

# A.S.B.A.S. Tech - ConnectOne

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## Technical Documentation

Github URL: [https://github.com/Superme-Abdiwahid/ASBAS\\_Tech](https://github.com/Superme-Abdiwahid/ASBAS_Tech)

Presentation URL: [Final Presentation](#)

## Introduction

This comprehensive documentation of our application, designed to provide a thorough overview of the architecture, functionalities, and user interactions facilitated by our software. This documentation serves as a vital resource for developers, stakeholders, and any future groups who decide to continue this project who join the project, ensuring that all aspects of the application are clearly understood and easily accessible.

Our application is built on modern web technologies, leveraging React for its responsive and dynamic user interface, and using media queries in order to produce a mobile view and integrating robust authentication solutions for secure user management. Our initial plan for our application aimed to enhance user engagement through personalized experiences, which are crafted based on user preferences and interactions.

The purpose of this documentation is to detail the specific components that make up our application, describe their interactions within the larger system, and explain the underlying logic and state management. Each component documented here plays a crucial role in the application's functionality, from user sign-up and profile management to content creation and interactive discussions.

As you navigate through this documentation, you will find descriptions of each component, including their purpose, functionality, and the interdependencies that link them to other parts of the

application. This report is structured to provide both high-level overviews and detailed descriptions, facilitating a comprehensive understanding of the application's architecture and operational flow.

We hope this documentation proves to be a valuable tool for enhancing your understanding of the application and assists in future development, maintenance, and scaling efforts.

## Problem Context:

- 30% of college students are first generation.
- About 67% of participants who were first generation college students have said they lacked confidence when it came to their education
- About 80% of first gen students have admitted to facing imposter syndrome.
- This has led to more drop outs as well as these students progressing and making achievements in their academics

## Problem Statement:

How might first-generation college students who often lack confidence and face limited support systems overcome specific academic challenges during their transition to college so they can experience improved academic success within their grades, class selection and career path.

# Key Research & Findings

## Literature Review

Our literature review examines key factors of the influencing success and challenges faced by first-generation college students. It spans topics from socio-economic impacts, parental involvement, technological accessibility, to psychological factors like imposter syndrome.

- **Educational Disparities:** Research indicates that first-generation students face considerable obstacles related to lack of familial knowledge about navigating higher education, which affects their academic performance and stress levels.
- **Socio-economic Challenges:** These students often encounter financial hardships, which are exacerbated by a lack of awareness about available financial aids and scholarships.
- **Mental Health;** The pressures from these compounded challenges often lead to higher instances of mental health issues among first-generation students compared to their peers.

## Market Research

The Market Research documentation details our analysis of the competitive landscape and potential user demographics. It includes data we collected on market size, competitor strategies, consumer behavior, and potential market opportunities or threats. We conducted this research in order to identify existing solutions and gaps within digital platforms that are currently used to cater to college students, particularly those who are first-generation students.

- **Platform Analysis:** Several platforms like Handshake and LinkedIn are used extensively but often do not meet specific needs of first-generation students, such as mentorship and tailored guidance.
- **Feature Gaps Identified:** There is a need for features that facilitate better personalization and community building, as many existing services do not address the unique challenges faced by first-generation students.

## User Research

User research involved direct feedback from first-generation students, providing insights into their actual needs and experiences. By conducting a wide array of interviews, and surveys we were able to get a better understanding of what our target audience needed.

- Resource Awareness; Many students were unaware of the support services and resources available to them upon entering college, highlighting a gap in communication and outreach.
- Navigational Challenges: Students reported difficulties in navigating administrative processes and utilizing academic resources, pointing towards a need for more intuitive and informative platforms.
- Desired Features; Feedback indicated a strong desire for features that support social connections, academic planning, and stress management.

### Demo Video:

<https://drive.google.com/file/d/1V1MG5qw-VLt1MdZKLdHyIzYqoqtM583-/view?resourcekey>

In our demo video, we highlight the core features of ConnectOne that are designed to support first-generation students on their academic paths. For example, our calendar feature is built around the idea that many learners struggle to keep track of deadlines. It allows them to enter tasks in their daily schedules so they can stay organized and meet them on time. In addition to this, we have included a reminder system that brings important dates such as FAFSA opening and closing days as well as other university deadlines that will prevent students from missing out on significant events which can relieve stress later in the long run. Another one of our key features is our discussion forums which not only serve as a platform to clarify questions but also foster a sense of community among students that are going through similar challenges. This community aspect is crucial for the success of first-generation college students, as it promotes collaboration and support.

# Minimizing Scope

After much careful consideration, we made a strategic decision to refine and narrow the scope of our project in order to target iSchool students. The focus of this decision was to improve user engagement and functionality by three core features: a comprehensive calendar, an easy home page with notifications for the main events; and a strong event page.

