

WPI Mobile App

A study into a centralized mobile platform for students at Worcester Polytechnic Institute.

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Worcester Polytechnic Institute.

Interactive Qualifying Project Report completed in partial fulfillment
of the Bachelor of Science degree at
Worcester Polytechnic Institute, Worcester, MA

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Report submitted to:

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Abstract

WPI students are faced with an intense, fast-paced environment given the 7-week terms of a project-based curriculum, which puts them at a need to achieve their goals efficiently. WPI has more than 185 resources to help students be productive and reach their full potential, but finding and navigating them to access important information efficiently is time consuming and cumbersome. Further, the majority of resources are unknown to students. The existing Mobile WPI App provides students access some resources, but the App remains underutilized due to it's poor design, functionality, and marketing. To address this problem, the WPI Mobile App IQP Team redesigned and redeveloped the existing WPI Mobile App to create a connected community of WPI resources, ensuring that students have the best experience.

Acknowledgements

First and foremost, we would like to thank our advisors, Professor Robert Sarnie and Professor Curtis Abel for the tremendous time and energy they dedicated to our project and for their invaluable guidance. They brought positivity and enthusiasm to each of our weekly meetings, and we learned so much more about market research, and project management than we had expected.

We would also like to thank Damien Arlabosse, Diane O'Keefe, and the rest of the Marketing and IT Department for their time and insight in helping us create the best product and design possible.

Lastly, we would like to thank all the students who participated in the various rounds of surveying, testing and interviews to help us gather important data.

Executive Summary

WPI students are faced with an intense, fast-paced environment given the 7-week terms of a project-focused curriculum, which puts them at a need to achieve their goals efficiently. Alongside this curriculum, WPI provides an overwhelming number of resources to help students be productive and reach their full potential (i.e. 185 software tools). However, finding and navigating to these tools to access important information efficiently is heavily time consuming and cumbersome.

The goal of the WPI Mobile App IQP Team throughout this project was to enhance the on-campus experience for students by redesigning and redeveloping the existing WPI Mobile App to create a connected community at WPI. Our team, alongside the WPI Marketing and IT departments, focused on improving the utility, design, and usage of the current mobile app to allow students to easily access the tools they use on a daily basis, while also staying informed on all events and happenings on campus. To accomplish this, we took the following steps:

- Background Research
- Interviewing Students
- Student Surveying
- Prototyping
- Student User Testing
- Data Analysis

We hope that our work will provide a better tool for students to use to make their time at WPI fulfilling.




EXECUTIVE SUMMARY

Navigating the expansive database of resources can be overwhelming for both new and current students. Other institutions across the country have also identified similar challenges of trying to create a tool for students which can consolidate their resources. As a result, these institutions have developed mobile app platforms where finding resources is an easy task, leading to financial and time efficiencies for both the students and the establishment. To address this challenge here at WPI, we began by empathizing with our stakeholders to better understand their needs.

Our stakeholders included students, faculty, prospective students, and the marketing and IT departments. Since the primary stakeholder for this project was students, we conducted several rounds of interviews and user tests with students to collect qualitative data and distributed a student survey to get quantitative data. In addition to collecting this data, we developed three different prototypes of a WPI Mobile App and updated it as we received feedback from students through our user testing sessions. Through this data collection, we distilled a list of key areas for improvement within the app in utility, design, and usage. Our intentions are to continue working with the marketing and IT departments to implement our recommendations within the deployed version of the mobile app to increase student usage of the app.

Authorship



As there have been multiple revisions of sections of this report, it is difficult to clarify authorship on all sections. We will instead detail our writing, revising, and editing process. Sections of a chapter were divided so that there was a single, preliminary author for each. After the completion of a first draft, the entire project team read through each section and performed suggestive editing. After the suggestive editing process, the team as a whole addressed any major concerns through a face-to-face discussion. The original, preliminary author then accepted (or, in some cases, rejected) edits and made alterations. Many of these rounds of editing resulted in the reorganization of some sections and subsections. At this stage, a second draft was produced, and this draft was reviewed by each member of the team. Direct edits were made during this process, and any final major concerns were identified and discussed; the end product of this stage of revising and editing was the final draft. The reason that authorship is difficult to define is that our report has undergone many content-related and structure-related revisions, resulting in new and combined sections. In these changes, text from past sections was often borrowed and reorganized into different sections, making it impossible to track the original author.

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Introduction


 **WPI**
100 Institute Road

Worcester Polytechnic Institute

INTRODUCTION

Students entering the WPI campus at the beginning of the year are excited and filled with anticipation for what the year brings for them. As WPI improves and makes changes annually, there is a further addition to the information which students have to familiarize themselves with as they return to campus. In the beginning of every new academic year, students in different years experience different feelings and experiences. Especially for incoming freshman students, the feeling of being overwhelmed with various campus resources and information expends their energy which could be used for socializing and getting acclimated to their new environment.

Upperclassmen enter their new year familiar with the basic resources that WPI has to offer, but begin looking for information more specific to their academic and extracurricular goals. They tend to continue using the same resources they learned of in their freshman year unless they are forced to do so. However, all WPI students facing a term structure have virtually zero time outside of coursework and other commitments. Being a WPI student requires the understanding that time is indispensable. Students of all years eventually struggle to locate their information quickly, and instead waste time scouring through the scores of resources that WPI has to offer.



For many students, this barrier of accessing information easily leads to missing out on crucial information or feeling overwhelmed and burdened by the need to constantly stay up to date. This motivated us to begin our Interactive Qualifying Project by developing a greater understanding of the needs in the WPI community by conducting interviews and surveys. Addressing the pain points that WPI students face with a lack of centralized information and understanding their needs allowed our team to propose a targeted solution to mitigate the needs. By addressing the pain points that WPI students face through a lack of centralized information, our team was able to fully understand student needs to propose a targeted solution.

Need

Need

WPI Students are involved in a fast paced timeline, which puts them at a need to achieve their goals efficiently. There are many resources that WPI provides to help students reach their potential, but there is no centralized directory for convenience. The process of finding and navigating to resources can become repetitive and time consuming. For example, as WPI students, we have to login to Bannerweb three or more times every day after completing a term simply to check if our professors have posted our grades. This lengthy process involves searching, logging in, and constantly navigating to the same website, only to stay for a short period. Time is of the essence during seven week terms, and students should utilize their resources to access important information efficiently.



NEED

In addition to the fact that there is an overwhelming amount of resources, the majority of resources are unknown to students due to the lack of awareness or functionality of the resources. According to the WPI Hub website, students have up to 185 software tools available to them. Creating a solution that can ensure easy access to all these tools will greatly satisfy the needs of the campus.

Students are actively engaged with the latest technology, especially, smartphones. To cater to this space, there is a need for WPI to connect to students using this medium. The biggest pain point of the lack of a centralized location for resources married with the need for a proper mobile app platform is one that can and needs to be solved.

STAKEHOLDER #1



STUDENTS

Our primary stakeholders are the undergraduate students enrolled at WPI. Students have access to the many resources which WPI offers, from the host of tools in the Microsoft Suite to Zoom. Students can access these paid resources for free using their WPI credentials to accomplish their personal and academic needs. The fast pace of the seven week terms demands students to have quick and easy access to college resources, which are unfortunately scattered across different web pages and apps. For example, students have to navigate to Bannerweb to view their grades but use the Canvas App to access their course material. It is important to make the process of accessing resources streamlined so that students can leverage them.

Noelle had to attend school remotely during the COVID-19 Pandemic. To prepare for her future in-person attendance at WPI, she wanted to learn about the college's guidelines. She found some interesting infographics on WPI's instagram, and took notes from some emails that she had received from President Laurie Leshin over the past couple months. However, she could not find all the information in one place, and felt frustrated at the lack of information that was directly accessible to her and at the amount of time it required her to search for this information instead of focusing on her academics.



STAKEHOLDER #2



WPI MARKETING DEPARTMENT

The Marketing team has to communicate with incoming students, prospective students, current students, and alumni. They need an efficient way to share information and advertise the school. A centralized singular platform that will allow them to communicate with different groups of students at the same time is beneficial and a need that the department has. Recently, they began investigating the possible utilization of the WPI Mobile app for this purpose. Over the years, the app development platform tools have advanced, and the WPI Marketing team is paying special attention to improving the utilization of the current mobile app through these existing tools.

Rachel works in WPI's Marketing Department. She is in charge of informing the students of President Laurie Leshin's latest COVID update with students. Besides an email sent out to students, she wants to reach out to the student body with this same information. There is a need for reliable and constant communication with the entire student body to convey this message aside from mass emails and through a different medium instead of just through a computer.



**MARKETING
DEPARTMENT
PERSONA**

STAKEHOLDER #3



WPI IT DEPARTMENT

The WPI IT Department is a major stakeholder in this project for several reasons. Their interests align with making sure the WPI Mobile app can be updated and developed, is sustainable and can provide technical support for when issues arise, and is overall an application that can keep up with the needs of students. Additionally, the IT Department is funding the use of the Modo app development platform for the WPI Mobile app, which financially makes them stakeholders in this application. Their ability to control and advise the application to make sure it is functional and is up to the standards of the students is a very important role.

Carl is a developer at the WPI's IT Department. One of his responsibilities involves working with the WPI Marketing Department to make sure that content created by Marketing gets delivered to students. Carl is looking for solutions that are cost effective technology, easily maintainable and sustainable throughout changes to the IT team, easy for the Marketing team to access and use, and is modern technology that gives students a reason to use it.



**IT
DEPARTMENT
PERSONA**

STAKEHOLDER #4



PROSPECTIVE STUDENT

Students considering college as their next step in higher education turn to college resources to provide them more information. During their research, students are looking for tools to give them more insight about the college they are interested in. A centralized mobile platform is a potential solution for becoming the primary source of information for prospective students due to the engagement and resources functionalities. This solution can be marketed as an integral part of the college application process.

Liz is a high school student interested in WPI as her college of choice. However, she is a resident of California and is unable to visit the college in person. She has read a lot about it on the college's webpage, but she is looking for a tool which would help her connect with the college in real-time and experience a student's day to day life.



**PROSPECTIVE
STUDENT
PERSONA**

STAKEHOLDER #5



FACULTY AND STAFF

One of the biggest issues that event coordinators face is attracting the student population to their events. The innovative minds (students, professors, and staff) at WPI are always introducing new programs and events that are in the best interest of the students, however, students miss out on the announcements or emails regarding them. This platform is an excellent way to publicize events/programs and communicate with students. Users of the app will be capable of viewing all the upcoming events and also add them to their calendars, which would be in the favor of their attendance at the events and programs.

Professor Smith is a lecturer on campus and an advisor for his new robotics club. He is looking to reach out and recruit students to join his team for competition, but is not sure of the best avenues of contacting students besides email. Professor Smith would also like to know what is happening on campus with student events so that he can market his club effectively and reach out to the right groups.



**FACULTY +
STAFF
PERSONA**

MARKET OPPORTUNITIES

There are various market opportunities for a solution to cater to the student needs and the current market situation. A user friendly tool to resolve daily issues students face regarding accessing resources and connecting to each other would be greatly appreciated.

COVID-19 PANDEMIC

The COVID-19 pandemic has completely altered the student lifestyle, making remote learning unavoidable. The orthodox classroom teaching style has transformed to completely digitized. Professors and students have started utilizing resources like Zoom and Canvas discussion boards for their lectures. Nowadays, the primary ways of communication include Slack, Discord, and Microsoft Teams. In such times, a seamless experience of accessing and utilizing all these online resources is desired by everyone.

CENTRALIZED PRODUCTS

WPI has begun transitioning to centralized products. This can be noticed by their recent transition to WPI Hub and Workday. While these two resources are accessible using the internet, students would appreciate the simplicity of a mobile friendly centralized environment. The WPI Marketing Department has been developing a similar solution in the form of an app. However, this resource has remained underutilized for the past few years. to develop and market this app as a centralized hub for students to use on the tip of their fingers.

PROSPECTIVE STUDENTS

Every year, the freshman class size gets bigger. WPI has been working diligently to market themselves, so that more students are attracted to the college and enroll into it. They are always excited to adopt new tools which will help them to connect with and educate the prospective student population and vice versa.

BEACHHEAD MARKET

First-year students and prospective students are curious minds that enter college and tend to leverage the resources that they are introduced to in the beginning of their college career. For example, students in the past were introduced to a course planner tool in their freshman year. Even though WPI transitioned to using a new course planning tool 2 years ago, these students continue to utilize the older tool throughout their four years at college since they adapted to using it in the past.

In addition, first year students need more basic information about the college than any other student on campus. Currently, there is no centralized resource for basic information such as a campus map and dining information, making it ideal for our solution to target this need with this specific market. Understanding these concepts helped our team realize that the best way to make the tool a fabric of the WPI student experience is by introducing it to students earlier in their college journey, that is, in their first year of college.

Jessica is a freshman Biomedical Engineering major at WPI. She learned that she could add-drop her classes using the WPI Hub (a new and improved WPI ITS website). Later that day, she met up with her mentor, Cece, a junior. Jessica shared her experience of registering for courses with Cece. Cece was surprised to learn about WPI Hub, since she had been using Bannerweb for the past three years for course registration. When Jessica recommended Cece to try out WPI Hub, Cece was reluctant since she was used to leveraging Bannerweb for the same purpose since freshman year.



**BEACHHEAD
PERSONA**

A large group of cheerleaders in red and white striped uniforms are performing a routine on a campus lawn. They are arranged in a large circle, with some in the center and others around the perimeter. The background features a large, multi-story brick building with many windows, surrounded by trees and a clear sky. The entire scene is overlaid with a semi-transparent red filter.

Background Research

MODO LABS



Figure 1: Modo Labs' Logo

Modo Labs is a company specializing in providing enterprise-scale customized mobile platforms for engagement and communication platforms. The Modo platform can allow users to quickly create a mobile app experience, regardless of technical skill set. The technology provided by Modo is used by many colleges and companies across the country, including MIT, Harvard, and Capital One. Colleges using this platform have the ability to create long term engagement and communication through the many features that Modo Labs provides. The various features include persona selection, the ability to link social media and news directly into the application, have an up to date calendar of events, third party app integration, and digital media linking. The Modo mobile platform is currently being used for the WPI Mobile app due to its low cost and numerous functionalities that can help the college engage with the users more effectively.

Several competitors exist for Modo Labs and include companies such as Knack HQ and Caspio. Both of these platforms however are used specifically for database management and backend website creation. Since these two companies do not have a front end mobile application feature, they are not direct competition for Modo Labs, and are not being considered for the WPI Mobile app (Modo, 2020).

ALTERNATIVE STUDENT RESOURCES

Students at WPI have access to multiple resources which are accessible using different apps and web pages, such as, Canvas, Bannerweb, WPI Hub, etc. Students leverage these resources on a daily basis for tasks such as accessing course material, reserving time for lunch, and reserving tech suits.

We identified the need for the following student resources and understood their functionality: WPI Hub, Bannerweb, Canvas, TechSync, WPI Instagram, and WPI website.

WPI HUB

- Centralized hub
- Personalized dashboard

CANVAS

- Course material
- Platform to connect with peers and professors

WPI INSTAGRAM

- Connection to social media
- Informative for different types of viewers

BANNERWEB

- Student academic info
- Primary portal for course info

TECHSYNC

- Information about clubs and organizations
- Access to forms and events

WPI WEBSITE

- Info regarding WPI programs
- Targeted for all types of audiences

WPI HUB

WPI Hub is a centralized webpage that caters for all student needs. It gives students access to a huge knowledge base, service catalogue, software library, different locations and servers, news and events, and a personalized student dashboard. The knowledge base can be used by students to gain information on various topics, such as, resetting passwords, getting Office 365 on personal computers, and Microsoft Teams tips. The service catalogue provides a list of a range of services provided by WPI ranging from teaching and learning services to communication and collaboration services. The software library is a collection of all the software available to WPI students. The locations and servers section provides information regarding the desktops, classrooms, servers, and desktops on campus. The app marketplace is a platform for adding online applications to the TechFlex shortcuts list. The news and events section contains major announcements for maintenance and events on-campus (including the timeline, updates, and current status). One of the most useful features of the WPI Hub is the student dashboard. The user can personalize and design this dashboard based on his/her needs. The dashboard contains detailed information regarding the student's frequently used apps, testing routine, courses for the current semester, ability to manage passwords, tickets, approval requests and history, assets, history of activities, and widgets for certain features on WPI Hub.

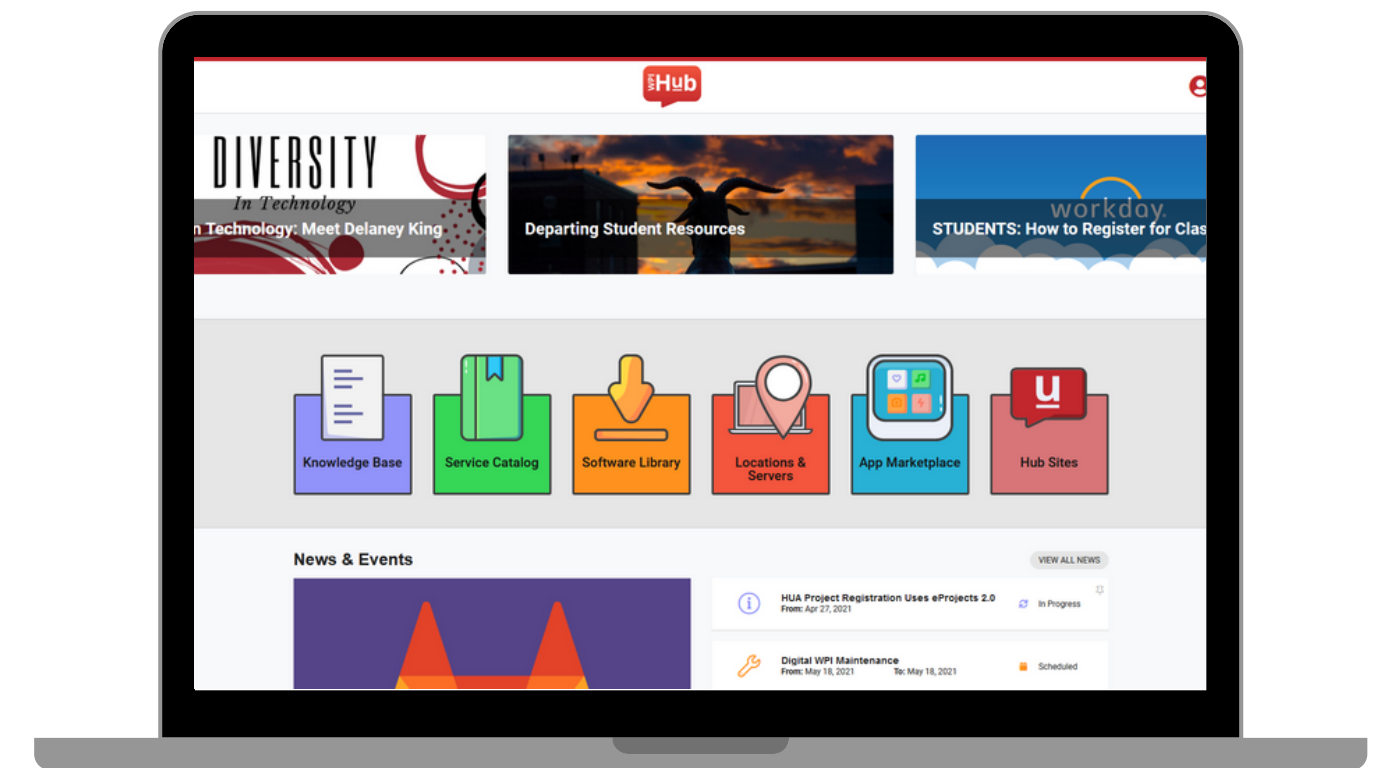


Figure 2: WPI Hub

BANNERWEB

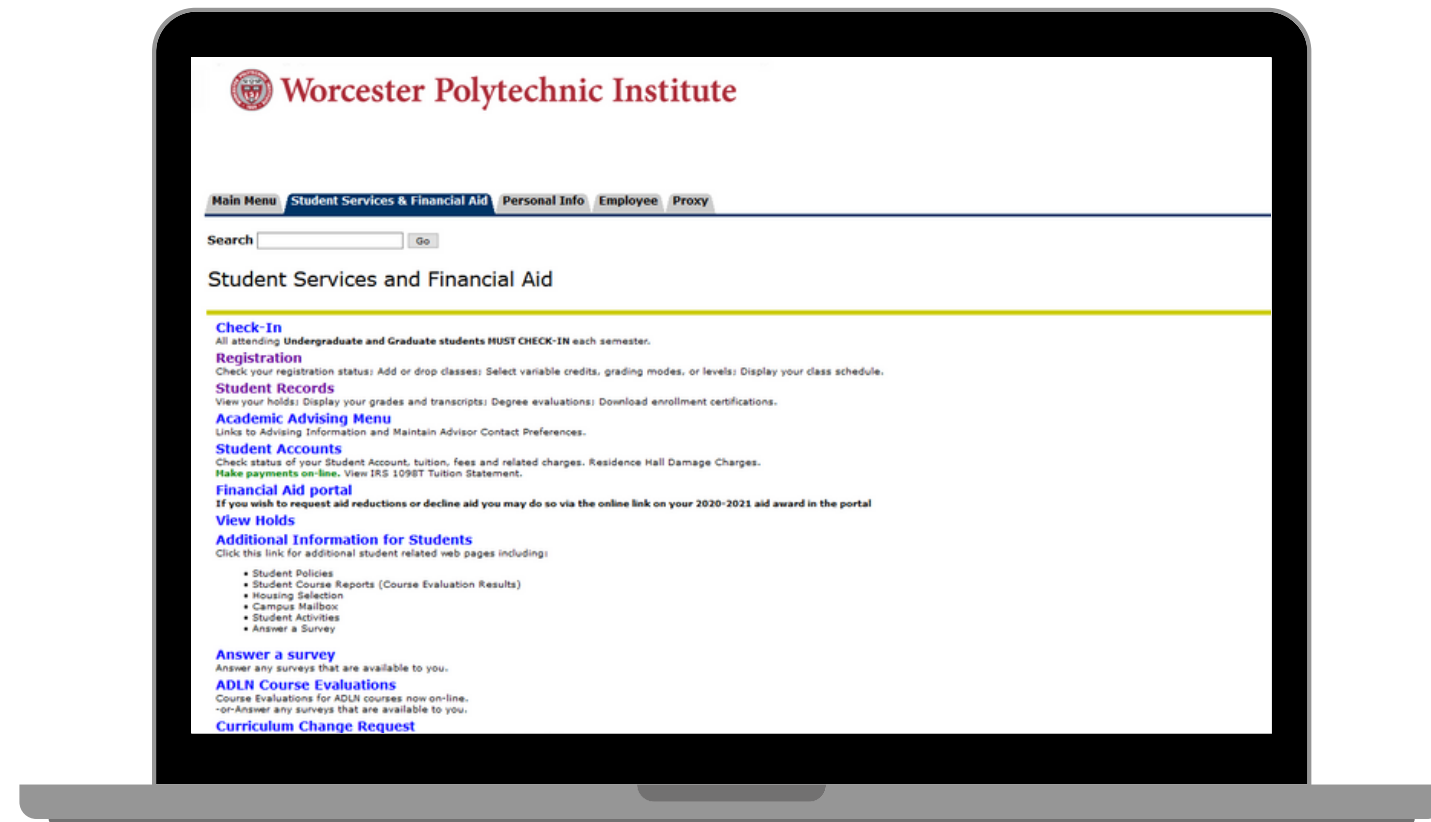


Figure 3: Bannerweb Interface

Bannerweb is the prime portal for students to view their records, course registration, and fee payment. Bannerweb has an emergency communication system for the students. Before the beginning of every semester, the students have to use this portal to confirm their attendance. It provides the ability to view academic advising information, campus mailbox information, link to the GET webpage, financial aid portal, and housing portal, and access to the curriculum change form.

CANVAS

Students use Canvas for all their courses. It provides access to important course related information, such as, course materials, faculty/staff contact information, course lectures, course announcements, etc. The inbox feature allows students to communicate with their peers, professors, and teaching staff. It also keeps track of a student's old courses and its course material. The teaching staff can use tools on Canvas to provide feedback and grade breakup on student submissions. One of the most important features of Canvas that was leveraged during the pandemic was live lectures through Echo360 or Zoom.

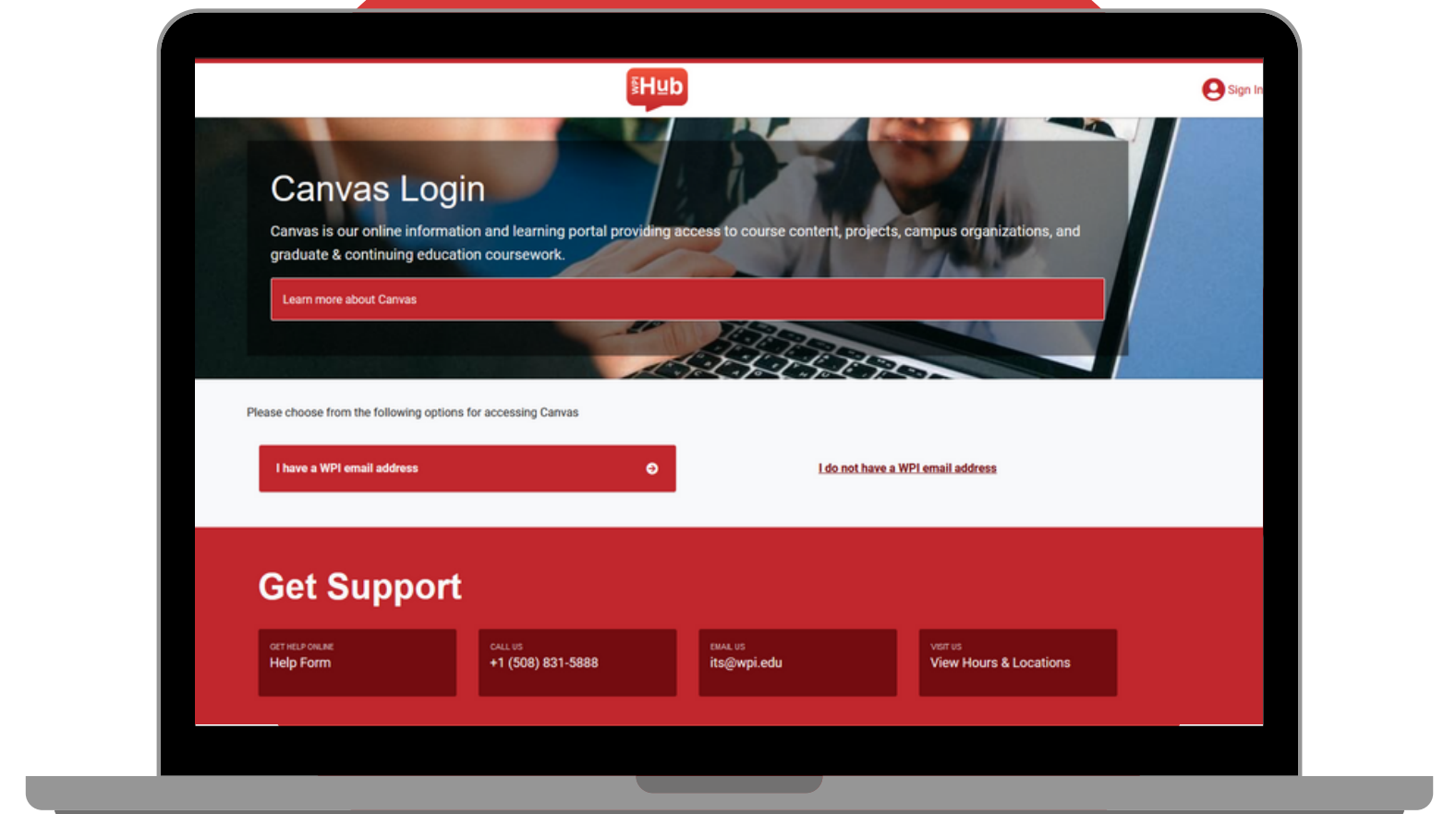


Figure 4: Canvas Interface

TECHSYNC

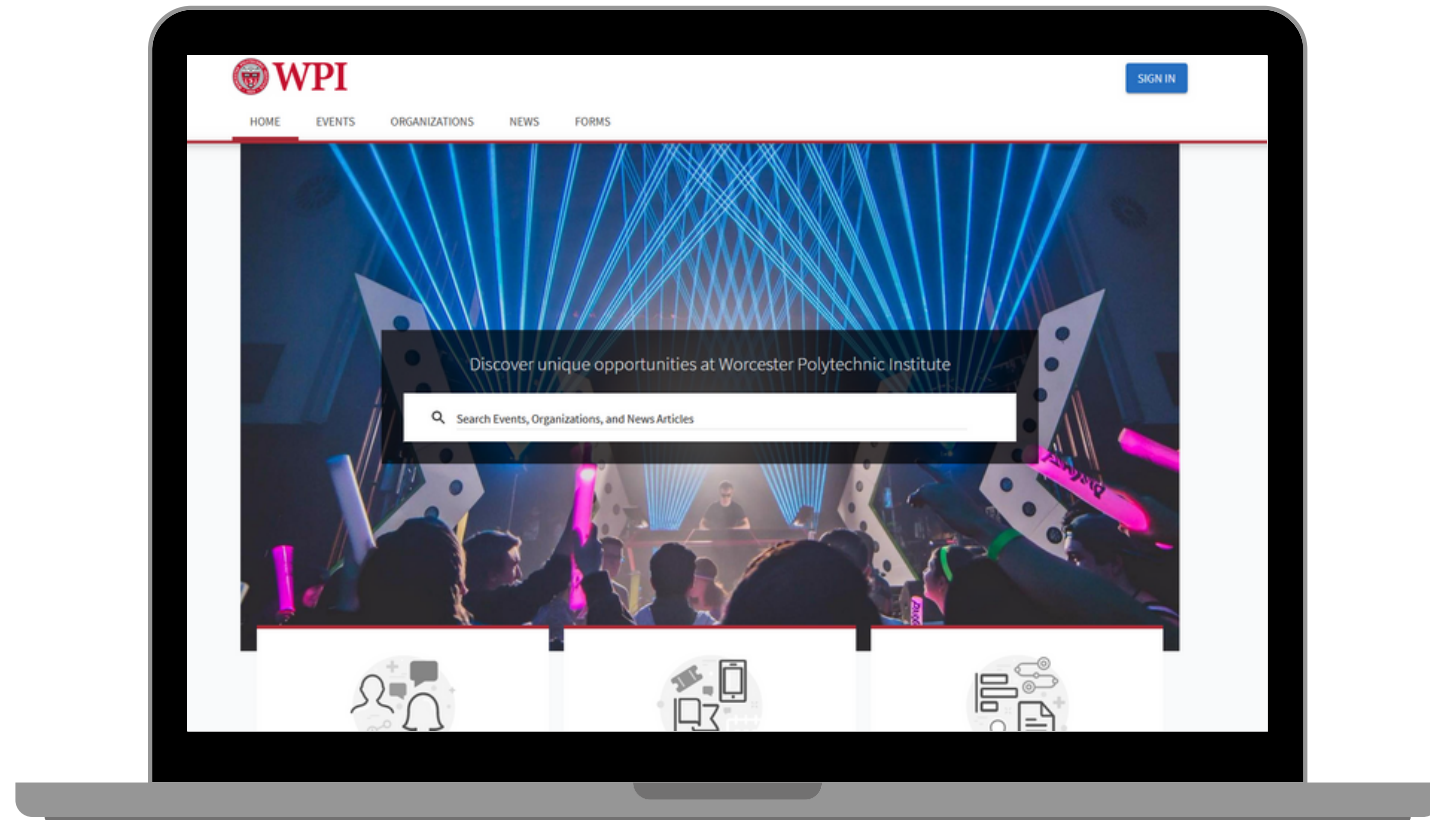


Figure 5: Techsync interface

WPI students leverage Techsync to get information about clubs and organizations on campus including sororities and fraternities. They post updates for students on TechSync. Students can add themselves as members, find club executives' contact information, and explore new clubs and organisations. One can view, RSVP, and filter events in the events section of the webpage. Lastly, TechSync's form library contains a huge range of forms, such as, Anti Hazing form and Fundraising Request form, which are frequently used by club members and executives.

WPI INSTAGRAM

The WPI Instagram account is a way for prospective students, currently enrolled students, and alumni to connect with the college through social media. It is one of the student favorites. It has over 16,000 followers which includes prospective students, currently enrolled students, alumni, and faculty/staff members. The account's posts include infographics regarding important updates on campus, snaps of student life at WPI, information on application deadlines and NSO, student shoutouts (#GoatsoftheWeek), and infographics for generating awareness regarding social issues.



Figure 6: WPI's Instagram

WPI WEBSITE

The WPI website is the go-to resource to get information regarding the college and its programs for all types of audiences including students, parents, faculty and staff, alumni, employers and partners, and media. All the information regarding Bachelor's, Master's, and PhD programs can be found on this website. The latest updates can be found here too. The webpage contains links to the following websites: Global Project Programs, Research Opportunities, Information about the City of Worcester, CyberPoint at WPI, Student Voices, and Career Development Center. Lastly, the website's menu allows the user to get information in the following concentrations: Project Based Learning, Academics, Admissions and Aid, Athletics, The Student Experience, Research, News and Events, and Give to WPI.



Figure 7: WPI's Website

WPI MOBILE APP

The origin of the initial WPI app used the Blackboard platform to create a tool for course selection, scheduling, and publishing course materials. Blackboard came up with a mobile application to stay in sync with the technological advancement. However, the application did not satisfy the end-user requirements. It consisted of a couple buttons which redirected users to the web browser, there were no built-in features in it. Eventually Blackboard realized that their product was not good enough and they ended up discontinuing their mobile application services.

Modo Labs invented a similar drag and drop app development solution targeted towards colleges and universities. WPI decided to partner with Modo to develop their mobile application especially because no coding skills were required to develop it and it was compatible with iOS and Android devices. Additionally, an app created with Modo Labs updates automatically and doesn't require the user to manually update it using the App Store or Play Store. This was an incentive for the developers to focus more on the quality of the content rather than the backend of the application.

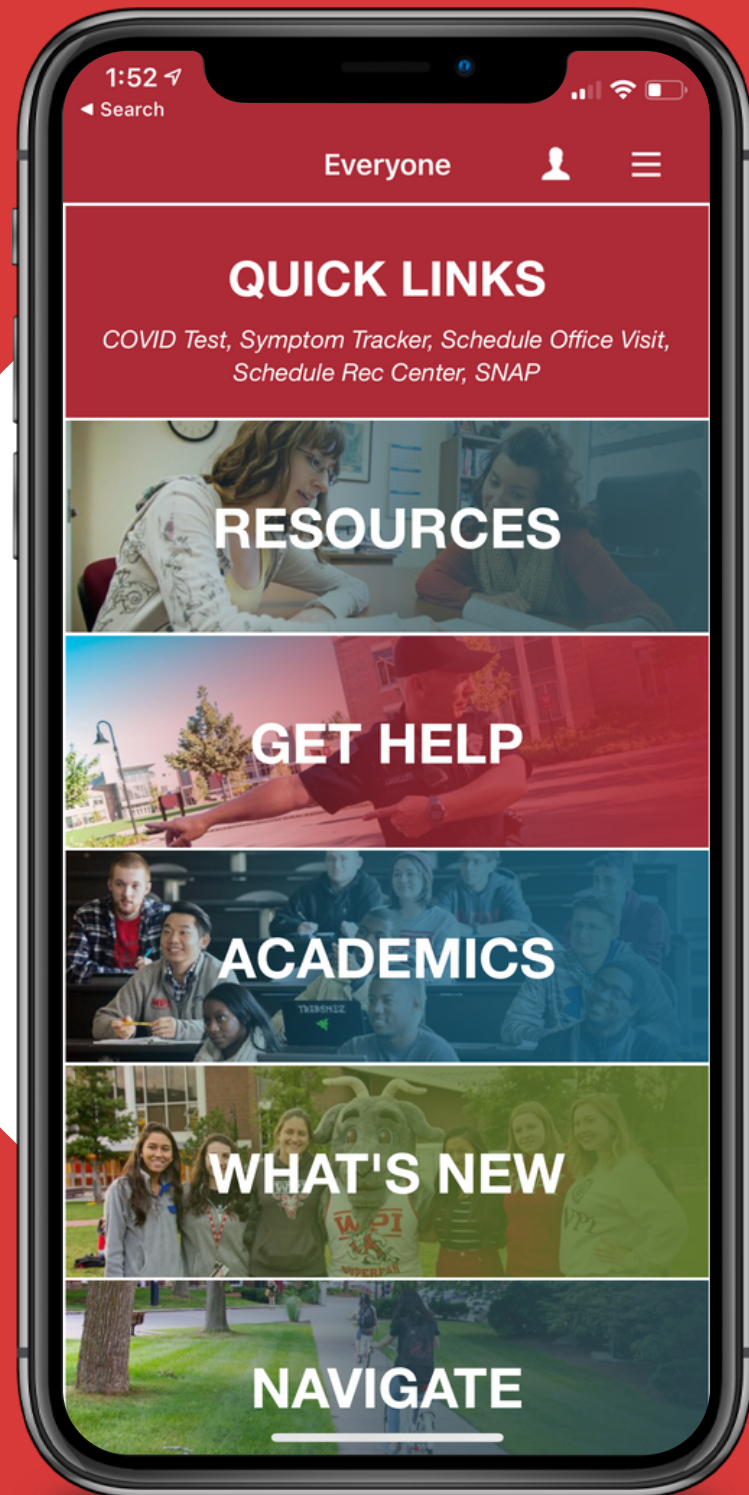


Figure 8: WPI's Mobile App

WPI MOBILE APP

Development tools in Modo Labs have improved significantly over time which resulted in a more advanced version of the WPI application. The older version of the app had one screen with a couple of buttons, however, the new version which was introduced 3 years ago launched personas: the Student persona and the Everyone persona. Now, content is uploaded to the Student persona on a weekly basis and it also leverages the notification feature that Modo Labs provides. The Everyone persona is designed for a general population and includes quick links to informative resources.

