Maximizing Participation in an Online Mathematics Course

Lauren Falck  
*University of Northern Iowa*

Douglas Shaw  
*University of Northern Iowa*

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Lauren Falck & Douglas Shaw

Introduction

The year of 2020 highlighted many issues of online learning. For example, online classes do not enhance the learning of the students the same as face-to-face classes do.

Why am I Researching Online Mathematics Courses?

Coming from a small school, the only way to advance in mathematics was to take online courses. These courses were all self-taught where I read material or watched a video and then completed a final assessment or wrote a paper. I quickly discovered with a non-interactive course, I was not getting the most out of the class. My perception of online courses changed the spring of 2020 when my classes were suddenly put online. Suddenly, I realized I needed to prepare myself, getting the most out of the class. For me, the most effective way to achieve student participation.

Methods

In the Graph Theory class I assisted with, students worked on problems in small groups. I wanted to measure each student's contribution to the problems. Every time a student participated in answering a problem, they received a point. The points were divided by how many problems there were each day to give each student a percentage of daily participation. The data I collected highlighted peer participation and in-class participation. Once a student engaged in the course, which result in a lack of learning.

Results:

After the first observation, I was curious if there were additional trends surrounding gender. I averaged each student's percentages for the groups they were in. I noticed that female students participated more when there was another female in the group. I also included the male students who experienced having both one female and two female students in their group. It is important to note that not every student in this course had the opportunity to have multiple female students in their group; therefore, those students were not included.

Conclusion

Every teacher's goal is to provide an environment in which all participants have the opportunity to learn and explore using their critical thinking skills.

How to Maximize Participation in an Online Math Course:

1. Provide an inclusive social event for students and staff
2. Make sure there are multiple female students in a group
3. Place both higher participating and lower participating students in the same group

What Am I Going to Do?

After this research, I realized how important building relationships is for optimizing a students education. In my future classroom, I will provide out-of-class social events and will be more conscious of designing groups.

My Findings

Peer Socialization and In-Class Participation

Once a week, a virtual game night was held with the teaching staff and students. After our first game night, I noticed that the students who attended seemed to be engaging more within their in-class small groups. I decided to investigate. First, I reviewed their Professional Problems Google Docs history to measure each student's contribution to the solutions. I gave each student a point for every contribution to solving a problem; as a result, multiple students could get a point for the same problem. Then I took the points each student earned from assignment contributions and turned them into percentages. After coding these results, I compared the daily participation percentage between the students who attended the game nights and those who did not. It is important to note that some students may have been contributing verbally, which I was, unfortunately, not able to track.

Resources