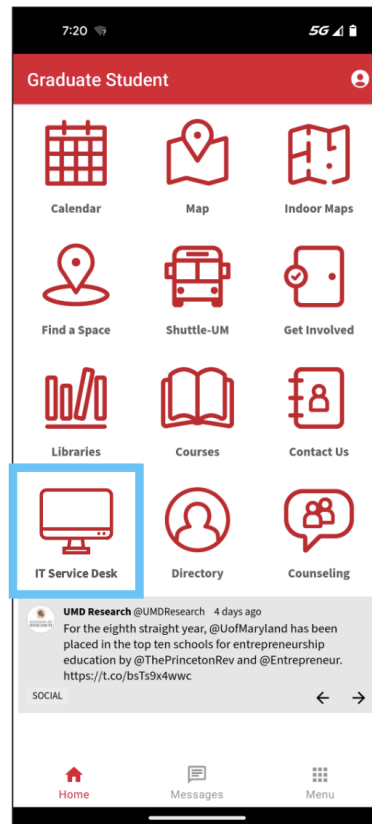
10. Although none of the tasks involved the Help Desk page (which brings users to the IT Service Desk), several of the usability testing sessions revealed that participants were unsure of what kind of information the page contained. Three participants clicked on Help Desk when looking for other information. P02 clicked on the page when looking for information on the ESJ huddle rooms, explaining, “I’m gonna do Help Desk because I feel like that might be frequently asked questions.” P04 selected Help Desk, and then commented, “Oh wait, this is IT.” P05 correctly guessed that Help Desk lead to IT services,

but was not sure: “I’m assuming Help Desk is like tech support? But we’ll click on it to see.” I would suggest labeling the page as IT Service Desk and changing the icon to a computer, to make the page’s content more obvious to users.

BEFORE



AFTER



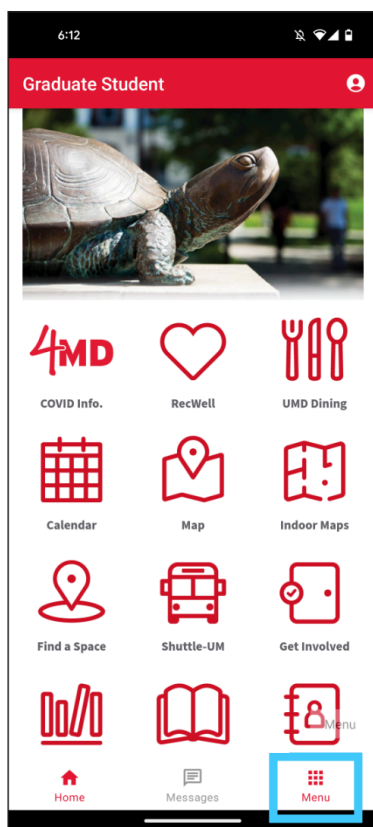
11. Participants were also repeatedly confused about the differences between the homepage and the menu page. They did not immediately realize that the menu page contained more icon options than the homepage, and struggled to find pages (such as the Police page) which were on the menu page, but not the homepage. P01: “There’s the same stuff here (home) and in menu.” P03: “I feel like home and menu are kinda the same thing because there’s a lot of overlap.” P04: “I really don’t like that you have this home with these icons and then there’s like four additional, or eight or however many additional ones on this page (menu). I feel like they should just be the same.” P05: “I didn’t realize... So the homepage has 15 of those little icons, and then if you go to the menu it has like 20. So I didn’t realize that the menu had other icons that the home page didn’t because they mostly have the same icons. So I figured if it wasn’t on the homepage that I wouldn’t be able to find it. Why are there two of them?” This confirmed the potential menu issues I had identified in the heuristic review.