The WPI application currently leverages about 20% tools that Modo Labs provides. A few goals that the WPI Marketing team would like to achieve in the near future include adding more personas (Alumni, Faculty/Staff, etc.), integrating the Single Sign On (SSO) functionality, personalizing the content for students (using artificial intelligence algorithms), and making the app low-maintenance such that a beginner could make changes to the app and deploy it.

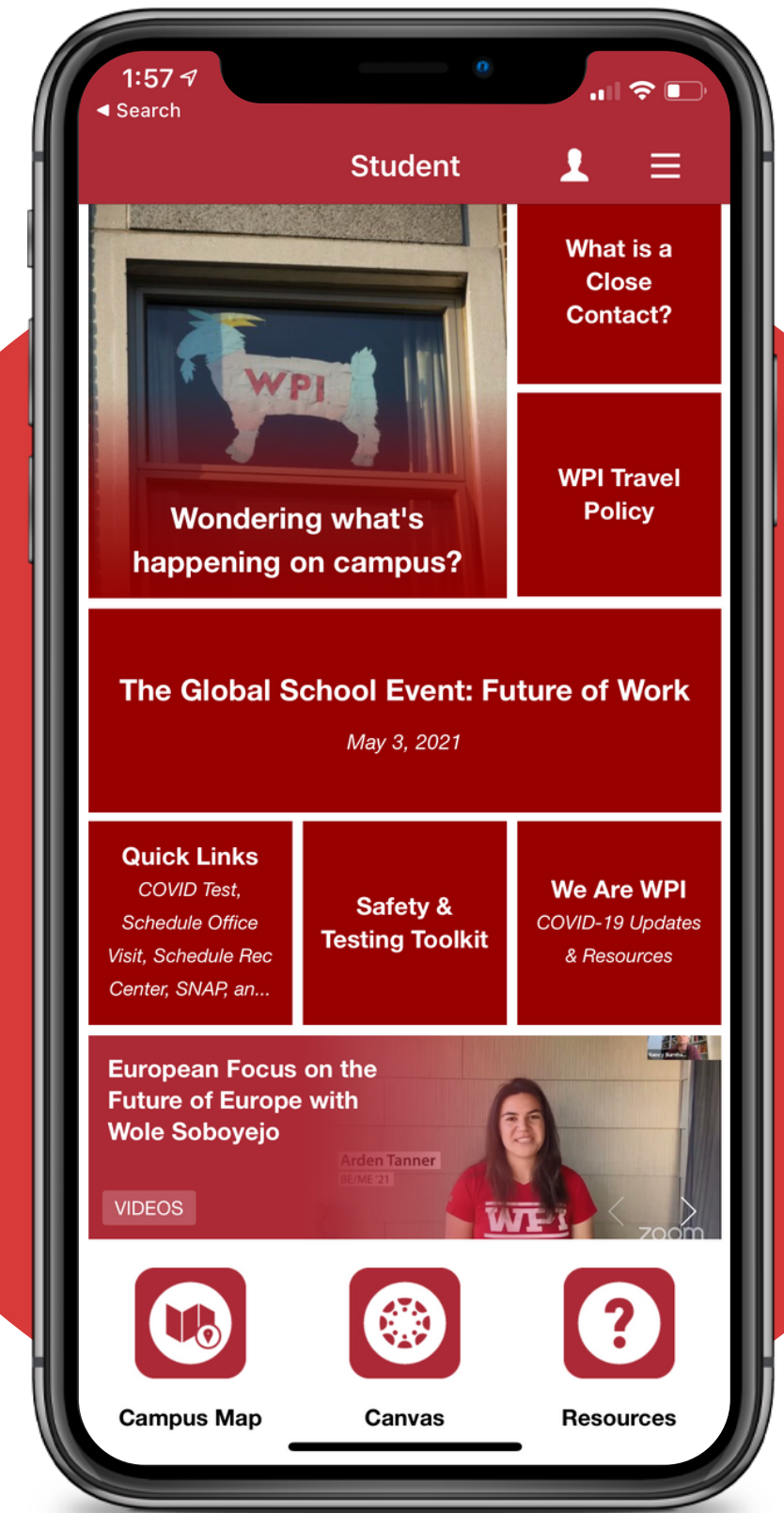


Figure 9: Mobile App Student Page

A circular frame containing a photograph of a university campus scene. In the foreground, several students are walking on a paved path. One student on the left is wearing a blue t-shirt with a logo. Another student in the center is wearing a dark t-shirt with "21st NATION ARMY" printed on it. To the right, a tall, ornate fountain is spraying water upwards. The background is filled with lush green trees and a building with a dome. The entire image has a warm, reddish-orange tint.

Approach

UNDERSTANDING THE STAKEHOLDERS

Creating a mobile app for students allows for easy access to resources available on campus and throughout the student body. The development of a modified WPI app will provide a centralized hub for students to access various tasks. Through an app aimed to be used daily by students, events will be updated consistently allowing users to be notified by push notifications. These events can vary from guest speakers, information sessions, promotional events, club events, and more.

The app would create a community for WPI students by allowing students to have a central location for finding information about the school and different organizations on campus. This will include accessing club information, finding the availability of laundry, easily booking rooms/tech suites, etc. Finally, the WPI app will be accommodated to help students find resources they might not be aware of, or help them understand how they can access these resources and use them to improve their work ethic and experience.

STUDENT INTERVIEWS

To understand the need for the WPI mobile app, our team put together a focus group and conducted interviews. Receiving feedback from students on their use of technology throughout their daily life or understanding how they interact with tools on campus was important for us in order to extract a need that could help the WPI student community. We interviewed 11 students of different majors and backgrounds to help create a diversity in our spread of information and to help represent the entire WPI campus. Sustainability of this mobile app is very important to both the students and to WPI. Particularly with the IT and Marketing departments, it is very important to have an application that is easy to maintain and make changes to. The current Modo platform allows for anyone to make changes without a need to have prior technical knowledge. Modo also allows for easy maintenance, since the logistics are handled in the back end on Modo's side. This is very important for understanding how the WPI Mobile app can be cultivated for years to come.

STUDENT INTERVIEWS

In addition to easy maintenance, our team has set the precedent for working with the IT and Marketing department on projects, and will hopefully encourage more teams to partner with these departments and this mobile app. Having IQP and MQP teams working in conjunction with the WPI departments will allow for solutions such as the WPI Mobile app to be preserved and updated accordingly. Our team will also provide the proper documentation and videos as training material for future students and departments to refer to when working with this mobile app. Finally, constant and consistent communication between the two departments and students will allow for the app to stay up to date and relevant, therefore always keeping the focus on the needs of the WPI students.

This app provides a unique and sustainable competitive advantage over the other resources available to students because it is being actively managed by two departments, has direct access to users and the market through data and analytics, and will be backed by research which can further manage the relevancy and applicability of this mobile app.

Methodology



IRB APPROVAL

Process for receiving IRB Approval



STUDENT INTERVIEWS

Interviewing students to gather initial data



STUDENT SURVEYS

Mass surveying of school to get large amounts of data



IRB APPROVAL

In order to begin the process of data collection and student interviews, our team had to complete the Institutional Review Board (IRB) Approval of our survey and data acquiring methodologies because of research involving human subjects. The purpose of this approval is to determine whether the questions and methods of which our team will have used on students in interviews and surveys would be ethical and not cause harm. The IRB approval process required our team to complete training modules, followed by creating a proposal of the types of testing which will be done. Our team anticipated user testing, one on one interviews, and mass surveying tactics to be used, therefore we created a proposal for each type. Our team was able to receive IRB approval before the beginning of the first round of student interviews.

STUDENT INTERVIEWS

Before starting our work on the project, we wanted to understand what the students felt about the current WPI App. We picked out a sample of students such that we would have a good mix of different class years and majors. Through these interviews, we wanted to understand student's outlook on the following areas:

- Usage of the WPI App
- Pain points of the WPI App
- Marketing of the WPI App
- Design of the WPI App
- Functionality of the WPI App

We conducted the interviews on Zoom. It helped us maintain our bubble during the pandemic and allowed us to record the interviews. The interviews were recorded with the participant's permission. We had prepared a set of questions for these interviews. The tone of the interviews was conversational, and we took the liberty to ask follow-up questions whenever needed. Additionally, we ensured that none of the interview questions created any bias by making the questions open-ended, such as, "What do you feel about the design of the WPI App?"

We had two sets of students. The first set of students had some exposure to the WPI App, whereas, the second set of students had never heard about it in the past. For the first set of students, we mainly focused on the utility, design, and functionality of the app. For the second set of students, we focused on understanding the needs and expectations of the students. Additionally, we asked both sets of students for insight on how we could market the app to other students. Interviewing 11 students gave us a head start on the project and helped us plan out the next steps of the project.

STUDENT SURVEY

Our next step was to send out a survey to students. The survey questions were similar to our interview questions. However, the reason behind conducting a survey was that it helped us reach out to a larger student population. Additionally, it would provide us with statistical data which could be used to perform correlation analysis.

The survey was created on Qualtrics. The survey questions were mostly multiple choice questions to make it small and quick to complete, taking about 3-5 minutes to complete the survey. It had three versions for the following categories of students: students who used the WPI App frequently, students who had never used the app, and students who didn't have the app installed on their phone. Additionally, we asked all the students who were interested in further participating in our research in the form of user testing to share their email addresses through the survey. We shared the link to the survey on our social media accounts and on WPI Club Slack and Discord groups. As an incentive, students were allowed to enter a raffle for four \$25 Amazon Gift Cards. We received 75 responses to the survey. Using Qualtrics, we analyzed the survey data and also shared it with the WPI IT and Marketing teams. We leveraged the feedback received from the student surveys to create the WPI App design prototypes.

PROTOTYPING + USER TESTING

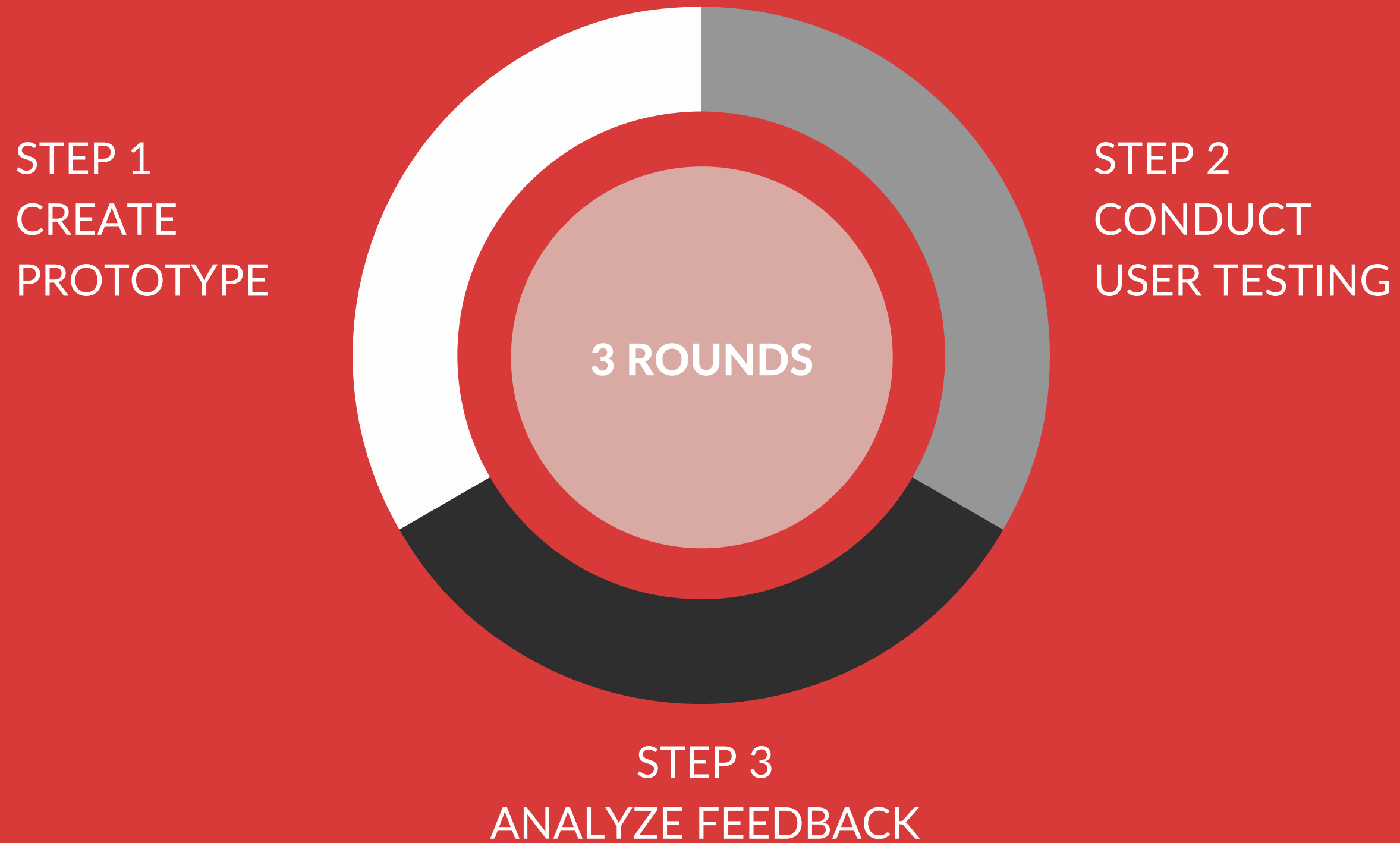


Figure 10: Prototyping Method

ROUND 1

The Everyone persona of the WPI App had a very unique design, it was aesthetically pleasing. Therefore, we decided to keep it the same in our first prototype. The Persona Selector page looked very plain and was a bit complicated to navigate to. It needed a better design. The Student persona landing page was super cluttered with articles, links, and videos. While we were interviewing students, many of them complained that the page was very busy and it didn't have much functionality. Therefore, in the first prototype, we redesigned the Persona Selector page and improved the user experience in the Student page. During our research, we noticed that only a few students knew about the different personas in the WPI App. Our goal was to make these personas prominent so that students could leverage both of them to their advantage. We took inspiration from Netflix's landing page. Their landing page is simple, it has a box for every experience in the app. Since people all over the world use this app and like the design of Netflix's landing page, we decided to create a similar design for WPI App's landing page.

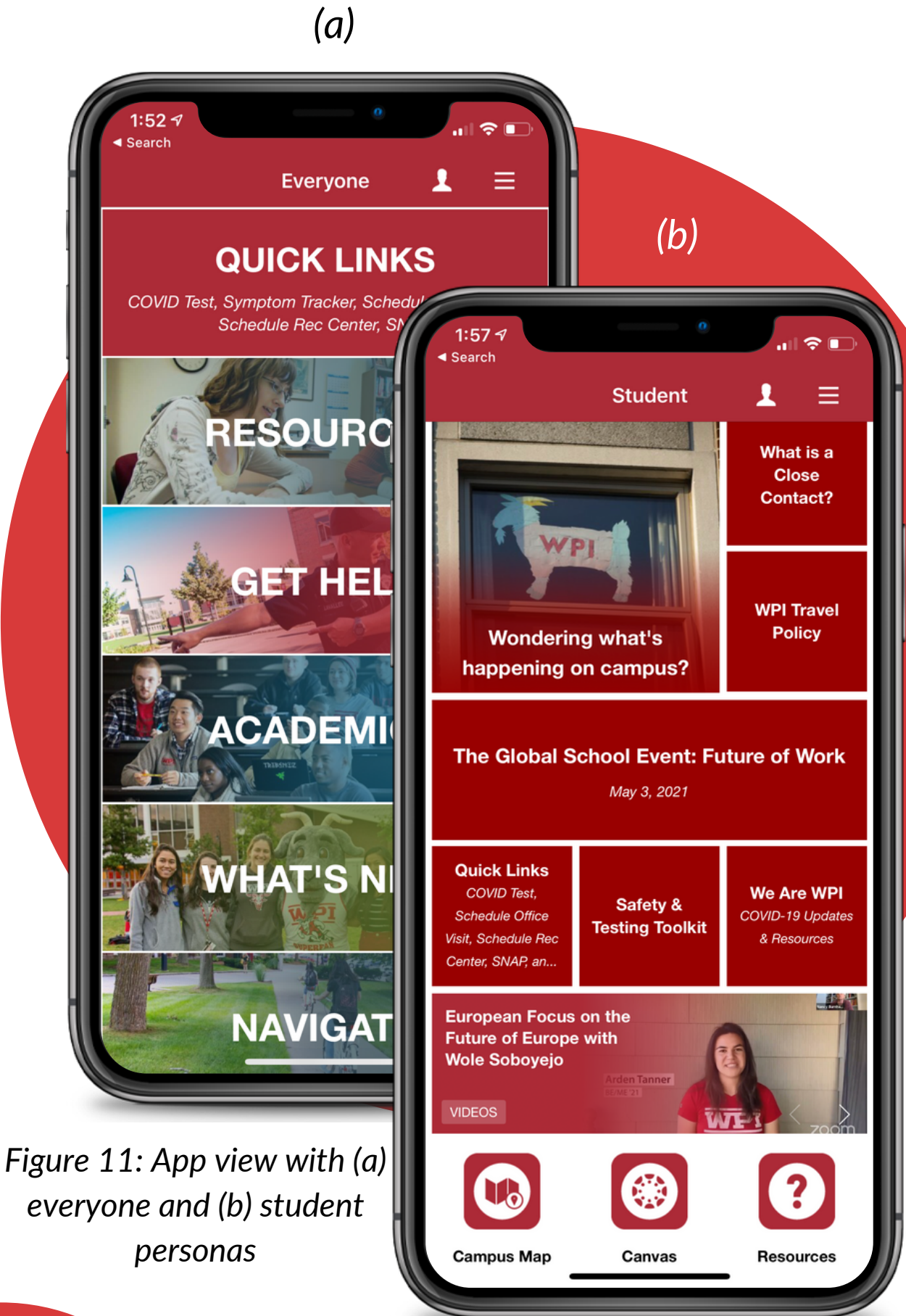


Figure 11: App view with (a) everyone and (b) student personas

To reinvent the persona page, we took inspiration from Netflix's landing page. Their landing page is simple, it has a box for every experience in the app. Since people all over the world use this app and like the design of Netflix's landing page, we decided to create a similar design for WPI App's landing page.

During our background research, we came across the Stanford App, Penn State App, and UCF Go App. We liked how the Penn State App and UCF App had integrated multiple third party apps like Canvas and Outlook in their student version of the apps. This was a potential solution for the need of having a centralized place to quickly access all the WPI student resources. Additionally, both these apps displayed 4 apps in one row, which introduces us to new types of tile blocks in Modo Labs. This layout was better because it allowed us to fit more apps in the space we had. The Stanford app is not developed using Modo Labs. However, the user interface of the Stanford app was excellent. The user interface was a good combination of the college's colors and pictures. Since the picture tiles could be replicated using Modo Labs, we tried to integrate it in our initial design.



Figure 12: (a) Netflix and (b) WPI landing pages

FIRST PROTOTYPE



Figure 13: (a) Stanford's and (b) Penn State's apps combining to form (c) the first prototype

All our prototypes were created using Figma, an online prototyping software. It is free to use by anyone and it allows teams to work together on their prototypes in real time. Once the prototype was completed we could preview the screens in a mock phone screen too. Additionally, the platform allowed us to share the link to the prototype with our advisors and volunteers for user testing.

Once the prototype was complete, we conducted the first round of user testing. As an incentive, we gave \$5 Dunkin Donuts gift cards to all the participants. The user testing was conducted over Zoom to maintain our bubble during the pandemic and also record these sessions with ease. The Zoom meetings were recorded with the participant's permission. For conducting these sessions, we took the two-person approach. While one of the team members asked the user to complete some tasks, the other one took notes regarding the participants' response. We got 7 people to participate in our first round of user testing. All of them were WPI students and were from different class years and majors. During these sessions, the participants were asked to think-out-loud while completing the assigned tasks. After completing the tasks, we asked them some general questions about each persona and the overall app. The tasks and questions can be found in Appendix A of the paper.

We received a lot of valuable feedback during these sessions, that we used to make changes to the prototype and create the second prototype.



Figure 14: First Prototype

ROUND 2

A second round of prototyping was created in order to implement feedback and changes received from students about the first round of prototyping. The biggest modification to the first prototype was adding an Everyone persona. The results of the first round of user testing led to the creation of a newly designed Everyone persona, which was more minimalistic and contained features which were only useful for users who were not students (faculty, visitors, prospective students, etc.). Figure 15 shows the difference between the current Everyone page in the WPI app against the prototype version of the Everyone page. The Everyone persona in the prototype included the most important and basic features which were believed to be most important to non-student users, such as being able to connect to WPI internet, scheduling campus tours, admissions info, and more. The design of the prototype is more convenient for users to quickly go to the desired feature without confusion.

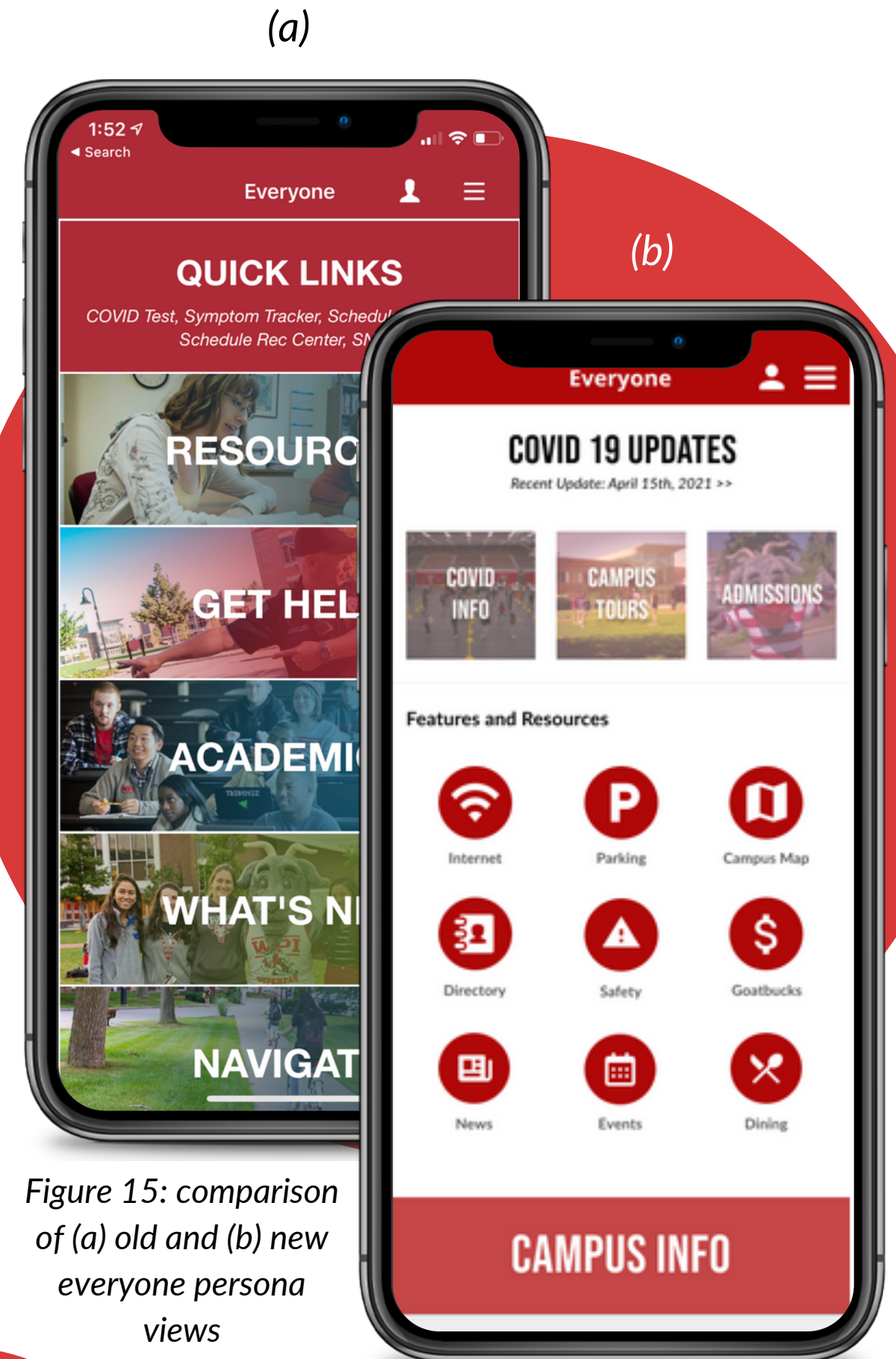


Figure 15: comparison of (a) old and (b) new everyone persona views

ROUND 2

Another major addition to the second prototype was implementing a different Student page view. The prototype gave two options for displaying icons, with the intention of students choosing which view they preferred in the second round of user testing. Figure 16a is a view of a four by four icon layout, while Figure 16b is a three by five icon layout. An additional design was considered due to the responses received in the first round of user surveying, discussed in Round 1.

The final assortment of changes made to the prototype from the first round included minor user design changes on the Student view to make things more legible and easy to access, while the Everyone persona was completely prototyped for the first time from scratch. Overall, the second round of prototyping provided the ability to take student opinions, favorite features, and design preferences into consideration in order to create something that catered closer to student needs than the existing WPI mobile app.



Figure 16: comparison of (a) 4x4 and (b) 3x5 icon views



ROUND 2

Once this prototype was finalized, we began the second round of user testing to receive feedback for our third and final iteration of prototyping. A second round of user testing was conducted in order to gauge student opinions after making changes from the first prototype to the second. This round of interviews were conducted in a similar manner to the first round, but with more descriptive questions and added tasks. Seven random users with different backgrounds and years were selected once again to maintain diversity and receive a representative sample of the overall campus. Users were still asked to walk through their thought process when navigating the various tasks. The questions and tasks asked of the users can be found in Appendix A.



ROUND 3

The third and final round of prototyping is a culmination of all the features and design recommendations given to us through two rounds of user testing. This prototype includes not only design changes, but also important features that students deemed important for the WPI mobile app to have in order to contain a need for which students would be able to depend on the application. With this final prototype, we were able to determine that the feature which was most important and contributed to the need for this app was the ability to easily access student resources in minimal time. Including frequently used features which are generally very difficult to access into our application was a big favorite with students, and something taken into account for other features in the final prototype. The final features of the student persona can be found in Figure X. Alongside these features, the student persona contains events, news & updates, and explore pages to provide more information to students about campus events and other happenings. These elements are dynamic and will be updated with the latest information by the WPI Marketing department.

ROUND 3

The Everyone persona in this third prototype was redesigned to be a Visitor persona, where it became more clear that the persona was directed towards WPI visitors and prospective students. From both the first and second round of user testing, students said they were confused about what the word Everyone entailed and who the target market would be. This convinced us to change the everyone persona to “Visitor” and add features more useful to visitors than before. The following features in visitor can be shown in Figure 17. The link to the final prototype viewing can be found [here](#).

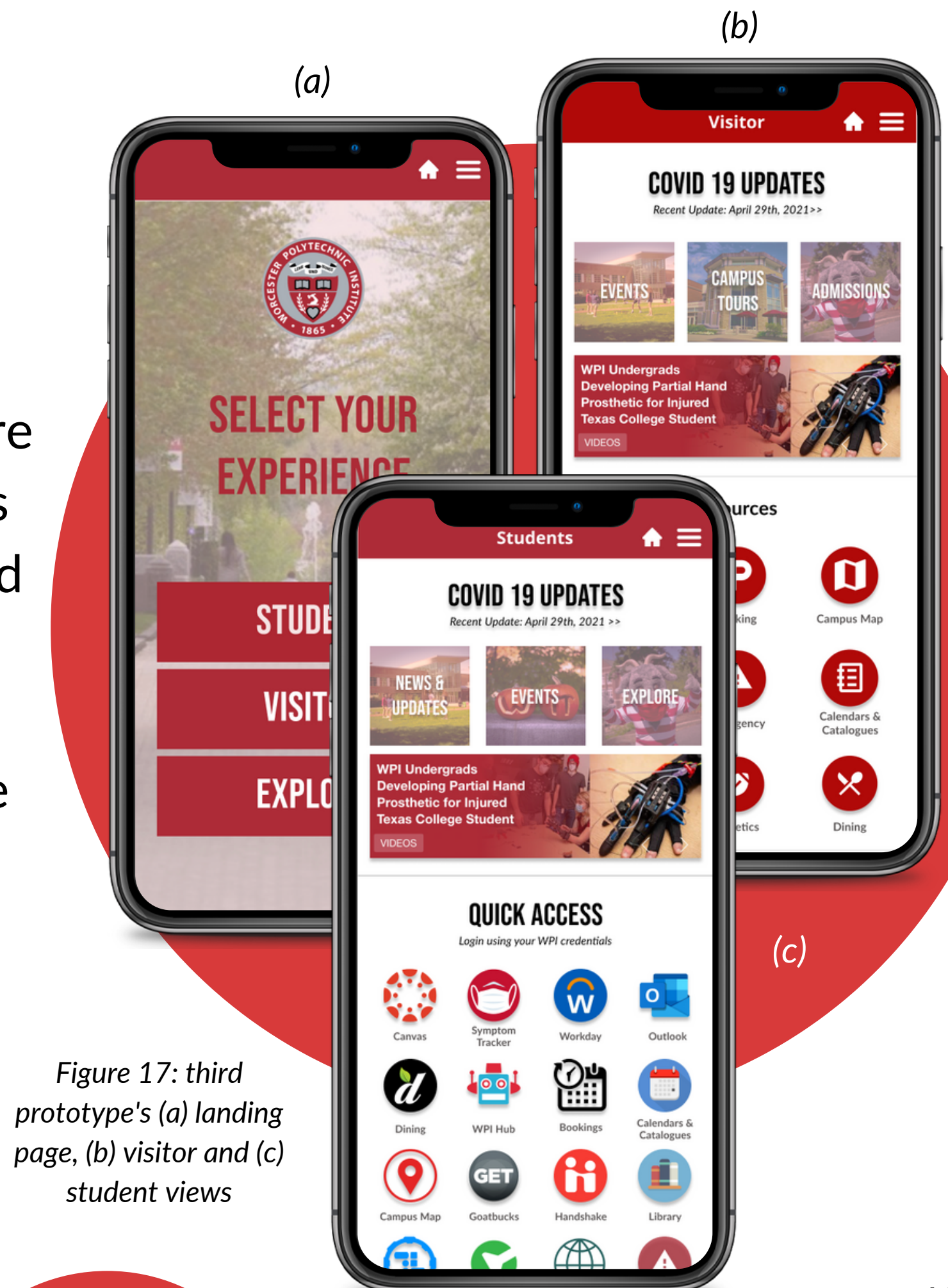


Figure 17: third prototype's (a) landing page, (b) visitor and (c) student views



Benefits

BENEFITS

Students will be able to access resources with two to three taps on their mobile screen. This reduces the average time that a student takes to find and navigate to various web pages and apps. For example, if a student has to check their class schedule, they can simply find it on the app instead of trying to find it on Bannerweb. Time is one of the most valuable assets that WPI students have during their seven-week terms, therefore it will allow students to redirect their time in a more efficient manner instead of trying to locate resources.

Ten out of the eleven students who were interviewed as part of the process of understanding the needs of the campus, wanted in-app access to other apps and web pages like Canvas and DineOnCampus rather than being redirected to them through the app. We plan to fulfill this requirement by working with WPI Marketing and IT Team and leveraging the third-party integration feature in Modo. The app will be an all-in-one app, students will be able to access all their daily use apps through this app. This means that they will not have to download separate apps which will consume their device memory, a limited resource.

The SSO login will be the ultimate time saving feature. An SSO login requires a student to login once using their credentials and then further signs the user in to other softwares which use the same credentials. So, if the student logs in through the app, they will be automatically logged into their Canvas, Bannerweb, and Handshake account. This feature is beneficial to both WPI students and WPI faculty/staff.

BENEFITS

The app will create a special connection between the students and on-campus life. It will keep the students updated regarding the college developments and events. This will make them feel more connected to the on-campus life. For example, the events feature will keep the students updated regarding upcoming events. Such a feature will increase student engagement.

Since the past couple of years, WPI's freshman class has increased significantly. The Marketing department is putting in great effort to attract new students. This app can be an added marketing tool. Prospective students can download the app and use the Everyone persona to learn more about the college and get insight on the WPI lifestyle. Features like the interactive map can help them memorize the college layout even before they come in as freshman.

The maintenance and development cost of this app is negligible. The only cost that might be incurred is expanding the current Modo Labs plan by adding a couple extra tools. Modo Labs, the app development tool, is a simple drag and drop tool that anyone could learn and use. Therefore, there is no need to hire a team of software developers for the maintenance of the app, students and staff is more than sufficient for the maintenance of this app. Further, the cost of development post this IQP is reduced if it is passed on to other teams in the form of IQPs or MQPs. The app is a cost efficient solution that will cater to student needs.



Findings

Student Interviews

DIVERSITY

Insights gathered from interviews and surveys of our stakeholders show that many students did not know about the existence of the WPI app. After interviewing 11 students of various years, ages, and majors (Figure 18), 48% of the students that we interviewed were not quite satisfied with the features, usability or design.

Majors

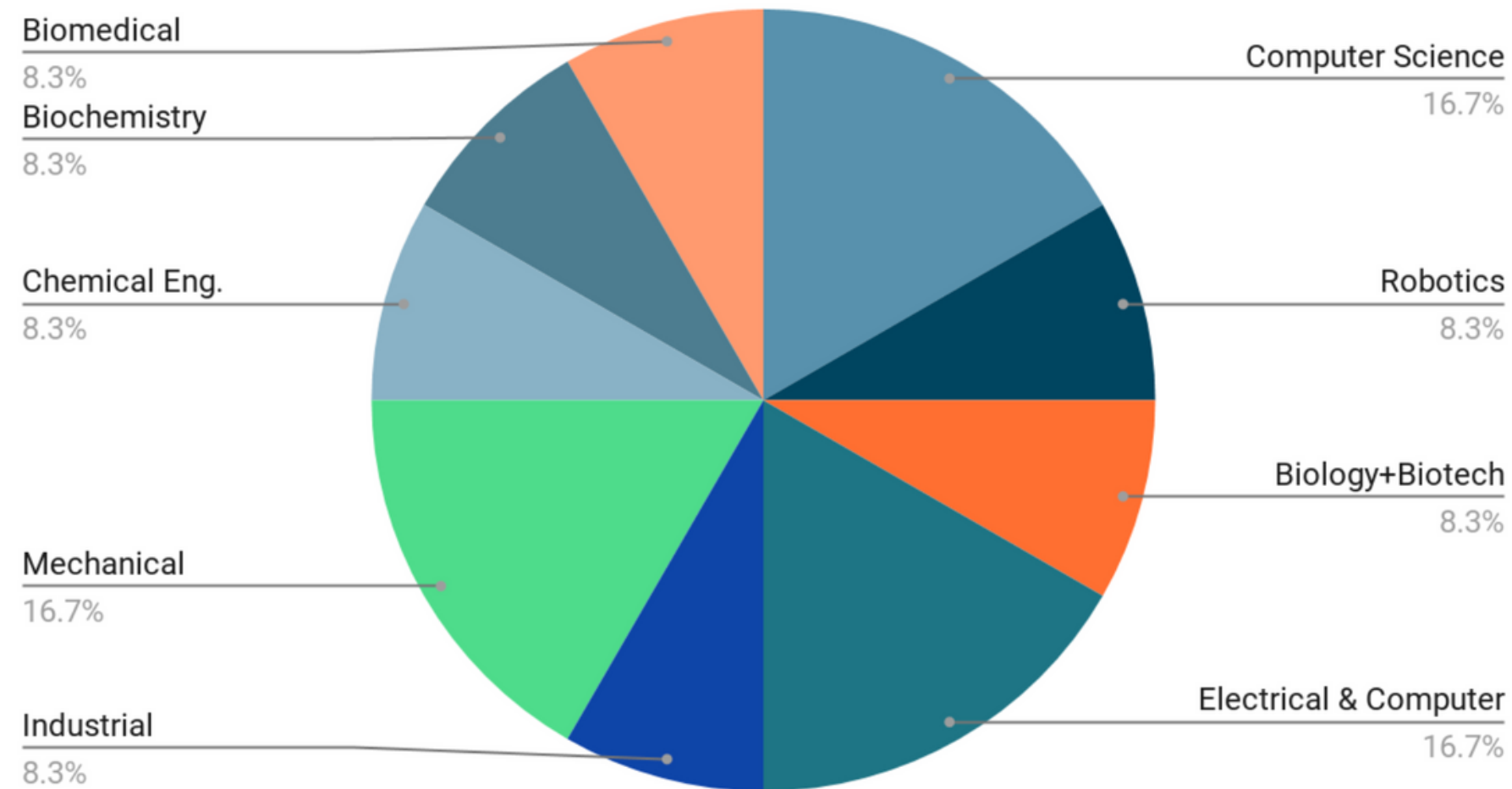


Figure 18: Major spread of students interviewed.

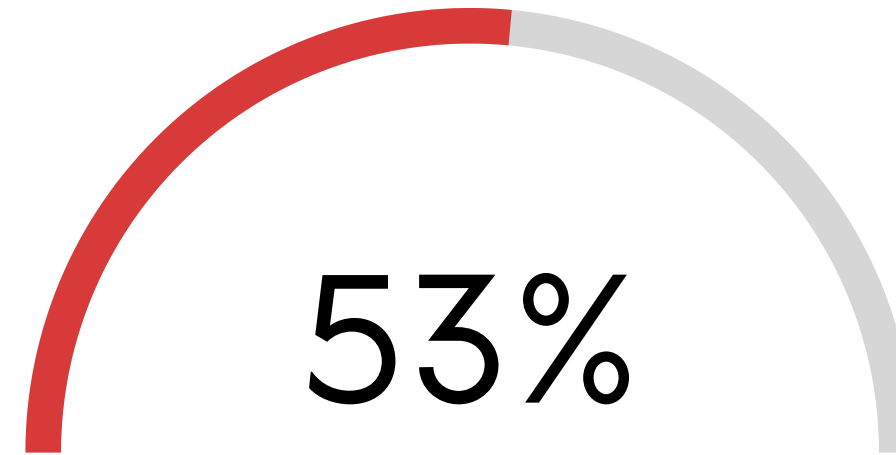
LOW RATING

The average rating of the app by the students was 2.5. The current problems facing the WPI app are that the design is very overwhelming and confusing, there is not enough engagement with students in order to increase usage, and the features contained within the app are not helpful and not enough to help students succeed on campus. The issues facing this mobile app have not been addressed yet because there was no previous effort to conduct an analysis on the obstacles impeding the success of this app. However, our team decided to take this mobile app and modify it to promote growth of users, increase utility, and design a better user interface design in order to make this app more appealing to users to solve the needs of the student community.



