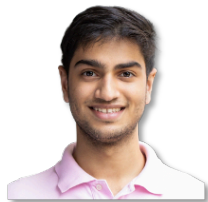


Campus Connect

Making group formations fair and efficient in education



Team Members: Arnav Aggarwal, Winnie Dong, Arnav Jhaveri, Heyi Liu, Nicky Wongchamcharoen

Faculty Advisors: Gad Allon, Stephanie Weirich

Executive Summary

Campus Connect makes group formations fair and efficient in an educational setting. It champions diversity, educational equity, and collaborative experiences. It allows students to meet new people and learn from their teammates' diverse backgrounds. Students are incentivized to be good teammates through peer-review scores that carry across classes.

Instructors or coordinators can make groups (dis)similar based on their desired features. Campus Connect can maximize objectives such as new connections across a student's total time on campus and not just for specific classes.

Campus Connect is sold to universities and integrates seamlessly with their existing infrastructure on Canvas and GitHub Classroom, among other platforms. It is aligned with higher education's liberal arts goal while preparing students for the workforce and promoting a strong alumni network.

Problem Statement

Collaboration is integral to education in the 21st century. The existing team formation methods reduce the diversity of thought, limit the ability of students to take different classes and promote short-termism through misalignment between students. As students, we experience this ourselves.

It is comfortable to do group projects with people you know. However, in the long term, it limits your ability to work in diverse teams and learn from others' experiences. Research shows that diverse teams are more creative and perform better. Lack of diversity in educational teams limits educational equity by restricting knowledge to certain groups.

Students find it stressful to form groups, making them hesitant to take new classes where they don't know anyone. Even after teams are formed, they face incentive problems. Individual students get the same grade as the whole group, creating a free-rider problem, especially for those taking the class pass/fail. Professors who try to help by creating random groups find it hard to do so as registration varies during the course shopping period. Professors currently use tools such as Google Sheets and Forms, which are not suited to the task and increase the risk to students' privacy.

Proposed Solution

Campus Connect matches students based on instructor-selected factors such as professional experience, skill levels, time zones, majors, backgrounds, etc. This ensures a balanced group composition while enhancing the education experience for both students and instructors. We address the free-rider problem by keeping track of peer-review scores. We take these scores into account when forming groups in future classes. The peer-review score uses a recency bias to limit long-lasting impacts while creating stronger contribution incentives. Campus Connect eliminates stress and uncertainty for students, particularly in larger or online classes where students may not know their peers.

Instructors design a survey targeting specific features relevant to group formation. They can prioritize features based on their relevance and importance to the course objectives. Instructors decide whether they

prefer the groups to be homogeneous or diverse. The data collected from the survey is inputted into our algorithm. Our proprietary matching algorithm uses a mix of cosine similarity and hamming distance as optimization metrics. We provide the professor with the best group options to choose from.

We integrate with Canvas as it is the market leader in higher education Learning Management Systems (LMS). Integration reduces switching costs by leveraging a familiar platform. We automatically create Canvas groups and suggest pre-filled templates to help create Canvas quizzes. At the end of the semester, we create a peer evaluation survey that updates student scores on the backend.

Stakeholder analysis: social impact

People are finding it harder to talk to someone different in a polarized society. The widening gap impacts our daily lives and reduces our ability to negotiate, compromise, and come to win-win situations. Education can promote communication and collaboration in a diverse environment.

Campus Connect promotes a diverse learning environment by fostering diversity of thought and experiences through calculated group formation. Students learn how to work and communicate with new people while utilizing their collective knowledge. Research shows that economic mobility and political ideology are linked to your social network. Campus Connect removes social barriers by linking different communities. For information restricted to certain communities, it forwards a university's objectives in breaking those barriers and making the pursuit of knowledge available to all.

Campus Connect creates an environment that is conducive to learning. Students' educational outcomes improve through motivated teams. They learn more and transfer that value to society. Campus Connect empowers instructors. It allows them to focus on what they love to do: teaching and research. Instructors produce more value through their research/innovations with the time they save.

