

Sample AMTE Reflection

During this semester I've been thinking about how to better use class as a space where students really work in groups to challenge and push themselves and why it so often doesn't happen in math class. I wanted to experiment with a type of "flipped" classroom where some of the easier work is done out of class (during our pretend "homework" assignment) and students have time in class to try to figure out something different and new. This is in response to a few different experiences I've had in this semester and in the past year. My teaching goals, content goals, and experimentation goals were based on the following:

- This fall I visited a school in Chicago and saw a high school Calculus class that was different than any other math class I've seen. Students were given a short, somewhat general homework assignment, but then spent the class working in groups to be more specific and precise in their thinking. The class was structured as follows: students worked in groups of six for a few minutes. After the beginning of class the teacher called them together and called on one student to speak about the problem. The student verbally worked through the problem and the teacher provided specific and exact feedback. When the student got to a point where they were stuck, he sent the class back to work in groups and called on another student. The energy in the room was palpable, and the precision of thinking and amount of student buy-in was inspiring. The structure of this class wasn't something I could recreate in a one-time teaching experiment, but I wanted to try out a question where students were engaged in working in groups.
- The TIMMS studies have shown that the way homework is often used in the United States is uninspired and wastes class time. I wanted to try out a homework assignment that might be useful in class, but wouldn't be reviewed whole class.
- One of the articles from the first or second class (I can't remember who wrote the article!) talked about giving students the answers, so the work was more about process than the answer. I wanted to try out including some answers on the homework and revealing the answer in the middle of class and see if this changed student buy-in. I liked how the homework gave them some answers so they could see if they were on the right track. I don't think it lowered student buy-in.
- I wanted to try out a problem that would be a "jump" for students from their previous knowledge. I hoped the problem would encourage students to mesh their knowledge of exponential functions and geometric series. I currently teach a unit on exponential functions, but do very little with geometric series and wanted to find a problem that would challenge me to think about how to teach material that I've never taught.

Synopsis:

Some parts worked better than others. Here are my general thoughts and ideas of changes in the future:

- I liked the structure of the homework assignment. I think I may try switching homework during my next unit in my class to try this out for an extended time to see how it works with middle school students. I'd like the homework to include hints, some answers, and be tied to the next day's assignment, rather than be tied to the previous day's lesson.
- I think working in groups was helpful in a problem like this and think I would keep this aspect.
- I think my "hint" about geometric series was confusing and misplaced. I tried to simplify the formula for geometric series in a way that would work for this specific problem, and I think it led to greater confusion with some students and also led to the larger problem of students not seeing this problem within a larger, generalizable context. In my regular class I might either do a short lesson on sequences and series prior to having them work on the problem or I might just give them access to resources that talk about different ways to sum a series. I think this mistake would have made the problem fall apart in my regular class of 8th graders. In the context of our seminar there were people with enough background to make it work and my addition just made it more confusing than it needed to be.
- Due to time we never did a wrap-up of sorts. This is part of teaching I often struggle with. In our class students solved this problem using several different methods, so I didn't feel that a quick wrap-up would be helpful. In a longer class period, it would have been interesting to show how different individuals solved this problem and have them explain their thinking. This led to the end of class feeling unfocused. It was nice, however, to see how many people wanted to stay and work on the problem until they figured it out and I didn't want to cut into this time.