Campus Connect
Final Report

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Executive Summary

As a new student, it can be hard to meet new people, despite attending classes of hundreds of students. Campus Connect aims to bridge the gap, providing a shared middle ground to meet new colleagues and study for courses together. It also provides a way to find individual and group studying locations, with reviews of campus facilities to help users.

With our initial ideas of what the application would accomplish, we included sleep spaces, study spaces, and washrooms that students could search, rate, and navigate to. With that in mind and taking students as the main users, we moved on to user research. Research revealed that most students did not care about sleep spaces, while having a map of group study sessions would encourage attendance to those sessions.

A concept and users in hand, we moved on to the ideation phase and came together with various sketches of system UI. After organizing those sketches into an affinity diagram and deciding which ideas we wanted to move forward with, we moved ahead to prototyping.

From our low-fidelity prototype, we discovered some parts of our design needed changing. For example, our review rating system out of five needed to be simplified to encourage user reviews. We needed accelerators like direct-from-map shortcuts and study session history. Our high-fidelity prototype followed with a similar design to the low-fidelity prototype.

The heuristic evaluation found some issues in preventing slips and mistakes, as well as cohesion in icon designs. From the evaluation, we added confirmation dialogs and fixed icons so they would reflect what they represented. For our final iteration, we made the overall design a bit more cohesive by adding drop shadows behind clickable buttons to indicate interactivity, as well as making the shapes of UI elements coherent.

For a future iteration, many features could still be added, such as general event management, description of all rooms and spaces, and further integration of the instructor user type. Along with general event management, invitations and subscriptions could be added; so that a user who subscribes to an event will be notified when it occurs. Finally, it would be a good idea to follow a more cohesive design language like material design.

Introduction

University campuses can be large locations with many buildings. New students and exchange students may find themselves in unfamiliar territory looking for places to study or people to study with. As students, we only want to use the best facilities afforded to us by our institutions.

Campus Connect is an app that allows users to form study groups on-the-go, facilitating the meeting of new colleagues in a casual setting. It also allows us to search for the best facilities in a school by crowdsourcing user reviews while gathering information on new facilities through user submissions. Users can also view each others' profiles as a quick introductory tool prior to sessions or to see all the reviews a user has submitted.

The report begins with a statement of the design problem undertaken by the team. We present our analysis of the end-users and stakeholders, followed by the user research we conducted and our findings from that research. We then discuss our initial design and justifications for that design, followed by the heuristic evaluation. Finally, we analyze our design changes resulting from the evaluation and recommend further changes for future iterations of the project.

Design Problem

We began with brainstorming what we wanted our application to actually accomplish. The initial idea was to have a map of various spaces on campus: sleep spaces, study spaces, and washrooms that students could search, rate, and navigate to. The intent was to provide students with an accessible medium from which to navigate the campus. By having interactive filters and a rating system, the users would be able to find exactly what they needed and how to get there.

After having a rudimentary idea of what we wanted our application to accomplish, we came up with a list of our end-users and stakeholders.

End-users and Stakeholders

The initial projected users of the project were students. We considered separating students into undergraduate and postgraduate, but decided postgraduate students would likely have offices in which to study and were unlikely to use communal studying locations. With not much else to differentiate the two categories, we simply took students as one group.

Another end-user group we considered was instructors; teaching assistants and professors. They could use the app to conduct unofficial, off-schedule instructional periods in case students need further instruction outside of normal class time.

We considered another general stakeholder to be the university itself as the app could help students achieve higher grades. In further iterations of the app, event-planning could be introduced as a feature which would help universities plan events.

User Research and Findings

After deciding on our initial idea, we began preparing to do our user research to find out if there was a need for our product and how we would meet the needs of our end-users. We felt that the IDEO method that would best fit our project would be to conduct a survey as it is easy to distribute and allowed us to gather a large data set regarding the key ideas of our app. We separated our survey into five main question categories: study sessions, study spaces, washrooms, sleep spaces and general questions about writing reviews. We used the responses to the survey to create several personas for potential end-users.

Study Session Findings

Through the responses to our study session questions, we learned that the majority of people attend study sessions very rarely - if at all - and the ones who do usually hear about them through their friends. We noticed that this fails to address a key demographic: people who want to attend study sessions more often but do not know how to find them. To confirm this, we asked people if they would attend study sessions more often if the locations were marked on a map and almost half of respondents said they would. This told us that an interactive map would be a good way to address those who do not know how to find study sessions.

Study Space Findings

With our study space questions, we wanted to gain some insight into our potential users' on campus study habits. We started by asking them how often they study on campus with over 75% of respondents saying they do so at least a few times a week. We then looked to characterize the details of that process by asking how they go about finding a spot to study and how difficult the process is. The results showed that the vast majority of respondents found a study spot by walking around campus, half of those experiencing some difficulty during the activity. This exposed the need for one of the most important features in our app: helping students find suitable study spaces in an efficient and effective manner.

Washroom Findings

Since we know that people use the washrooms on campus and doing so is usually outside of one's control, we did not focus on frequency of use in our survey. Instead, we focused on the criteria that people find most important when selecting washrooms. Our results showed that the three most important criteria to our respondents were that a washroom is clean, not busy, and close. We ultimately used these criteria to determine how users can filter search results in our app. Our survey results also showed that about 65% of respondents have used a washroom that they would not use again and around 60% would recommend other people don't use that

bathroom. This is important because we want people to share their experiences so that others can avoid making the same mistakes.

Sleep Space Findings

With the sleep space section of our survey, we wanted to find out if people sleep on campus at all. Approximately 75% of respondents said they never sleep on campus and most of the remaining 25% said they rarely do. Given these findings, we decided that showing sleep spots on campus was not a feature our end-users would want or use and that it was not worth implementing.