Figure 19: Ratings for the WPI App During Focus Group Interviews

NEED FOR MARKETING



Over 53% of students interviewed did not know about the app, the best approach to marketing this solution, especially towards our beachhead market, would be during the New Student Orientation (NSO) event, when freshman students are provided the opportunity to adapt to their new college environment and resources. The spread of information during this particular event is very likely to stay with students and will help them traverse their new life as a WPI student. The tool can be shared through means such as social media, emails, and word of mouth. The WPI Marketing Department partnered with us to create marketing material for the marketing phase of the project.

Survey

STUDENTS FROM ALL YEARS

Using Qualtrics, we created a survey for WPI students. After sharing the survey through our social media connections and Slack/Discord group chats, we received a total of 71 responses. Below are the results and findings of the survey. The survey consisted of some questions which required an answer, and the rest were optional.

Figure 20 shows we got students from a variety of class years to fill out the survey. 15 students were freshman, 19 students were sophomores, 27 students were juniors, 8 students were seniors, and 2 students were alumni who chose the “Other” option in the survey.

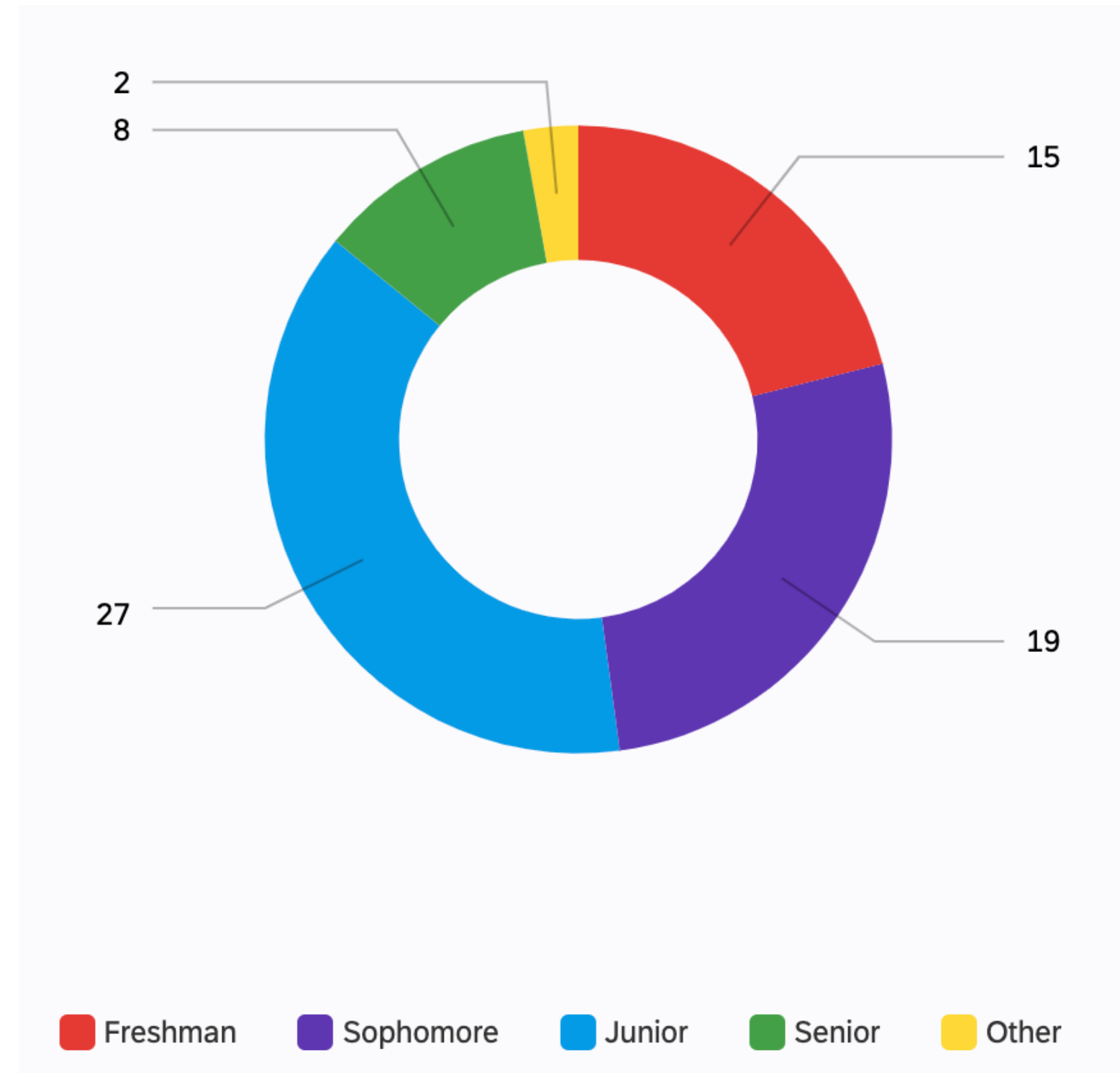


Figure 20: Pie chart showing the class years of the survey participants.

Major	%	Count
Aerospace Engineering	8.57%	6
Bioinformatics & Computational Biology	1.43%	1
Biology & Biotechnology	1.43%	1
Biomedical Engineering	7.14%	5
Business	1.43%	1
Chemical Engineering	7.14%	5
Chemistry	1.43%	1
Civil Engineering	4.29%	3
Computer Science	18.57%	13
Data Science	1.43%	1
Electrical & Computer Engineering	8.57%	6
Environmental Engineering	1.43%	1
Industrial Engineering	1.43%	1
Interactive Media & Game Development	2.86%	2
Mathematical Sciences	5.71%	4
Mechanical Engineering	15.71%	11
Physics	1.43%	1
Robotics Engineering	8.57%	6
Society, Technology & Policy	1.43%	1
Total	100%	70

Table 1: Class years of the survey participants.

STUDENTS FROM ALL MAJORS

As seen in the table on the left, students from various majors filled out the survey. We got insight from majors ranging from Aerospace Engineering to Society, Technology & Policy. This prevented any bias in the survey.

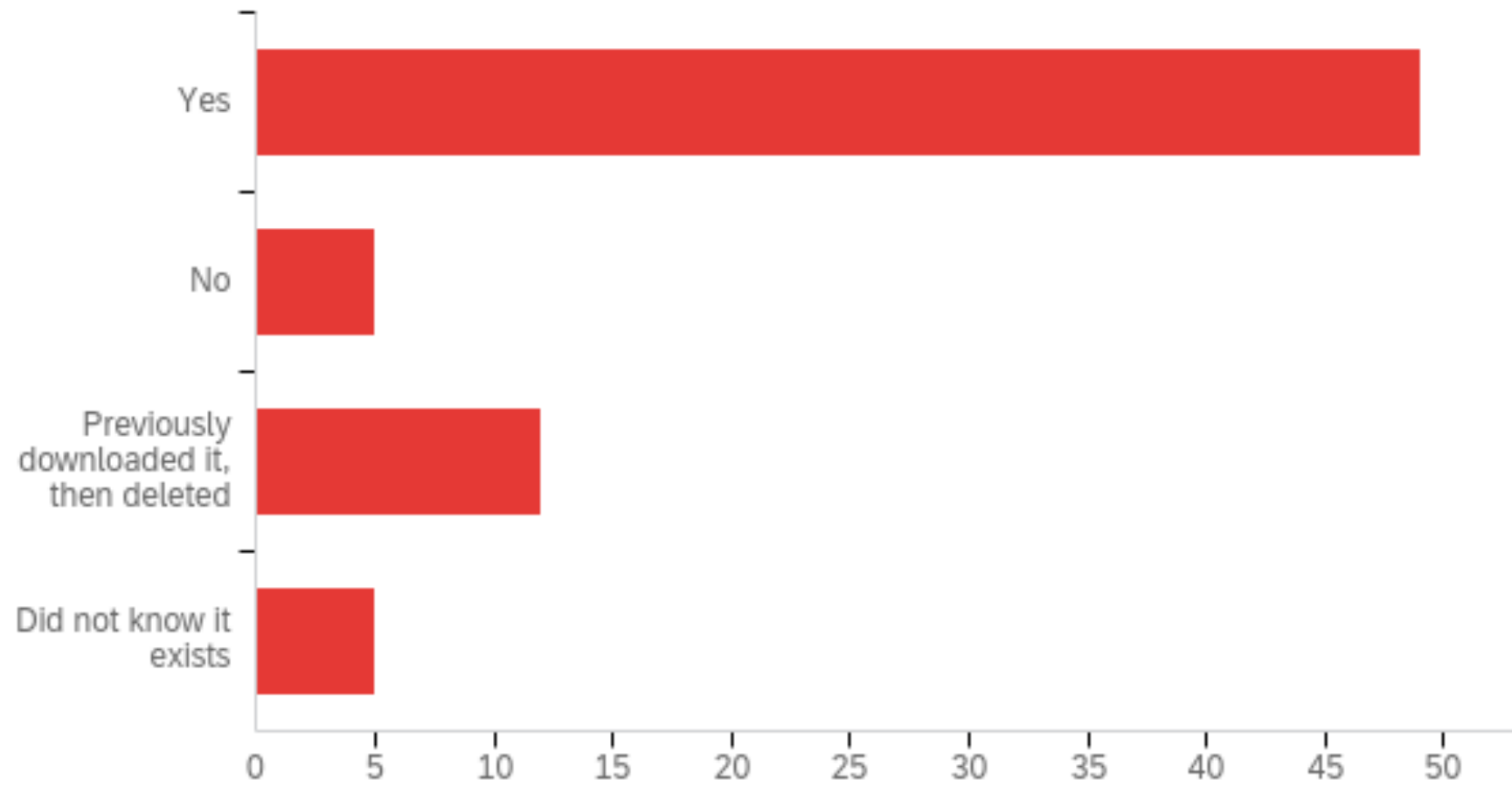


Figure 21: Bar graph showing if the survey participants have the WPI App installed on their phone.

Answer	%	Count
Yes	69.01%	49
No	7.04%	5
Previously downloaded it, then deleted	16.90%	12
Did not know it exists	7.04%	5
Total	100%	71

Table 2: Data showing if the participants have the WPI App installed on their phone.

MAJORITY HAD THE APP INSTALLED

Amongst the 71 participants, 49 participants had the WPI App installed on their phones. 22 participants didn't have the WPI App installed on their phones out of which 5 participants never downloaded it, 5 participants did not know it existed, and 12 participants uninstalled it after downloading it in the past.

LOW APP RATING

One of the survey questions for the participants who had the app installed was to rate the app on four factors: visual appearance, ease of navigation, responsiveness, and functionality. Participants could rate the app on a scale of 1 to 5: 1 (Poor), 2 (Below Average), 3 (Average), 4 (Good), and 5 (Excellent).

When asked to rate the visual appearance of the WPI App, 32.6% participants rated the app a 2/5 and 36.9% participants rated the app 3/5. The average rating for the visual appearance of the app was 2.89/5. This shows that the majority of the participants think that the WPI App's visual appearance is below average.

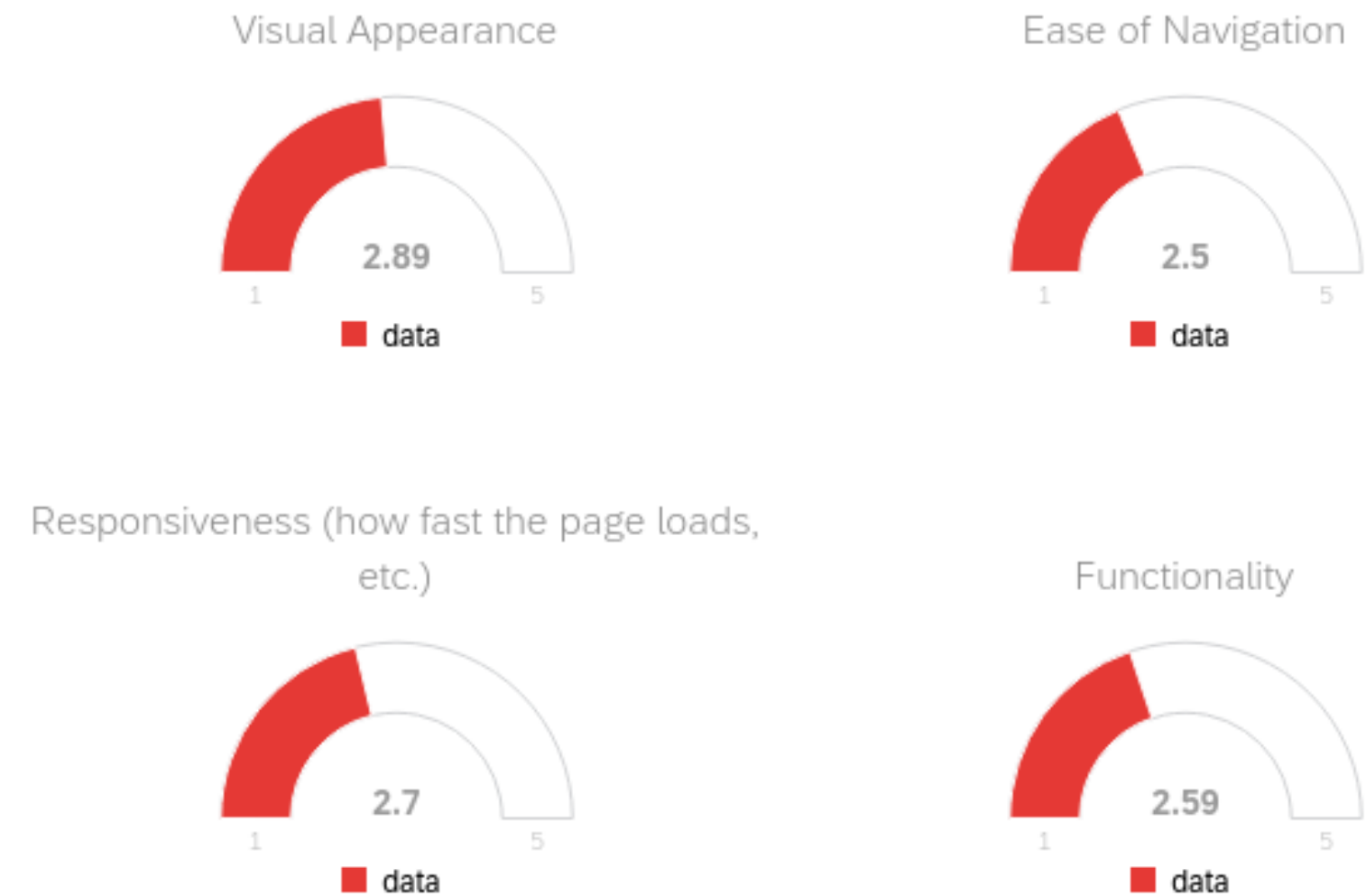


Figure 22: Average rating for WPI App's visual appearance, ease of navigation, responsiveness, and functionality.

LOW APP RATINGS

When asked to rate the ease of navigation of the WPI App, 34.7% participants rated the app a 2/5 and 43.3% participants rated the app 3/5. The average rating for ease of navigation of the app was 2.5/5. This shows that the majority of participants think that the WPI App's ease of navigation is below average.

When asked to rate the responsiveness of the WPI App, 32.6% participants rate the app a 2/5 and 39.1% participants rated the app 3/5. The average rating for responsiveness of the app was 2.7/5. This shows that the majority of participants think that the WPI App's responsiveness is below average.

When asked to rate the functionality of the WPI App, 30.4% participants rated the app 2/5 and 39.1% participants rated the app 3/5. The average rating for the functionality of the app was 2.59/5. This shows that the majority of participants think that the WPI App's functionality is below average.

Question	1 (Poor)	2	3 (Average)	4	5 (Excellent)	Total					
Visual Appearance	4.3%	2	32.6%	15	36.9%	17	21.7%	10	4.3%	2	46
Ease of Navigation	13.0%	6	34.7%	16	43.4%	20	6.5%	3	2.1%	1	46
Responsiveness	10.8%	5	32.6%	15	39.1%	18	10.8%	5	6.5%	3	46
Functionality	15.2%	7	30.4%	14	39.1%	18	10.8%	5	4.3%	2	46

Table 3: Statistics for participant's rating for WPI App's visual appearance, ease of navigation, responsiveness, and functionality.

LOW FREQUENCY OF USE

Participants shared their frequency of using the WPI App through the survey. Out of 46 participants who had the app installed, 27 participants (more than 50% participants) never used the app, 9 participants used the app about once a month, 5 participants used the app at least once a week, and 5 participants (about 10% participants) used the app daily.

This means that the majority of participants had the app installed on their phones, however, they never needed to use the app.

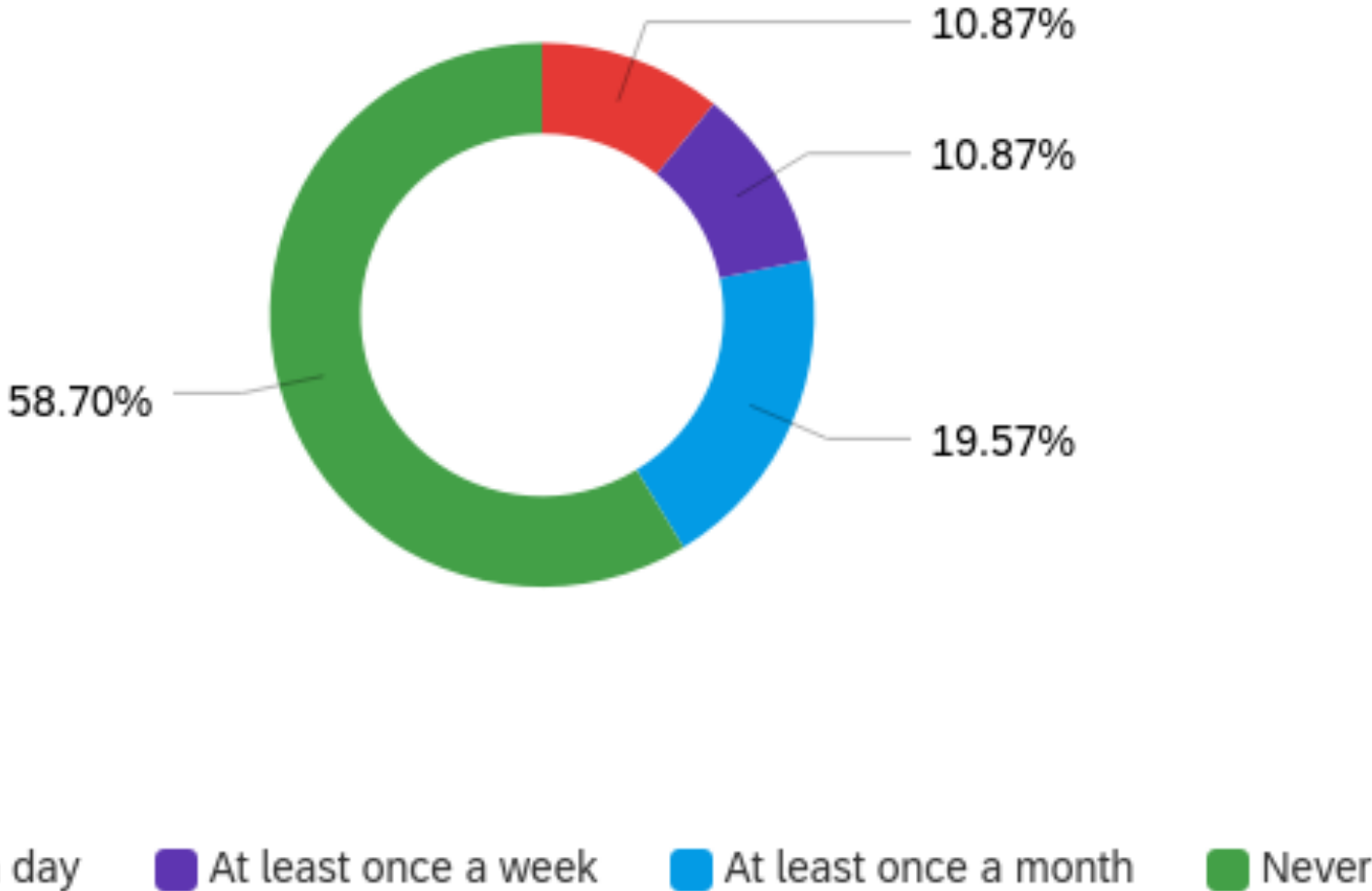


Figure 23: Participants' frequency of using the WPI App.

USE OF PERSONA(S)

Recently, the Student persona and Everyone persona was introduced to the WPI App. We were curious to know if students who used the app frequently were leveraging the two personas. When we asked the students about the personas they used, 14 students used the student persona and 2 didn't know which persona they were using. None of the students leveraged the Everyone persona.

Persona	%	Count
Student	87.50%	14
Everyone	0.00%	0
I don't know	12.50%	2
Total	100%	16

Table 4: Data showing participants' frequency for using the WPI App.

FEATURES USED

The WPI App has a lot of different features, such as, the COVID-19 symptom tracker, campus news, campus map, goatbucks, etc. Before we edited the features in the prototype, it was crucial to understand which features students leveraged. In the survey, we asked the participants which features they usually use. 2 features that 15/16 students used were the symptom tracker and the COVID-19 information. Other features that students used were Academics, Bookstore, Campus Map, Campus News, Dining, Directory, Get Help, Goatbucks, News, WPI Events, WPI Social Media, and Quick Links.

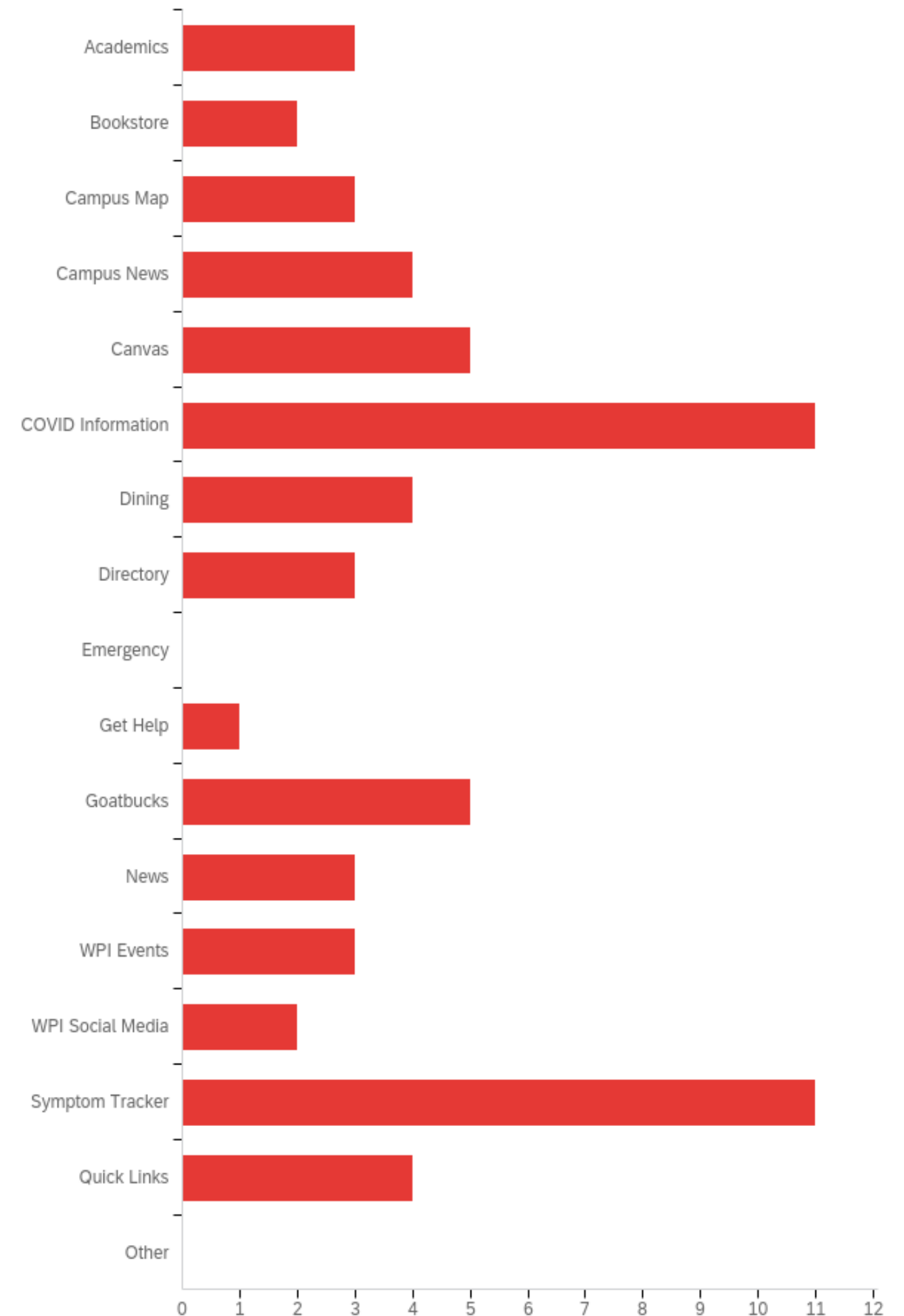
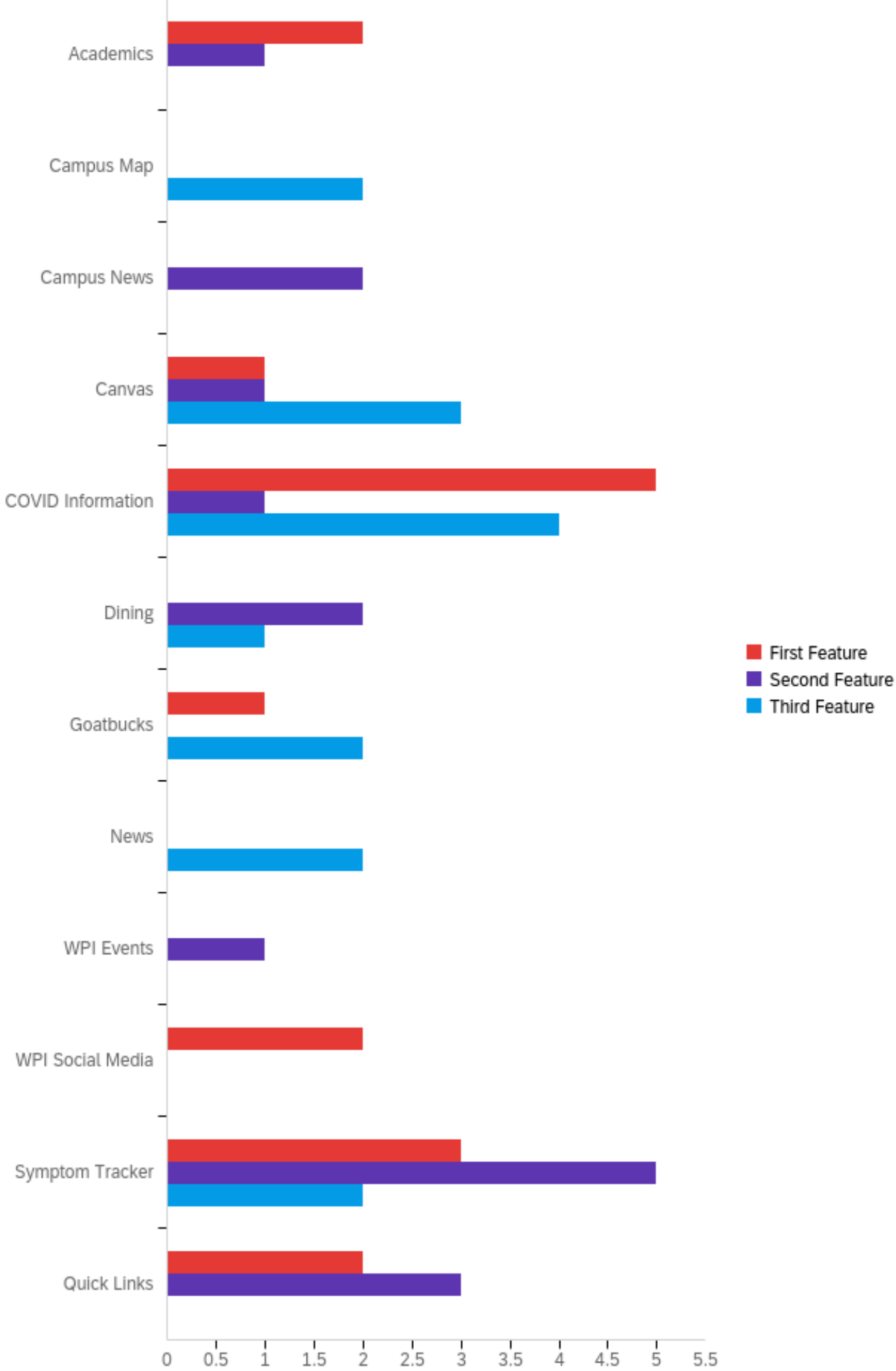


Figure 24: Bar Graph showing the different features of the WPI App used by the participants. 63



MOST USED FEATURES

For the first prototype, our plan was to create a quick access menu of the frequently used features. To form a prioritized list of features, we wanted to learn which features students used the most. From the survey, we learned that students leveraged the COVID-19 information, dining, symptom tracker, quick links, campus news, and social media the most. Specifically, students primarily used the app for COVID-19 information and the symptom tracker.

Figure 25: Bar graph for top three features used by the participants.

PAIN POINTS

During the student interviews, we observed that students were unsatisfied with the functionality of the WPI App. Through the survey, we wanted to learn more about ways to improve the features. Students gave us a lot of valuable feedback regarding how we could do so. Here are some suggestions:

DESIGN

- *“The app in general is not very enticing to use; it seems rigid and lacks appeal.”*
- *“For the symptom tracker, it's hard to tell if it went through as a submission sometimes. A system reminder or checkbox that automatically keeps track.”*
- *“Make the different things to find. For example it takes me awhile to find where to book a gym appointment.”*
- *“It would be nice if all WPI stuff (including dining) was consolidated to one robust app.”*
- *“Easily viewing courses and making the app easier to use.”*

FUNCTIONALITY

- *“Most features aren't very responsive and aren't easy to use.”*
- *“The quick links just take you to a webpage or another app, which could be navigated to by yourself.”*
- *“Dining because it is difficult to find the reservation feature.”*
- *“Campus news and better notifications.”*
- *“Synchronization with DineOnCampus, GET Mobile, MyMailServices, Corq (TechSync), Motivac (Goat Bikes), & Transloc.”*
- *“A medium to book locations, including study spaces and suites at the Gordon Library, benches, machines and equipment at the Foisie Innovation Studio.”*
- *“More versatility and accessibility to other apps.”*

GENERAL IMPROVEMENTS

Apart from improving the functionality of the app, we asked a general question about how the app could be improved. This way we could cater to any of the needs the participants had. Here are some general improvements that the participants suggested

FUNCTIONALITY

- *“Notifications never clear. It takes forever to load and it’s hard to use it to book things. I would rather go in my browser.”*
- *“The app’s functionality is all there, but it is not entirely smooth.”*
- *“It could have more useful functionality (like consolidating the other apps we need to use) and can look better.”*

ADDITION

- *“Potentially integrating this into the Hub would be quite useful, especially since it is established and well maintained.”*
- *“Have a search bar. maybe section the pages into tabs or more clear categories. Make the load time quicker if possible.”*
- *“Put tabs like handshake, canvas, dining, emergency, goat bucks, etc. in a menu to avoid having to scroll around to find them.”*
- *“Maybe if you could sign in and have it be customized, and if it were more focused and had specific uses.”*

CONTENT

- *“More geared towards students and not a marketing app.”*
- *“Include more relevant information.”*

DESIGN

- *“The layout of the whole app is difficult to navigate, poor UX design. It’s very busy, tough to find what you’re looking for.”*
- *“I always get the hamburger menu confused for navigating back a page, thinking it’s a directory of all the features of the app. Some clearer navigation system once you’ve moved to a new page might be nice.”*
- *“Have the information laid out in a more intuitive way, rather than just squares that all look the same.”*
- *“It’s not well organized or intuitive on where to find it or what they offer.”*
- *“Have it look less like a browser. Also, less overpoweringly red (maybe just red accents).”*
- *“The homepage feels a bit cluttered and confusing. I think it could be improved with a simpler interface.”*

APP RATING

In the survey, we asked the participants to rate their overall experience with the app on a scale of 1 to 10. This would allow us to calculate the net promoter score for the WPI App. 84% participants were detractors, they rated the app below 7, and 16% participants were passive, they rated the app either a 7 or 8. We didn't have any promoters for the app, none of the participants rated the app a 9 or 10. The net promoter score of the current WPI is -84.21. The world's highest recorded net promoter score is 79. Typically scores higher than 0 are good.

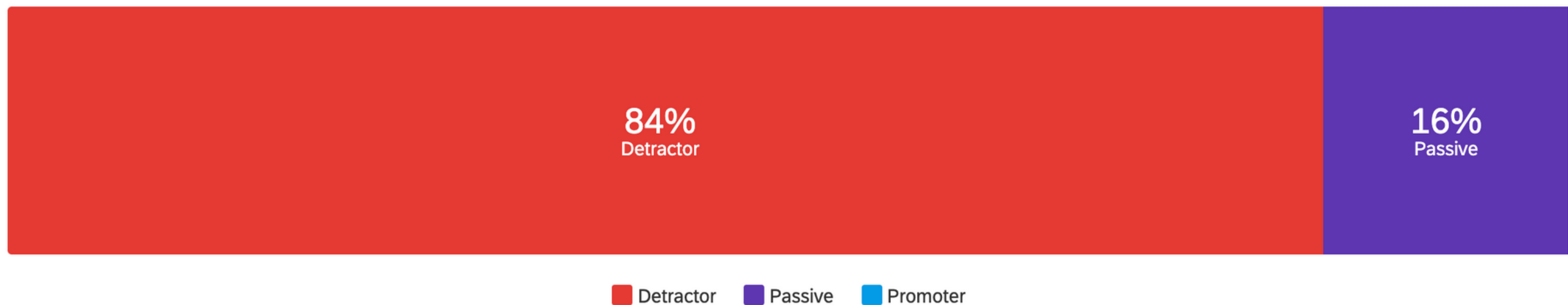


Figure 26: Net promoter score scale based on participants rating for the WPI App.

REASONS FOR NOT INSTALLING THE APP

We asked all the participants who didn't have the app installed on their phone the reason behind it. This would help us understand if the marketing app had to be improved or were there other factors such as the utility or design of the app that required attention. One of our main goals of the IQP was that all WPI students should download the app and leverage its features. Here are some reasons for which the participants didn't download the app or uninstalled it eventually:

- *"Just seems that the WPI app is an awkward middleman."*
- *"I don't see the necessity to install it."*
- *"It has no value except as shortcuts to other existing things, there are better places for that info right now like installing the WPI hub as a shortcut on my phone, or just using google to find things. The current app itself doesn't have any specific features or tech that would make it a must have."*
- *"I did not find it useful enough to take up space on my phone."*
- *"I didn't know it existed or what its purpose was."*
- *"User interface not appealing, app not needed to access symptom tracker (only Microsoft Power Apps needed for that)."*
- *"I had the app installed and then deleted it since I get the same info on the WPI instagram."*
- *"I didn't use it frequently."*
- *"I have never heard of the WPI app until this survey, and I have been around for 4 years. I like to think I keep pretty up to date on WPI news, so I'm shocked that I have never heard of this."*
- *"Uninstalled it because it's completely useless, was buggy, had to load something external every time (like a website) and was a waste of space on my phone too many WPI apps and need to conserve space on my phone it's mostly tailored for incoming students."*

ALTERNATIVES

It was important to learn about what other resources did the participants use as an alternative to the WPI App. These would be the competitors of the WPI App but could also be useful to integrate into the app. The survey results showed that participants used the following as alternatives to the WPI App: Bannerweb, Canvas, PowerApps, TechSync, TransLoc, WPI Hub, WPI Instagram, Outlook, Workday, GET App, DineOnCampus, and WPI Webpage.

