

A Collection of Teaching Advice: Teaching through the Pandemic

Piazza to the rescue: Being a present Math instructor

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This teaching brief describes my journey of using Piazza, an instructional chat of sorts, in order for students to get their questions answered promptly, efficiently, and thoroughly, despite not being able to meet in a traditional face-to-face learning environment.

Teaching and learning context

In Spring 2020, I was faced with the challenge of converting my face-to-face set-theory graduate-level course to an entirely online format. The conversion had to be accomplished quickly, and I had no experience with online teaching.

In addition, not only would I be working from home, so would my wife, and our two sons would be learning from home. Bandwidth at our house, which had never been especially good, was my biggest concern. And so was the capacity of my students to effectively participate in my course from a distance.

My style of lecturing is very Socratic. I frequently stop to ask questions of my class (e.g. “What should we do now?”, “Why did we need this assumption?”). Office hours are key to my teaching. I frequently encourage my students to stop by my office to discuss homework problems. During these sessions, students build their understanding by working out solutions on the whiteboard in my office.

I needed a way that would support this type of instructor-student interaction, require low bandwidth and be simple to implement.

Applied teaching strategy: Piazza

These considerations led me to look closely at Piazza, a platform I first encountered several years ago while redesigning the mathematics department’s pre-calculus curriculum. Educational institutions could use Piazza free of charge up until the end of 2020, the infamous year. Piazza allowed for students and professors to construct a wiki page inside an online course shell. Students could pose questions, which could be answered either by the instructor or their peers.

The questions and answers were visible to the entire class, so students could get their questions answered more quickly. Instructors could endorse and edit student answers. Students were able to post ‘anonymously’ so their identity was hidden from their classmates, but not their professor. Best

of all, for a mathematician, Piazza understood LaTeX, a commonly used typesetting language for mathematical expressions.

Piazza was the right tool for me. In fact, when I created the Piazza page for the course, I discovered that almost all my students had already had Piazza accounts.

Before we went online, I spent class time going through my lecture notes, writing through the solutions on the board and frequently pausing to prod the students with questions and engage them in discussions. I was in the practice of typing my lecture notes and posting them in a Canvas course shell.

Once we were transitioned to remote delivery, I began each class day with a reading assignment, which usually consisted of 2-3 pages of the course notes (about what I would get through in a normal class period). I would then post several questions on Piazza, much as I would in class, such as 'On page 23 line 7, why does it follow that ...' I told students I would give them credit based on the number of questions they answered and the number of answers I endorsed. This included answers to the questions posted by other students. I told them I would also give them credit for asking questions either about the lecture notes or the homework problems.

I installed the Piazza app on my phone, so that I would get alerts whenever students made a posting. By the afternoon, responses to my questions would start to pour in. I would endorse correct answers and pose follow-up questions to incorrect answers. Throughout the afternoon, a conversation would evolve and revolve around the new course content.

Students were welcome to post their own questions about homework problems or other items in the course notes. These questions and the ensuing conversations among the students often took place while I was sleeping. One of the most pleasant parts of the morning was opening Piazza and seeing what my students had been up to. Again, I would endorse questions and responses and post follow-up questions and comments.

Why this strategy worked

Due to Piazza's anonymous posting capability, I noticed that as a result, some of the quieter students in the class were now becoming much more vocal. This was also likely a consequence of my implementation of one of the more important 'principles of Piazza': *no* email questions, period. Students were told that all questions about the course material and homework had to be asked on Piazza.

Piazza gave the students the opportunity to participate on their own terms, even during the times when I was not immediately available to tend to their questions. Their peers, however, were ready to chime in with their responses. My role was to facilitate the conversation, catch the inaccurate information and support my students with corrective feedback.

Key takeaways

Piazza allowed the instructor to conduct class polls. I conducted four such polls over the remainder of the semester to assess student satisfaction with the new course format.

For example, one poll asked how strongly they agreed with the statement that 'Piazza is helping me to learn in this class'. Twenty-five percent strongly agreed, 63% agreed, and the rest were neutral.

Another poll asked how they felt the answers they received on Piazza compared with those they received in class or in office hours. Thirty-eight percent found them more helpful, 38% found them about as helpful, and the rest found them not as helpful.

Finally, at the end of the semester, I held “de-briefings” on WebEx, so students could discuss their experiences with the course. One student remarked that whereas he found the classroom environment to be a passive experience, he felt that Piazza forced him to take a more active role in his learning. Another noted that there were no pictures in the Piazza posts, thereby putting visual learners at a disadvantage. I later found that it was possible to include images and videos in Piazza responses. Many students agreed that while Piazza had been an enjoyable experience, they wanted to go back to in-person classes as soon as we could.

I am now using Piazza in my large-lecture online differential equations course. It has been very effective at reducing the amount of email I get, and I can still provide students with answers to their questions. While perhaps not as effective as what can be achieved in the classroom, it has allowed me to continue to teach through inquiry and the promotion of student discussion with no cost (at the time) to and little bandwidth required from my students. Piazza is no longer a free application.