To make matters even more confusing, all participants were also presented with an additional slide out menu screen accessible through a hamburger icon in the top left

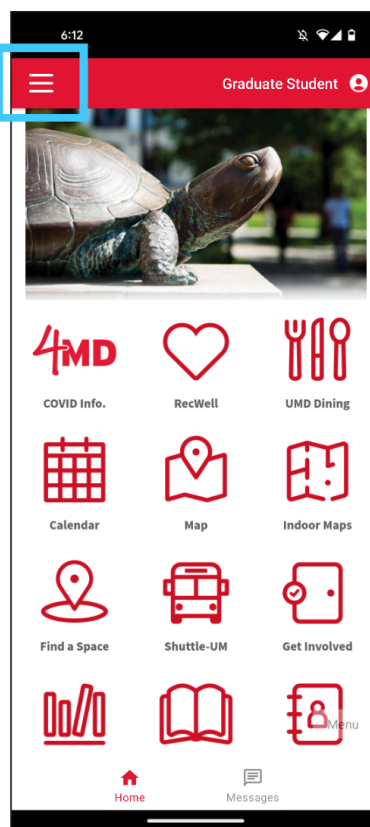
corner of the screen. This menu was present at the beginning of the sessions, but would then mysteriously disappear part way through the testing. Most users didn't realize what had happened, but P01 noticed part way through his session that the menu was no longer accessible, commenting, "Oh, the three bars disappeared." The hamburger menu has never been present when I used the app on my own device, so seeing it during the usability tests was a surprise.

I am unsure why the menu is there sometimes and other times is gone, but I think utilizing a slide out hamburger menu is actually a step in the right direction. In my heuristic review (before realizing that the app sometimes contained a slide out menu) I suggested using a slide out menu in order to make the location of the menu more obvious and to provide more detail about the sub-links within each page. I think that this would help alleviate the confusion between the homepage and current menu page, and would make it easier for users to quickly scan the menu and recognize the links they are looking for, rather than having to recall which page contained which links.

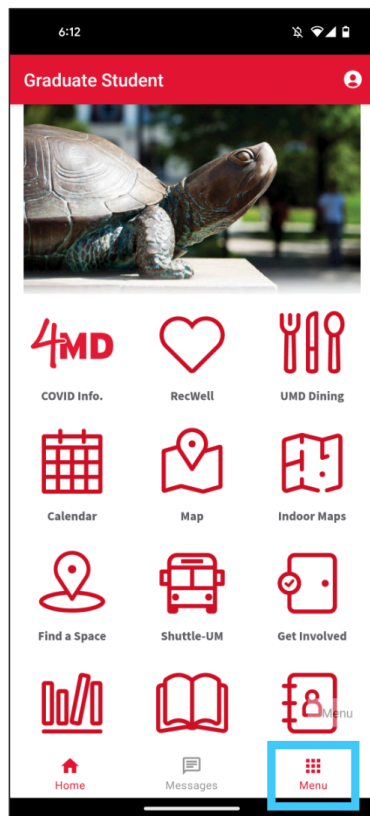
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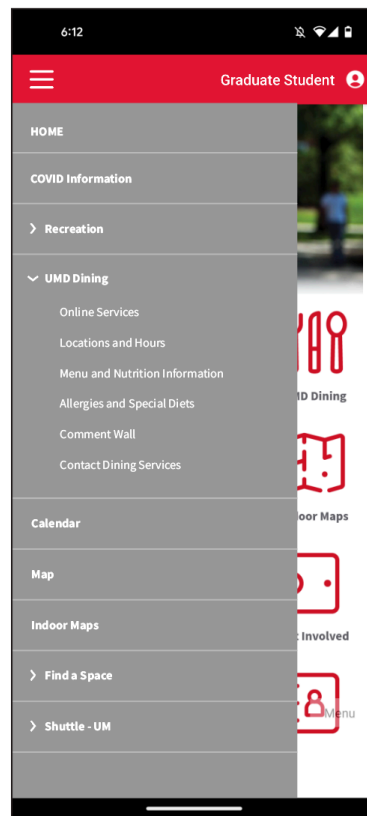
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4.3 - Priorities

Of the various potential improvements that you discovered in the user-based testing and the heuristic evaluation, which would you prioritize as the top three interface improvements needed? Describe why they are the top three improvements.

I would prioritize the Home/Menu, the Calendar, and the Police page as the three improvements which should be tackled first.

Confusion regarding the Homepage and Menu page was an issue for all five participants and affected their performance on several different tasks. The value of the app is that it connects users to information from many different parts of the University, but if users are confused about where to find the pages they are looking for, the app will fail in its main goal.

I would also prioritize the Calendar. University events play a large role in student engagement and getting students plugged in to the campus community, but it's currently very difficult for students to find information on events using the UMD app. Providing one central source of information for campus events would make it much easier for students to browse events they might be interested in and to look up information such as location and start time for specific events.