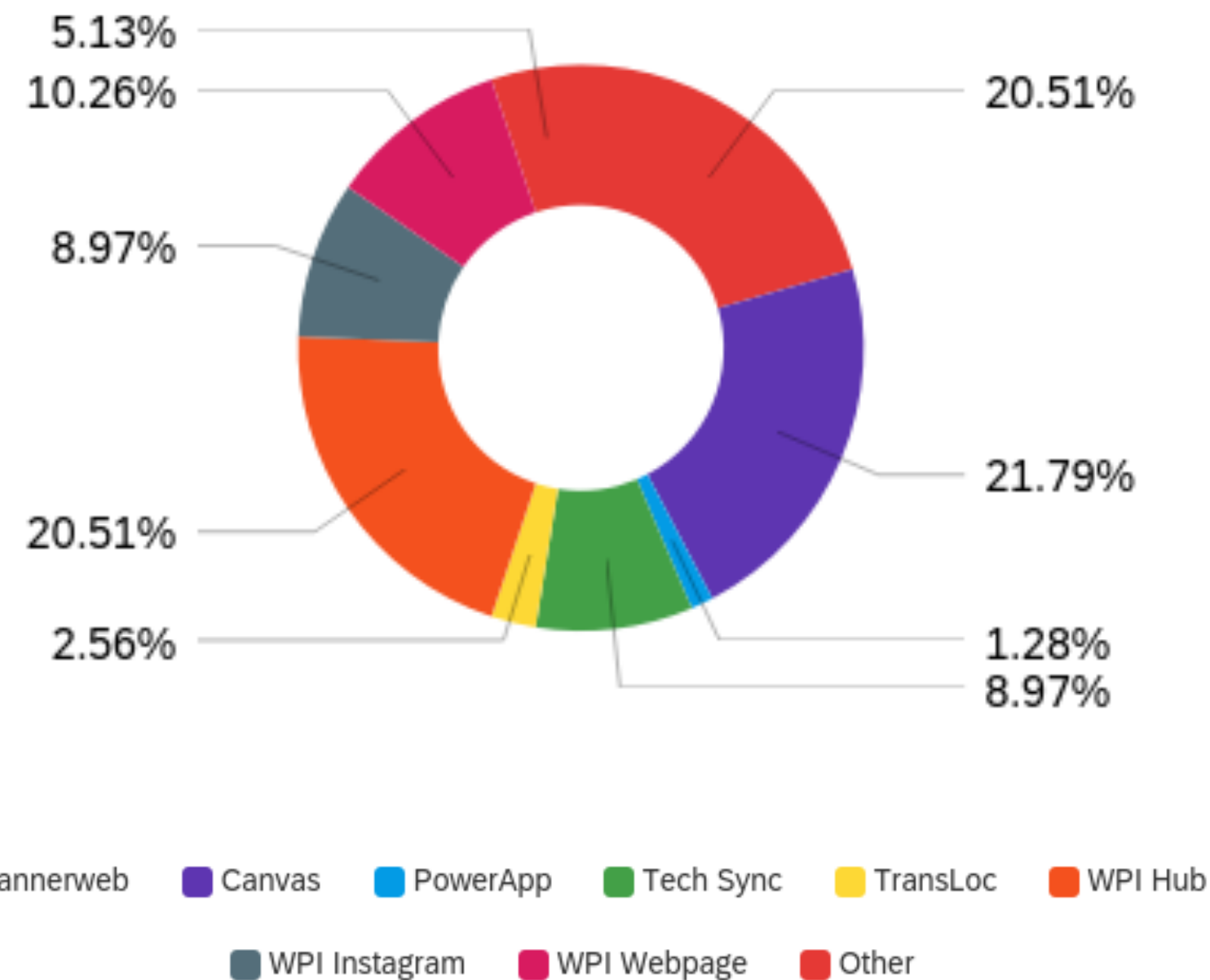


Figure 27: Pie chart for alternative resources used by the participants.

SUGGESTION FOR IMPROVEMENT

We were curious to know which features would entice the students to download the app and leverage it. Our ultimate goal was that the app proves helpful to the students. Here are some suggestions from the survey participants:

- *“Maybe a calendar feature where I could neatly see all upcoming events.”*
- *“It'd be nice if there were actual features instead of it essentially acting as a repository of useful bookmarks.”*
- *“A quick, easy way to get into Canvas and other WPI apps, an interactive campus map, emergency service numbers.”*
- *“Have everything on the app. News, events, make it more social too.”*
- *“Centralized ability to do everything WPI related on it, wpi hub features would be great.”*
- *“Ordering food, making rec center reservations, seeing maker resources.”*
- *“Maybe if it had the reservation for buying CC food that's currently on the Dine On Campus app, or the checking the goat bucks balance feature that currently uses GET mobile.”*
- *“Maybe have canvas built into the app.”*
- *“If it had links to all of the websites I already use as well as campus news, events, etc, I would use it.”*
- *“List of weekly events.”*
- *“If everything was integrated together so that it doesn't redirect you everywhere. This would mostly include things like Tech Sync, booking DineOnCampus, Transloc, etc.”*
- *“Information about dining menus, schedules of events.”*

MARKETING SUGGESTIONS

During the student interviews, we noticed that not many students knew about the app. The last question on the survey asked students for suggestions on marketing the WPI App better. Below are some suggestions from the survey participants:

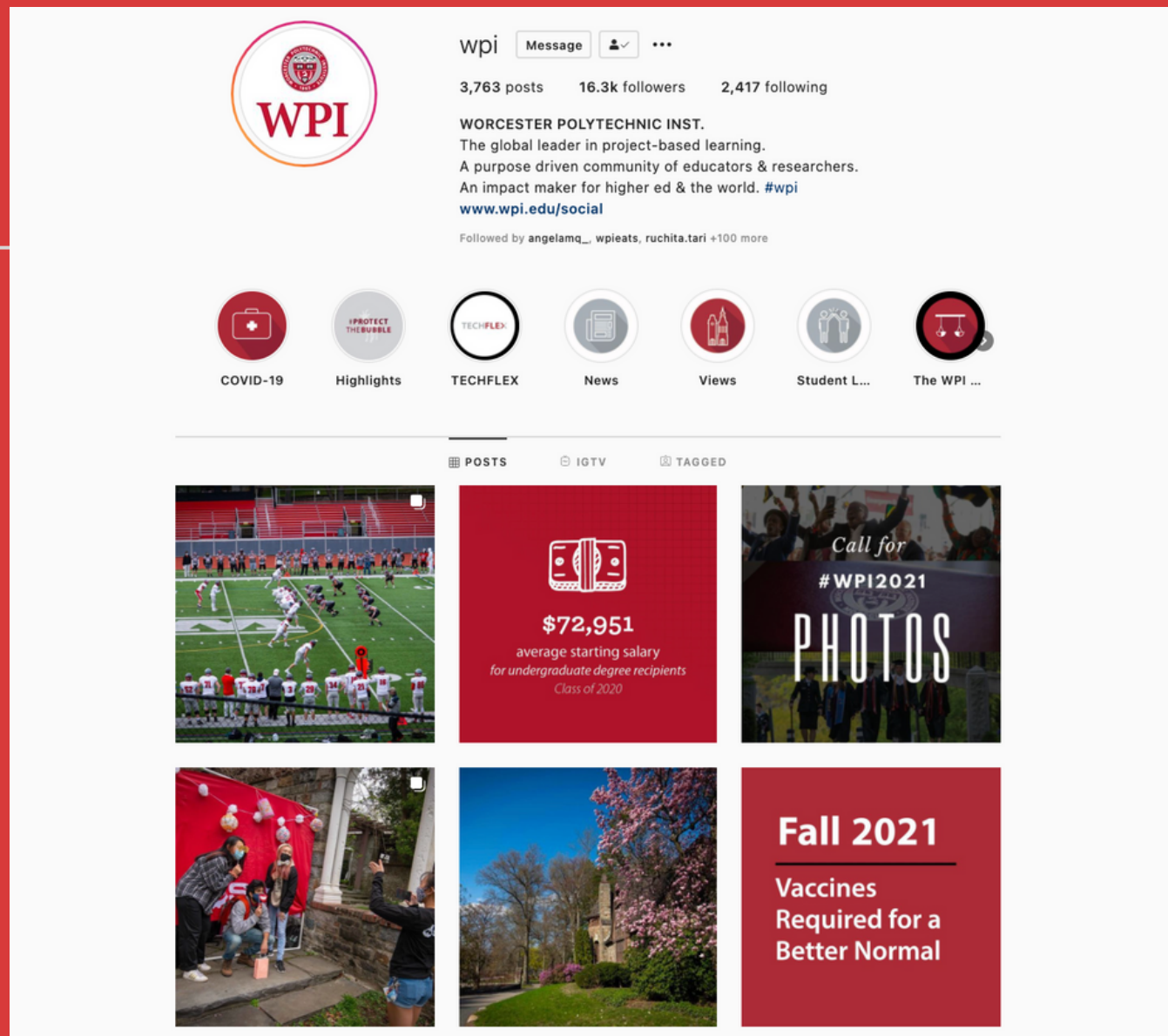


Figure 28: WPI's Instagram Page

- *“Fliers, app-exclusive promotional giveaways, and word of mouth come to mind.”*
- *“Put it on the WPI Instagram and webpage, send out emails to the student body.”*
- *“Social media and orientation for freshmen.”*
- *“Make it more well known, have it provide actual value for students.”*
- *“Send an email about it.”*
- *“Make it usable and actually a place where I can do most/all the stuff I need.”*
- *“Putting information on the WPI website/telling people during freshman orientation about the app.”*
- *“Maybe send it out in an email? or post about it on instagram/other social media.”*
- *“Advertise it more on social media.”*
- *“The instagram could market the app.”*

The survey finding provided a good foundation for our app prototypes. Hearing from 72 students gave us a good sense of how students felt about the WPI App. They pointed out the pain points of the app and suggested improvements. The WPI is an app for the students, of the student, and by the students. They are our target audience, and we wanted to make sure that we were catering to their needs.



Figure 29: Survey Questions

User Testing Round I Results

In the first round of user testing, participants gave us feedback on the student persona's prototype and on the WPI app's everyone persona. In this round of user testing, we interviewed 7 students from diverse backgrounds. Students were asked to complete a few tasks which allowed them to explore the prototypes. Upon completion of the tasks, students were asked to rate the app on a scale of 1 to 10 and further provide feedback and suggestions for improvement.

As seen in the bar graph, most students like the student persona of the prototype. The ratings were in the range of 8 to 10. The average rating for the student persona was a 9/10. Students really liked the Quick Access links to the resources that they used on a regular basis. Another popular feature in the prototype was the Bookings page, most of them said that they would use it quite frequently.

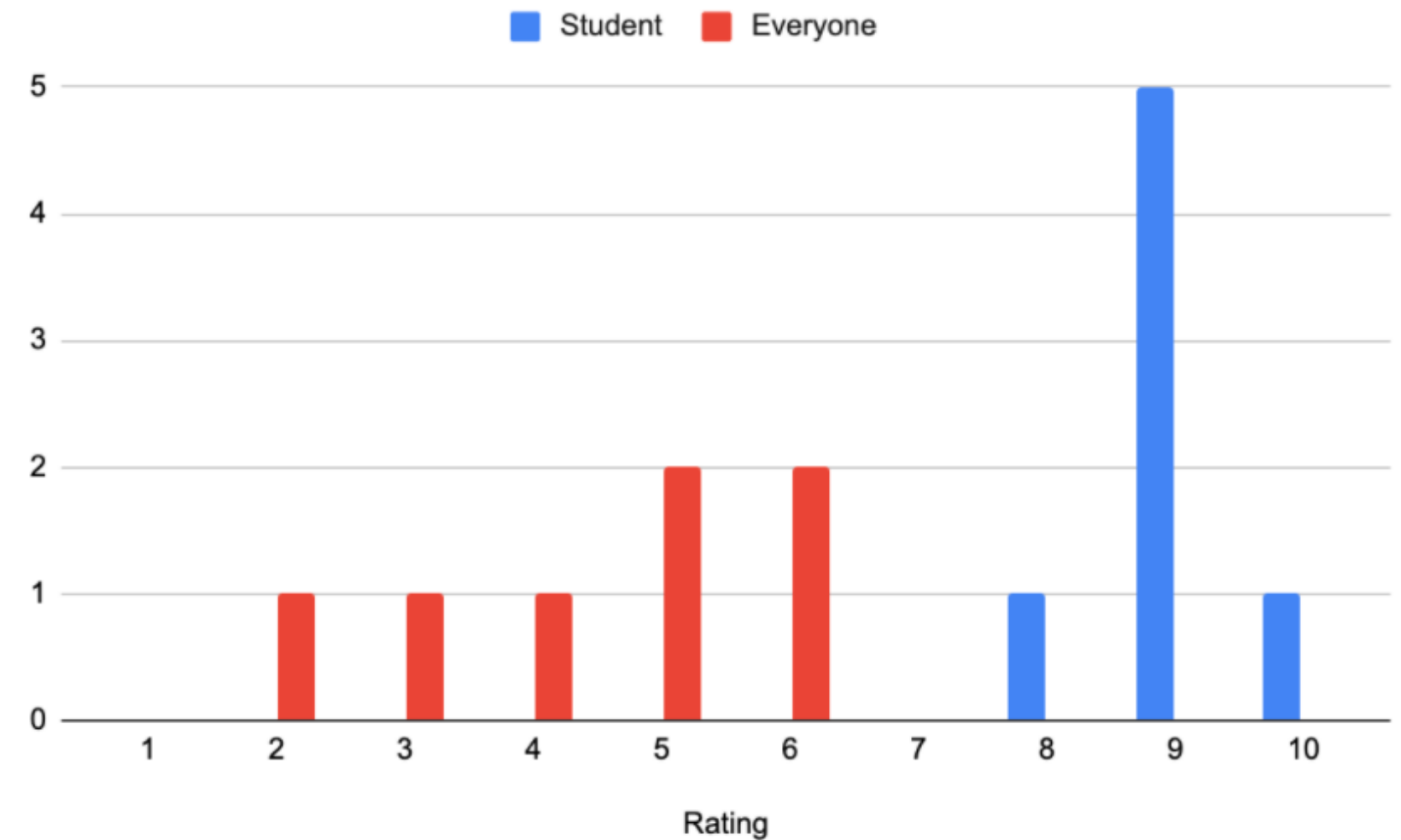


Figure 30: Student ratings for the Student and Everyone personas in first prototype.

As seen in the bar graph above, most students like the student persona of the prototype. The ratings were in the range of 8 to 10. The average rating for the student persona was a 9/10. Students really liked the Quick Access links to the resources that they used on a regular basis. Another popular feature in the prototype was the Bookings page, most of them said that they would use it quite frequently.

However, the prototype wasn't perfect, it had some pain points. Students found the Quick Access menu overwhelming, there were too many app icons in one space and it took them a while to digest the information. The events page received some constructive criticism too, students suggested that it should have more color and fewer words. The inconsistent app icons bothered a few students. They liked that we used the original icons since they were familiar to them, but they suggested that all of them should be the same shape. One of the most requested features was that the quick access menu should be customizable. Another excellent suggestion that we received was that there should be a dynamic element on the page such as WPI Instagram's feed. Overall, students liked the new look of the student persona. We integrated all the suggestions into the student persona before commencing the second round of user testing.

The everyone persona was rated in the range of 2 to 6. The average rating for this persona was 4.43/10. We observed that students were having trouble navigating through the app because the headers weren't descriptive enough to predict the features they would contain. Some students found the persona underwhelming, since it was one static page. They also found the categorization confusing, for example, they were confused to see "Alumni" under "Resources." Suggestions for improvement included creating a layout similar to the student persona and adding descriptions under the headers. Most students were hesitant to refer this persona to others, they found it confusing to use. This was a clear indication that we had to recreate the everyone persona. Overall, the first round of user testing was very fruitful. We took all the feedback into account while creating the second prototype.

User Testing Round II Results

The process of user testing for round two involved interviewing seven students of various backgrounds and majors. The diversity of student backgrounds was an imperative part of both user testing rounds in order to get varied opinions on the prototype functionality and design. The average rating of the prototype design and features were a 8.7 out of 10, while overall navigation was rated a 8.8 out of 10 (as seen in the bar chart on the right).

These general ratings, which were asked based on a net promoter score scale, can be considered as students willing to promote this prototype or mobile application if the design and functionality of the current WPI mobile app emulated the prototype. This is one of the biggest takeaways we received from this user testing round, where we were able to discover that all seven students interviewed said that their preferences for the prototype were much higher than the current layout of the WPI mobile app

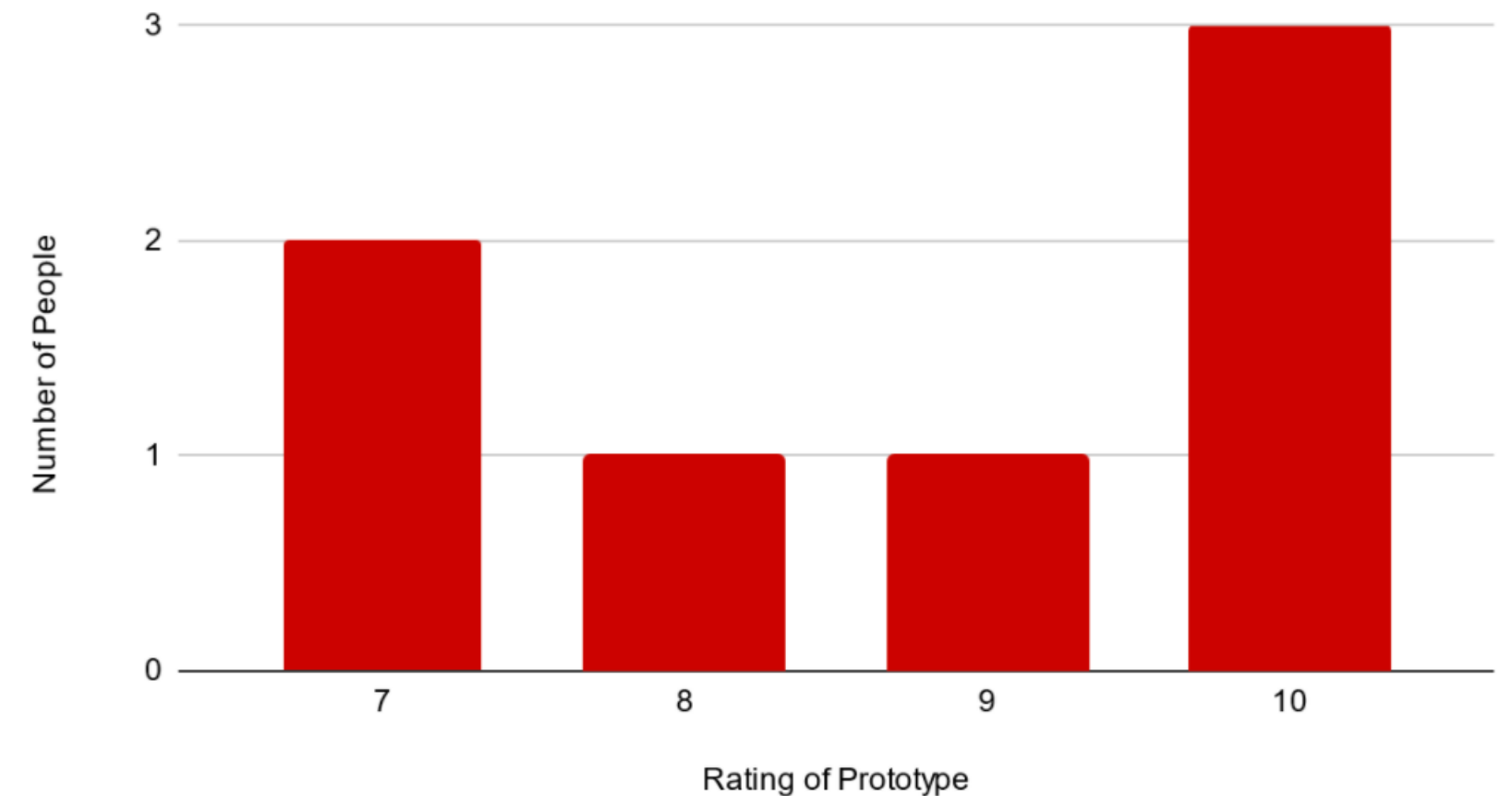


Figure 31: Student ratings for overall second round prototype

Specific features that students desired within the prototype were the dining app, bookings, symptom tracker, and calendar/catalogue integration. Students stated that these features were highly useful and eliminated the search for these features since it is not easily accessible through mobile or browser. Providing quick links for these features was a very favorable feature according to students because of the fast ability to access the resources. However, students did not like the Outlook or Canvas integrations out of all the features available. This was because students already have these applications on their phone and would not see a need to access these features through the app. Overall, this round of user testing allowed us to finalize features that were most important to students, as well as design that was most appealing to students to establish a need for using the app more.

Competition

An analysis of college mobile apps using the Modo platform allows our team to determine the best features which can be emulated in the WPI Mobile app to increase engagement and functionality.

UNIVERSITY OF CENTRAL FLORIDA MOBILE APP

The University of Central Florida (UCF) Mobile App is the main mobile application that allows students, faculty, alumni, and prospective students to find resources and stay informed about all things related to UCF. The major features of this app include the ability to access class information, schedules, finances, housing status, emailing, maps, updated dining menus, and shuttle tracking (University of Central Florida, 2020). This app provides the ability for any audience to easily use a feature that also may not be accessible through a website such as the shuttle tracking feature. Some features use location based services or other sensors from the mobile device, which allow them to be more functional on a mobile app than a website. This app received a 3.7 star rating on the App Store due to previous bugs and errors that were occurring on the application before any patches and updates were implemented. Reviews after the patches were released show five star ratings stating that the features were working and the app was very useful.

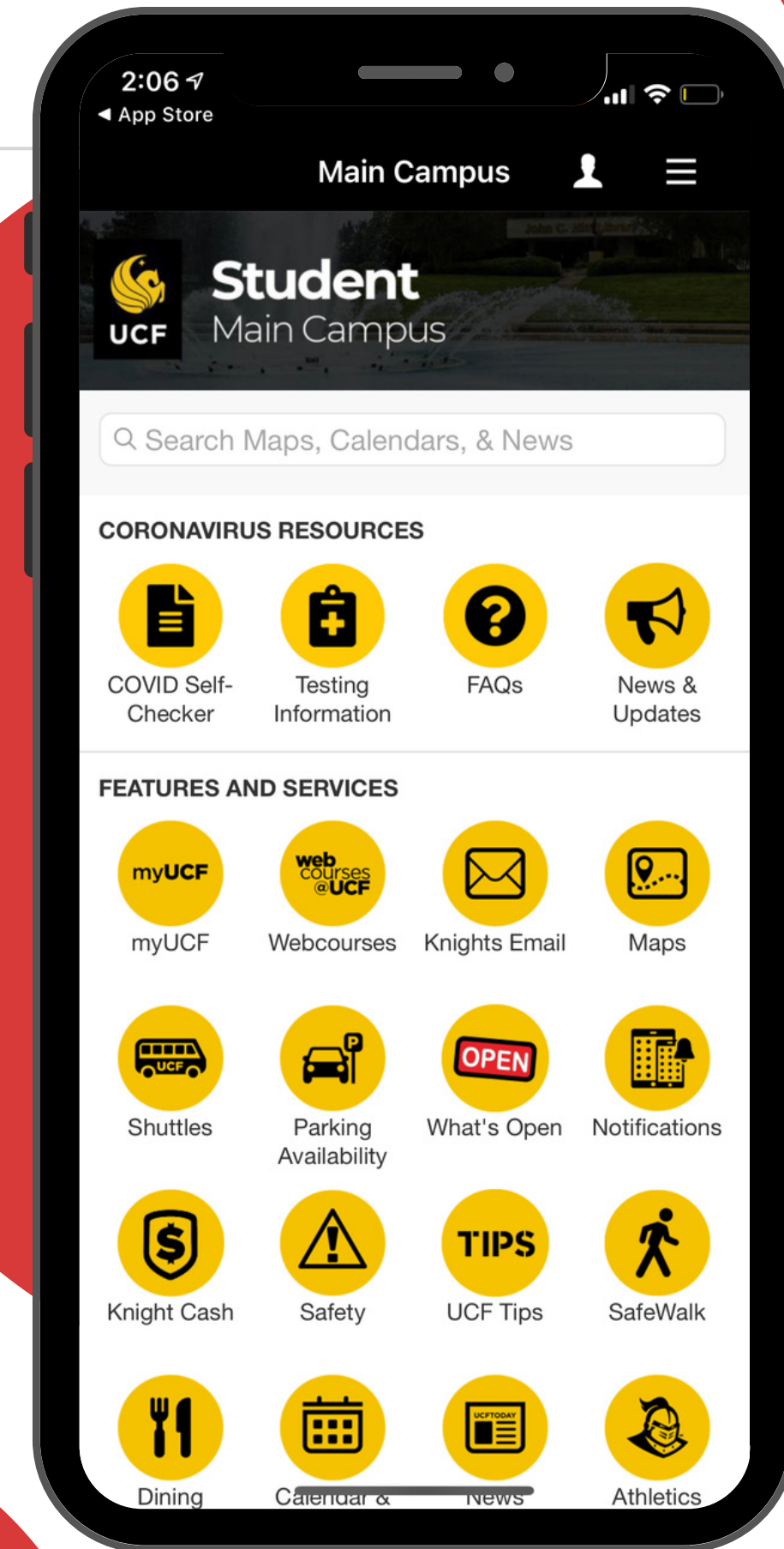


Figure 32: UCF Mobile App

UNIVERSITY OF HOUSTON MOBILE APP

The University of Houston (UofH) Mobile App is the main mobile application that allows students, faculty, alumni, and prospective students to find resources and stay informed about all things related to UofH. The major features of this app include the ability to access class information, schedules, finances, housing status, emailing, maps, updated dining menus, and shuttle tracking (UH Go, 2020). This app provides the ability for any audience to easily use a feature that also may not be accessible through a website. Some features use location based services or other sensors from the mobile device, which allow them to be more functional on a mobile app than a website. This application received 3.8 stars on the App Store for great functionality and features. Access to academic information and personal digital information is a crucial element of this mobile app which allowed it to succeed amongst the students.



Figure 33: UofH Mobile App

MASSACHUSETTS INSTITUTE OF TECHNOLOGY MOBILE APP

The MIT Mobile App is the main mobile application that allows students, faculty, alumni, and prospective students to find resources and stay informed about all things related to MIT. The major features of this app include the access to campus news, directory of people, MIT Student ID, and easy mental health support. This app provides the ability for any audience to easily use a feature that also may not be accessible through a website. Specifically, the mental health feature in this app allows students to quickly call or book an appointment with a professional, which is the most important feature allowing students to get help regardless of the time of day (MIT, 2019). This app has several of the features mentioned in the other apps, yet it received 2.5 stars on the App Store. There were many technical issues and bugs with the functionality of the app, and the design was not well received according to the reviews by users from the MIT community.

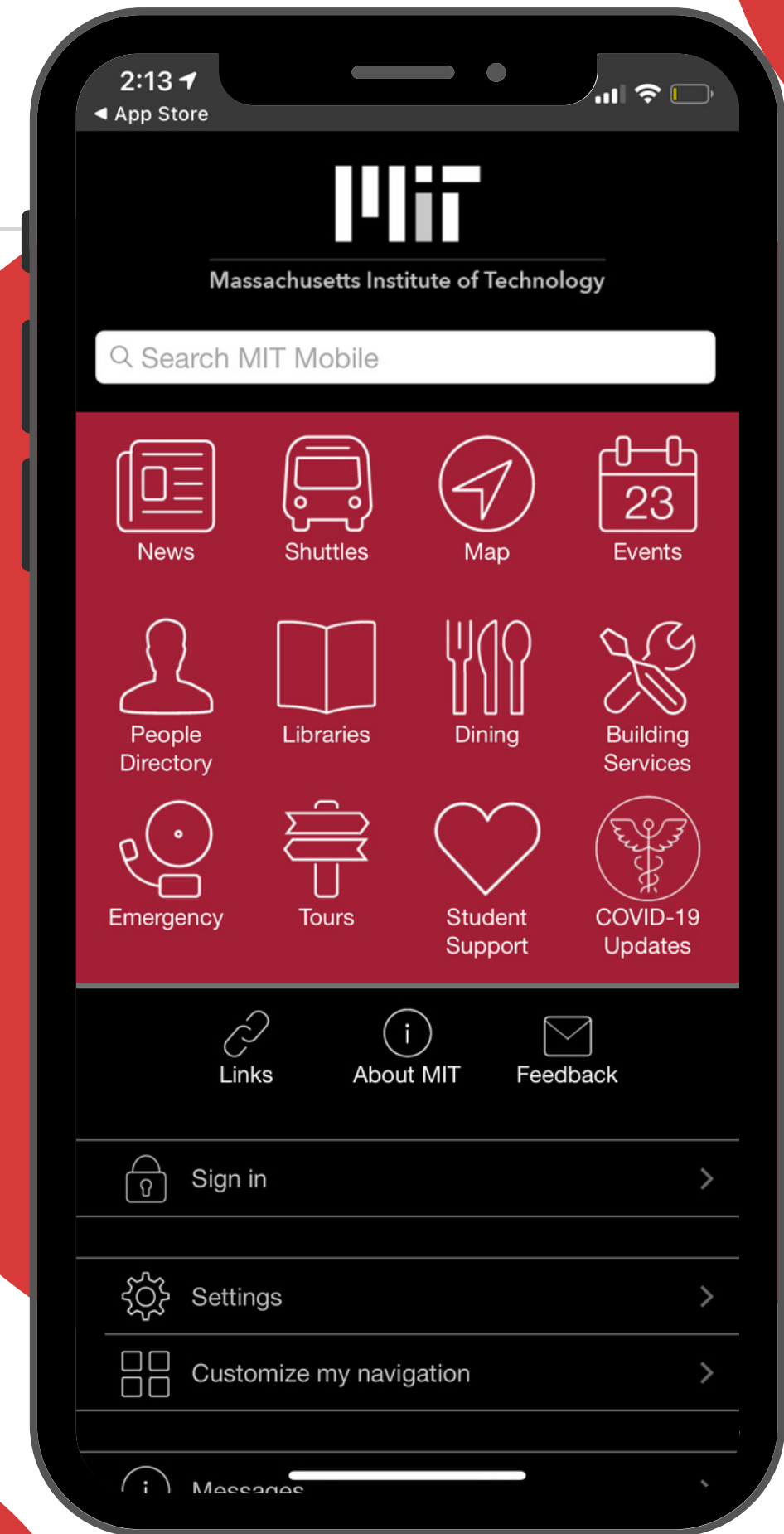


Figure 34: MIT Mobile App

STANFORD UNIVERSITY MOBILE APP

The Stanford University Mobile App is the main mobile application that allows students to find resources and stay informed about all things related to Stanford. The major features of this app include not having personas, push notifications about police activity, linked student ID, and easily accessible COVID information. This app received 4.6 stars on the App Store due to the design of the application making it easy for users to navigate through (Stanford, 2021). The information in this application is useful and pertains to all aspects of student life in a very easily navigable way and a proper color scheme to support it. This application, along with the University of Central Florida mobile app, is a great example of a college app and can be mirrored in its useful features and neat user interface.



Figure 35: Stanford University Mobile App

PENN STATE UNIVERSITY MOBILE APP

The Penn State Mobile App (Penn State Go) is the main mobile application that allows students, faculty, alumni, and prospective students to find resources and stay informed about all things related to Penn State. The major features of this app include the ability to access class information, schedules, finances, housing status, emailing, maps, updated dining menus, and shuttle tracking (Penn State, 2020). This app provides the ability for any audience to easily use a feature that also may not be accessible through a website such as the shuttle tracking feature. Some features use location based services or other sensors from the mobile device, which allow them to be more functional on a mobile app than a website. This app received a 3.5 star rating on the App Store due to previous bugs and errors that were occurring on the application before any patches and updates were implemented. Reviews after the patches were released show five star ratings stating that the features were working and the app was very useful.

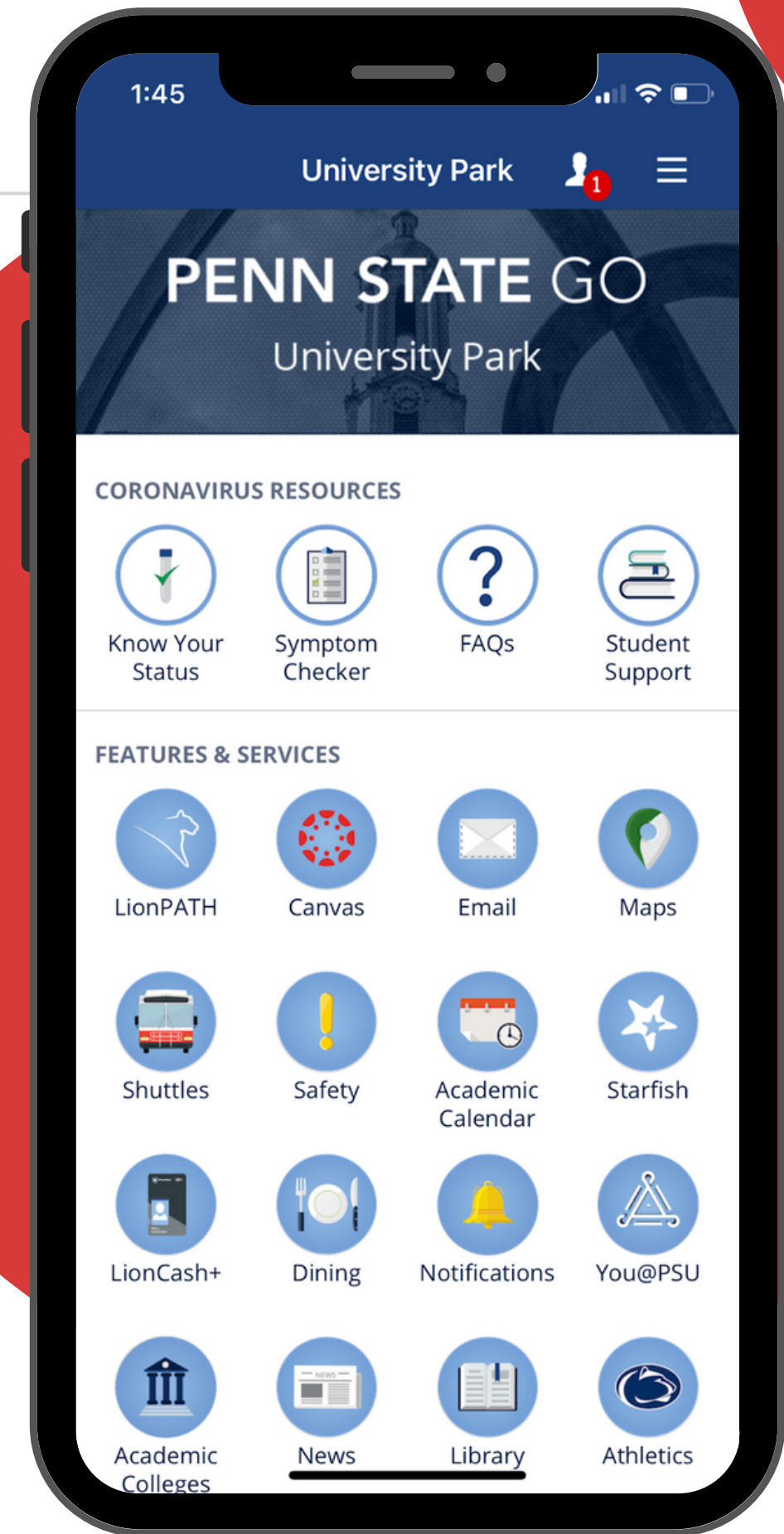


Figure 36: Penn State University Mobile App

Conclusion and Recommendations

After surveying and interviewing students, we understood that there was a need to improve the WPI App's design, utility, and design. Our next steps were to assess and take inspiration from the app's competition and alternatives. Taking into account the students' feedback and our analysis of our account we created the WPI App's first prototype. After conducting user testing twice and revising our prototype, we finalized our prototype which was a mixture of our competitor's design and functionality and included an explore page, to keep up with the trend of social media like Instagram and TikTok to advertise the college and its events. We learned a lot while working on this project about presenting, networking, and project management. Our advisors gave us extremely valuable advice and we greatly appreciate their help and guidance.

Over the past 14 weeks, we achieved all our tasks. However, there's always scope for improvement. During our research and implementation phase, we came up with multiple enhancements to the app that we couldn't implement during the project's timeline. We would recommend the Marketing and IT departments to implement these changes in the future to ensure that all their users have a satisfying user experience.



**KEY
TAKEAWAYS**

Over the course of the past two weeks, our team learned a lot of valuable lessons. Some of the most important skills that we developed were project management, networking, and presenting.

KEY TAKEAWAYS

Over the course of the past two weeks, our team learned a lot of valuable lessons. Below are 3 of the most important skills that we developed during the IQP.



Project Management



Networking




Presenting



PROJECT MANAGEMENT

Project management skills like scheduling, task management, communication, and critical thinking were crucial for this project. While scheduling, we had to break down our goal into small tasks which would help us get there. We created a Gantt chart to keep track of tasks, duration of those tasks, dependencies, and milestones. We had weekly meetings with our advisors to update our progress and get their recommendations for the next steps. Additionally we had three team meetings per week: in the Thursday meetings we would plan and split tasks for the upcoming week, in the Sunday meeting we would share our progress with the rest of the team, and in the Tuesday meetings we would wrap-up the tasks for the week. We dedicated an average of 8-10 hours per week to work on this project.

Communication played a major role in our project. Our team had to maintain regular communication with the advisors, the WPI Marketing Department, other colleges, and the most important, with the team. We primarily used Zoom to host meetings, because it allowed us to conveniently record the meetings and limit exposure during the pandemic. Additionally, we would send updates to the marketing team using email. The team members communicated with each other in their in-person meetings and through text messages.



Task management was the key to completing our tasks timely. We had 14 weeks in hand and they had to be used well. Every week had a new set of tasks which were planned based on the previous week's outcomes. We had planned out all our tasks while creating the Gantt chart before we started our work on the project. A lot of unexpected challenges came in our way, we had to think critically and alter our plan accordingly. For example, our initial plan was to implement a new WPI App using Android Studio, however, after discussing our project with the WPI Marketing department, we learned that they used the Modo Labs platform to develop the WPI App. This changed our project's entire scope and timeline. There were some times that multiple tasks on our timeline would overlap. Time had to be managed properly and tasks had to be distributed amongst the team members evenly.



NETWORKING

We collaborated with multiple departments, teams, and colleges in the duration of this project. Since the WPI Marketing Department and WPI IT Department were the product managers of the WPI App, even before starting our work on the app, we had to connect with them and understand their rationale behind the app. During the research phase of the application, our team reached out to the creators of the WPI Hub, a new tool developed for the WPI Community. The user interface and functionality of this web-based tool is excellent, and we wanted to learn from their experience. While working on the app's prototypes, we decided to reach out to other colleges who were leveraging Modo Labs for their college's app. We managed to schedule a meeting with creators of the PennState GO app. They shared their development and survey experience which inspired us to market the app better, survey and get feedback from students, and collaborate with other colleges like University of Central Florida.

Networking enhanced the quality of our final product. It was refreshing to connect with new people and get a fresh perspective on our work. We received a lot of valuable information in every meeting. The best part was that we developed so many new connections in the past 14 weeks.