Review Findings

Reviews are a critical part of our system as this is how we will gather data on different spaces and study sessions. Our review survey questions told us that most people don't leave reviews very often so we knew we needed to make this process as easy as possible and incentivize users to create reviews.

Personas

Using the findings from our research, we took to creating personas that represented the targeted end-user demographic. Five personas were developed, each with distinct desires and goals. These goals helped us see what our system needed to accomplish, and the desires helped us see the rationale. This information allowed us to move towards the ideation of our system.

Design and Justification

Our implementation process started with creating ideas for the features that our research showed were useful. Each member sketched out some visuals for what they thought certain aspects of the system should look like. These sketches were done independently and then brought together to allow for original ideas. After we presented our sketches to one another, we began to organize them into common themes and areas of focus. By organizing the sketches, we were able to highlight recurring ideas that helped to drive our design.

After making an affinity diagram from our sketches, we moved on to creating a storyboard. This storyboard helped to give direction to our low fidelity prototype that we made in Balsamiq. The prototype highlighted three of our vertical tasks: creating a study session, adding a new study spot, and searching. We chose these tasks as they encompass a majority of the unique functionality of our app as opposed to something more generic such as creating a profile. These

tasks helped us gain valuable feedback about how we were doing and what we should implement for the next phase of design.

We then moved to our high fidelity prototype, done with Adobe XD. We kept the tasks from our low fidelity prototype, adjusting them in accordance with feedback we received. We also fleshed out more of the design. In this phase, we solidified our idea to use a hamburger menu as a familiar method of navigation in the app. We also added verticality to all of our tasks such as creating a review, editing user settings, and registering a new account. After doing this, we submitted our design to another group for a heuristic evaluation.

Heuristic Evaluation and Findings

After conducting a heuristic evaluation, we found that there were features that we had overlooked or features that could be improved upon. These can be separated by severity ratings:

Severity 4 (Usability catastrophe)

- No way to change a password

Severity 3 (Major usability problem)

- Tutorial or help/support button needed so user knows how to use the app
- Should be able to cancel or edit a session that they have created
- Should be able to edit/delete reviews
- Should be able to exit hamburger menu by clicking map
- No confirmation check for writing a review, creating a study spot, and logging out

Severity 2 (Minor usability problem)

- Search function may require too many clicks to get the wanted results
- A home page to help users decide what they want to do
- Map should distinguish different buildings in some way
- User should be notified of conflicts in session creation (same time/room)
- Accelerators such as favourite study locations/previously hosted sessions
- Ability to tap anywhere to close info popup on map rather than small button
- Too many ways to get to profile
- Cancelling any function should take you back to menu
- Keep same filters on as last session

Severity 1 (Cosmetic problem)

- Confusing icons that don’t indicate what they should

- Should show what building or room user is in

Design Changes From Heuristic Evaluation

Of the evaluation points listed above, we first implemented all points of Severity level 4 and Severity level 3; seeing as they're the most critical and thus the most important fixes of the evaluation. From here, we went back to our original design and adjusted the minor usability issues and cosmetic issues in order of simplicity. We chose to focus on solving the quickest problems here as these issues were barely inhibiting usability, if at all. After some time, we were able to resolve all the issues brought up during the heuristic evaluation, as well as issues brought up during our presentation.

Recommendations for Next Design Iteration

In the next iteration, it may be useful to gather some more user input. Our heuristic evaluation provided insight and inspiration for new designs and it stands to reason that further input could only aid us.

Other recommendations would be to expand the application to a larger scale. This would mean allowing organizations to host events such as career fairs and information sessions. In addition, it would be good to include inviting other users - and sending them notification - as well as subscribing/reminders for future events. We would also want to expand to include schools beyond just the University of Calgary. This would be accompanied by adding the option to link your user profile to a school account, in order to automatically set up information such as classes and schedule. By increasing the scale of the application, we hope to reach more people with our solutions.