The Business Model

Campus Connect operates on a subscription-based software-as-a-service (SaaS) model targeted to universities. The price is determined by the number of total credit units that students are enrolled in. Pricing based on credit hours aligns our revenue model with the cost model. The majority of our server costs occur at the start and end of the semester when students form groups and evaluate their peers. Pricing based on credit hours increases flexibility due to students taking a gap semester or taking more classes than others. To boost market penetration, Campus Connect offers a freemium model. Given the high switching costs for learning tools, we expect limited churn. Competitors like FeedbackFruits charge ~\$8/user annually for their discounted K-12 product on [Azure Marketplace](#). We use this as a benchmark for our pricing strategy.

The market for educational technology is ~\$350 billion. For Campus Connect, however, the total addressable market (TAM) is approximately \$9.4 billion. There are around 235 million students enrolled in universities worldwide and we estimate a price of \$5 per enrolled credit and ~8 credits per student. We believe we can charge a slight premium compared to our competitors given deficiencies in their current product. We expand on our addressable market size and profit in the pro forma financials estimate in the Appendix.

Competitors such as FeedbackFruits and CATME don't effectively address the market need. CATME lacks integrations with existing infrastructure such as Canvas. It is a complex application that instructors find hard to use. The app is used for group formation but doesn't combat the free-rider problem as it doesn't offer peer evaluations. FeedbackFruits only supports peer reviews and not group formation. FeedbackFruits doesn't store data throughout a student's education, which limits them from implementing our features. Universities are sticky long-term customers. We believe Campus Connect provides a significant quality difference over alternatives. With an already-built minimum viable product (MVP), we have the first-mover advantage to capture long-term customers early.

For technology costs such as server storage and web application development, we use AWS services such as RDS, S3, and Elastic Beanstalk. The APIs we use for integration, such as the Canvas and GitHub APIs are free to use. Other than technology costs, we face maintenance costs, patent application and implementation costs, and research costs to prove our product's value. With such semi-fixed costs, we expect our business to be scalable as we expand to multiple universities and educational institutions.

Campus Connect's primary customer segment is universities and educational institutions. We start by focusing on universities using Canvas as their LMS. We plan to add support for Blackboard, the largest competitor to Canvas. The growing focus on collaborative learning methods has made group projects common in higher and K-12 education. These institutions are incentivized to create a positive learning environment given their long-term focus and relationship with students. We initially focus on individual instructors and departments. Departments are more flexible and willing to try new technologies given their smaller size. Having experienced our product, departments will convince their universities, allowing for our product to scale faster.

Next Steps and Timeline

Our next steps include conducting market and user testing through a pilot program and implementing additional features such as Blackboard integration. We will use techniques such as A/B testing to understand which features and workflows are preferred by our target audience. We plan to use conjoint analysis to research how much value each feature contributes.

Q4 2024: We will pilot our program through classes at Penn. Some Wharton 0.5 cu courses, such as FNCE 2830: Strategic Equity Finance, are currently interested in piloting our course.

Summer 2024: We will market Campus Connect to individual departments for summer classes at Penn and other similar institutions.

Fall 2024: Based on success at these institutions, we will refine our target customer demographic. At this point, we will market to MBA programs as they utilize group projects the most and place a strong emphasis on building an alumni network. As we talk to such customers, we will add/remove features.

Spring 2025: Add new features in the educational technology (edtech) space. These include an AI note-taker, an automated scheduling tool, and a peer-evaluator that considers factors outside of the final deliverable.