PRESENTING

We learned the art of presenting while working on the project. We pitched our project plans to our advisors and stakeholders on a regular basis. Before our presentation, we would get our slides and speaking notes reviewed from our advisors. They gave us some very valuable advice which helped us enhance the quality of our presentation. We learned that voice modulation and catchy phrases were ways to catch the audience's attention. With that in mind, we integrated statements like "Let's make this app the fabric of WPI student life." to our presentations. This had a huge impact on our audience, and helped us win the confidence of our stakeholders.

The flow of the slides is a crucial part of any presentation. Our advisors taught us about the NABC - Need, Approach, Benefit, Competition - approach. First, we highlighted the need of our product using data and findings during the research phase. Next, we would share our approach to cater to the need that we highlighted in our previous slides. After that we would talk about the benefits of the choice of approach and the solution. Lastly, we talked about the potential competition to the solution and ways of handling it. Another important lesson we learned was that the introduction and conclusion of the presentation should have a huge impact on the audience. We attempted to do so by integrating humor and catch phrases in our presentation.

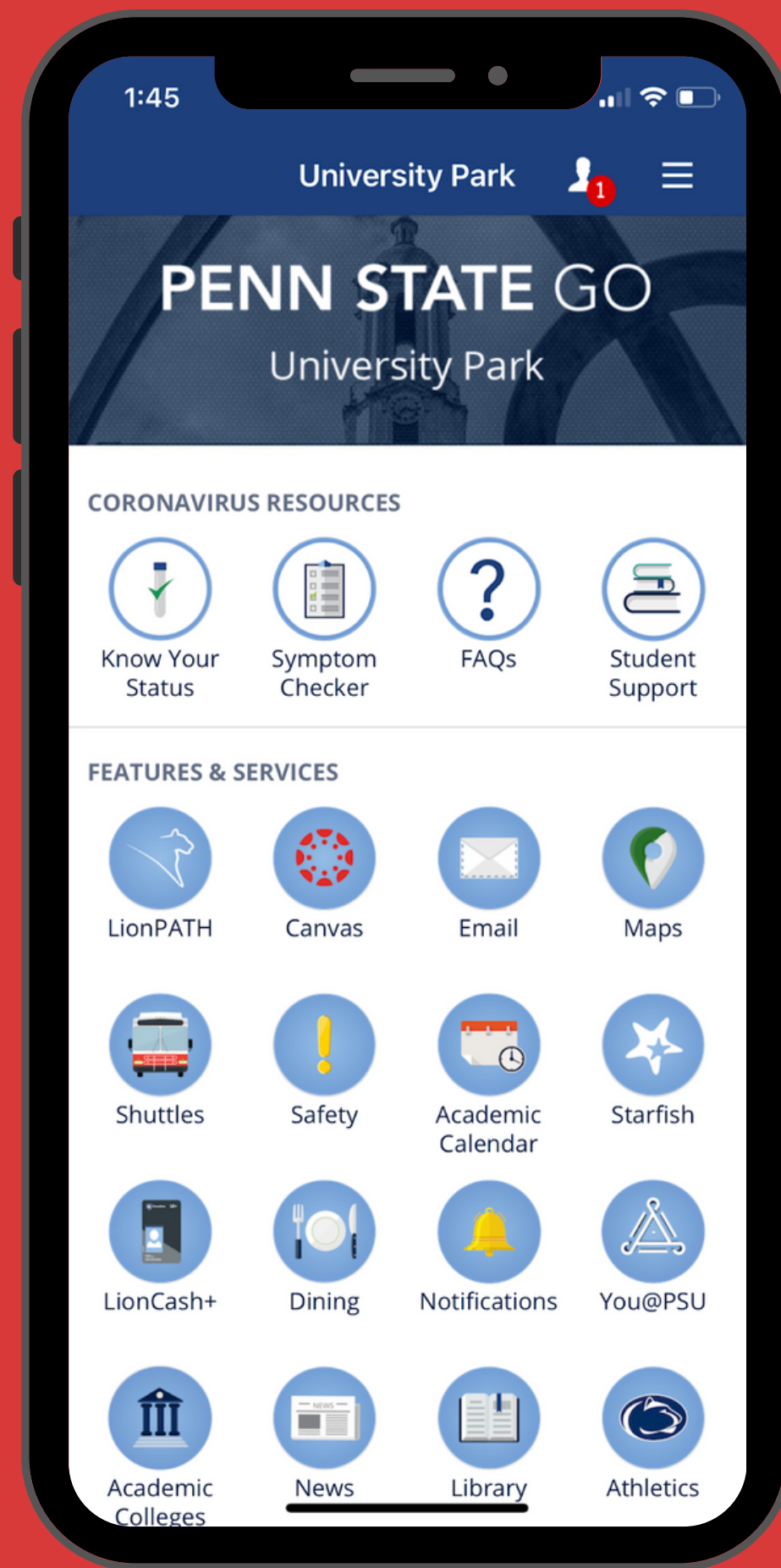
We leveraged the screen share feature on Zoom to present the visual representation of our presentation in the form of slides. The visual appearance and content of the slides had to be relevant but not distracting. For example, our advisors gave us feedback on one of our presentation drafts that we shouldn't have 2 charts on one slide at once, this diverts the viewer's attention. To ensure that the audience focussed on the correct content, we integrated animations into our slides. This helped us talk about one thing at a time and allowed the audience to focus on it as well.

Presenting is a very important skill useful not only in educational institutes but also in the corporate culture. We are glad we could learn so much about presenting in a span of 14 weeks.

RECOMMENDATIONS

Through our research over the past few weeks, we realized that the WPI App has immense potential and would be a great addition to the life at WPI. In the past 14 weeks, we conducted research on ways to improve the current WPI App. The interviews, surveys, and user testing allowed us to communicate with students, understand their needs, and integrate their suggestions into our prototype.

Due to time constraints, we could not implement these changes on the Modo Platform. There are several ways to enhance the current WPI app. Below are some recommendations for the future development and marketing of the app.

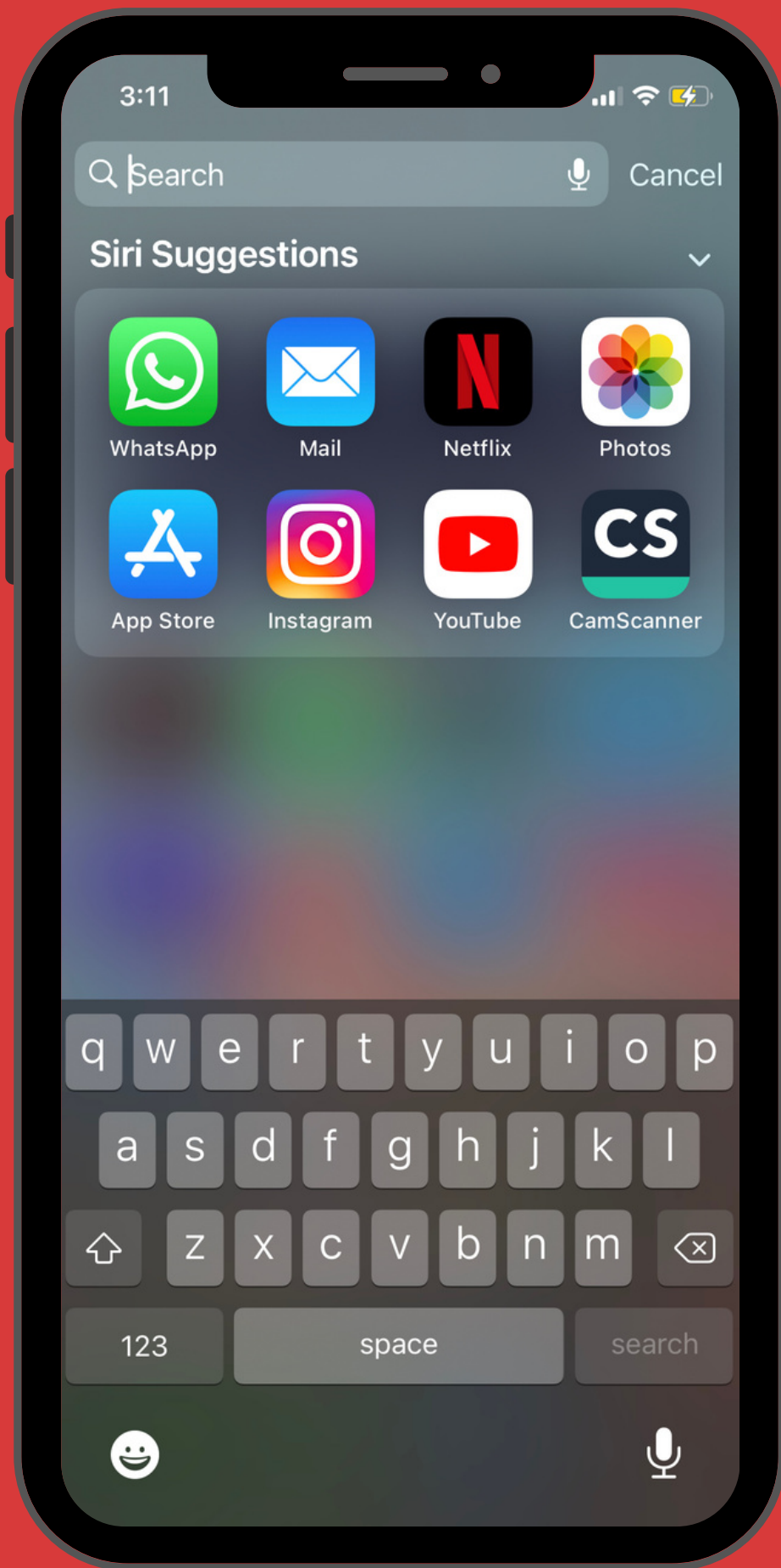


DESIGN CHANGES

The current WPI mobile app could utilize new design features from different Modo packages to create a more engaging user interface.

During our research, we looked at some other apps which were developed using Modo Labs. They had some additional tile blocks that could be useful for the WPI app as well. For example, Penn State Go app had a tile block which allowed 4 app icons in one row. During the user testing sessions, students like the layout with 4 app icons in one row compared to 3 app icons in one row for the Quick Access menu. They liked it better because the 3 app icons per row layout required them to scroll more compared to the 4 app icons per row. Deploying such new design changes would ensure the best use of space in the app.

Figure 37: 4 Icon Layout in Modo Labs



A lot of students requested a search bar in the app. The search bar enables users to “look-up” any feature they need and saves their time. Modo Labs might not support this feature at the moment, however, students would really like it if it could be integrated in the future. One of the most requested features during our multiple rounds of user testing was that the app icons should be made customizable in the Quick Access menu. Additionally, instead of having preset options in the hamburger menu, the users should be allowed to customize it. Lastly, students requested that dynamic elements should be added to the app, such as, the WPI Instagram’s feed and events on campus.

These are some small design changes that will help elevate the user experience. In general, we noticed that students repelled from the idea of scrolling through the app to find resources and they preferred a simple and interactive design for the app.

Figure 38: Search Bar to Look-Up Features



ADDING PERSONAS

The other option as mentioned previously, is to add more personas to the existing two (student and everyone). Adding personas for alumni, faculty and staff, and any major events occurring on campus are just a few examples of how personas can be utilized. To begin with, having a persona for alumni and one for faculty would allow the WPI Marketing department to create targeted content specifically for these two groups, making it more personalized and engaging. The app would then act as a great marketing tool to outreach to alumni and faculty.

The second usage for personas would be to market events such as TouchTomorrow or graduation commencement. This would be a very useful application of personas because it would make the app more useful by making it easy for people to quickly access information related to the event. Once the event is past, the persona can either be removed or be replaced with an upcoming major event. This makes it easy for users to know which events are going on and how to get all the information pertaining to it, creating more incentives to download the mobile app.

MARKETING MATERIAL

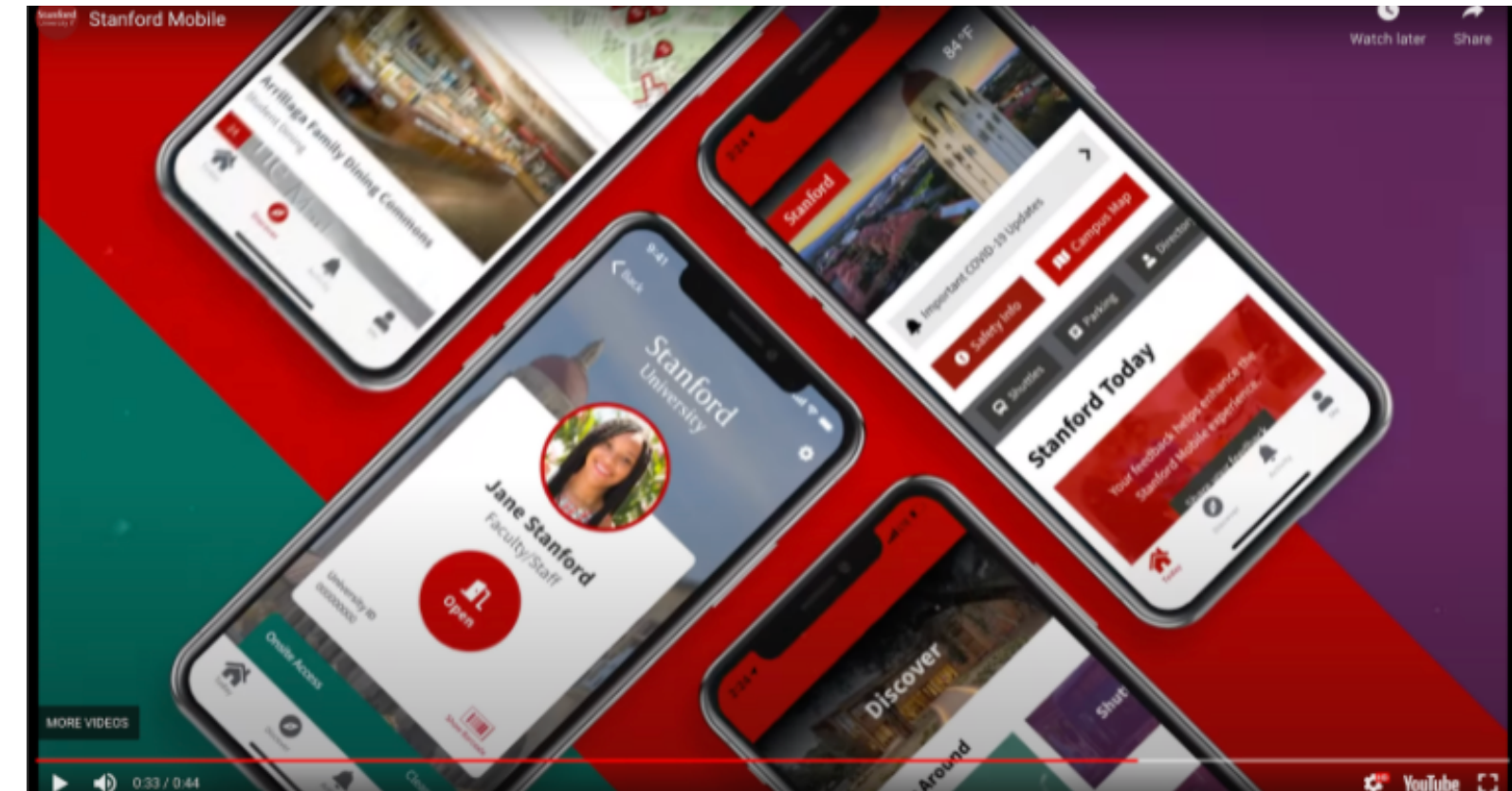


Figure 39: Marketing of the Penn State Go App and Stanford App.

Effective marketing can entice students to download the app and leverage its features. During the student interviews, we found that 5 out of 11 students in our sample had no idea that the WPI App existed. Additionally, 7% percent of the survey participants did not know of the WPI App before they came across the survey. Similar to other apps like Facebook and Twitter, WPI needs to advertise their app on different platforms like their websites and social media.

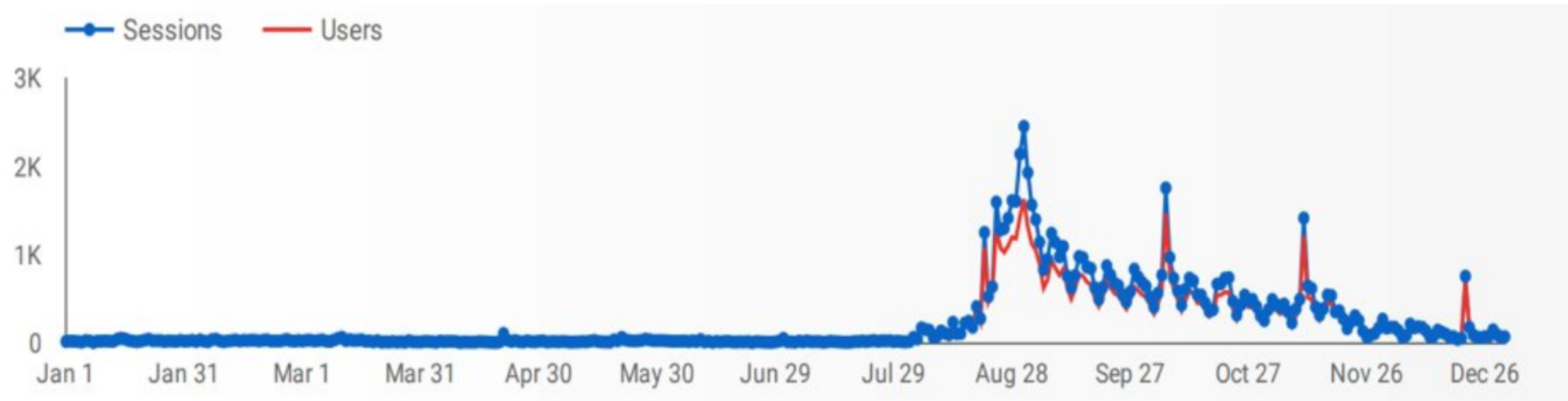


Figure 40: The rise in sessions and users of the WPI App after a reference on WPI's Instagram

WPI could market their app like University of Central Florida, Penn State University and Stanford University market their app. All these universities have created a website that specifically advertises their app's functionality and importance. Additionally, they have created videos and uploaded them on your YouTube channels so that their followers can download their app. Using this approach, recently the Penn State Go app hit 100,000 downloads. In the past, we have observed that the users and sessions on the WPI App peak when WPI posts about the app's features.

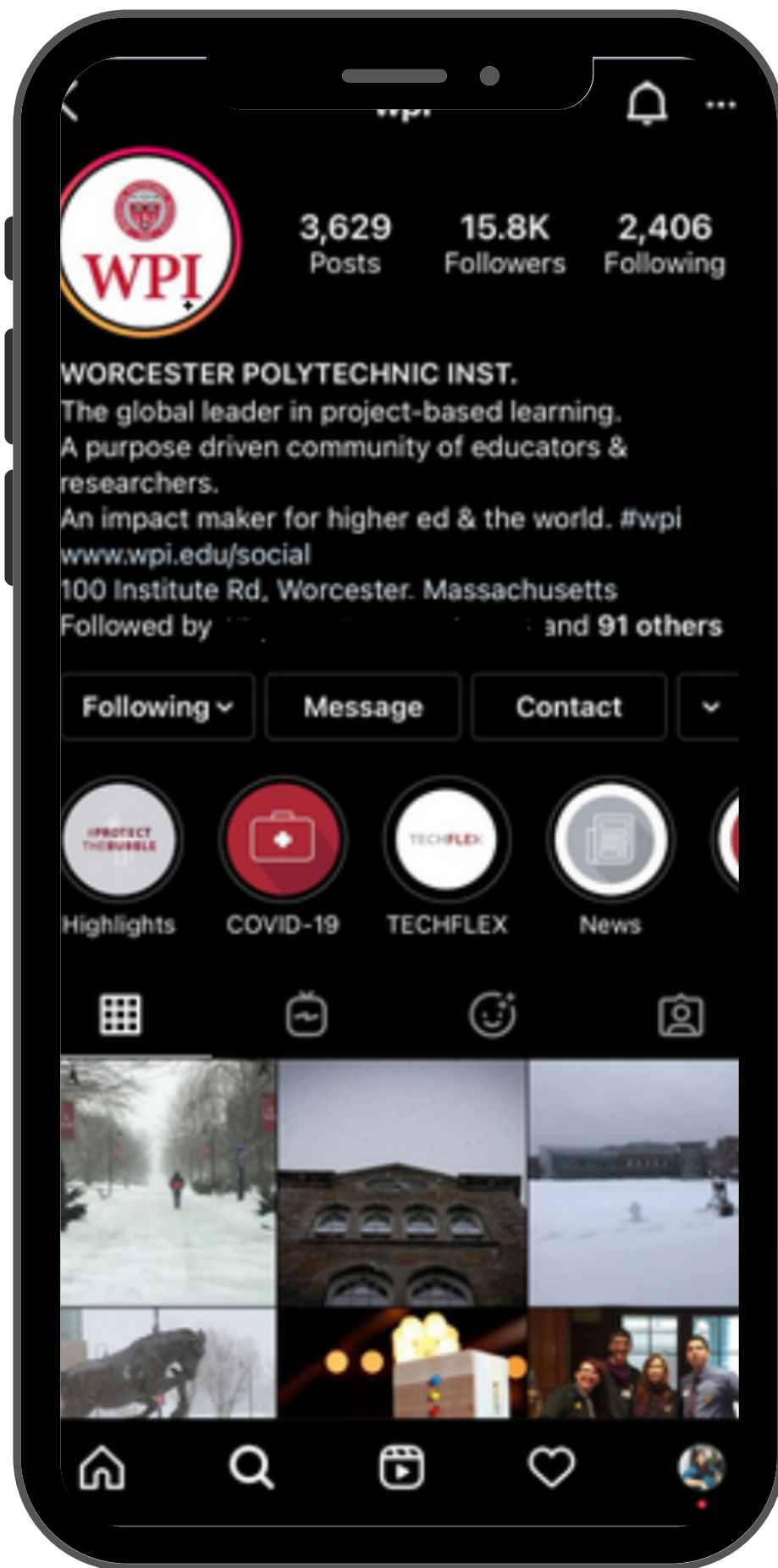


Figure 41: WPI's Instagram Platform

The WPI Instagram has roughly 16.3K followers, which includes students, prospective students, faculty and staff, alumni, and their family members. WPI's Facebook Page has 31,397 followers. If these platforms advertise the WPI App, the number of users could rise exponentially. In the past, when WPI Instagram advertised the symptom tracker on the WPI App, the number of downloads and sessions had spiked according to the Modo Labs user statistics. Additionally, there are multiple email aliases which can be leveraged to inform different groups of students about the app. By following good marketing practices, the WPI app could become one of the best college apps, and has the potential to be beneficial for visitors and used daily by students.



Figure 42: WPI's Facebook Platform

LEVERAGE DATA

Modo Labs provides statistics regarding the usage of the app to the developers. These statistics such as number of users per day, number of sessions per day, and frequency of visiting pages. Developers of this app should leverage this information to enhance the user experience and marketing of the app.

We analyzed some of these statistics during our research phase. There were some peaks in the number of sessions once in a while. When we decided to dig deeper into this to understand the cause of the peaks, our finding was that when the WPI Instagram posted regarding the Covid-19 symptom tracker on the WPI app, the number of sessions and users peaked. This was proof that posting about the WPI app was an effective way to market the app. The marketing department could leverage all their social media tools to market the app effectively. This was a great solution to the problem of lack of awareness about the WPI App in the WPI Community.

We are in the era of artificial intelligence and machine learning. Massive amounts of data is analysed within a few milliseconds on a daily basis to provide suggestions to the users. Data received from student activity should be used to provide a customized experience to the students. For example, iPhones learn which apps do their users open throughout the day and then eventually they suggest a shortcut to those apps. Users love this feature because it saves their time. Similarly, one potential way of customizing the user experience would be by learning which resources does a student access most frequently and providing him/her quick access to them through the app. This data could also be used to predict student's usage based on their demographics.

Data is a powerful tool, and if used correctly can be extremely helpful in creating a tailored experience for the students. Modo Labs might not support integration of data analysis tools at the moment, however, in the future the WPI app team should work on making the most of the data they receive.

ADVANCED FEATURES

Further enhancements to the WPI Mobile app include the incorporation of more advanced features beyond the ones provided in the MODO platform. Creating unique features that are not part of the MODO platform allows the WPI Mobile app to stand out, which can be beneficial in many aspects.

A potential idea for a feature of this sort would be creating a social media aspect to the app which can allow students to message each other to create a more connected community. This messaging system would allow students to easily communicate with each other in a semi professional manner instead of relying on email for simple conversations.

Using this instant messaging feature can lead to implementing a feature where students can locate student-led study groups for various subjects, allowing for a collaborative environment in an institution focused on project work. Students are accustomed to studying in groups for classes that are at a larger scale and require more group work, which is most of the classes at WPI. Therefore, having this study group tracking feature would make it very convenient for students to find students studying a similar subject, or even create a group meeting for their own projects.

Another feature that goes above and beyond the capabilities of the MODO platform is a laundry tracking feature. WPI already has a laundry tracker, which is a hidden feature that not many students know about. However, integrating this into the app would make this feature more noticeable and would be another reason for students to use the app.

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Appendix A

INTERVIEW QUESTIONS

If the student does not have the WPI App installed

1. Can we record this meeting?
2. Is this a good time for this interview?
3. Do you have the WPI App installed on your mobile device?
4. Have you heard of the WPI app?
5. Why do you not have the WPI App installed?
6. What other services do you use as an alternative?
7. What would be the reasons for you to download this app?
8. Would you download this app in the future?
9. What features would you like the WPI App to have?

If the student has the WPI App installed

1. Can we record this meeting?
2. Is this a good time for this interview?
3. Do you have the WPI App installed on your mobile device?
4. When or how did you come across the WPI app?
5. How frequently do you use the WPI App?
 - a. Once a day, once a week, once a month
6. What are some of the reasons you use the app?
7. What are some features you know the app contains?
8. What words or feelings come to mind when you think about the WPI App?
9. What are some things you like about the app?
10. What are some things you dislike about the app?
11. What features would you like the WPI App to have?
12. How likely are you to recommend this app to a friend?
13. On a scale of 1 to 5 stars, how would you rate the overall WPI App on the App Store? Why?

If the student has not heard of the WPI App

1. Can we record this meeting?
2. Is this a good time for this interview?
3. What is your name, year, and major?
4. Do you have the WPI App installed on your mobile device?
5. Have you heard of the WPI app?
6. What are some ways that WPI can market this app so it could reach you?
7. What features would you like the WPI App to have?
8. Would you download this app in the future?
9. What would be the reasons for you to download this app?



Appendix B

INTERVIEW QUESTIONS

Default Question Block

This survey is intended to understand the usage of the WPI Mobile App among the WPI student population. This is being conducted as a part of the research for the WPI Mobile App IQP. The data from this survey will be shared with the WPI IT and Marketing departments. By filling this survey, you will also have a chance to enter into a raffle for one of four \$25 Amazon Gift Card!

If you have any additional questions or concerns regarding the survey, please feel free to contact Manjusha Chava (mchava@wpi.edu) or Pradnya Mahurkar (pmahurkar@wpi.edu).

This survey is expected to take 3-5 mins. Thank you for your time and cooperation!

What is your current year?

- Freshman
- Sophomore
- Junior
- Senior
- Other

What is your major/area of study?

Major

Do you currently have the WPI App installed on your mobile device?

- Yes
- No
- Previously downloaded it, then deleted
- Did not know it exists

Please rate the following based on your experiences with the WPI App.

	1 (Poor)	2	3 (Average)	4	5 (Excellent)
Visual Appearance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ease of Navigation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Responsiveness (how fast the page loads, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Functionality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How frequently do you use the WPI App?

- At least once a day
- At least once a week
- At least once a month
- Never

Which "My persona" do you use more often?

- Student
- Everyone
- I don't know

What features in the WPI App do you use? (Check all that apply.)

- Academics
- Bookstore
- Campus Map
- Campus News
- Canvas
- COVID Information
- Dining
- Directory
- Emergency
- Get Help

INTERVIEW QUESTIONS

- Goatbucks
- News
- WPI Events
- WPI Social Media
- Symptom Tracker
- Quick Links
- Other

What features from the list above do you use the most? (Rank top three)

First Feature

Second Feature

Third Feature

What features from the list above should be improved, and why?

What are some features that would entice you to use the WPI App?

Overall, how can the WPI App be improved?

How would you rate the overall WPI App on the App Store/Google Play Store?

Very Poor 0 1 2 3 4 5 6 7 8 9 10 Very Excellent

If you do not have the WPI App installed, please elaborate on the reason why.

What are some apps or webpages that you use as an alternative to the WPI App?

- Bannerweb
- Canvas
- PowerApp
- Tech Sync
- TransLoc
- WPI Hub
- WPI Instagram
- WPI Webpage
- Other

What are some features that would entice you to use the WPI App?

What are some ways that WPI can market this app so it could reach you better?

Are you interested in entering a raffle for a \$25 Amazon gift card?

- Yes
- No

Would you be interested in potentially participating in future user studies regarding the WPI App?

- Yes
- No

Please provide your WPI email.



Appendix C

USER TESTING ROUND #1

QUESTIONS

Student Persona Tasks

- Where can you find the undergraduate calendar?
- If you're lost on campus, where could you go to find information to help you?
- If you want to find information about a professor, which feature would you choose?
- How would you schedule a rec center appointment?
- How do you switch personas?
- Which feature allows you to track your COVID symptoms?
- If you want to check your grades, which feature would you navigate to?

Follow up questions (during or after the completion of tasks)

- Do you think there is an easier way to accomplish [process] than what you just did?
- Is there anything here that confuses you?
- How does this design make you feel?
- What do you think about the way features and information were presented?
- On a scale of 1-10 how easy was it to navigate?

Figma specific questions

- What did you think of the Figma interface?
- What parts of the Figma app did you like the most? Why?
- What parts of the Figma app did you like the least? Why?
- If you could change anything in this prototype, what would it be and why?
- Based on this prototype, how likely are you to refer this app to another friend on a scale of 1-10? Why or why not? (Net promoter score)

USER TESTING ROUND #1

QUESTIONS

Everyone Persona Tasks

- Where can you go to report an incident on campus?
- If you're looking for information about where to park, how can you get there?
- Where can you go to find today's events on campus?
- If you want to reload goatbucks on your account, where can you navigate to?
- To schedule an academic advising appointment, where do you go?
- Where can you go to find information about COVID testing?
- Using the hamburger menu at the top right of the app, navigate to GoatBucks.
 - Was it easier or harder to navigate to Goatbucks through the hamburger menu?

Follow up questions

- Do you think there is an easier way to accomplish [process] than what you just did?
- Is there anything here that confuses you?
- How does this design make you feel?
- What do you think about the way features and information were presented?
- On a scale of 1-10 how easy was it to navigate?

Modo Specific questions

- What did you think of the Modo interface?
- What parts of the Modo app did you like the most? Why?
- What parts of the Modo app did you use the least? Why?
- If you could change anything in this app, what would it be and why?
- How would you describe your overall experience with this product?
- How likely are you to refer this app to another friend on a scale of 1-10? Why or why not? (Net promoter score)

A red-tinted photograph of a busy campus scene. In the foreground, several students are walking along a paved path. A young man on the left is wearing a dark blue long-sleeved shirt with 'WEST VIRGINIA STATE COAST GUARD' printed on it and red shorts. Next to him is a young woman in a red t-shirt and black shorts, also wearing a face mask. To her right, another young woman in a red top and black shorts is looking at her phone. In the background, more students are walking, some with backpacks, towards a brick building with large glass doors. The entire image is overlaid with a semi-transparent red filter and a white circular border.

Appendix D

USER TESTING ROUND #2 QUESTIONS

Student Persona Tasks

- Where can you find the undergraduate calendar?
- If you're lost on campus, where could you go to find information to help you?
- If you want to find information about a professor, which feature would you choose?
- How would you schedule a rec center appointment?
- How do you switch personas?
- Which feature allows you to track your COVID symptoms?
- If you want to check your grades, which feature would you navigate to?

Follow up questions (during or after the completion of tasks)

- Is there anything here that confuses you?
- How does this design make you feel?
- What do you think about features and information included?
- What parts of the persona did you like the most? Why?
- What parts of the Figma app did you like the least? Why?
- Which layout do you prefer for the quick access menu?

Everyone Persona Tasks

- Where can you go to connect to WPI-Wireless as a guest?
- If you need to call for help, where would you navigate to?
- Where can you go to find today's events on campus?
- If you're lost on campus, what feature can help you?
- Where can you go to schedule a tour of WPI if you're a prospective student?

Follow up questions

- Do you think there is an easier way to accomplish [process] than what you just did?
- Is there anything here that confuses you?
- How does this design make you feel?
- What do you think about the way features and information were presented?
- What parts of the persona did you like the most? Why?
- What parts of the persona did you like the least? Why?



USER TESTING ROUND #2 QUESTIONS

General Questions

- What did you think of the two personas?
- What parts of the app did you like the most? Why?
- What parts of the app did you use the least? Why?
- If you could change anything in this app, what would it be and why?
- Icons in the everyone persona vs. icons in the student persona, which one do you like better?
- How would you describe your overall experience with this product?
- How would you rate the navigation of this app on a scale of 1-10? Why or why not? (Net promoter score)
- How likely are you to refer this app to another friend on a scale of 1-10? Why or why not? (Net promoter score)



Appendix E



A Reformed Experience for
the WPI Community

WPI Mobile App

MANJUSHA CHAVA, PRADNYA MAHURKAR

Meet the Team



Manjusha Chava

Student



Pradnya Mahurkar

Student



Robert Sarnie

Advisor



Curtis Abel

Advisor

A centralized mobile platform of resources for WPI students to access.

STAKEHOLDERS

WPI Students

- Primary user
- Target Audience
- Developers



Marketing/IT Department

- Product Managers
- Content creators
- Technical supporters



Prospective Students

- Source of information
- Insight into WPI
- Integral to application process



Faculty/Staff

- Advertise events
- Latest campus info

Market Opportunity

1

COVID-19 Pandemic

Need for a seamless experience of accessing and utilizing online resources.

2

Centralization

WPI is transitioning to centralized tools like Workday and WPI Hub.

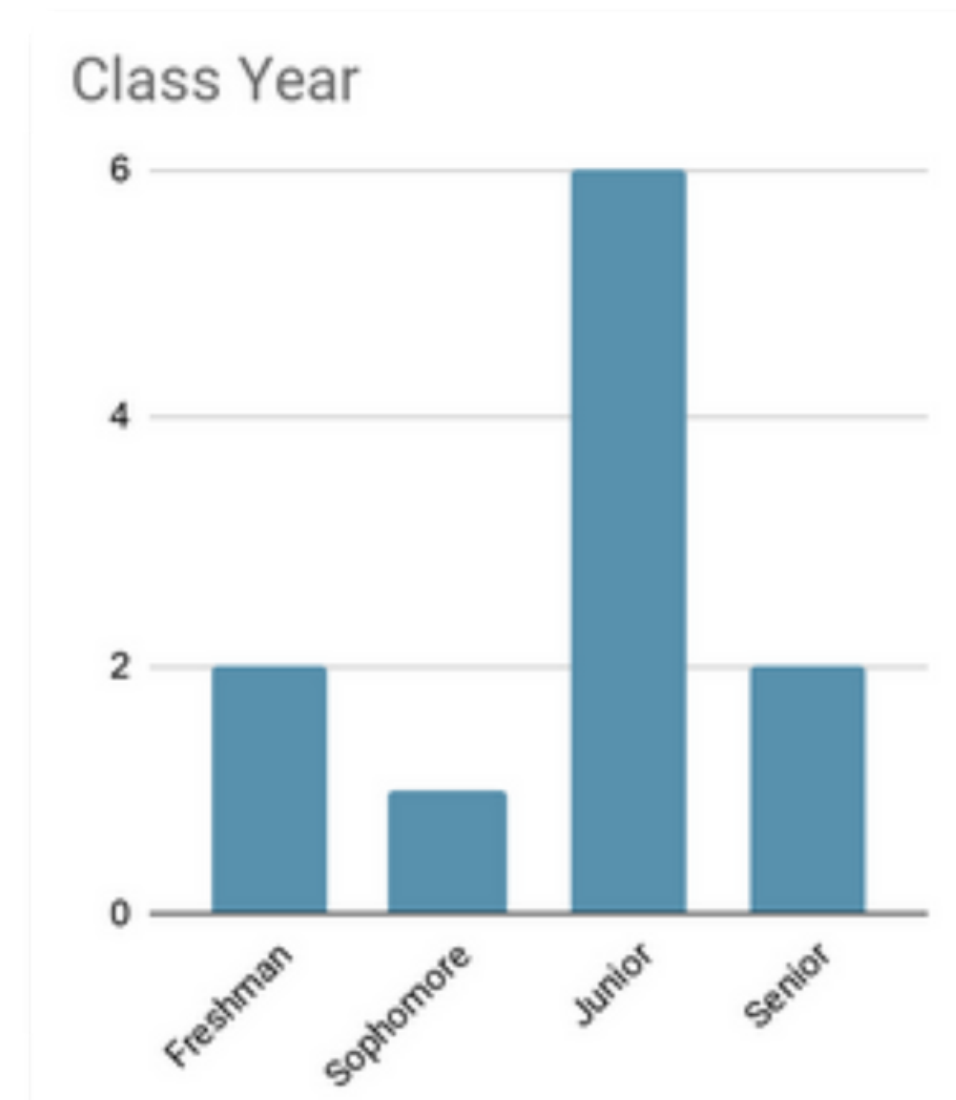
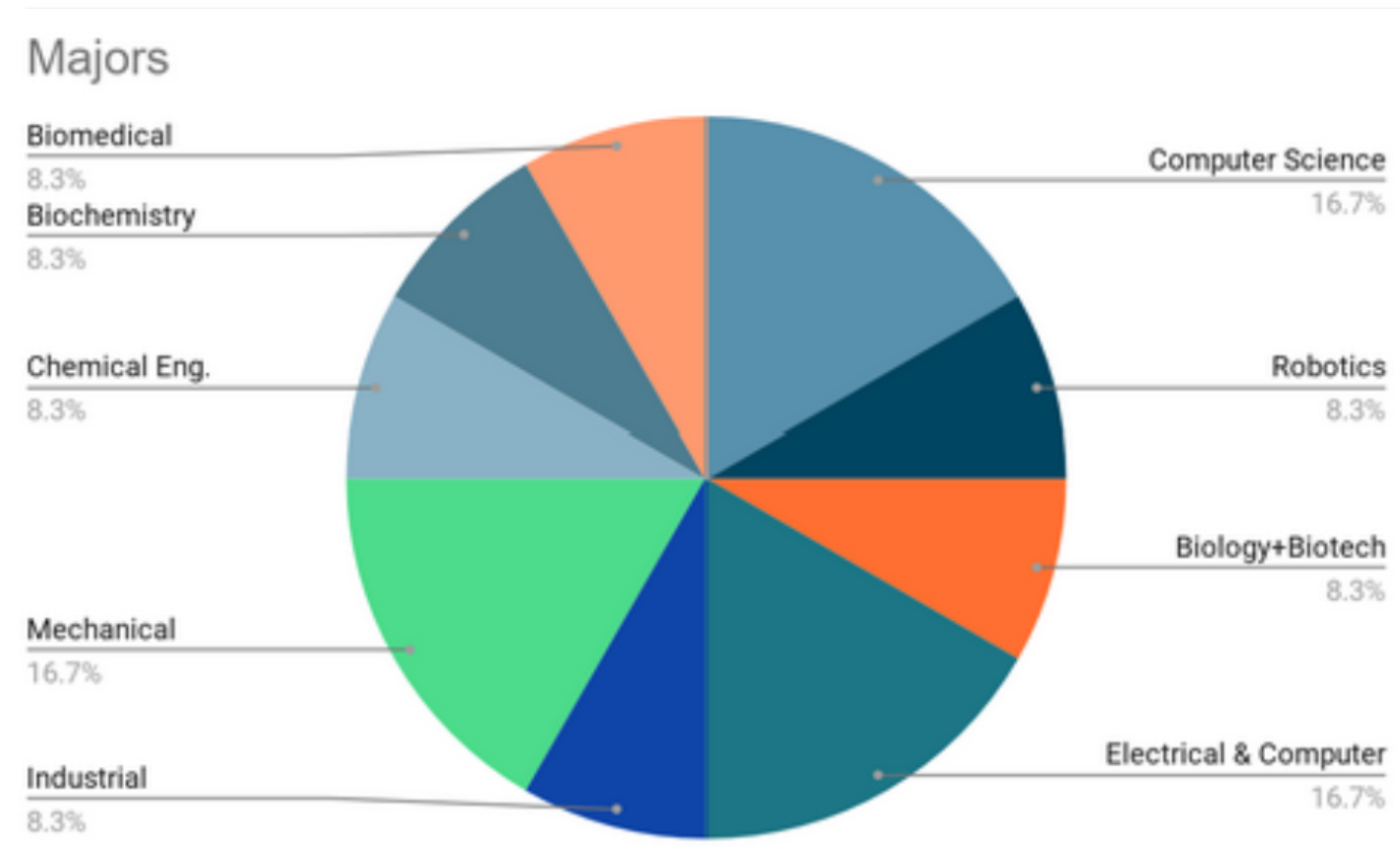
3

Marketing Tool

Tool to help prospective student population to connect with the college.

