The Participation Station

2018 Start-Up Competition Proposal

By Phillip Donnelly & Madhav Mohan

Executive Summary

Through high school and continuing into college, I have noticed myself and my classmates struggle with participating in overcrowded or large classrooms. The fear of being the only one confused about an important concept was the strongest deterrent keeping us from asking good questions and engaging directly with the teacher or professor. It seemed as though being shy or uncertain had always been something slowing most of us down and it had never been addressed until now. We wanted to create an easy and safe way for everyone to participate on a level playing field so we came up with the idea of the "Participation Station".

The Participation Station is a website designed to be used in the classroom to help engage students and raise the level of participation. The website would also give the teachers the tools to help them manage the class. Students using the website will be placed in an online chat room with their classmates and the teacher. Within this chat room, students may pose comments or questions, regarding the class, for their peers to view. Messages sent in the chat are anonymous from student to student but the teacher has the ability to check which student sent which message should the need arise. This allows students to pose questions that they would normally be too shy or too intimidated to ask.

Initially, the teacher does not receive messages. All questions posed in the chat room can be voted on by other students. If a given question reaches the "vote threshold" (an arbitrary value to be set by the teacher), then that message is sent to the teacher. This way the teacher's screen is only populated with questions that a "significant" number of students are confused about. An example would be a teacher with a class of 100 students who set the vote threshold to 20 then, throughout the class, 200 questions might be asked in the chat room but only those which received more than 20 votes from other students, would be brought to the teacher's attention. These questions could then be addressed immediately or at the end of the class depending on the teacher's preference. This way the class is not hindered by unnecessary commentary and at the same time students feel safe to ask and comment away without worrying about asking a "stupid question".

Furthermore, the teacher would be able to push real-time quizzes and polls to the students. The quizzes could test the students understanding of the material, giving them surety and confidence in knowing what they do and do not understand. Polls can be used to collect information on the entire class in real time. Questions like "How many of you are confident with concept A?" will give the teacher instantaneous answers indicating whether the concept needs to be explained again, or if the class can move forward. For instance, a poll might ask the students "how is the pace of the class?" and allow the student to respond: too slow, just right, or too fast. Within a few seconds, the teacher would know how the majority of the class felt and be able to make effective adjustments to improve the learning environment.

Our Venture

Participation Station is a website which aims to help teachers manage classes better and facilitate increased participation. This includes students that are often too shy to speak up and classes that are normally too large to allow individuals to contribute.

Why We Need The Participation Station

At the moment, many students have a hard time participating in the classes they are taking. Harvey Mudd Professor Ran Libeskind Hadas exclaims, “Is participation a problem in the classroom? Yes! Students are often reluctant to ask or answer questions in front of their peers. They seem concerned about being wrong or judged by their classmates (and maybe by the professor as well)”. Classrooms need a safe way to facilitate participation among every single student to allow for the richest opportunities to learn.

When students give up on participating in class they have a harder time engaging overall and struggle more with the material. To prevent this there must be a way for students to speak up without feeling judgment from those around them.

What It Fixes

Over many discussions about our classes in high school and college, my partner and I realised that both students and teachers faced a major communication problem. At the moment, many students have a hard time participating in the classes they are taking. This is a problem recognized by students as a whole and many adults in the education industry. Former student and current entrepreneur Dakota Brown agrees that “Participation is a real problem in lecture classes” and that it is worth addressing.

By allowing students to ask and comment anonymously they will not feel the pressure of needing to only ask questions that make them appear smart, which often times means asking nothing at all. Students will be able to ask as much as they want without feeling anxious. This will allow students with valuable thoughts, who were previously too shy, to speak out and raise the overall level of the class. With all of these new ideas floating around the teacher would need some way to pick from the most relevant which is where the voting system comes into play. By allowing the students to vote on the comments of their peers based on which they most wish to be addressed. The teacher is given a manageable number of comments and questions which the largest number of students are struggling with. This is the most efficient way for the teacher to help the largest number of people without taking too much time away from their class plans.

Why We Can Beat The Competition

The only other software that is used in classes for real-time activities are kahoot which provides simple quizzes and test taking apps and websites such as socrative. Neither of these allows the students to address the teachers lecture directly and neither encourage students to add onto or question what the teacher has said. The apps and websites that would represent competition do not encourage participation while the teacher is talking and require active engagement from the student. Our idea

would encourage participation at all times and require passive engagement on the students end. In other words our website does not demand all of the students' attention, instead, it is used to direct more of the students' attention towards the teacher.