This adjustment in scope, while a deviation from our initial expansive design, aligns seamlessly with the objectives we established in our problem statement. By concentrating on these key areas, we ensure that the project remains manageable and relevant to our target audience.

The decision to streamline our focus was primarily influenced by time constraints—an obstacle we anticipated during our project's planning stages. This proactive approach allowed us to allocate our resources more efficiently, ensuring that we deliver a polished, functional, and user-centered product within the available time frame.

## Personas

These are our detailed personas of first-generation college students, illustrating typical user profiles that will guide the development of tailored support solutions. Each persona is created to highlight unique challenges and aspirations that shape their college experience.

### **Sarah - First Generation College Student**

Basic Information:

- **Year:** Freshman
- **Residence:** Lives on campus
- **Age:** 18 years old
- **Major:** Biology

## **Her Story**

Sarah is a first year college student majoring in biology, she is also the first of her family to attend college. Living on campus has been both an adventure and a challenge for Sarah. Juggling a demanding class schedule, extracurricular activities, and part time work while staying in the campus dorms adds an extra layer of complexity to her college experience. Sarah often feels the weight of uncertainty regarding class selection and study group formation with her hectic schedule.

As a first generation student without familial guidance, the on campus environment provides a mix of opportunities for social connection but also comes with challenges in navigating resources. Sarah's main goal is to streamline her college experience, improve her academic performance, and build a strong social network that goes beyond just academics which will enhance her overall sense of belonging and success.

## **Goals and Needs**

- **Social Integration:** Enhance her social network to feel more connected and supported.
- **Resource Navigation:** Improve her ability to access and utilize college resources efficiently.
- **Academic Success:** Develop a structured academic plan that alleviates uncertainties about class selection and study habits.

## **Jason - First Generation College Student**

### Basic Information

- **Year:** Freshman
- **Residence:** Lives off campus
- **Age:** 18 years old
- **Major:** Computer Science

### **His Story**

Jason is a first year college student pursuing a computer science degree and proudly representing the first generation in his family to pursue higher education. Living off campus comes with its own set of challenges for him as he navigates the difficulties of commuting while adapting to college life. Him not being that connected with the on campus community comes with difficulties in forming study groups and accessing resources readily available to those living on or around campus.

Jason wants to adapt seamlessly to college life, excel academically, and also build a support system that aids the unique challenges faced by first generation students. Living off campus does add an additional layer of complexity to Jason's college experience, influencing his class selection, study group structure, and the overall sense of community that he wants to establish. Jason's goal isn't just individual success but to lead by example for future generations in his family, providing a structure for improved academic success, confident class selection, and a clear career path that breaks the cycle of limited support systems.

### **Goals and Needs**

- **Campus Connection:** Bridge the gap between off-campus living and on-campus engagement.
- **Support System:** Build a support network that caters specifically to off-campus first-generation students.

- Leadership and Legacy: Establish a successful academic and social pathway that can serve as a model for his peers and future family members.

## Current Solution Approach / Key Features

Our platform provides a comprehensive solution designed to enhance the academic and social experience of students at the iSchool. By integrating essential features such as a calendar, visual schedule, important reminders, and a dynamic events page, the platform serves as a central hub for student planning and engagement.

### **Key Features**

#### **1. Calendar and Visual Schedule**

- **Functionality:** The calendar feature offers a visual representation of the student's monthly schedule. It allows students to view their academic and personal commitments in a clear, organized manner.

#### **User Benefits**

- **Ease of Planning:** Students can easily add, edit, and track their classes, meetings, and events.
- **Visual Clarity** The visual layout helps in better time management by providing a snapshot of daily, weekly, and monthly activities.

#### **2. Important Reminders**

- **Functionality:** Integrated into the calendar are important reminders that help keep students aware of critical deadlines and upcoming commitments.

#### **User Benefits**



- Stay Informed: Ensures that students do not miss important deadlines such as assignment submissions, exam schedules, and registration dates.
- Custom Alerts: Users can set custom reminders for personal tasks, enhancing their organizational efficiency.

### **3. Announcements Page**

- Functionality: This dedicated page displays timely announcements and important reminders specifically regarding the iSchool.

#### **User Benefits**

- Centralized Information: Provides a centralized location for all school-related announcements, making it easier for students to stay informed about faculty meetings, program changes, and special events.
- Engagement: Encourages students to participate more actively in school events by keeping them updated with the latest information.

### **4. Events Page**

- Functionality: The events page lists upcoming events and opportunities for students to get involved and connect with peers.

#### **User Benefits**

- Community Building: Helps build a sense of community by facilitating participation in school and student-led events.
- Networking Opportunities: Provides a platform for students to find and attend networking events, workshops, and social gatherings, enhancing their educational and professional development.

# User Testing and Validation

## **User Validation Methodology**

User validation involved several first-generation college students who provided feedback on the prototype. The process aimed to capture initial reactions and gather insights on usability, aesthetics, and functionality through structured interviews and direct interaction with the application.