Assessing Needs

We interviewed 11 students from different backgrounds, majors, and years.



Here's what we found...

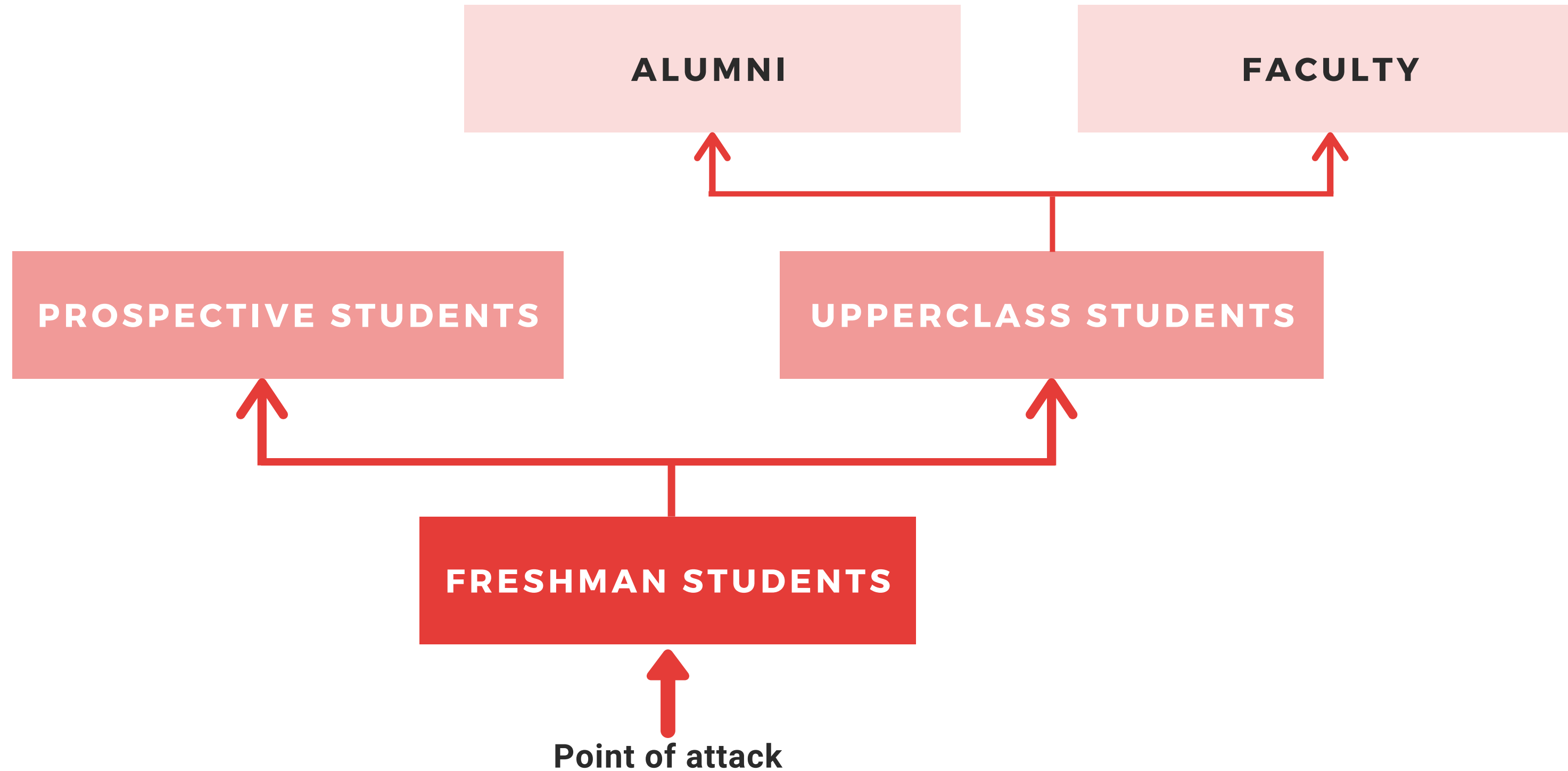
Student Interviews

Collected student feedback on usage, pain points, marketing, design, and functionality of the WPI App.

- Students do not know of the app
 - 5 out of 11 interviewed did not know about the WPI App
- Students are not satisfied with the app
 - Busy/cluttered design
 - Minimal useful functionality
 - Too much marketing material in one glance



Beachhead Market



Approach



Steps

01

Sent out a Survey

02

**Took Inspiration
from Competitors**

03

**Created 3
Prototypes**

04

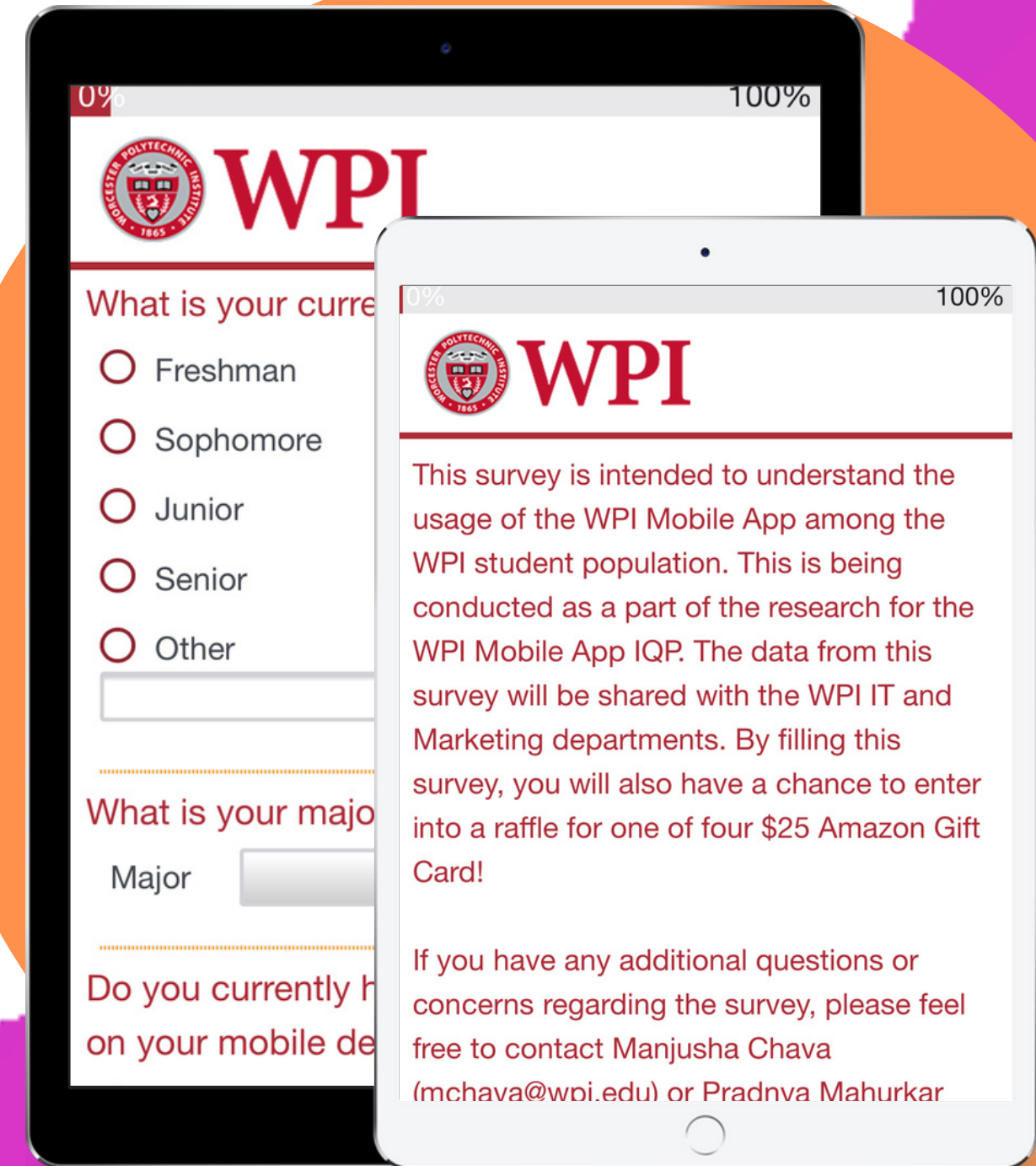
**Conducted 2
Rounds of User
Testing**

Student Survey

- Aim: Get feedback on the WPI App from a larger student sample.
- Created the survey using Qualtrics
- Three branches in the survey:
 - Frequent user
 - Never used app
 - Deleted app from phone
- Shared survey through:
 - Social Media
 - Club/Organization Slack or Discord Channels

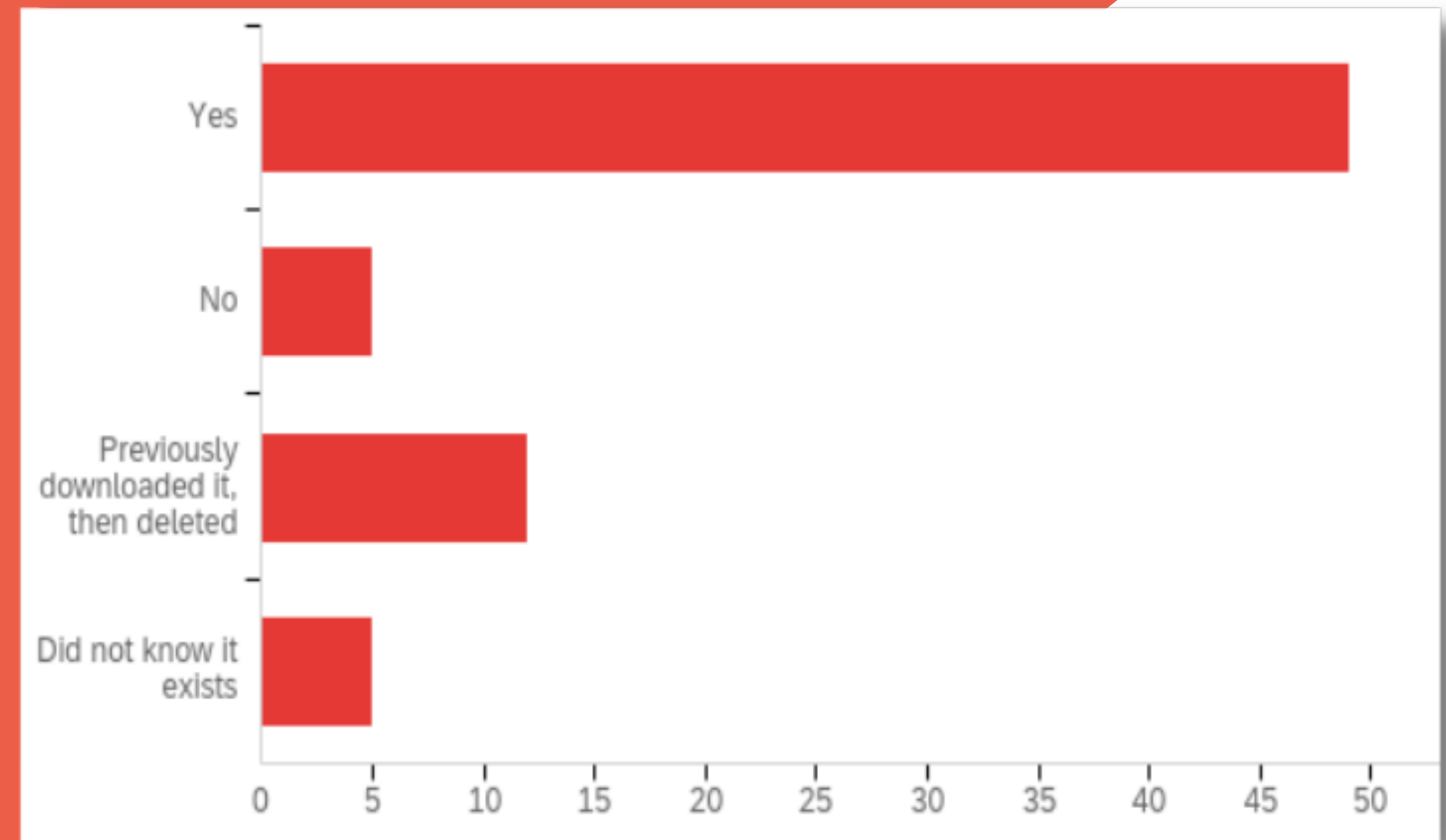


Survey Takeaways



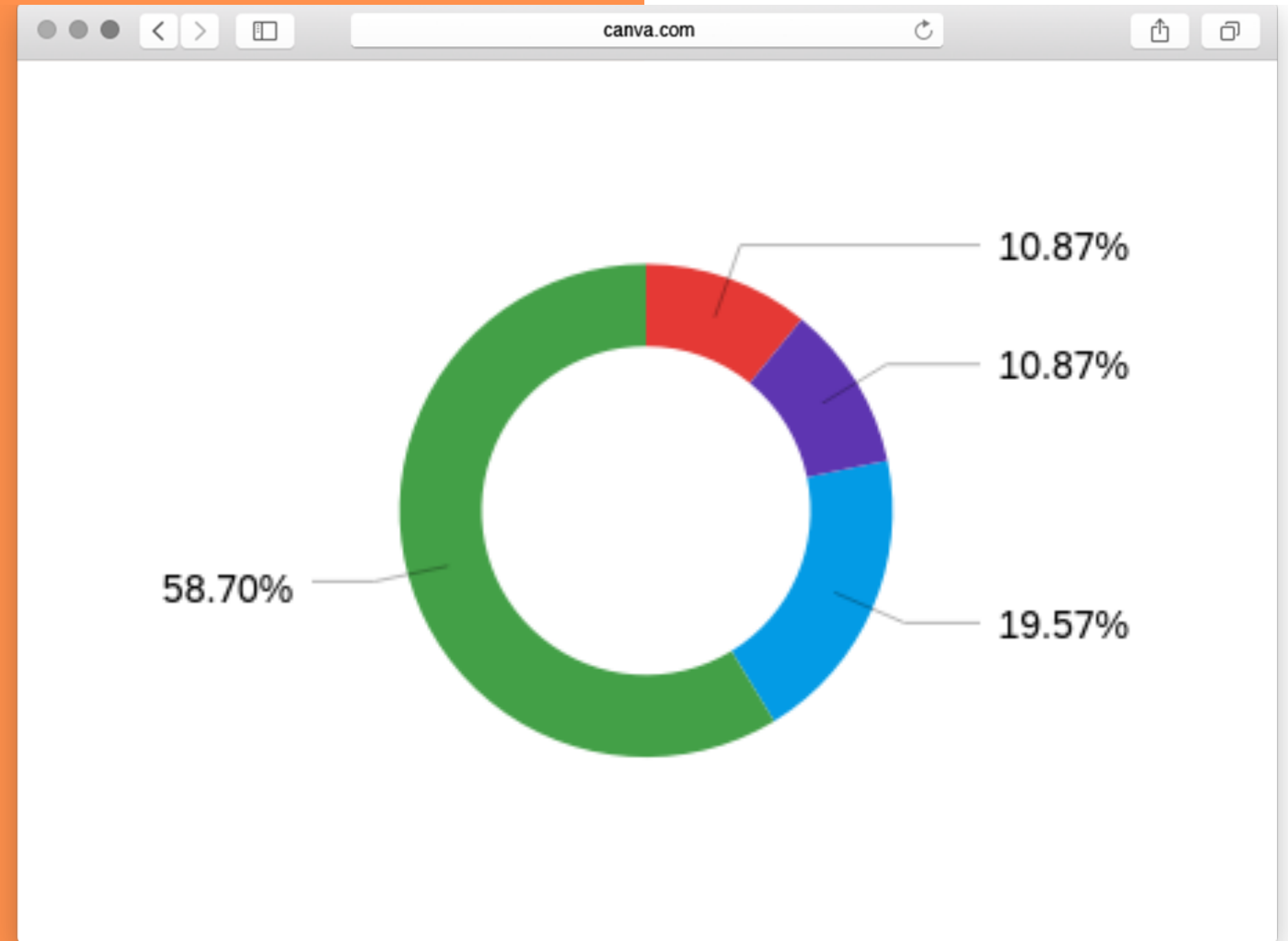
60% Participants Downloaded the App

- 60% of the survey participants had the WPI App Installed on their phones.
- 40% of the participants didn't have the app installed because they were unsatisfied with the app or didn't know about it.



Most Participants Never Use the App

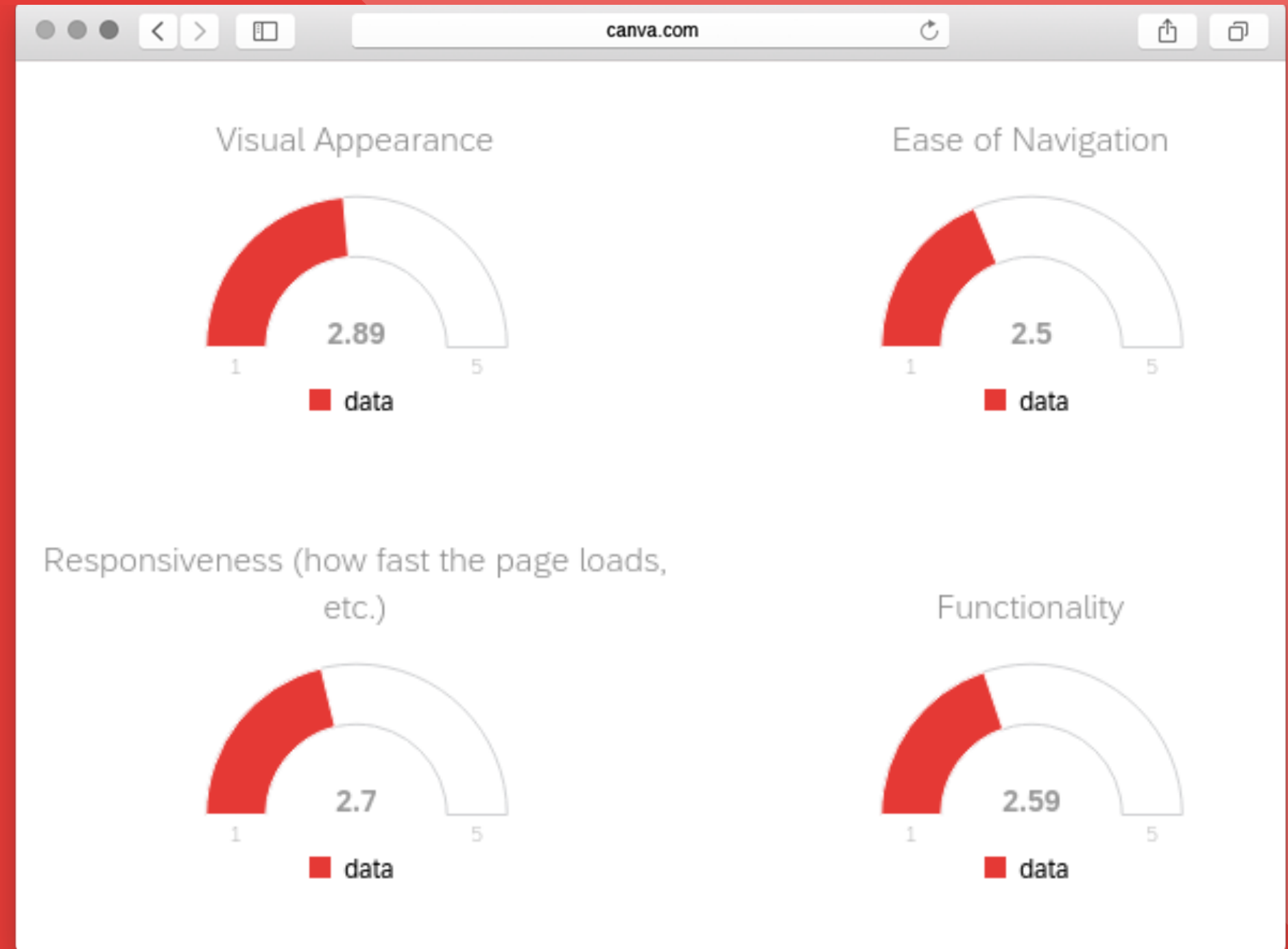
- 60% of the survey participants never use the WPI App.
- 10% of the survey participants use the WPI once a day
- 10% of the survey participants use the WPI once a week
- 20% of the survey population use the WPI App once a month



■ At least once a day ■ At least once a week ■ At least once a month ■ Never

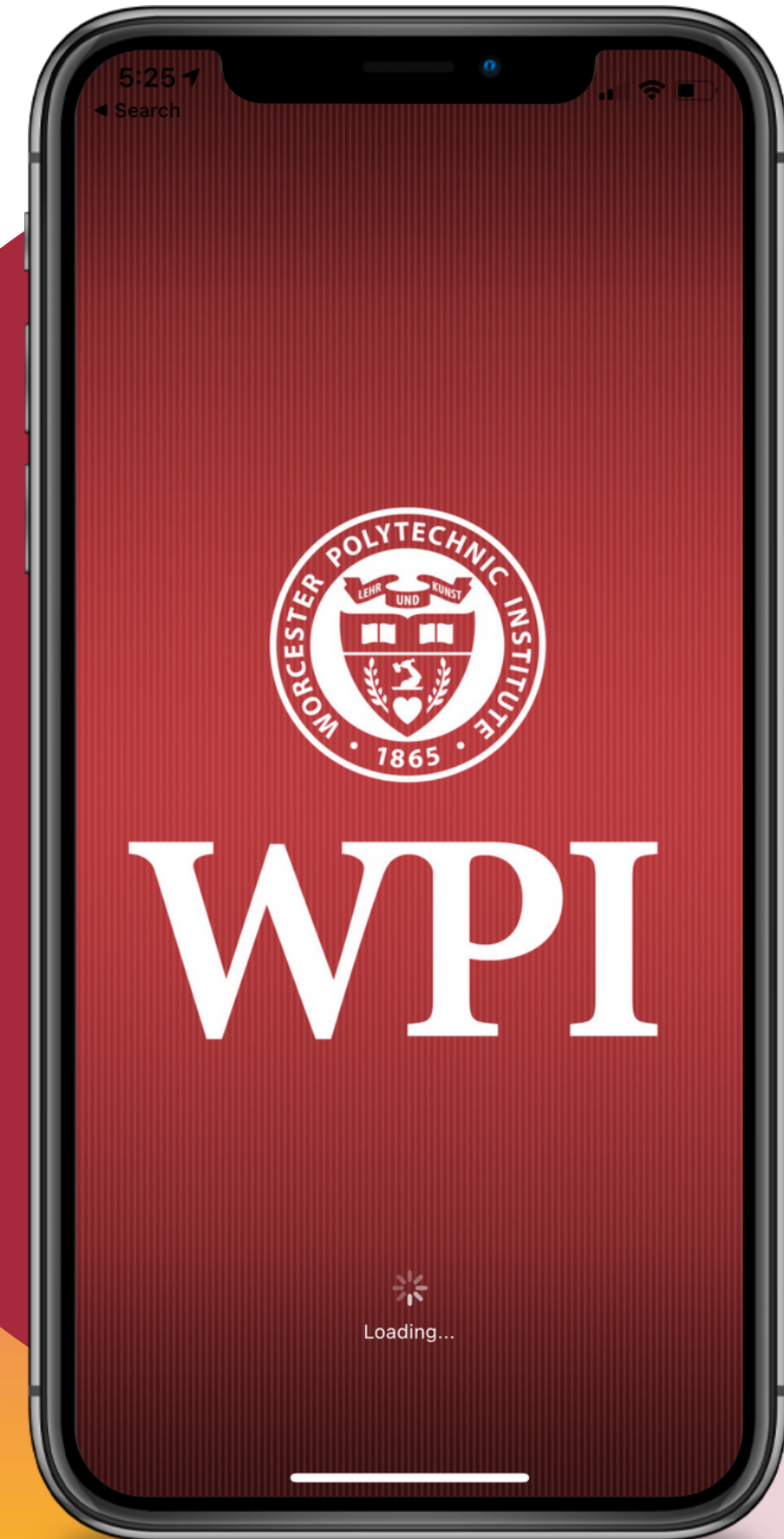
Below Average App Rating

- Visual Appearance Average Rating: 2.89/5
- Ease of Navigation Average Rating: 2.5/5
- Responsiveness Average Rating: 2.7/5
- Functionality Average Rating: 2.59/5



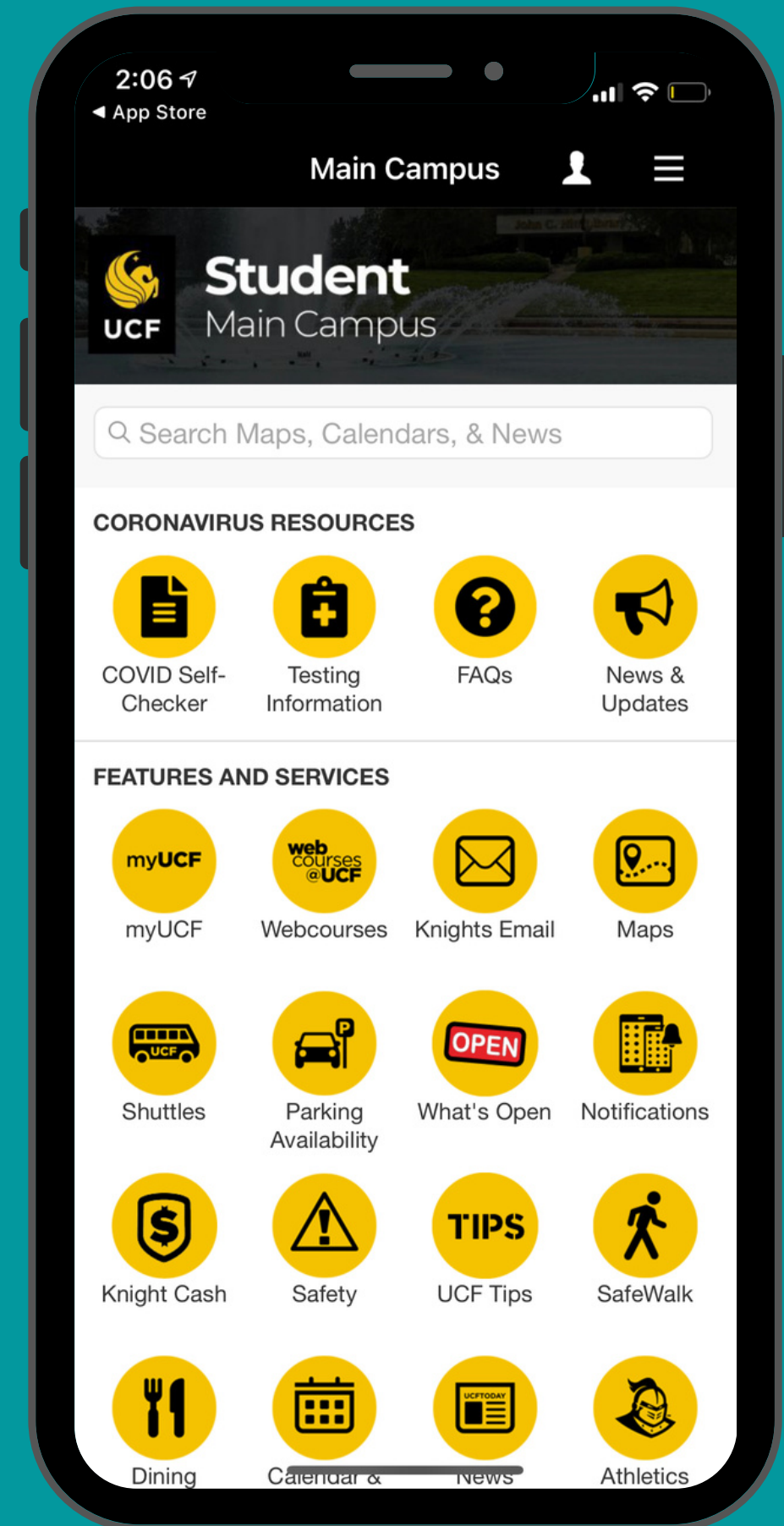
Competition

Our Inspiration



Competition

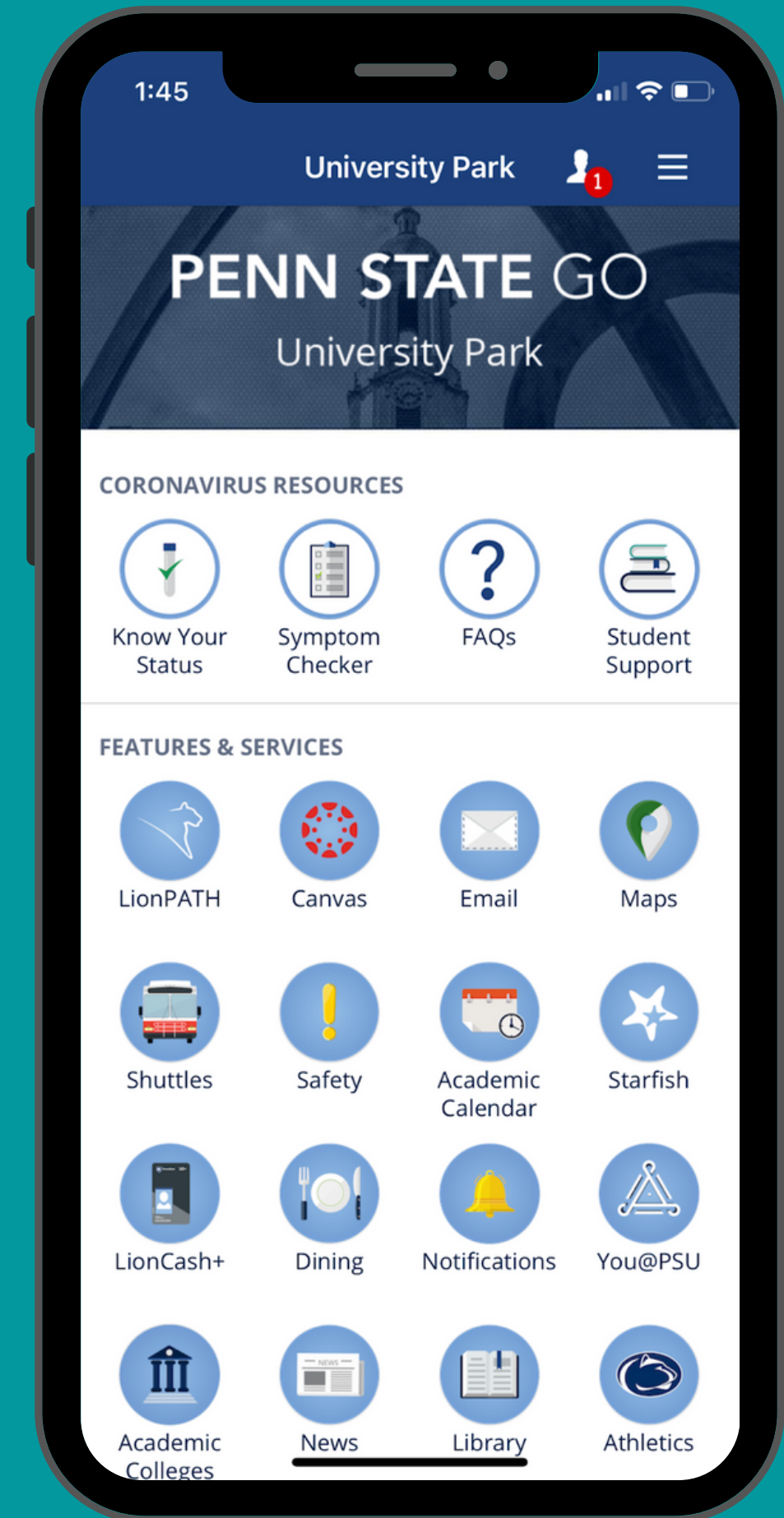
1 University of Central Florida



Competition

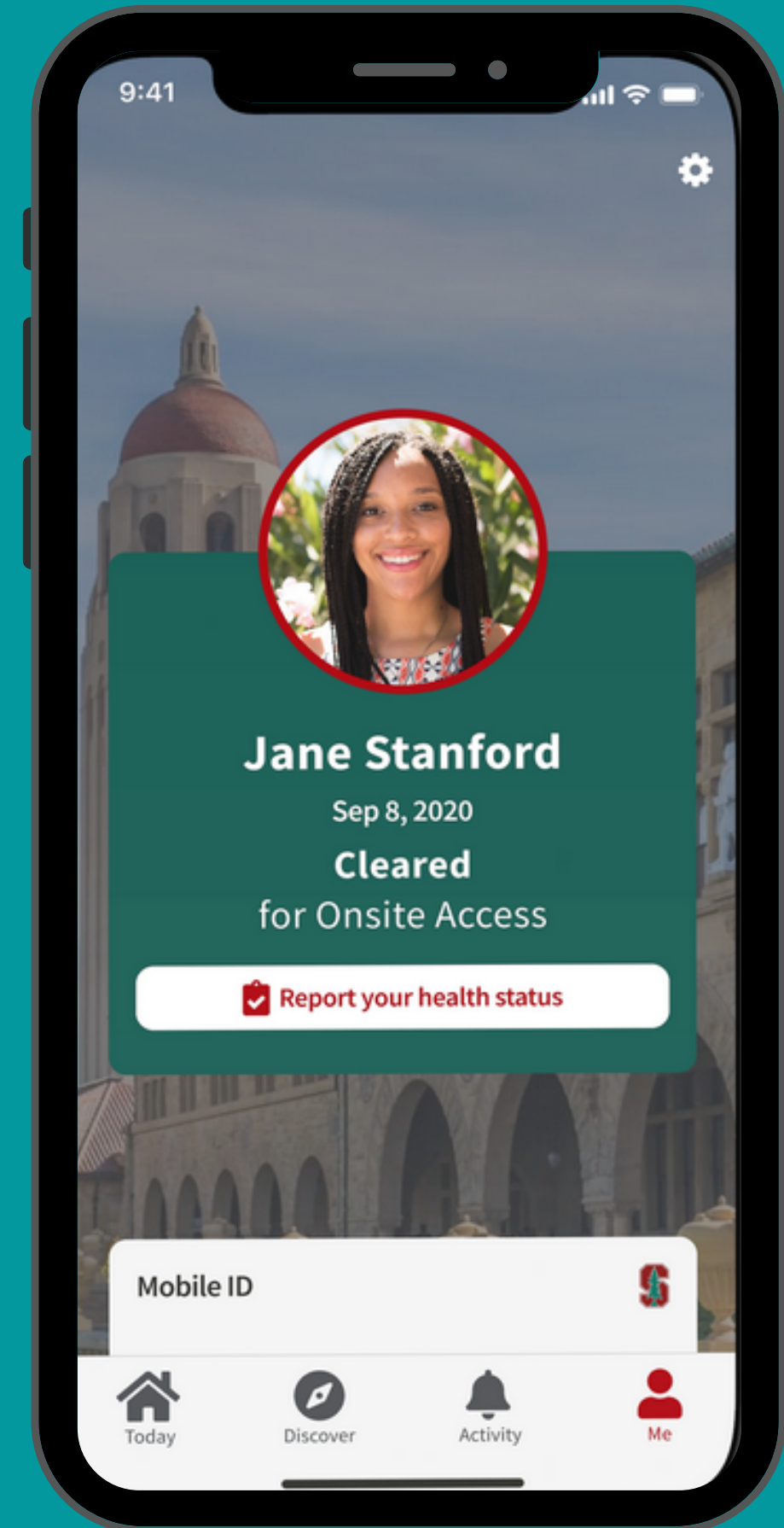
1 University of Central Florida

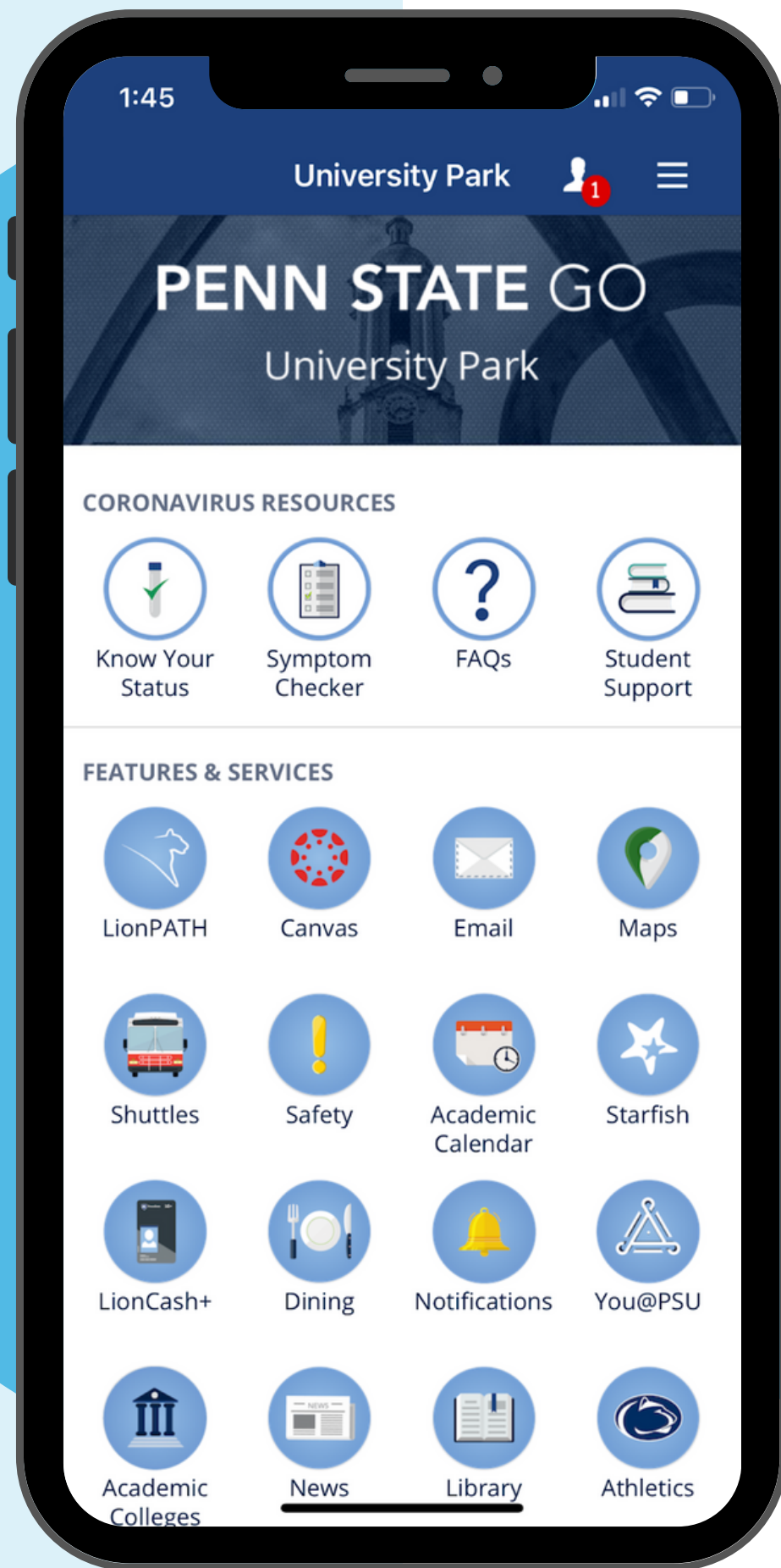
2 Penn State



Competition

- 1 University of Central Florida
- 2 Penn State
- 3 Stanford





PENN STATE GO

- Met with Penn State IT Department
- Provided design and MODO information
- Penn State Worked with UCF to implement current app design
- Takeaways:
 - Marketing the app is crucial
 - Survey students, always get feedback
 - Collaborate with other colleges