Appendix

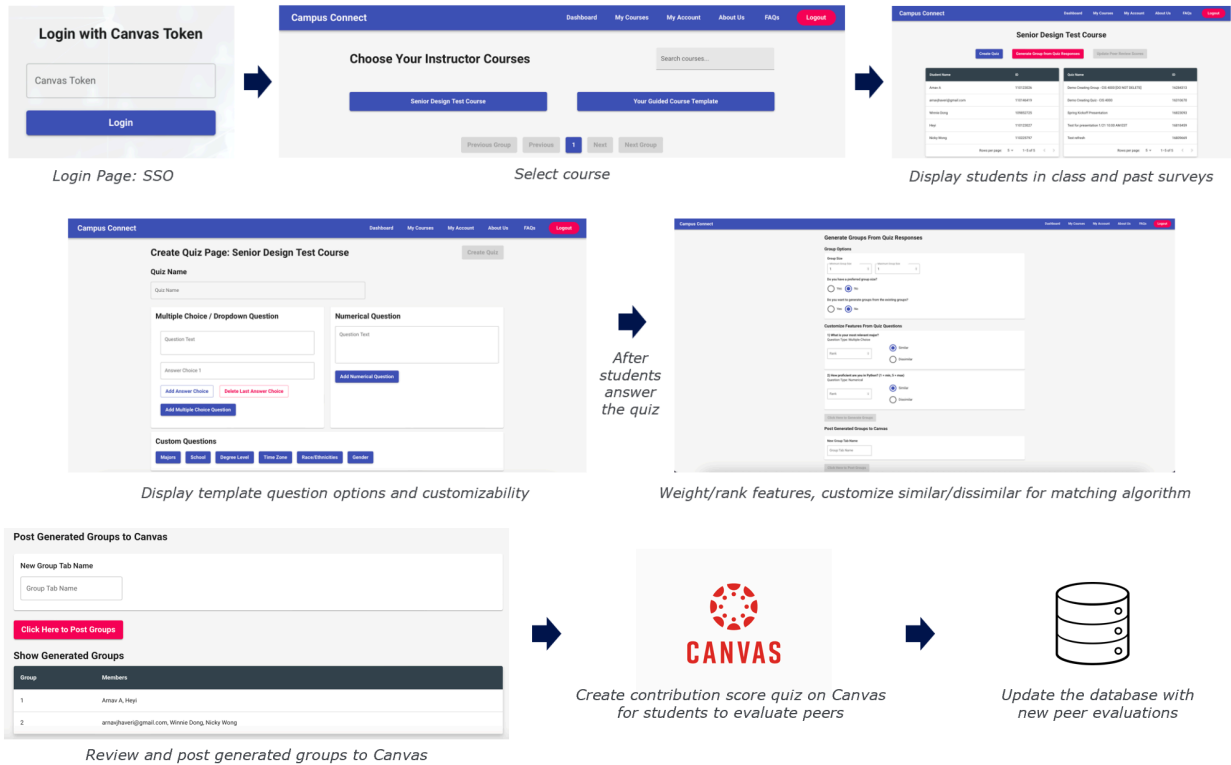


Figure 1: Application Workflow and Interface

Pro Forma Financials: Campus Connect

	Year 1	Year 2	Year 3	Year 4	Year 5	Notes
Revenue Model						
# of Students	100	600	3,000	12,000	36,000	
Credits Taken Per Student Per Year	8	8	8	8	8	
Classes Using Campus Connect	4	4	4	4	4	
Price Per Credit	\$-	\$5	\$5	\$5	\$5	First year free trial; \$5 thereafter
Revenue	\$-	\$12,000	\$60,000	\$240,000	\$720,000	
Cost						
AWS Infrastructure						
# of Students	100	600	3,000	12,000	36,000	
Database Cost Per Student Per Year	(\$0.20)	(\$0.20)	(\$0.21)	(\$0.21)	(\$0.22)	Grow with inflation
Solver Cost Per Student Per Year	(\$3.00)	(\$3.06)	(\$3.12)	(\$3.18)	(\$3.25)	Grow with inflation
Infrastructure Cost	(\$320)	(\$1,958)	(\$9,988)	(\$40,750)	(\$124,696)	
Domain Cost	(\$150)	(\$150)	(\$150)	(\$150)	(\$150)	Straight line
Software Development Cost	(\$100,000)	(\$100,000)	(\$101,000)	(\$103,020)	(\$105,080)	
Sales, General & Admin. Cost	(\$5,000)	(\$6,000)	(\$7,000)	(\$8,000)	(\$10,000)	
Operating Cost	(\$105,470)	(\$108,108)	(\$118,138)	(\$151,920)	(\$239,927)	
Operating Profit	(\$105,470)	(\$96,108)	(\$58,138)	\$88,080	\$480,073	
Assumptions						
% Student Growth		500%	400%	300%	200%	
% Classes Using Campus Connect	50%	50%	50%	50%	50%	
% Infrastructure Cost Growth		2%	2%	2%	2%	Target inflation rate
% Software Dev Cost Growth		0%	1%	2%	2%	

Figure 2: Pro Forma Financials