

Facilitating Learner-Learner Interactions with Mathematics Student in the Online Environment

Ricardo Ramos

CSUSB

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Dr. Baek

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Instructional Design Topic

Due to the current pandemic, educators all over the world have suddenly been thrust into the world of distance learning. As a secondary education mathematics teacher, my instruction has completely shifted online. The levels of interactions students have with the content, myself as the instructor, and each other has drastically changed. Students at the secondary education level have had very little exposure and experience when it comes to synchronous and asynchronous learning. The past few weeks of distance learning I decided to keep things very basic when it came to online learning. I only involved the students with content and their teacher and/or tutors...that is, learner-content and learner-instructor interactions. Once I realized that the level of involvement of the students was the majority, I found myself a little overwhelmed by the amount of students reaching out to me for additional help. It was here I realized that learner-learner interactions were necessary. I could not have the students rely on their teacher (or tutor) for additional help. I would have to develop ways where the students would be able to get help from each other. My instructional design project topic is to facilitate learner-learner interactions with my mathematics students in the online environment.

Literature Review

When it came to finding literature on the topic, I found very few articles referring to specifically mathematics in the online context. There were even fewer specific to learner-learner interactions with mathematics in the online setting. Of the five articles I've referenced, two hit

the sweet spot that I am looking for in my design. Designing Social Online Math Activities (Gedeborg, 2016) and Exploring the Impact of Small-group Synchronous Discourse Sessions in Online Math Learning (Choi & Walters, 2018) will be invaluable to me in the next few weeks for designing my project. One of my references describes the evolution of mathematics from distance learning to e-learning (Alvarez, Moreno, Orduna, Pascual & San Vicente, 2015). The other two references examine learner-learner interactions in the online setting in general, with no specific subject of class as the focus (Kurucay & Inan, 2017; Hrastinski & Stenbom, 2013).

Continued searching and researching articles on my project design will be necessary to facilitate best practices to apply to my online classroom.

Analysis

Having all secondary educational classes thrust into the online space with the current pandemic has brought upon myself the challenge to develop an online learning environment that incorporates a good balance of learner-content, learner-instructor and learner-learner interactions. Thus far, in the three complete weeks of online learning we have had at our site, I can say that I have only promoted learner-content and learner-instructor interactions in the online forum. Promoting and facilitating learner-learner interactions in an online math classroom I feel is a challenge, but a necessary component to a well rounded learning environment.

There are a variety of ways that I am looking to possibly take on this challenge. I have used a few technologies in the past and have been recommended quite a bit of new ones to facilitate online social interactions. Flipgrid is a site that allows one to record themselves to a

specific “grid” and allow others to respond with comments. I have seen this used in a math class in such a way where students are to post solutions or mini-tutorials on how to solve certain problems to their fellow classmates. Classmates then respond with questions and comments on the video. The idea here being that students learn from each other as opposed to just the posted notes and instructional videos that the teacher might provide on a topic.

Instead of videos, students can work out the step by step process on the solution of a specified problem on a piece of paper and post the screenshot of it on a comment thread or discussion board of choice. Fellow students then ask questions and comment on the solution process in order to gain greater insight into the possible ways to solve a variety of problems.

Another format of learner-learner interaction I am looking into possibly developing is the use of video conferencing technology, specifically Zoom with its breakout room feature.

Breakout rooms are essentially separate groups that can be formed in the online conferencing room. Students can collaboratively work on the solution of specific problems in small groups assigned by either the teacher or the students themselves while the instructor can oversee and/or provide guidance as the students work together to find ways into solutions.

There are, as of right now, just some possible ideas to facilitate learner-learner interactions with my math students online. The ultimate goal is to give my students another route to advance their learning. Real world person to person interactions happen all of the time, whether online or in person. One will eventually have to work with others to achieve a common goal. During the coming weeks I am going to narrow my focus down to a single route that I will develop, integrate, and attempt with my population.

Speaking of my population, they are 140 of my geometry students that I have had since the start of the current school year. The majority of my students are sophomores although I have all of the secondary grades accounted for. A good chunk of my students are classified as English Learners and a smaller percentage of my populations have IEPs.

Having been students of mine for the first three quarters of the school year in the physical classroom, the students know my expectations of them. They have been present, instructed and involved through eight units worth of geometric work. My students have the background knowledge and experience necessary to complete the material. The challenge will be getting proper involvement from the students in the online setting. Suddenly being thrust into the online learning world, my students have been struggling to find their norm and a routine. To be honest, I, as an instructor, have struggled with it as well.

A new challenge has just recently sprung up within our district. A policy was announced that students' grades could not go lower than what was posted as their quarter three grades. Only grade improvement can occur from here on out to the end of the semester. Student attitudes towards engagement and the level of involvement in learning the new material, I feel, will drastically drop from here on out. I, as the instructor, cannot allow this (if involvement does drop) to not hinder my goals. There will be students that will try to advance their grade and those that care about learning the material. I must focus on them.

In the end, the goal is for my students to be able to engage and learn geometry from each other in an online context. The contexts, whether it be Flipgrid, discussion boards, or Zoom, will be narrowed down to a single focus in the coming days.

References

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