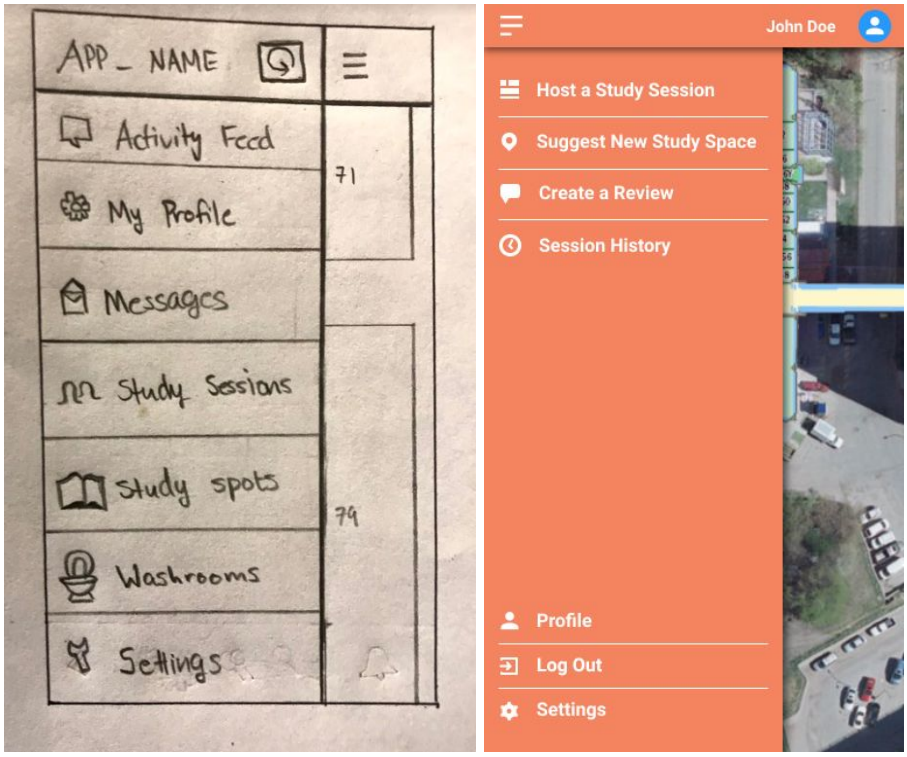
Conclusions

It's no secret that adjusting to university life can be a big step for many new and exchange students. On top of potentially living in a new city, living on their own for the first time, and making a new set of friends, these students also have to learn how to navigate an immense campus in a very short period of time. Campus Connect aims to ease that pain by helping locate ideal washrooms and study spaces as well as connecting students for group study sessions on campus. Our user research during Stage 2 was pivotal during our project as it helped confirm there was a need for our product and allowed us to refine and cut out features according to the needs of our end-users. We continued to use the outcomes of our research throughout Stage 3 including the brainstorming phase, while we were refining user tasks, and creating our low-fidelity prototype. Shortly after the completion of Stage 3, we began working on our initial high-fidelity prototype where we fleshed out more tasks and increased the breadth of the system

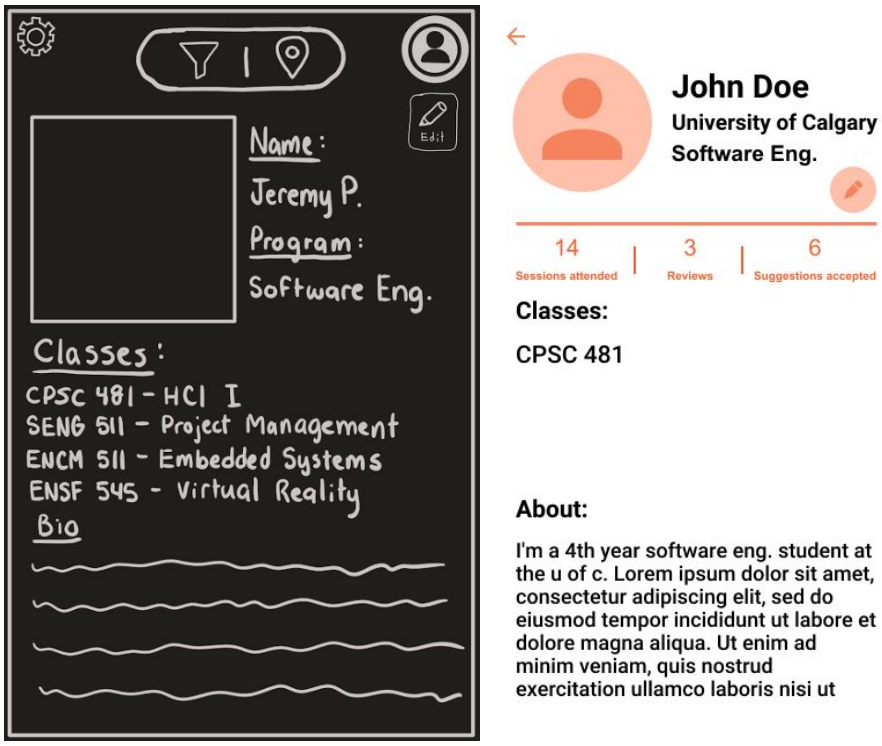
using our low-fidelity prototype as a baseline. The biggest challenge we faced during the high-fidelity prototyping and Stage 4 overall was dealing with the technical limitations of Adobe XD. The program simply did not support many of the features we had plans so we were forced to change our design accordingly. Eventually, we got our high-fidelity prototype to the point where another group was able to conduct a heuristic evaluation; this gave us feedback to address for the remainder of Stage 4 and into Stage 5. Lastly, future iterations should involve the end-users more frequently throughout development as our heuristic evaluation revealed many issues with our design that were overlooked and we may have been able to come up with better solutions if we had known about the problems sooner.