Currently, the entire education industry focuses largely on test taking skills and quality of tests. This has resulted in the most, if not all apps and websites, being built to enhance test taking. Both Socrative and Quizlet focus entirely on testing without touching on understanding or engagement of students. Moodle is an example of an app built for schools that addresses the organization of classes instead of testing yet it still leaves out participation. All of the functions of the apps and websites listed are important to schools but none of them overlap with what we are trying to address. As things are now, schools do not have any tools to augment lectures and in class learning that is designed to operate at the same time as the teacher. The Participation Station uniquely allows students to collaborate while a teacher is lecturing so that they can better focus on the material.

After talking with teachers who have been exposed to the already existing apps and websites available it became apparent that there was still a gaping hole over participation that has yet to be filled. Harvey Mudd professor, Zach Dodds clarified that participation is still something that needs to be addressed. When asked if participation was a concern of his he simply stated, "Always". This gives us assurance that we are tackling a real and current issue among schools.

Who Would Benefit

Teachers, students, and schools as a whole would benefit from the use of this website as it allows for greater efficiency and engagement in the classroom. Teachers would benefit by getting a realistic understanding of just how effective their pedagogy is. By understanding which areas the students struggle with through questions, quizzes and surveys, teachers can improve the learning experience. By getting real time accurate data on each of their classes, teachers will be provided with new insights that could revolutionize the way they teach, and increase class participation to a new level. The burden of asking "smart" questions would be lifted off students allowing free-flowing and independent discussions. Now, all students have an equal opportunity to be heard, creating a classroom friendly experience. In fact, shy students who did not participate in the class at all may start feeling more and more confident if their doubts are constantly being voted on. In such a way, teachers may also find hidden gems in their class, who they earlier just mistook for uninterested students. Students would also be given confidence in their knowledge through real time quizzes telling them exactly how much they know and do not know.

The Potential Size of The Market

The initial market would most likely start with the large introductory courses offered at colleges. This is because these classes contain the largest number of students and our websites ability to filter good commentary and engage each individual would be most valuable. However, once the website was being used in larger classes and had a foothold in the education system it could also be implemented in high schools (should their budget allow it) and smaller classes. In other words, the potential market is all schools ranging from high school to college with a focus on colleges, which will be more likely to be able to pay for the website.

Estimated long-term costs and profits

This is a for-profit business. Initially, the cost will be greater than the profit as development is completed, server space is bought and the website is made free to early adopters to encourage its use. This will create a deficit of $10,400 for the first year before the deficit begins to shrink. After this point, if the website is working properly and teachers are finding it to be helpful it will be easier to sell it to new schools for profit.

The current business plan is to charge fifty dollars per teacher per semester so. To give an example with round numbers, for every 100 professors using the website it would generate $10,000 a year. There are currently well over a million professors in the US so the potential here is quite high.

The hope is to add as many professors as possible but this depends on how teachers receive the website more than anything else so it is hard to give exact numbers until the website is actually deployed. If we started with ten professors and were able to achieve our goal of adding seventy each year then the deficit would be covered before the end of the second year. Even with a more modest goal of twenty professors each year on top of the initial ten the deficit would be covered within the first three years at which point we would be making $7,000 a year and continue to climb. Although this number is not ridiculously large the fact that our venture is to make a website allows yearly maintenance cost to be minimal, our main expense would be on tweaking the website according to our users. Furthermore, profit will continue given our target audience is a population of over a million people and even the model describing our ambitious goal of seventy professors a year accounts for less than two hundred.

Implementation

We plan on deploying the website and speaking with as many Carleton professors as possible along with professors that we know personally from other colleges to use it free of charge and build a base. From there were would use these colleges as a reference and ask larger colleges and universities to use it in their intro classes. We would continue to try and get in contact with as many professors as possible to use the website, starting with those that taught large classes.

For starters, my partner and can make direct contact with three professors at Carleton College, three professors at Harvey Mudd College, two at Cal Poly Pomona College, One at Pomona College and One at Macalester College all of which we already have a personal connection with. These professors will most likely make up those who will participate in our trial period.