Alternatives

Student tools incorporated into the prototype

1

WPI Hub

- Centralized hub
- Personalized dashboard

2

Bannerweb

- Primary portal for student related information
- Primary portal for course info

3

Canvas

- Course material
- Platform to connect with peers and professors

4

TechSync

- Information about clubs and organizations
- Access to forms and events

5

WPI Instagram

- Connection through social media
- Informative for different types of viewers

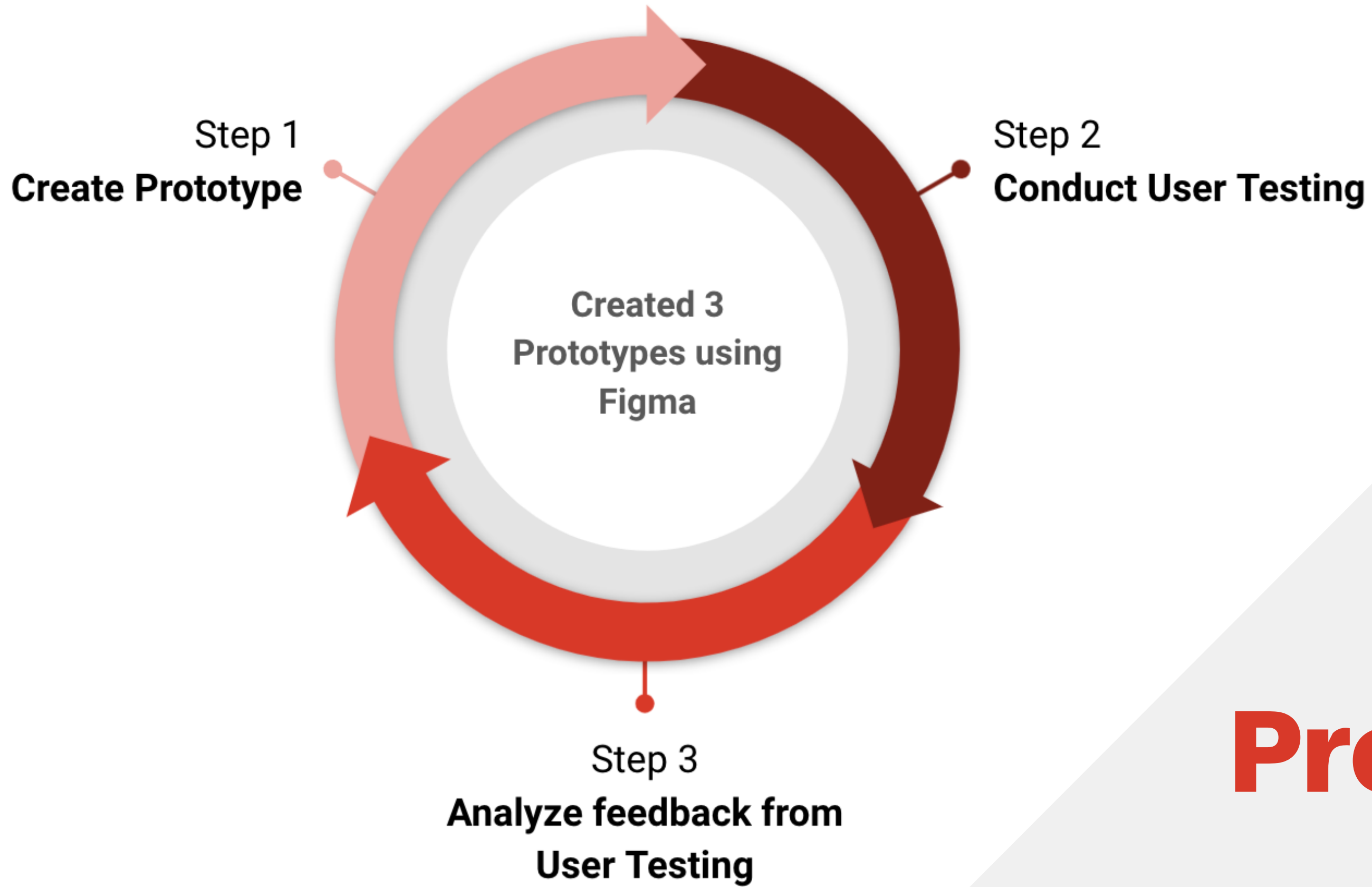
6

WPI Webpage

- Information regarding WPI and its programs
- Targeted for all types of audiences

Prototyping & User Testing

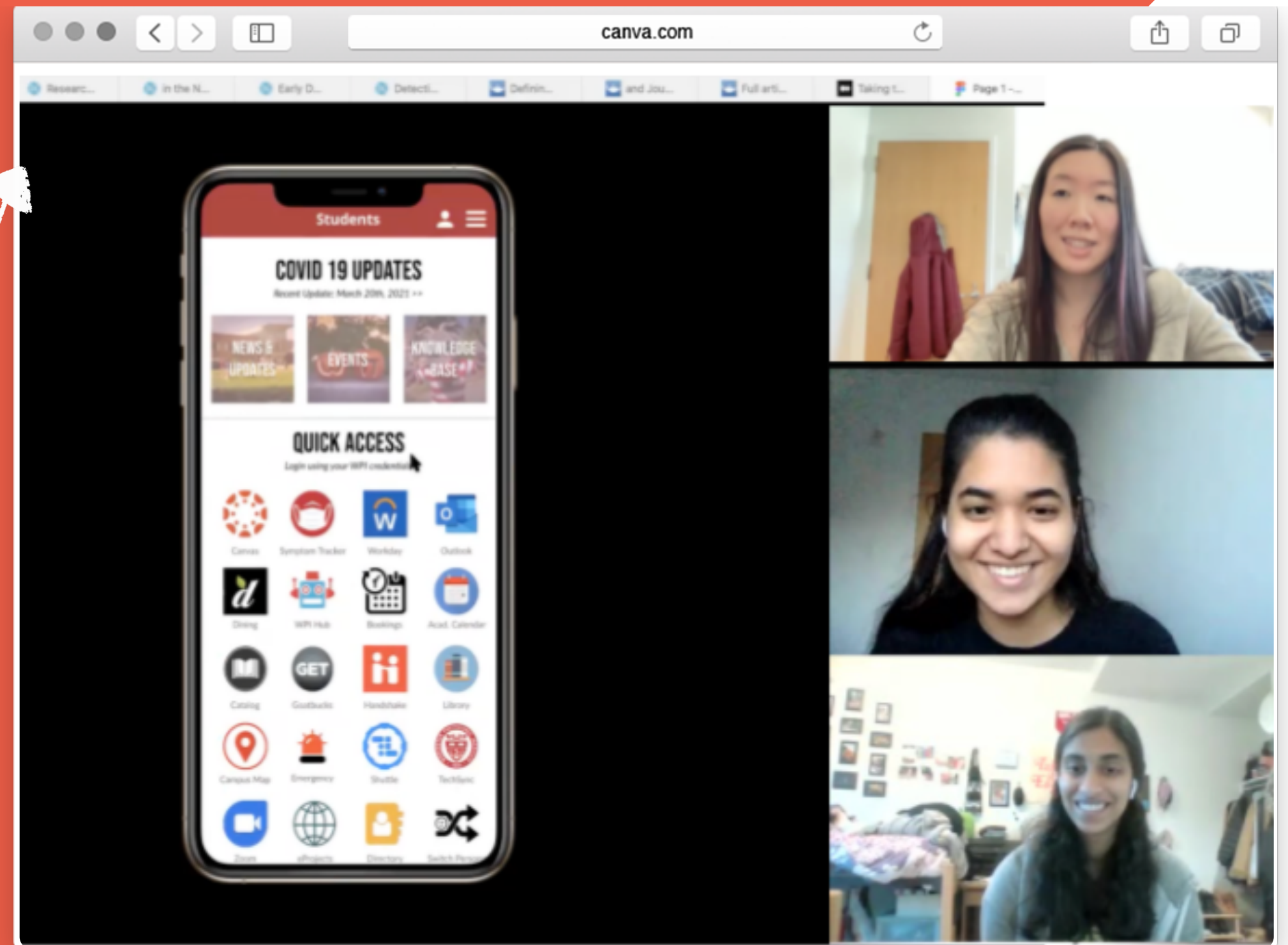




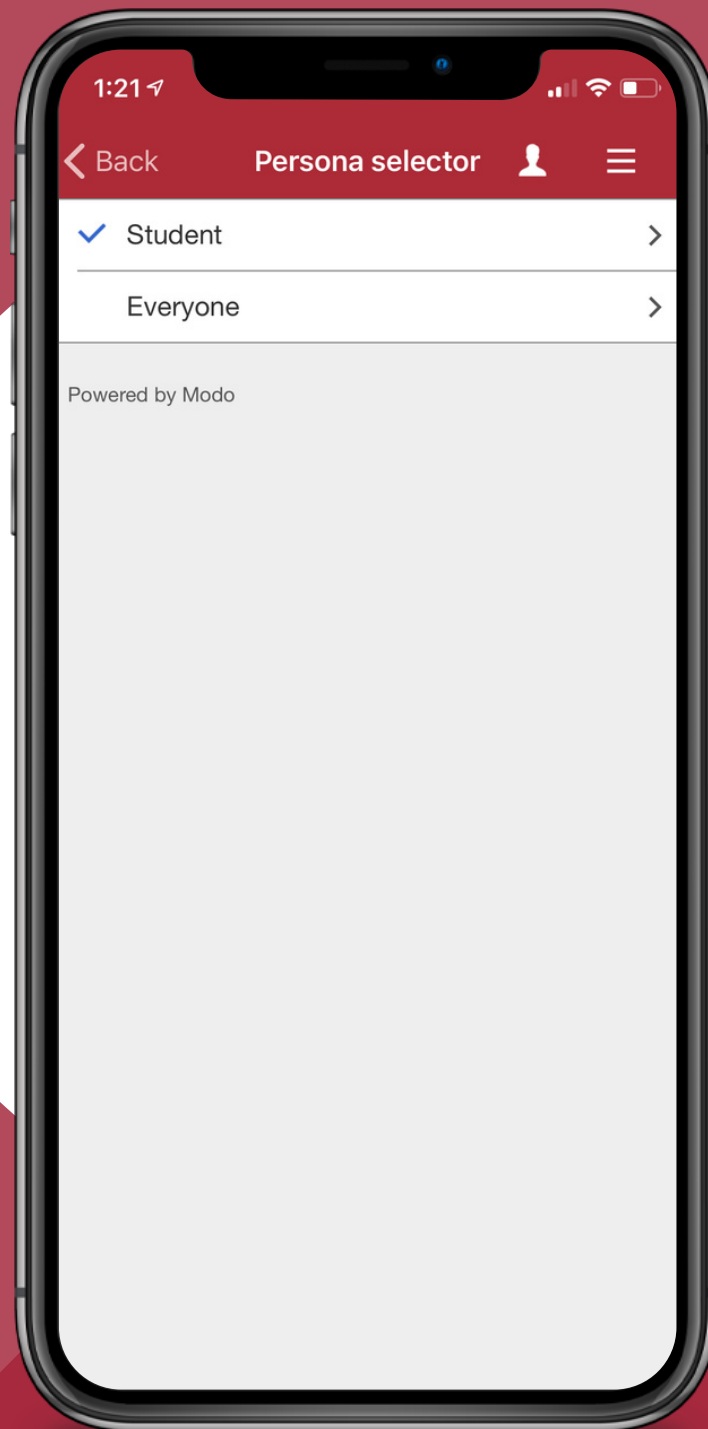
Prototyping

User Testing

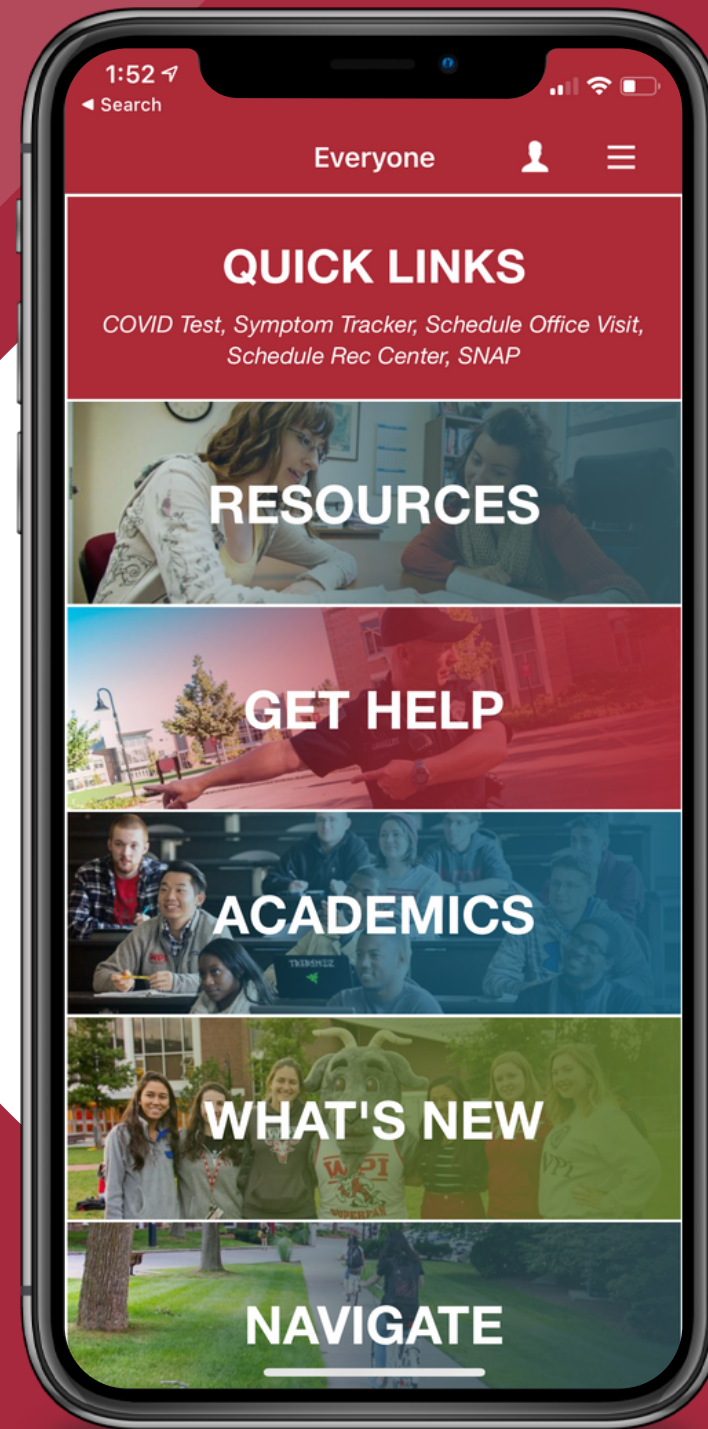
- Conducted 2 rounds of user testing over zoom (20-30 minutes)
- Procedure:
 - Asked the participant to complete tasks
 - The participant would think-out-loud while completing the assigned tasks
 - Conclude the session with follow-up questions about the overall experience
- Two-person approach