Appendix

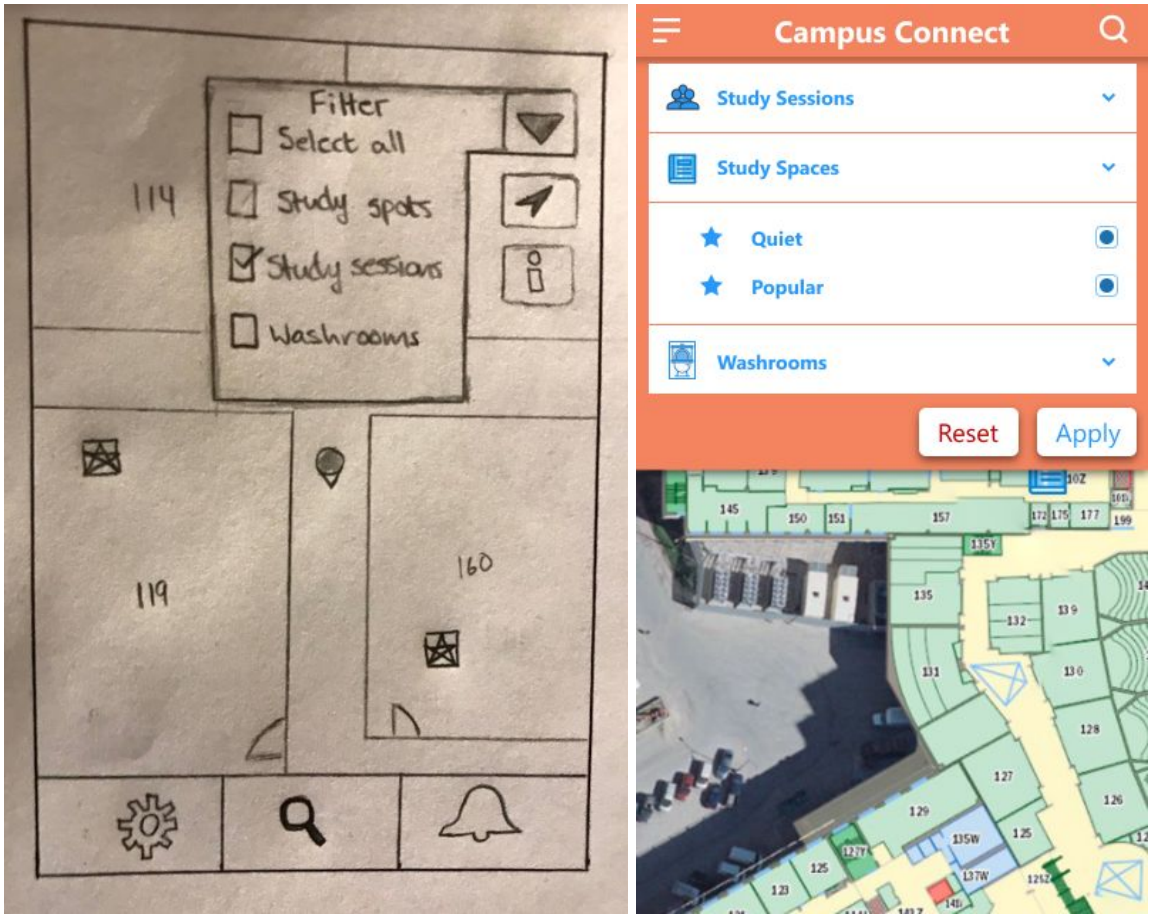
Sample selected persona



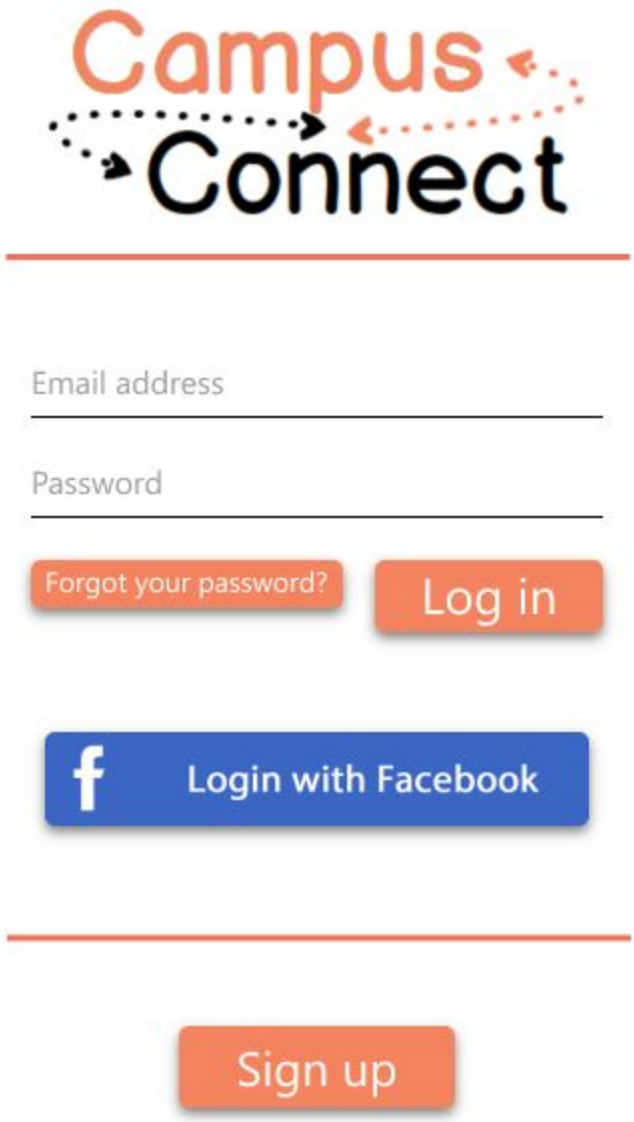
Initial menu sketch vs. final prototype design