Budget Justification

The first phase of development is already complete giving us a demo or MVP but this is not nearly good enough to draw in more users once it is released into the world. The second phase of development can be done mostly by a good freelance programmer named Ben Oman who was used to create the MVP. Ben is very efficient and good at communicating exactly how far along he is and how long he will need for each part of the project. In comparison to other freelance web developers he is also the most cost efficient. Ben charges $100 an hour and will need around forty hours to complete the

second phase which will optimize server usage, data organization, and implement recommendations currently being collected from professors at different teaching institutions. In the end, a $4,500 budget will be set aside for the first round of development by Ben. Another $2,300 will be set aside for the second round after professors who adopted the beta model have given us feedback on what works and what does not.

Both team members already have the hardware needed to reach out to more clients and do a light amount of coding ourselves, so no monetary resources will be set aside for the purchase of new hardware.

Server space will be an issue while the website is online and free to use. We want to plan on running the website for at least two years without needing to generate revenue. During these years it would possibly be being tested by Carleton, Pomona Pitzer, Harvey Mudd, Pomona and Macalester college. We should assume the number of student users at this point would be a few thousand and set aside a server budget of $800 to host the website on powerful Amazon Web servers. This will assure scalability and allow us to view a huge variety of statistics regarding who is using the website and how often. Amazon Web Servers are the best reviewed and most widely used. Digital oceans would be another good option but they do not allow for data visualization the same way Amazon Web Servers do. This is a feature we want so we can observe what features of the website help/hurt as we continue to improve it.

As the website becomes ready for release we will also need to create our company at the cost of $300.

Another $2,500 will be set aside for travel and outreach. This will allow us to travel in person to schools that would be optimal for using our website so that we could promote it face to face.

Revenue		
	Initial Trial Period June 2019	
	10 Professors	$ -
	2019-2020	
	Low Range (15 Prof.)	$ 1,500.00
	High Range (70 Prof.)	$ 7,000.00
	2020-2021	
	Low Range (35 Prof.)	$ 3,500.00
	High Range (140 Prof.)	$ 14,000.00
	Total Low Range	$ 5,000.00
	Total High Range	$ 21,000.00
Costs		
	2019 March	
	Company Registration	$ 300.00
	Server Space Funding	$ 800.00
	1st Round Development	$ 4,500.00
	2019 July	
	Travel and Outreach	$ 2,500.00
	2nd Round Development	$ 2,300.00
	Total	$ 10,400.00
P&L		
	2019-2020	
	Loss Low Range (15 Prof.)	$ -8,900.00
	Loss High Range (70 Prof.)	$ -3,400.00
	2020-2021	
	Loss Low Range (35 Prof.)	$ -5,400.00
	Profit High Range (140 Prof.)	$ 10,600.00

Team Bios

My name is Phillip Donnelly. I am a freshman at Carleton and intend to major in computer science. In the past, I have worked with groups and individuals on school projects, extracurricular projects, and starting a business all of which have revolved around programming. One of the extracurricular projects included leading a team of senior students at Cal Poly Pomona with a friend of mine in a programming project that lasted a full term. Another extracurricular assignment included spearheading the effort to bring “hour of code” to our local elementary schools. For this, I went personally as one of the teachers a few times a year during my junior and senior years in high-school and organized a number of classmates so that they could do the same. I started a business with my brother at the beginning of high school which required creating a class curriculum to introduce elementary school students to computer science. We then taught this curriculum over the summer each year. Because of these ventures, I feel comfortable working within, and organizing, teams to do complete computer science related tasks.

Hey! My name is Madhav Mohan and I am a freshman at Carleton. I am a passionate environmentalist and aspiring entrepreneur. Throughout high school I have been involved in multiple environmental initiatives; I started The Trash Project in India in 2014, an interactive idea to establish a social art practice to encourage the common task of garbage disposal. I took on numerous leadership roles in High School, being selected as the Head of Environmental Activities, I have brainstormed and executed several projects. I held a weekly talk show for my whole school called “2 degrees Celsius” that was modelled after John Oliver’s, Last Week Tonight, to make environmental topics fun and engaging to learn about. I was also given the opportunity to be selected as an Ashoka Youth Venturer for my work, where I was able to grow as a leader and develop my skills by learning from entrepreneurs.