## **Key Insights from Validation**

The validation process offered deep insights into user expectations and areas for improvement:

- **Design and Interface:** Users liked the visual appeal but suggested improvements in the user interface to make navigation smoother and more intuitive.
- **Functionality Requests:** There was a strong call for features that support better personalization, such as private messaging and customizable folders for resource organization.
- **Social Connectivity:** Many users expressed a desire for enhanced social features, such as group chats or forums, to connect with peers in a more engaging way.

## **User Testing Methodology**

User testing followed the validation phase and involved several tasks where participants interacted with various features of the application. The methodology focused on observing ease of navigation, potential issues, and gathering both qualitative and quantitative feedback.

## **User Feedback Summary**

Participants provided feedback on various aspects of the application:

### **Positive Feedback**

- Users generally appreciated the clean design and intuitive layout of the application.
- Features such as the calendar and search functionalities were highlighted as particularly useful.

### **Reported Issues**

- Some users encountered bugs related to page routing and errors when expected search results were not found.
- Suggestions for more customizable privacy settings and content categorization to improve user experience.

### **Ideas for Improvement**

Based on user feedback, several enhancements are proposed:

- Enhance User Interface: Streamline the design elements and improve error handling to provide clearer feedback during unsuccessful actions.
- Expand Features: Integrate a private messaging system and develop more robust group interaction capabilities.
- Fix Bugs: Address all identified technical issues to ensure reliability and improve user satisfaction.

### **Development Constraints**

Given the amount of time allotted for development, not all the desired features and improvements can be implemented immediately. The development team will prioritize modifications that provide the most significant impact on usability and user satisfaction, with plans to gradually introduce additional features in future updates leaving our project open sourced.

# Ethical Considerations

## **Accessibility**

- To ensure that the platform is fully accessible to users with disabilities, complying with ADA (Americans with Disabilities Act) standards and other relevant guidelines.

## **Actions**

- Implement accessibility features such as screen reader compatibility, keyboard navigation, and text-to-speech functionality.
- Conduct regular accessibility audits using both automated tools and feedback from users with disabilities to identify and address potential issues.
- Provide training to development teams on accessibility standards and inclusive design principles.

## **Resource Accuracy and Quality**

- To maintain the highest standards of accuracy and quality in the resources provided on the platform to ensure they are trustworthy and reliable.

## **Actions**

- Establish a rigorous vetting process for all content before it is published, involving expert review and verification.
- Regularly update the resources to reflect the latest research, policy changes, and educational methodologies.
- Implement a feedback mechanism that allows users to report inaccuracies or outdated information, ensuring prompt responses and adjustments.

# Next Steps Beyond Capstone

As our capstone project nears completion, we are preparing to transition the project to an open-source model. This strategic move will allow us to continue developing the application with the help of a broader community. Embracing open-source principles not only fosters innovation and collaboration but also accelerates the enhancement and scaling of our application designed for first-generation college students.

## Goals for Open Source Transition

- **Community Engagement:** Cultivate a community of developers, designers, educators, and students who are passionate about improving the educational experience of first-generation college students.
- **Continued Innovation:** Leverage the diverse ideas and skills within the community to introduce new features, improve functionality, and address user feedback more efficiently.
- **Sustainability:** Establish a self-sustaining model where the project continues to grow and evolve through community contributions, without the need for constant oversight from the original developers.

## Action Plan

### 1. Prepare for Open Source & Launch

- **GitHub Repository:** Launch the project on a platform like GitHub to make it easily accessible to potential contributors.
- **Outreach Campaign:** Use social media, academic networks, and open-source communities to promote the project and attract contributors.
- **Initial Contributions:** Encourage initial contributions by identifying and tagging 'good first issues' to help new contributors start easily.

### 2. Build the Community

- Mentorship Programs: Establish mentorship programs to guide new contributors through the development process and foster a sense of community.
- Regular Updates: Maintain regular communication with the community through newsletters, forums, and social media to keep contributors engaged and informed.
- Community Events: Organize code sprints, hackathons, and meetups to encourage active participation and collaboration.

### 3. Long-Term Development

- Feature Roadmap: Develop a roadmap of future features and improvements based on user feedback and community suggestions.
- Quality Assurance: Implement robust testing frameworks to maintain high standards of quality as the community grows.
- Feedback Loops: Set up mechanisms for users and contributors to easily provide feedback and suggest new features or improvements.

## **Conclusion**

This is what we hope to do, however by transitioning our capstone project to an open-source model represents a significant step towards creating a more inclusive, collaborative, and innovative development environment. If we halt development on our end, we hope to be able to pass on our project to another capstone group, or broader global community. We aim to ensure that the application continues to evolve in ways that meet the changing needs of first-generation college students, enhancing their academic and social experiences at college.