Initial profile sketch vs. final prototype design

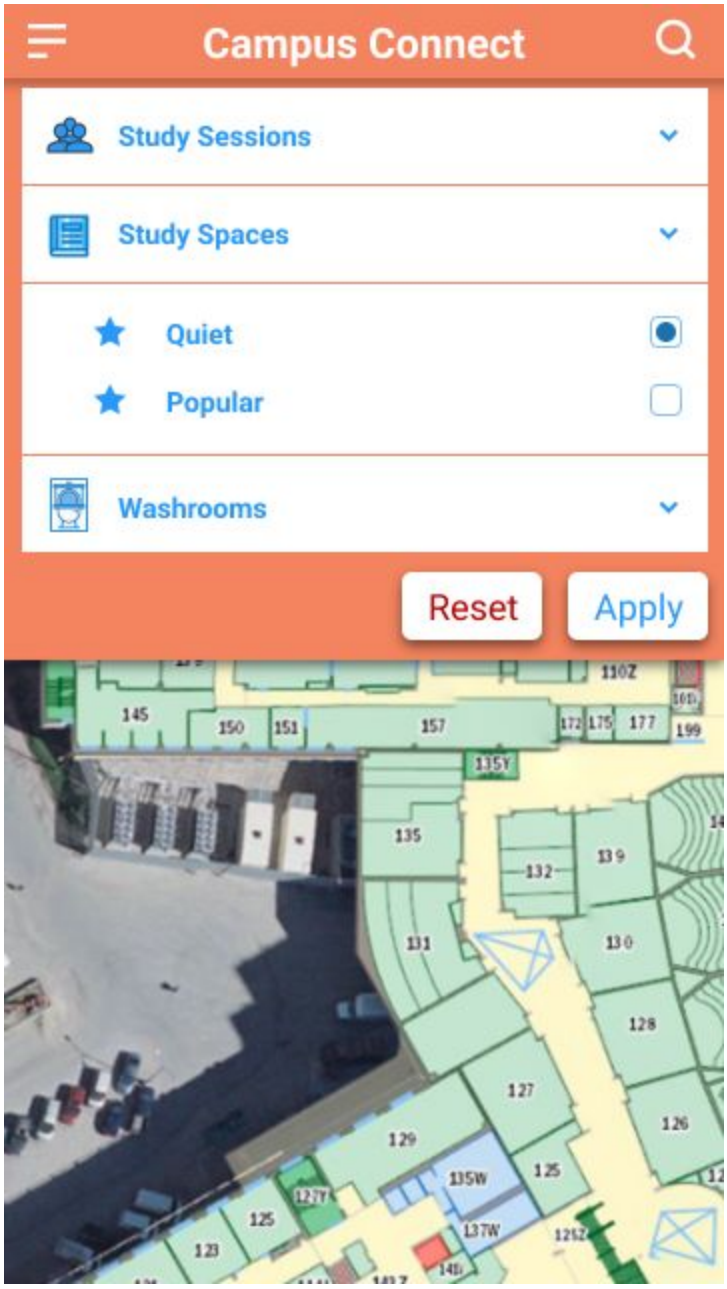


Initial filter system sketch vs. final prototype design

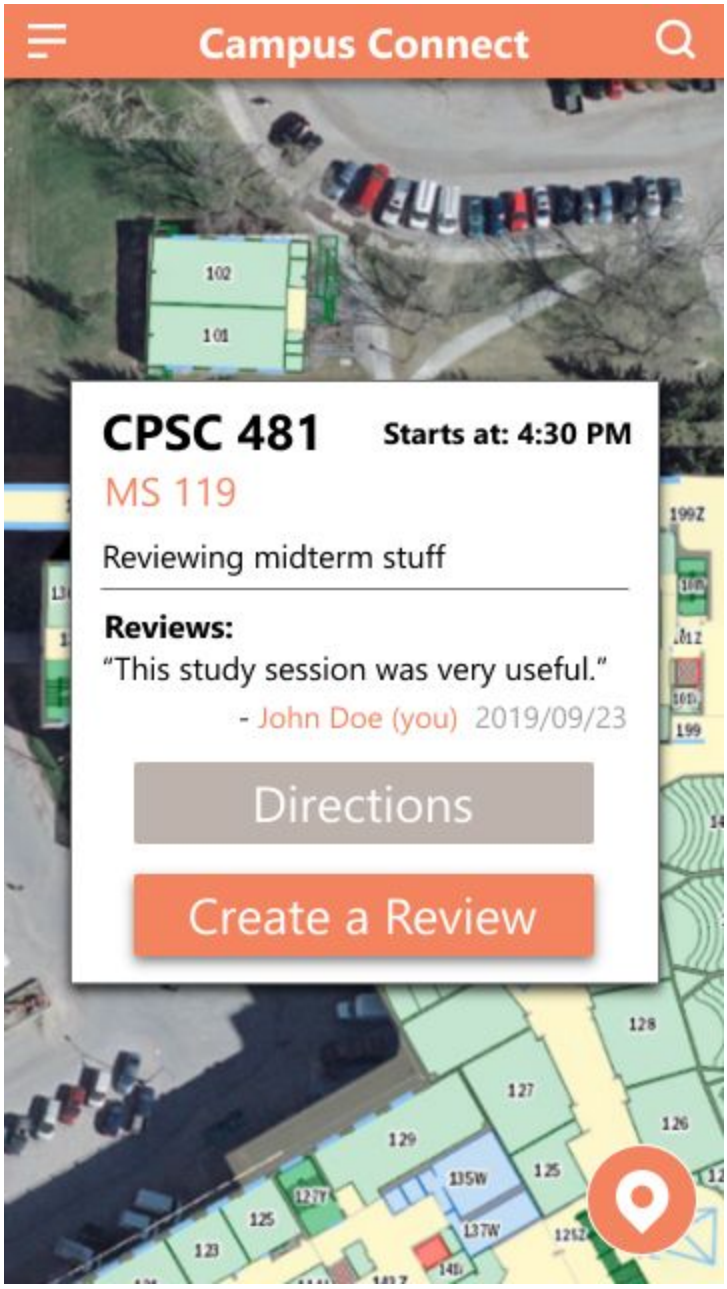


