

Narrative Reflection, Summer 2019 Benjamin V. Holt

Both sections I taught this summer were MTH 105 (*Math and Society*) courses: one was face-to-face, the other was online. This meant that I had the unique pleasure of 1) continuing the work I did to improve my MTH 105 courses in the spring and 2) the opportunity to teach another on-line course. Moreover, because of the minimal obligations during the summer term, I was able to experiment more boldly with ideas I had never tried in previous courses. In particular, I had the opportunity to try a fully-flipped classroom model in my face-to-face section of MTH 105. This worked out quite well as my online section required that I make instructional videos (like I already had done for my online Spring MTH 243 section), and it was the creation of these videos which allowed me to flip my face-to-face course. It was truly a fortuitous mix of circumstances.

Overall, as evidenced by my student evaluations and the overall mood of the face-to-face classroom, I feel my experimentation paid dividends. Below I will outline the both the successes I experienced this term, and, based upon student feedback and self-reflection, where I need to improve, and how I intend to carry out that future vision.

What Went Well

Time I had this summer enabled me to expand the range of topics I was able to cover beyond the usual topics in our MTH 105. In line with my previous efforts to get MTH 105 to “live up to its course title” (*Math and Society*), and in accord with my plans outlined in previous Narrative Reflections, I added the topics of power in weighted voting systems and apportionment (for example, the apportionment seats in the U.S. House of Representatives).

Also, in line with the way I taught the course in Spring 2019, I gave students the power to decide which topics we would cover using the ranked-choice voting techniques we learned, but this time, it was the first topic we covered. (Students in both my online and face-to-face sections voted collectively as a single unit so that I wouldn’t have to prepare two topics independently.) I decided on the list of available topics to be voted on so in order to ensure that the more standard topics were covered as well.

Students collectively opted to make our second topic apportionment and power in weighted voting systems, and collectively speaking, they seemed to do quite well with it. One of the great things this choice of topics afforded me as an instructor was the ability to incorporate related reading from other disciplines as items for discussion either in class for my face-to-face sections, or as a discussion in eLearning. Students overall seemed to respond well to the interdisciplinary nature of the material which touched upon current political themes (gerrymandering), a big dose of U.S. history (for example, the first presidential veto ever was by George Washington concerning an apportionment scheme devised by Alexander Hamilton), and issues of social justice (restoring power to a block of voters in Nassau County, New York who effectively had no say in matters which affected them). This rich mix of topics really seemed to hold the classes interest and kept them engaged and help the course to deliver on the tacit promise made by its title that mathematics and society really do intersect in a nontrivial, meaningful, and empowering way. That is, mathematics really does enable one to be a more effective participant in society.

When it came time to cover more traditional topics such as statistics and logic, as mentioned in previous Narrative Reflections, it was a much easier sell when framed in terms of the topics mentioned above. For example, when learning statistical methods which are used to gauge and infer popular opinion, it was much easier to do so against the backdrop of a solid background in voting theory and its surrounding issues.

Logic was yet another topic for understanding how argumentation and reason, both valid and faulty, are used to craft persuasive speech and to influence thought in realms of politics, commerce, and beyond. Even though the ideas and symbols required to distill an argument down to its essence and to analyze it are highly abstract and often non-intuitive, it was clear to me that the overall theme of the course gave students enough context to keep an open mind and to at least see the value of the material we were studying.

In my courses this summer, I witnessed a good portion of my students accept the challenge of facing their fears and learning to think in novel ways. It was a very rewarding experience to see these students get a glimpse of the connections between mathematical ideas and broader themes covered in a liberal arts setting. No matter how large or small, this heightened awareness of the interconnectedness of human knowledge is all I can ask for from my students.

Where To Improve

Despite the above observations which are more collective in nature, I shall narrow my focus to some of the rougher spots.

My online students seemed less engaged than both my online students from last term and my face-to-face students this term. By less engaged, I mean that there was less communication on the part of students in the form of questions via email, and more significantly, there seemed to be a lack of initiative for posting responses to the discussion forum. This was particularly true later in the course. All of this tells me that despite the success I had in my online statistics course in Spring, there are still many facets of online teaching I am still getting used to.

Between such wide variability in disposition from class to class, as well as how students respond to the subject of the course, it's difficult at this point to pin down why students in my online section of MTH 105 might have been less engaged than others. This is somewhat at odds with my experience that students who take courses in the summer tend to be more motivated toward completing a specific goal.

There is one factor, however, that stands out to me as significant, and that is class size. My online summer course had 11 students, whereas my online course in the spring had 25 students. It seems to me this could have some bearing on engagement and participation, or at least my perception of student engagement. With a larger class size, the likelihood of having students who are willing to "break the ice" is higher. (Some posts required a response before reading other students posts, but most of them were readable before posting.) This makes me think that despite my best efforts to build an online community where taking risks was encouraged and students feel comfort-

able speaking out in front of their peers, I still have a lot to learn in this regard, particularly with smaller class sizes in an online setting.

Finally, there are still some loose ends from last term which I still need to shore up. In particular, based upon one student's feedback this term, the connectivity between eLearning and my personal website is still not entirely seamless. I thought this would be a straightforward fix: the issues in the past arose from due dates not being updated regularly in eLearning. A solution to this problem is to simply post all the due dates in advance in eLearning. This being said, one student still experienced problems. However, they did offer a useful suggestion to create more direct links from eLearning to my personal website. This is another area where I will need to pay special attention in my future online courses.

What Lies Ahead

I would like to build upon and continue the successes I have had in my last three sections of MTH 105, *Math in Society*. To this end, it is my intent to add even more topics as time goes on. In particular, I would like to add a section on the mathematics of cryptography, the science of making and breaking codes. In the age we live in, data security is of paramount importance, and from both a liberal arts as well as a societal perspective, students only stand to benefit knowing how relatively accessible mathematical ideas are central to keeping our online data safe.

Generally speaking, it is my hope that students will find the topics we cover in MTH 105 useful, varied, and interesting. Most of all, I hope by studying such ideas, that my students will be better and more informed participants in society.