Thirdly, I would prioritize improvements relating to the University Police. Students will hopefully not have need of Police services frequently, but when they do find themselves in a situation which requires safety information from the Police, it is important that they are able to access that information quickly and easily. The improvements proposed (creating a Police section within the Contact Us page and moving the Police page to the homepage) will hopefully be easy fixes which will have a large impact on students' ability to easily find Police information when needed.

5 - Methodological Reflection

5.1 - Comparison: Expert Review and Usability Testing

Discuss the similarities between what you found in the user-based testing and the heuristic review.

Six of the potential issues which I identified in the heuristic review proved to also be problems during user testing. These were:

- the lack of a navigational tool such as breadcrumbs to let the user know where they are within the app and how to get back;
- the use of "RecWell" and a heart icon to indicate the Recreation and Wellness page;
- the distracting ads and small text on the RecWell page;
- the inconsistent behavior of the back arrow throughout the app;
- the confusion caused by the similar, but slightly different contents of the homepage and menu;
- and the repeated blank screen which required users to restart the app.

5.2 - Contrast: Expert Review and Usability Testing

Discuss the differences between what you found in the user-based testing and the heuristic review. Did any findings conflict with one another between the heuristic review and the usability evaluation? If so, describe those conflicts.

The usability testing allowed me to identify six additional issues which I had not found as part of the heuristic review. There were no conflicts between the findings of the heuristic review and the user testing.

The first was the issue of the non-emergency police number being located under the Campus section of the Contact Us page. I had assumed that participants would look for the phone number on the Police page, so learning that the majority of participants actually looked on the Contact Us page first was valuable.

The second issue was the location of the Police page under the menu and not on the homepage. I had not identified this specific issue during the expert evaluation, but it was abundantly clear from the user testing that finding the page at its current location was challenging for users.

When conducting the heuristic review I noticed that the Calendar was empty of events, but did not include this in the report because it didn't seem to directly relate to any of the heuristics. I think maybe leaving a page blank is such an obvious issue that it wasn't really covered by any of the heuristics. However the user testing made it very clear that this was a large source of confusion and frustration for participants.

Another issue which was uncovered by the user testing was the confusion surrounding the icons used for different food items in the dining hall menu. I also assumed that users would scroll down and count the options based on the icons, but several participants used the filter option as an alternative way of completing the task.

I was also surprised by the fact that several users clicked on the Dining Website link looking for the menu information when there was a specific Menu link slightly farther down. I think this revealed my bias as someone who was already familiar with the app and knew that the option existed. Users who were completely new to the app did not already know that the Menu link existed and as a result clicked on the Dining Website link because it was presented first and seemed like it could lead to the information they needed.

The user testing also uncovered confusion about the type of information that participants assumed the Help Desk page contained. I did not include any tasks involving the Help Desk page in my task list, so the feedback from participants on this page was an unexpected insight.

5.3 - Lessons Learned: Expert Review vs. Usability Testing

Reflect upon what you learned from doing both the user-based testing and the heuristic evaluation. (Note: This question is strictly a "reflection" question about what you personally learned.)

My biggest takeaway from this project is the importance of tackling interface evaluations from multiple perspectives and points of view. The heuristic review prompted me to think about the app's interface on a high level - for example, how users navigated throughout the app and the consistency of aesthetics and user actions across the app. The user testing was really valuable for identifying issues on a more granular level - for example, the ordering of links in a menu and the labeling of specific sections and links. The importance of conducting testing with multiple users was also clear to see. Participants chose different navigation methods and made different assumptions about the location or contents of specific pages. Even with just five participants, I was able to gather a wide range of insights.

Another reason for conducting both an expert review and user testing is the differing scopes of each evaluation. When conducting an expert review, I was able to dig into many different areas of the app and take my time evaluating them. With user testing however, it is difficult to touch on all areas of the app, and I had to choose what I thought were the most relevant aspects of the app for inclusion in the task list. The structure of the heuristic review seems to lend itself to a broad, but slightly shallower (high level) evaluation, while the user testing has a narrower scope, but allows you to dive deeper into the details.

On a practical level, this project also gave me more confidence in managing the logistics of a user study, and I am eager to apply these skills to future projects.