Login screen

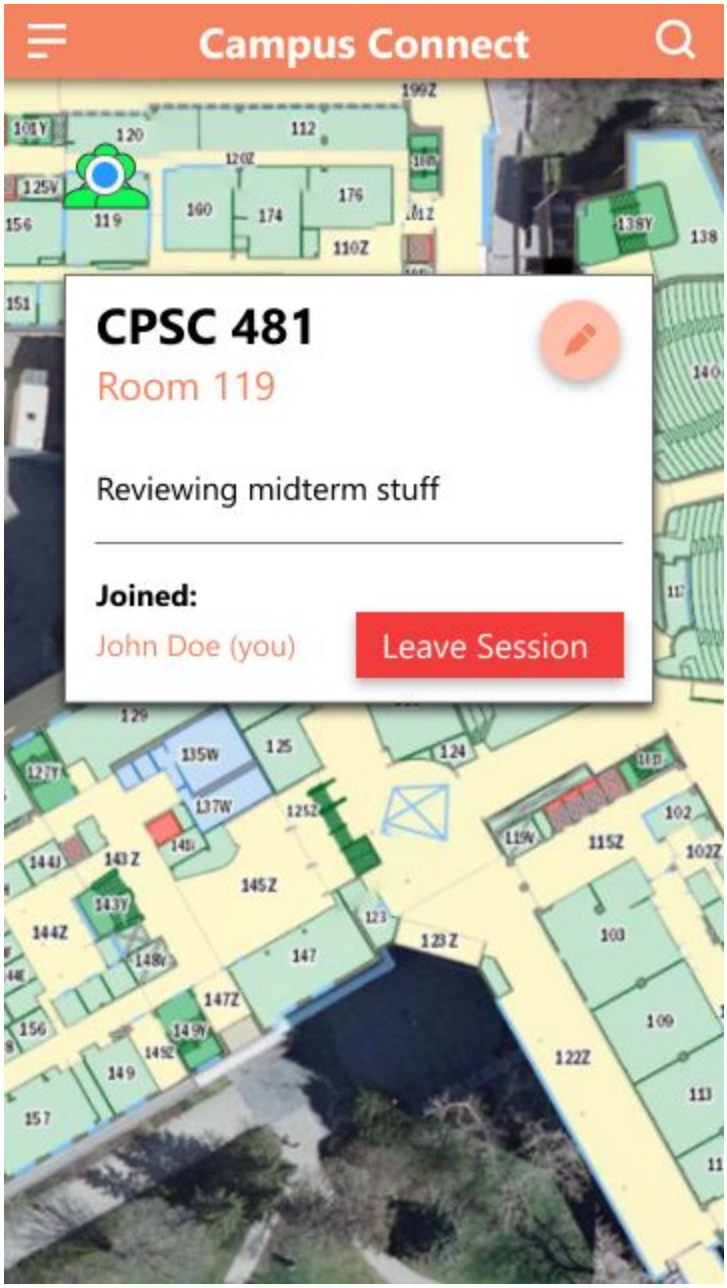
Home screen - Map



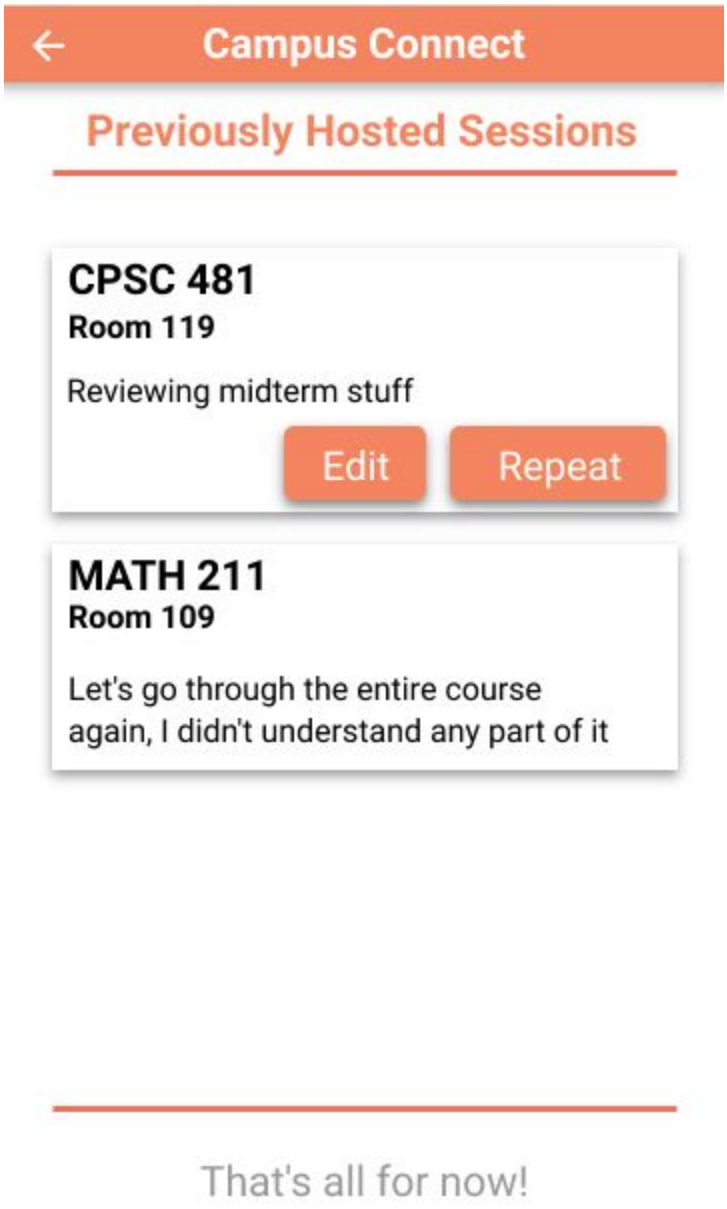
Filter system



Future scheduled study session