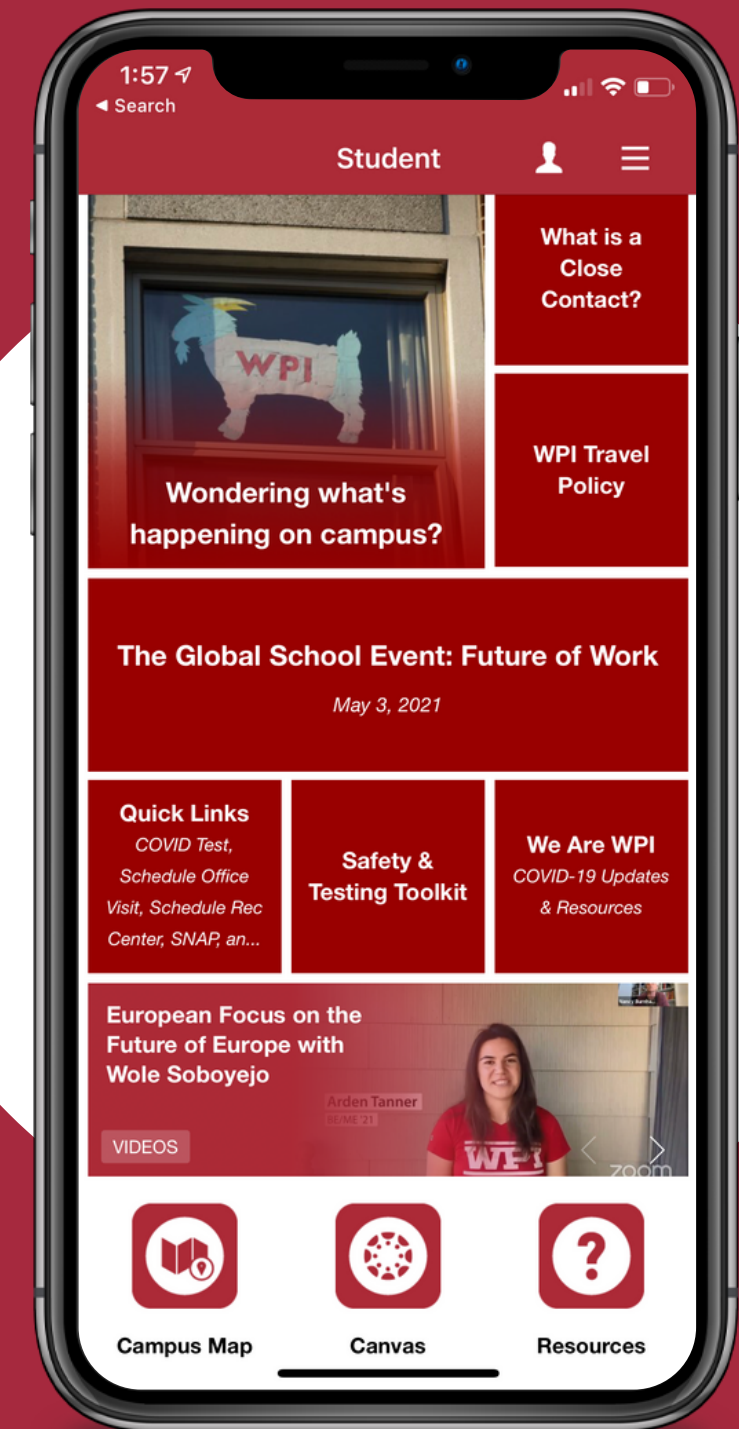
CURRENT WPI APP



PERSONA SELECTOR

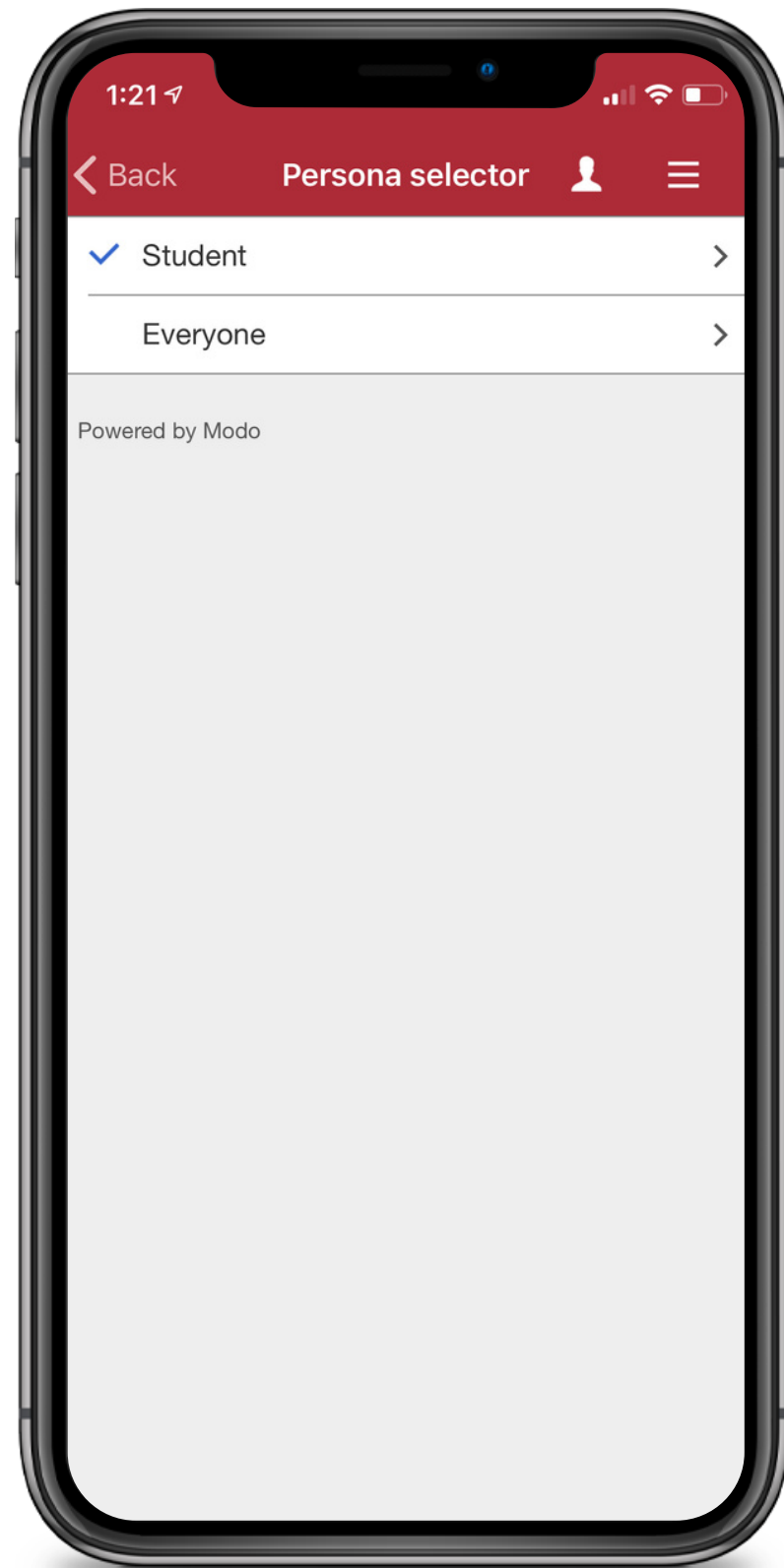


EVERYONE HOME



STUDENT HOME

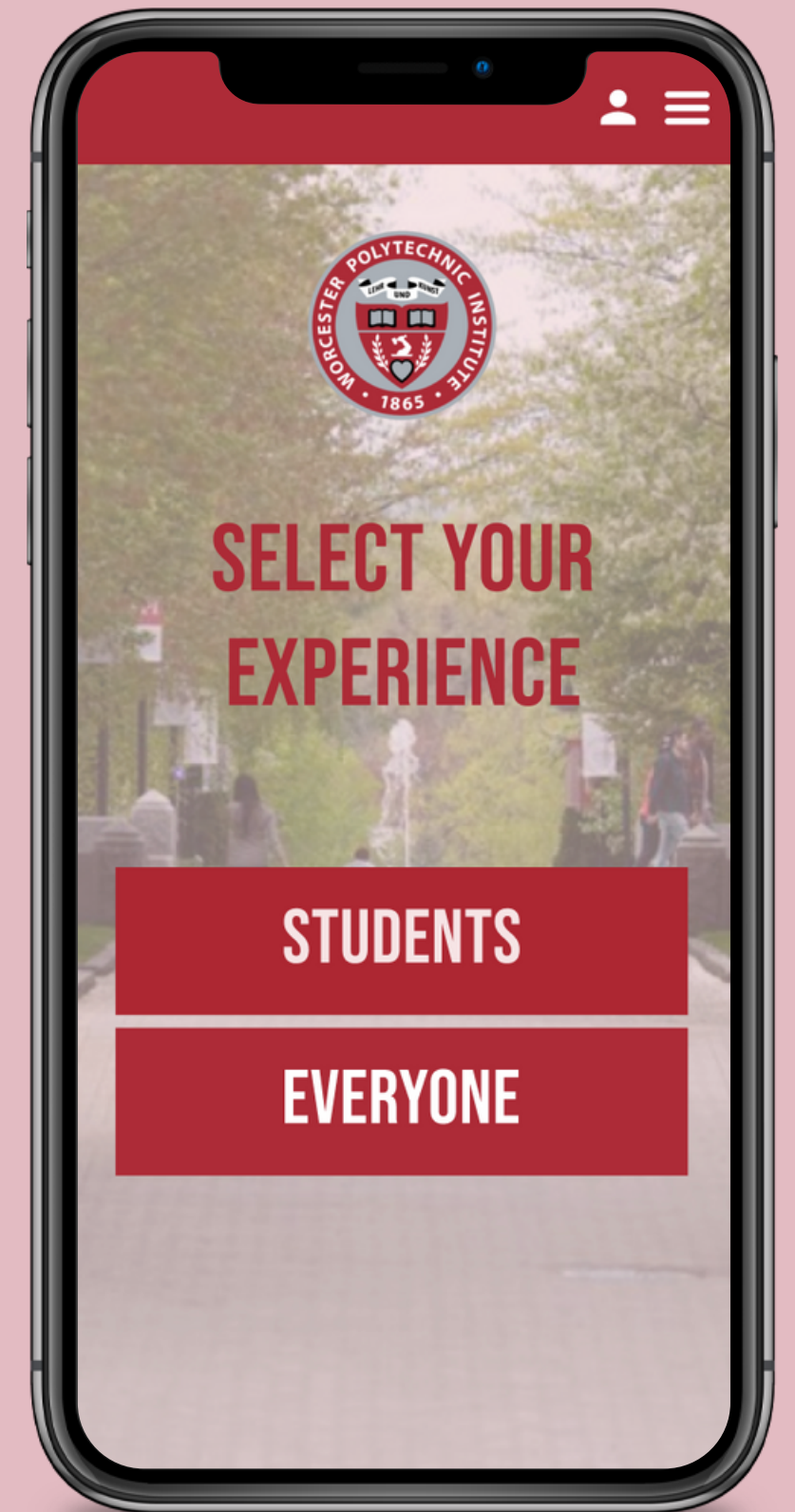
Prototype #1



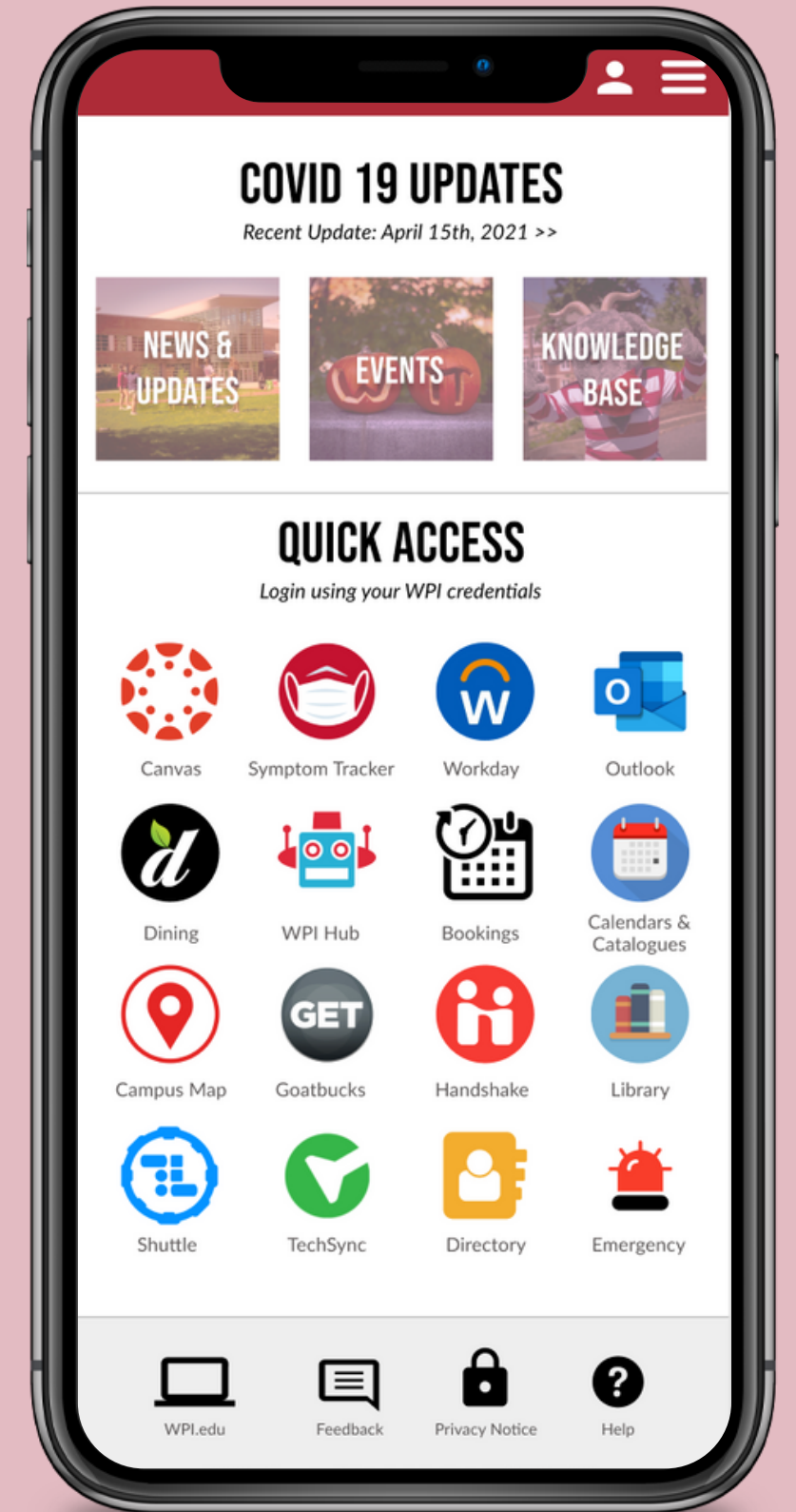
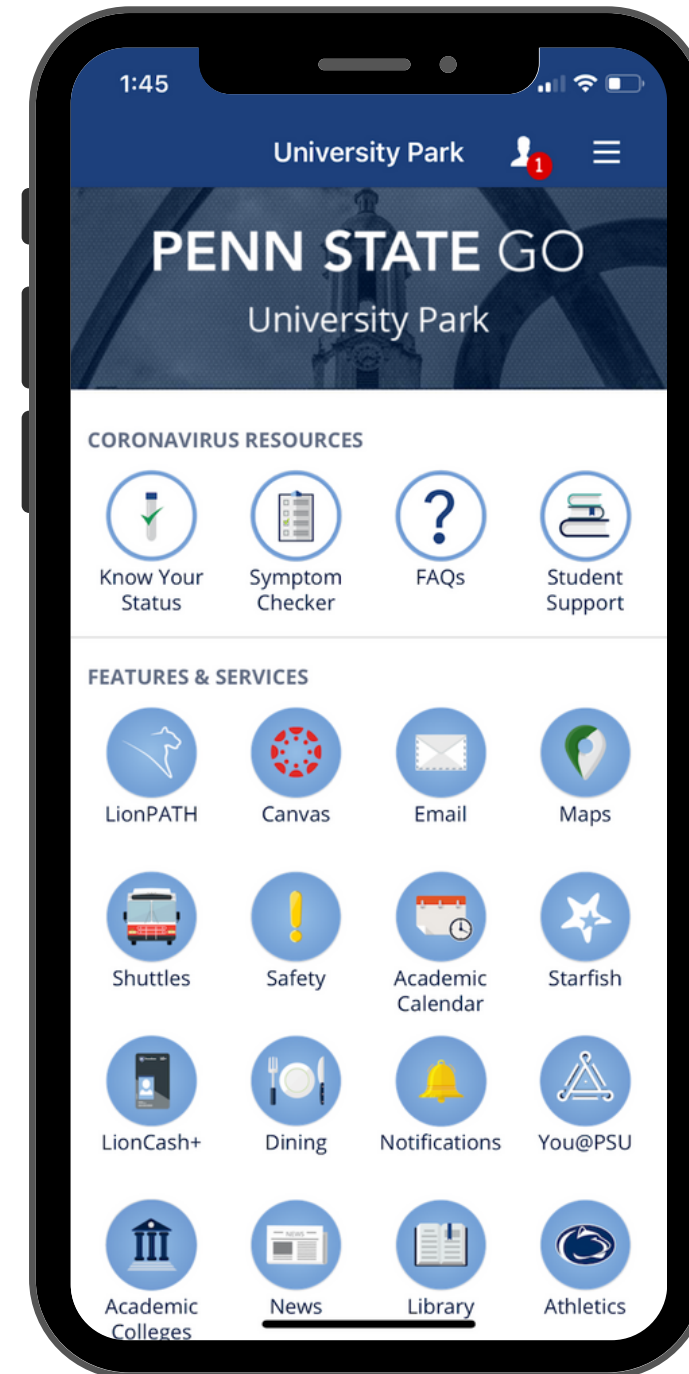
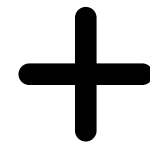
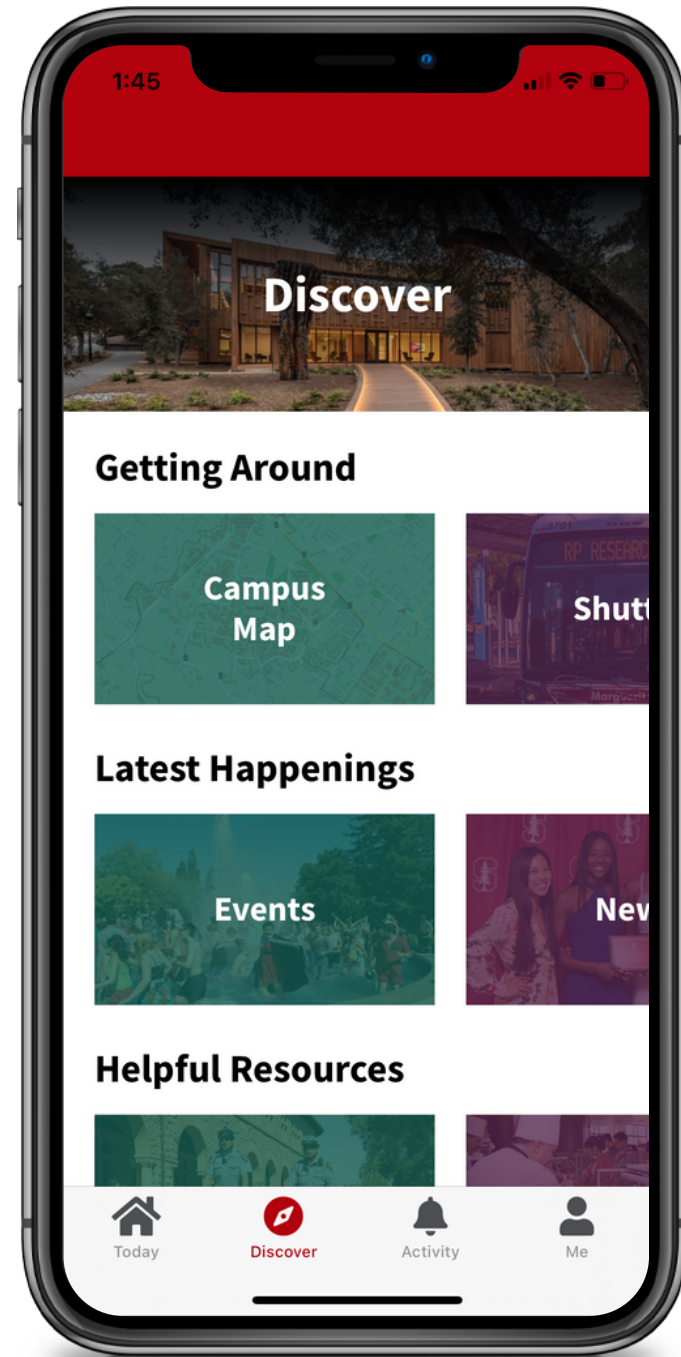
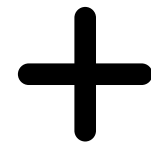
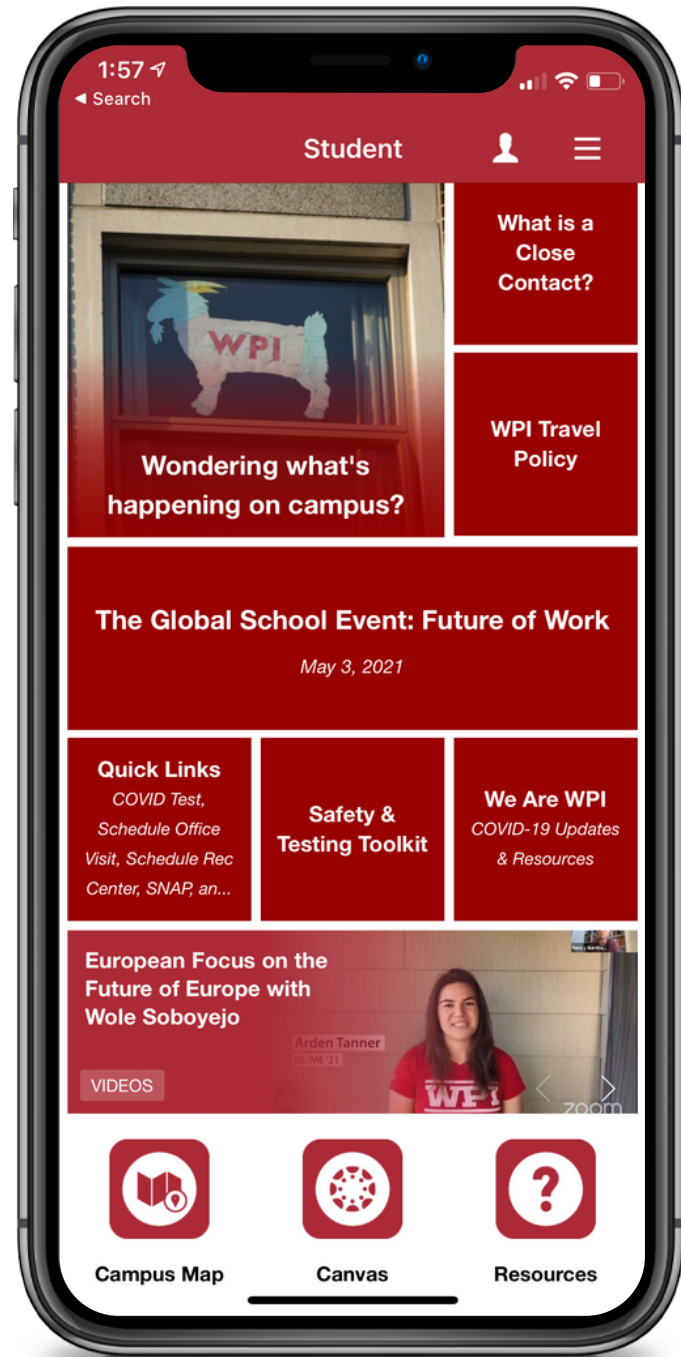
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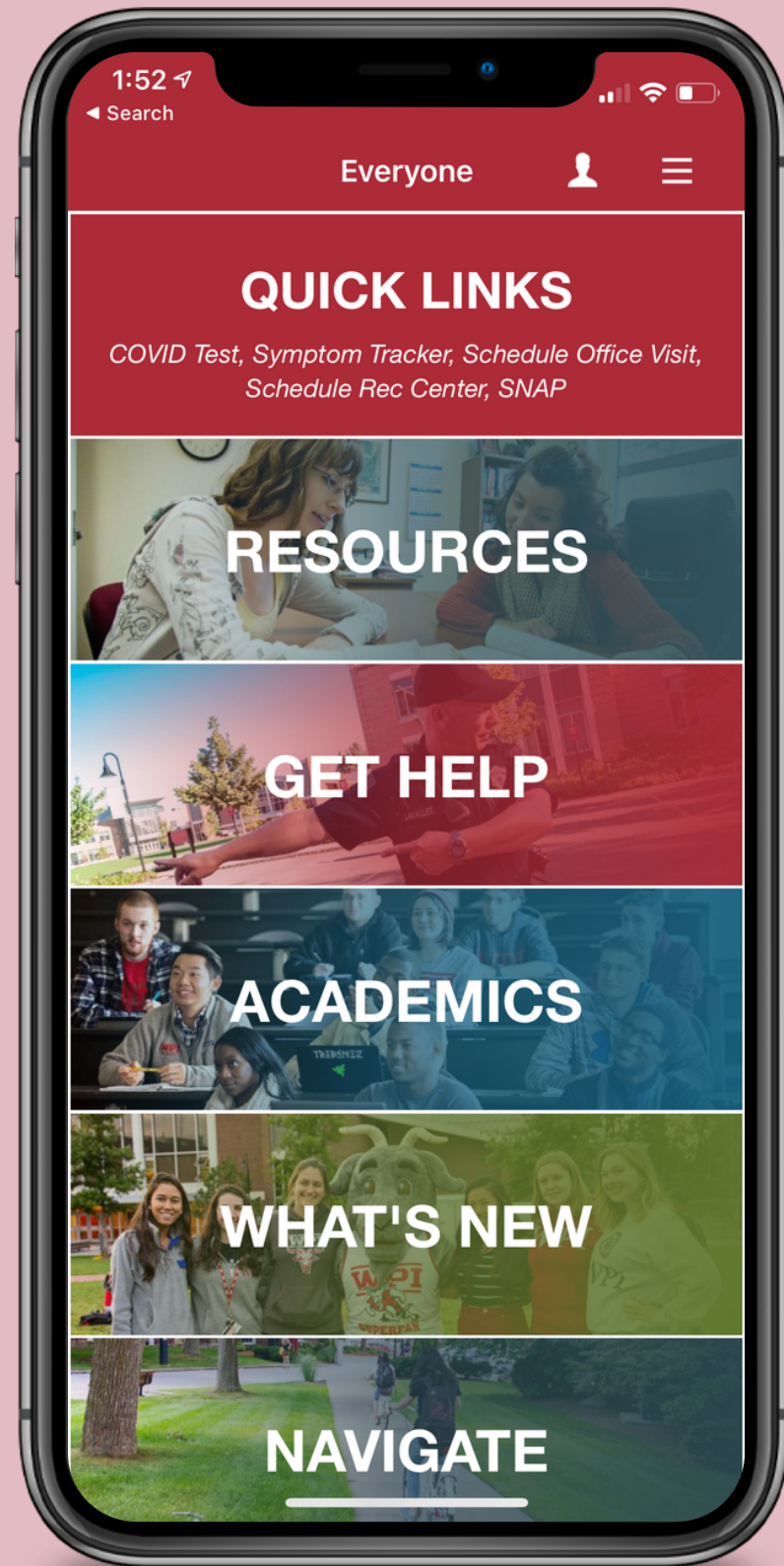
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Prototype #1



Prototype #1



User Testing Round #1

9/10

Student Persona

Student Persona strengths:

- **Quick access** links
- **Bookings** feature most popular

4.4/10

Everyone Persona

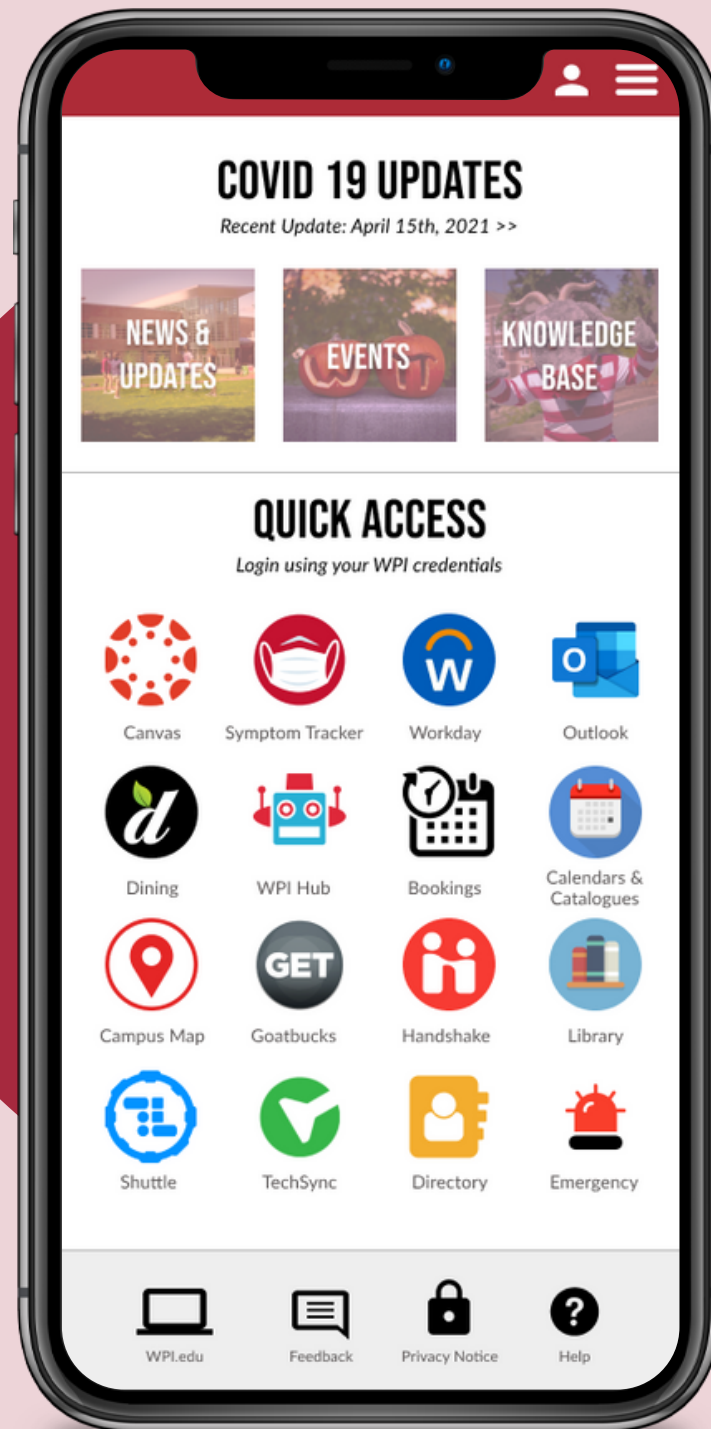
Student Persona weaknesses:

- **Overwhelming** menu
- **Inconsistent** icons

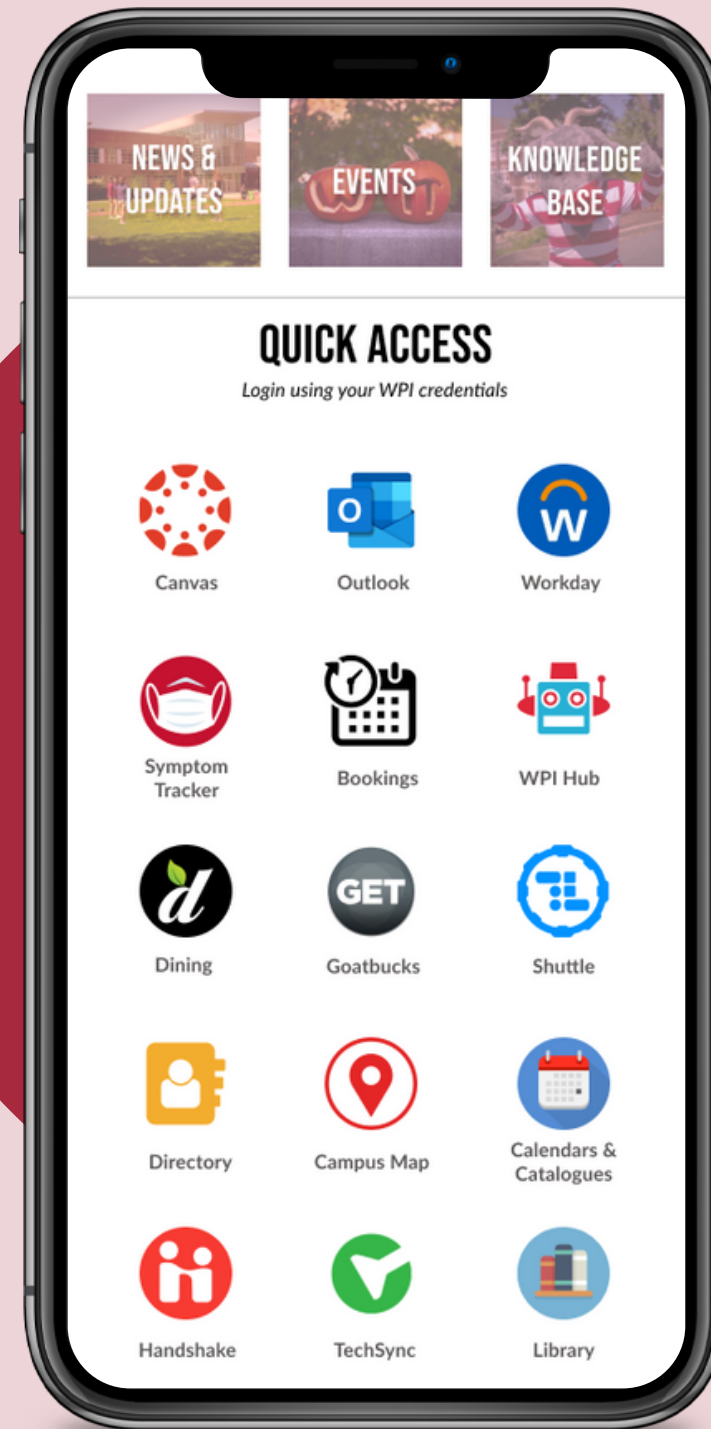
Everyone persona weaknesses:

- **Confusing** labels
- **Lack** of dynamic content

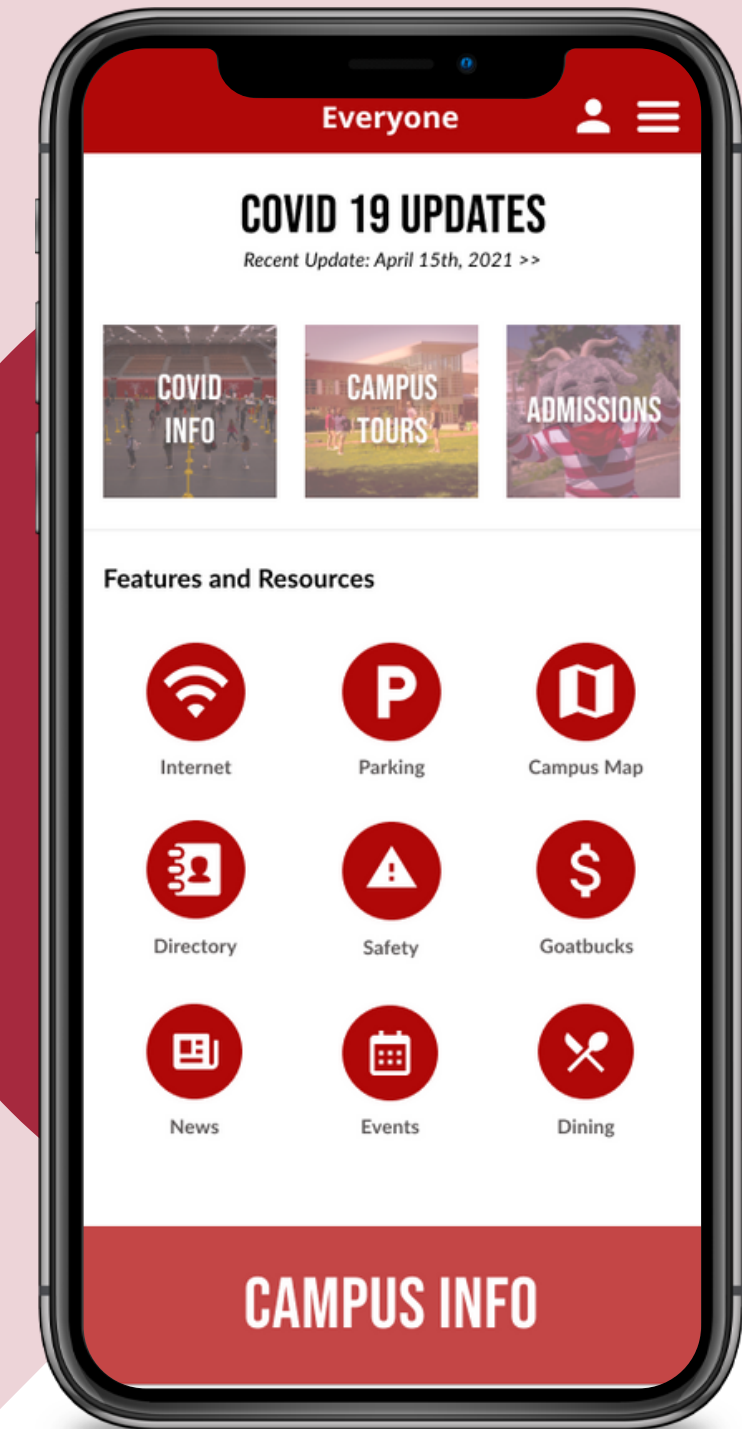
PROTOTYPE #2



STUDENT HOME #1



STUDENT HOME #2



EVERYONE HOME

User Testing Round #2

Student persona strengths:

- **Quick access** links
 - Bookings, dining, symptom tracker, calendar

Student persona weaknesses:

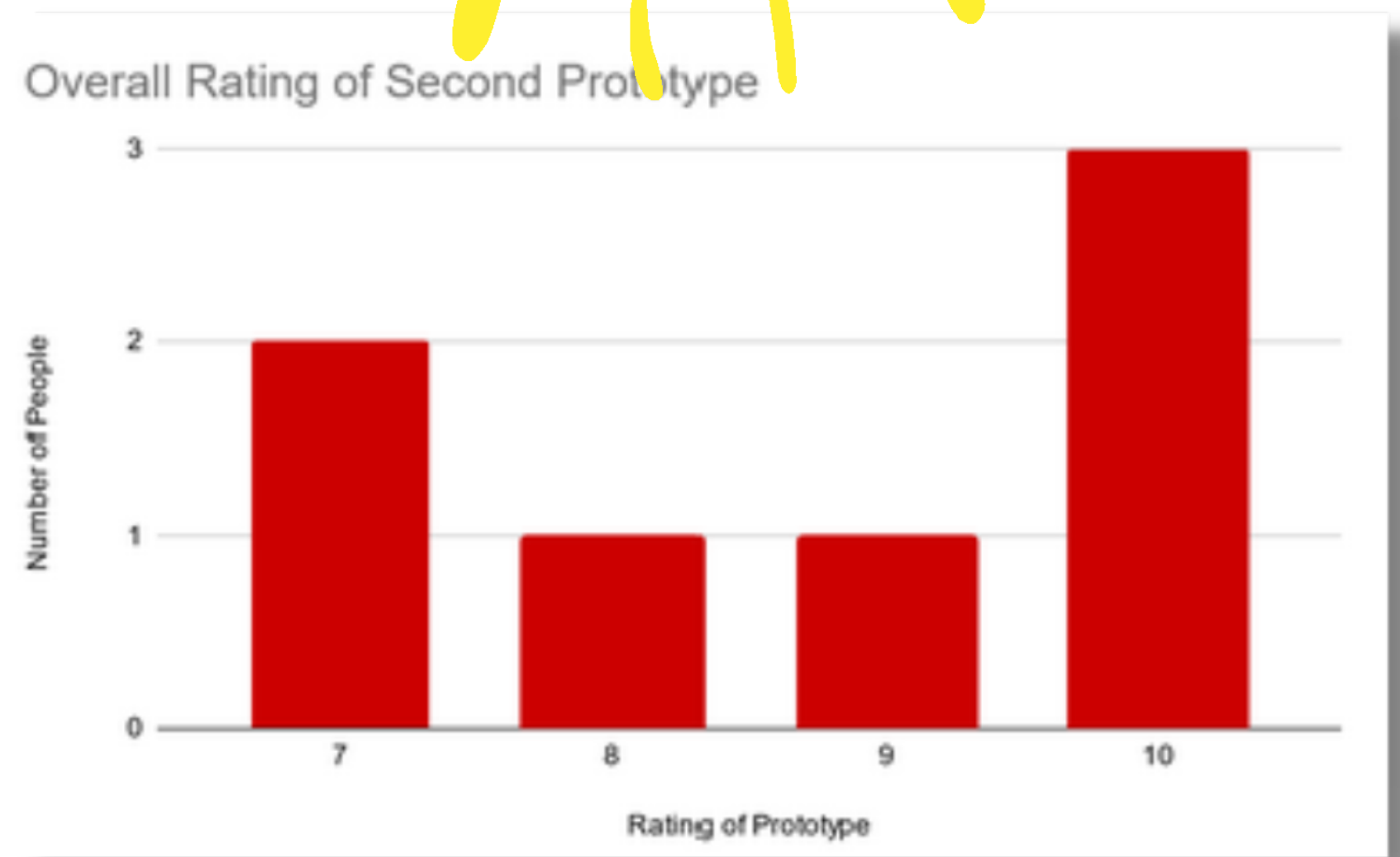
- **Canvas, outlook** integration features

Everyone persona strengths:

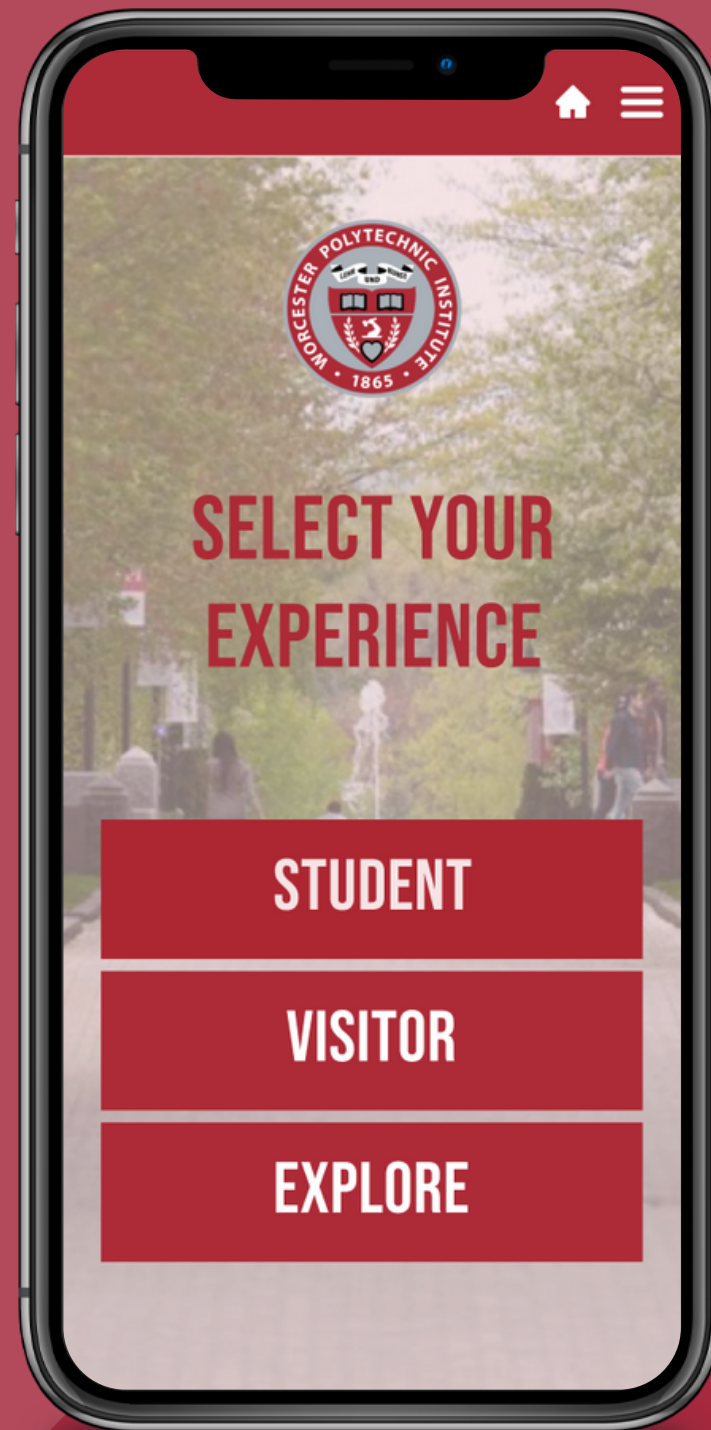
- **Useful** features
- **Consistent** icons
- **Easy** navigation

Final Prototype Rating:

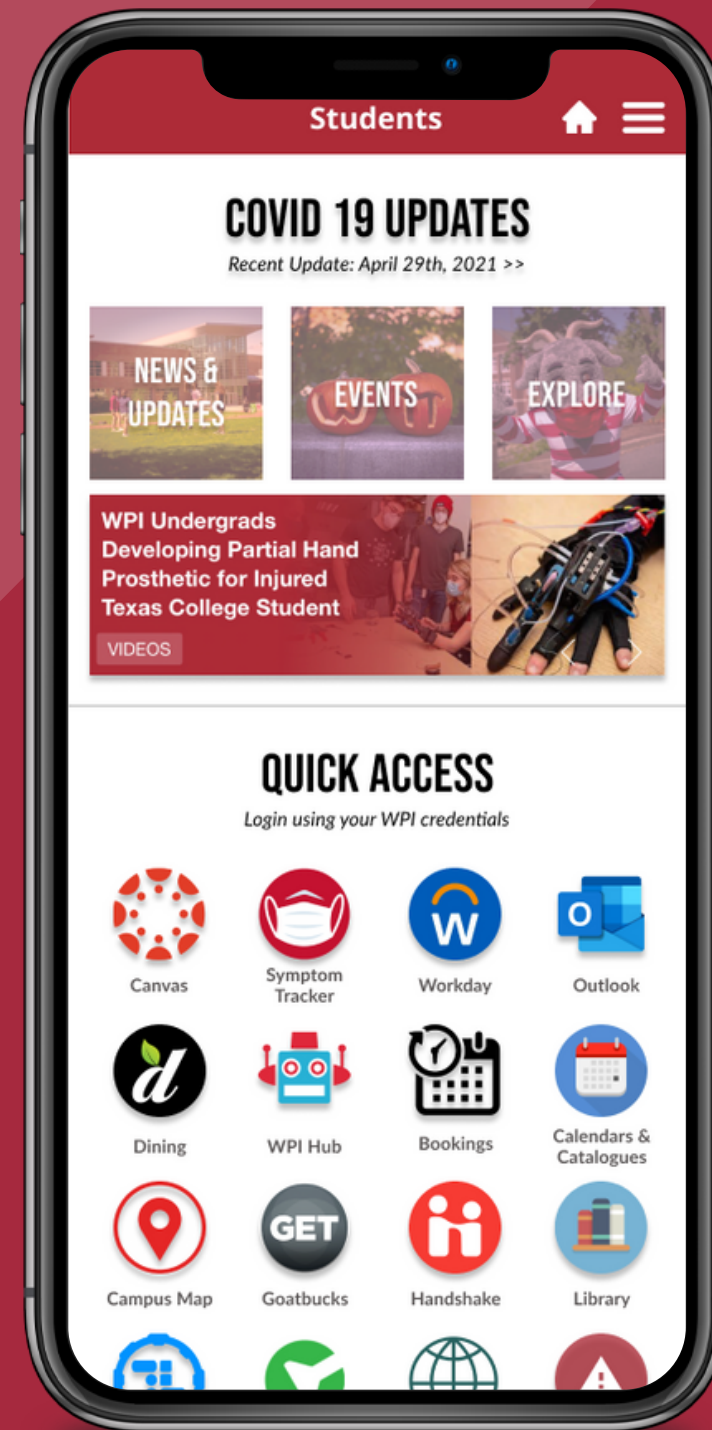
8.8/10



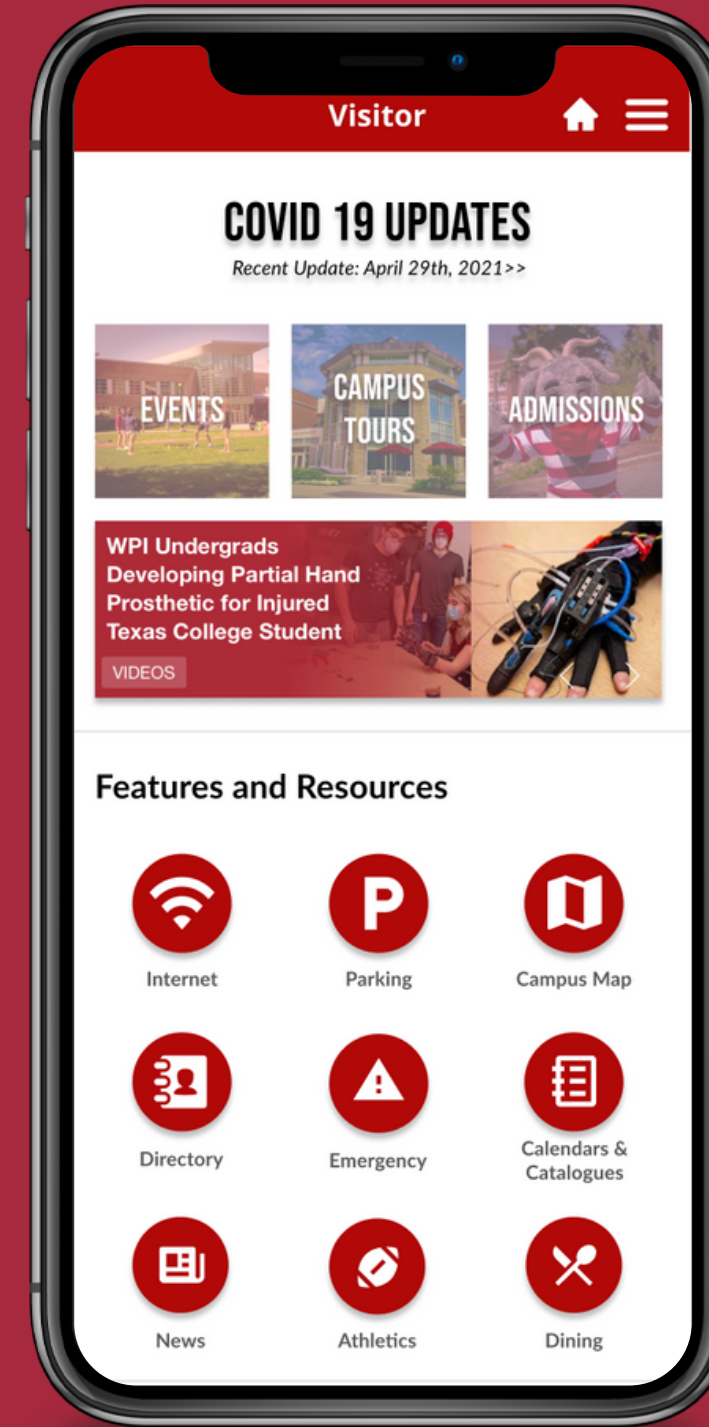
PROTOTYPE #3



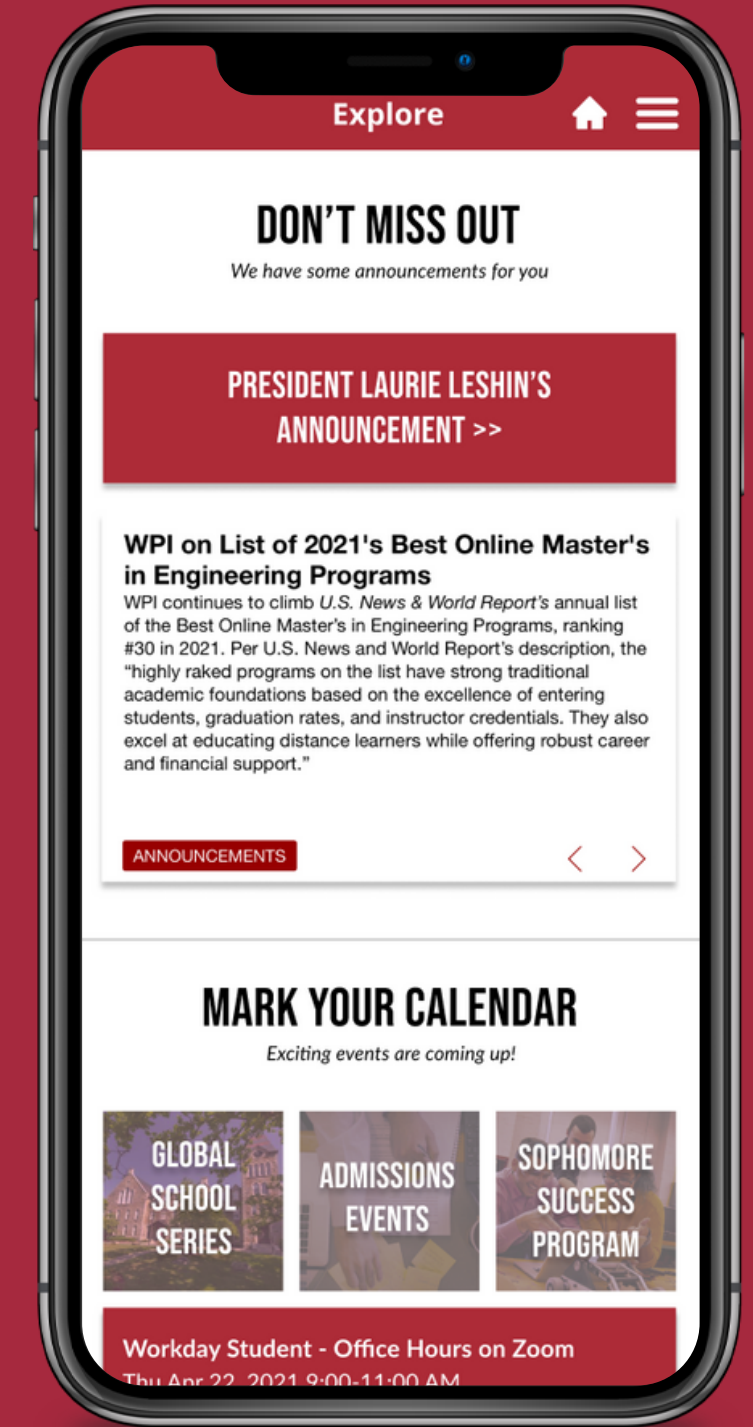
PERSONA SELECTOR



STUDENT HOME



EVERYONE HOME



EXPLORE PAGE

Benefits



Benefits

01	QUICK ACCESS	3 seconds to access any student resource
02	VISITOR EXPERIENCE	An enriched experience tailored for WPI visitors
03	EFFICIENT MARKETING	Advertise in style on the app's new Explore Page
04	STUDENT SATISFACTION	WPI students rate this app an 8.8 out of 10

Future Extensions

Design Changes

- Implementing prototype designs into Modo
- Using features accessible through other Modo packages

Adding Personas

- Implementing prototype designs into Modo
- Adding and modifying personas for major events

Marketing Material

- Generating marketing material to attract more users
- Utilizing social media more for advertising

Leveraging Data

- Predict user actions
- Targeted ads and marketing material

Advanced Features

- Laundry tracking
- Social media platform
- Study spaces and groups

+

Presenting

+

Networking

+

Project
Management

Things we learned....

**Let's make this app
the fabric of
WPI student life**



Thank you very much!

It was an honor working with you.