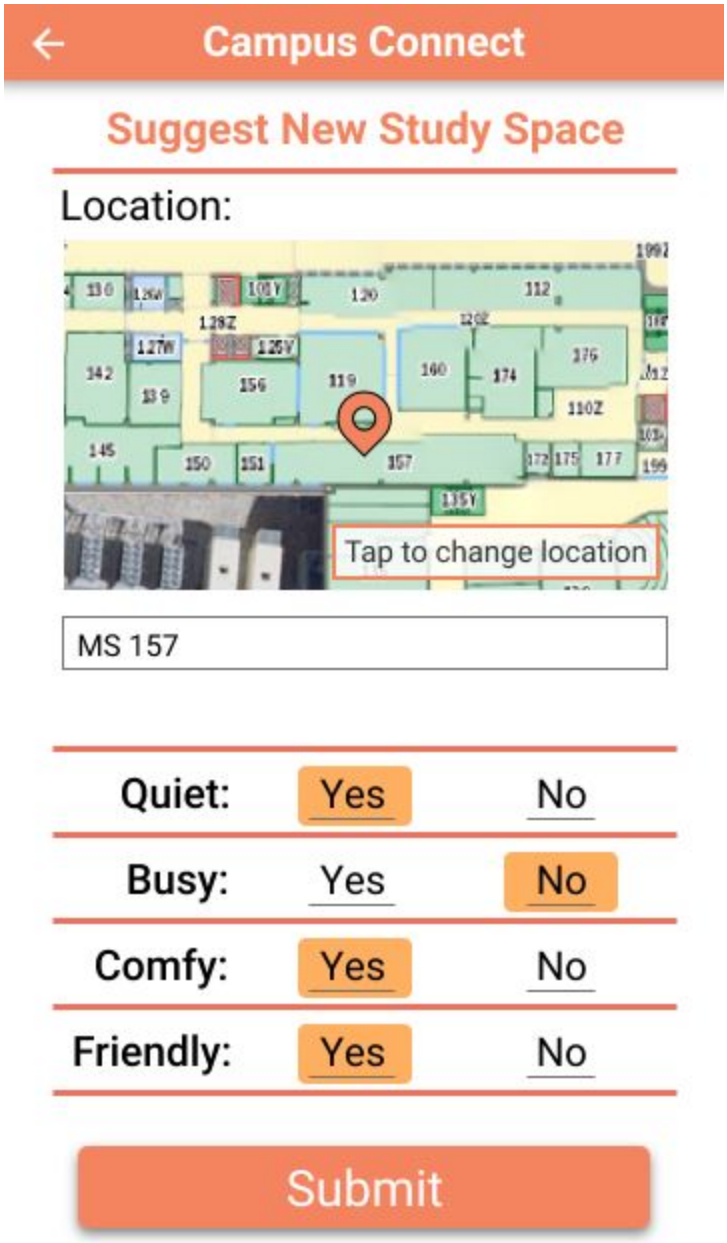


User hosted study session

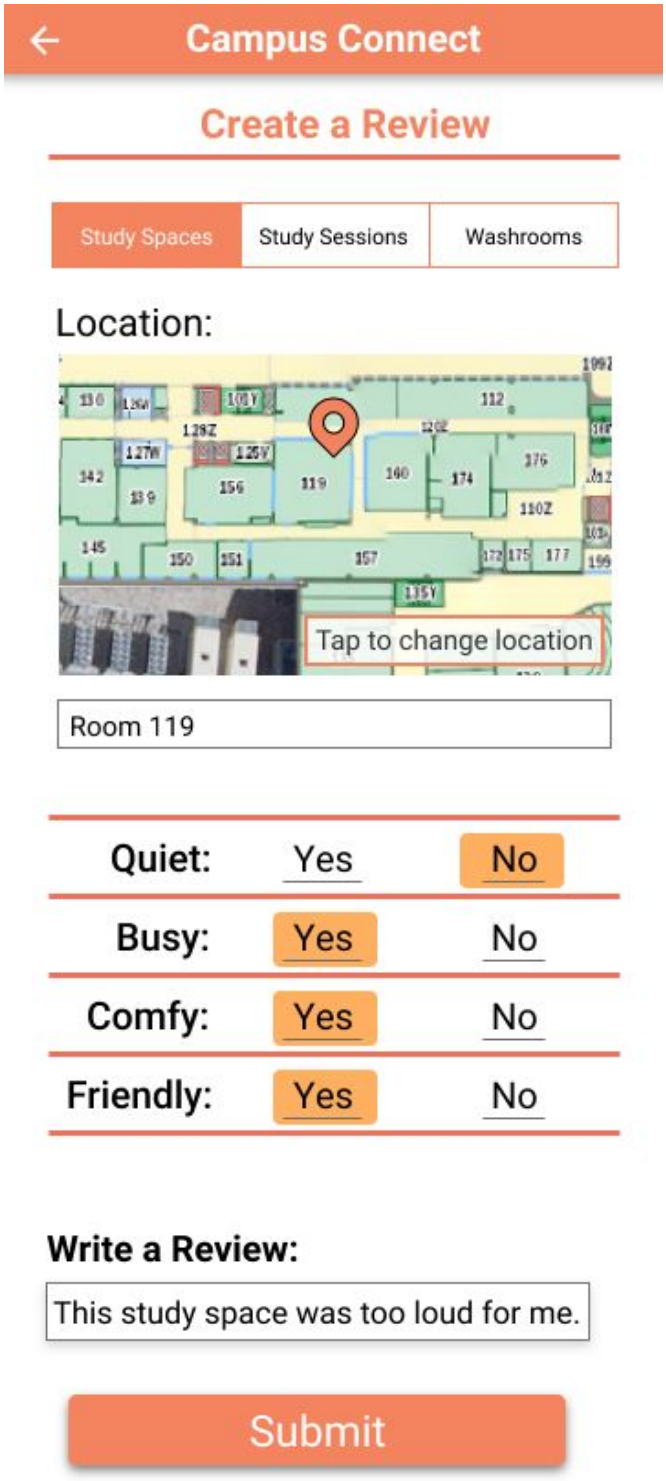


Hosted session history - note that clickable surfaces are “raised” (drop shadow)

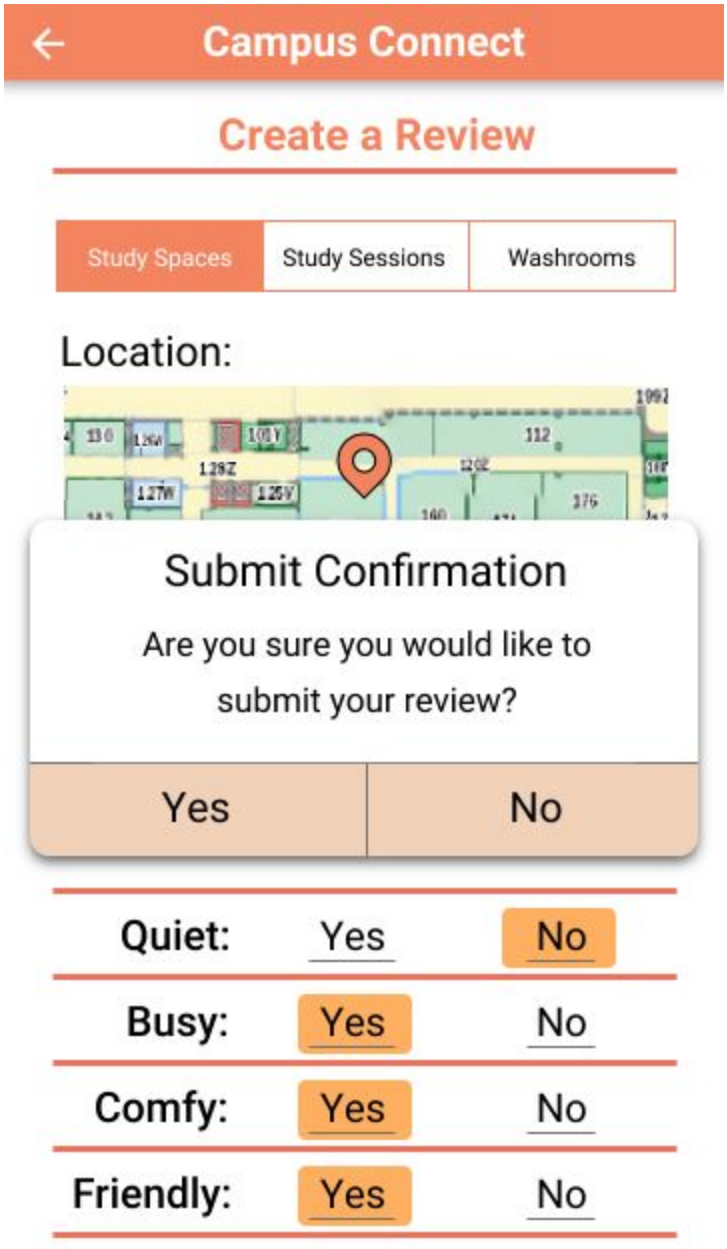
Map shortcut for adding new sessions or suggesting new study spaces



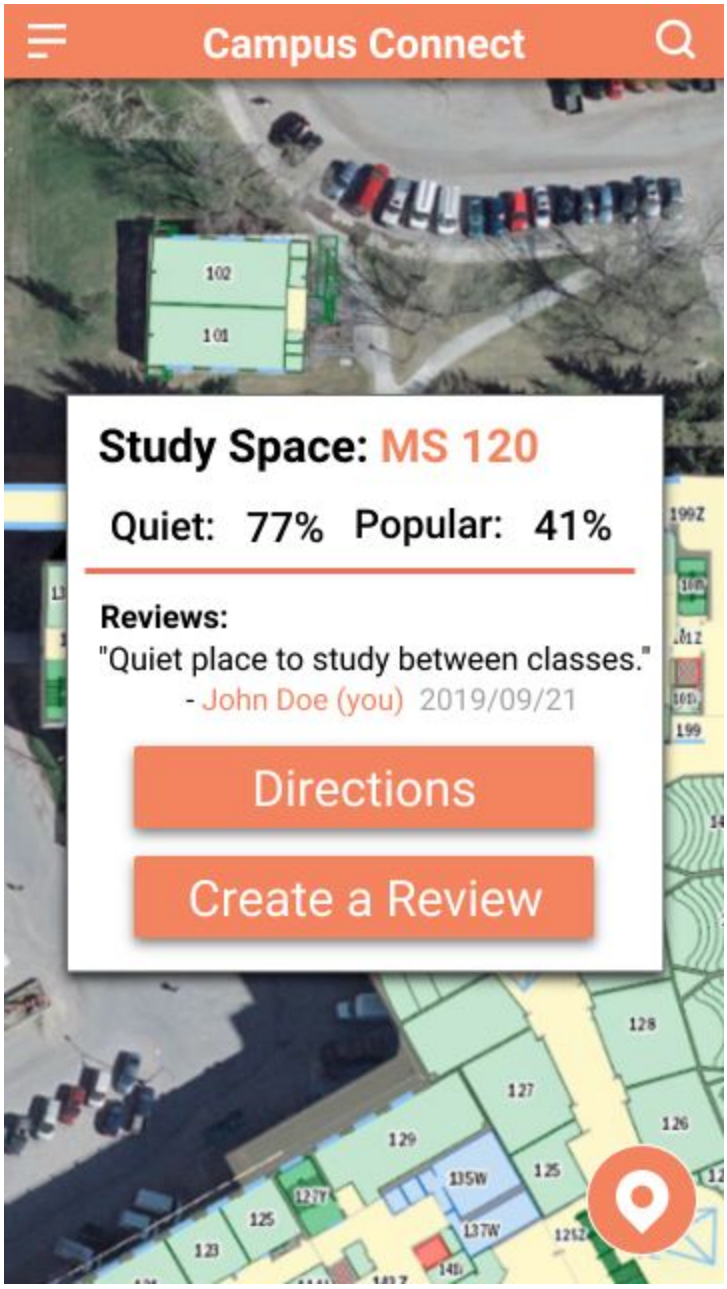
Suggest a new study space



Creating a review



Confirmation dialog present in most actions



Review card for study space

View all of a user’s reviews from their profile and edit your own reviews

Directions to points of interest