

## **Tools for Connection: Can the Tools That Helped Us Mitigate Students' Loss of Academic Community Broaden and Strengthen the Community After the Pandemic?**

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"I don't think going virtual will affect us too much," I told my Modern Algebra students during our first Zoom meeting, after the governor had closed all college campuses.

In hindsight, it was a heartless thing to say. What I meant to convey was, "Don't worry, I've got you. I've taught through Zoom before in online classes, and I've watched all the webinars about teaching synchronously online. We're still doing class the same way as when we were all on campus. You'll still preview videos like before; we're still working in small groups on problem sets. They're on Google docs instead of paper, so that you can see each other's thinking and I can see your work, but we're still working together. You'll just share your screen during whole class discussion instead of drawing on the whiteboard. The manipulatives, drawing and graphing tools, and calculators are virtual, (courtesy of Geogebra, Desmos, and Didax), but I'll take time to make sure you know how to use them. My office hours have changed due to childcare, but I'll be on Zoom, and it will be so much easier just to hop online than truck down to my office." Having taught synchronously online before, for me, class had just moved its location from a physical classroom to a Zoom screen. In my mind, all of our routines and objectives had remained the same. The combination of panicked emails and radio silence from students I had worked with for many semesters was my first clue that this was not a shared feeling.

In reality, their lives had been upended. The classroom is only one component of an educational experience at a small residential college. Many of the students develop close academic relationships with each other. They come early and stay after class to chat with each other or with me. They go to lunch or walk together to the library after class. They help each other understand assignments and how to work with particular professors. They do school together, and doing school is social. Now they were separated from each other by miles, with Zoom class time the only structured time to connect, with group texts replacing the walks to the library. The social-academic foundation of their success had been taken away.

From research on productivity and habit formation, I recognized that there were two major threats to their success in this new modality: students were lacking community – and therefore supportive accountability – and their routines and habits had been disrupted. We dealt with the break in routines by spending time in class backward planning their goals, planning their week, and checking in with each other weekly on our progress. To try to maintain some form of

community, we began our Zoom classes with check-ins, each taking a turn to answer, “What’s one thing that made you feel happy or proud this week?” None of this was enough, of course, but it was more than nothing.

For Fall 2020, the administration mandated all able-bodied professors teach “hyflex” – some students physically in front of us, some students Zooming in to maintain social distance, to comply with health accommodations, and for students in quarantine. With hyflex came an additional challenge – students were not “Zooming in” from the same location every week. Some joined from their cars or the campus café, because they had to be in person in their next course. Some were in their dorms, where their roommates might be sleeping or dressing. Some were in the basement of the “quarantine dorm,” with poor lighting and spotty wi-fi. Two of my students, responding to the desperate need for more childcare workers, joined class from the infant room at the campus childcare center. Therefore, I couldn’t expect them all to keep their cameras and microphones on. Creating an academic community, where all students had their ideas discussed and we were able to connect with one another socially, became increasingly challenging.

For out-of-classroom time, students completed homework assignments by discussing homework problems and submitting videos of their conversation; this helped build community, but also resulted in richer responses and fewer misinterpretations of questions or direction. In pre-pandemic times, some students would have initiated or been recruited into groups where they worked on homework problems together, but many would not. In requiring students to record conversations with others, I succeeded in supporting more students to build the habit and expectation of discussing mathematics outside of class time. For the mixed modality of class time, though, different strategies were required to build academic community.

Along with Google slides, I used Desmos Activity Builders. With Google slides, students can see each other’s work immediately, and they can move pictures of manipulatives around together. It supports collaboration but less individual accountability. It is harder to highlight individual students’ ideas for discussion. Additionally, the drawing tools are clunky. In Desmos Activity Builder, you build a set of slides students work on individually with tools designed for mathematics – they can graph, use mathematical notation, and draw on pre-loaded images, and answer multiple choice and numeric questions. I could see everyone’s work in real time and project students’ work on the board for discussion. Everyone got an opportunity to present their mathematical ideas. There are also check-in slides, asking students to graph how they were feeling or share something from their week. Even students who were not present in the classroom or could not turn on their microphone were able to connect socially. I was surprised by what I learned about my students via Desmos; it made me wonder if the informal chat at the beginning of an in-person class should be supplemented with more structure to support a wider range of students. As I scheduled Zoom office hours appointments with students who fell behind during the semester, I remembered to ask them first how they were doing – and really listen – before diving into the mathematics.

Pamela Harris (2020) and Rochelle Gutierrez (2018) have written about prioritizing the personal over the mathematics, “rehumanizing mathematics,” and the resulting impact on learning. Technology makes it possible to build a caring community, not just for those students who expect to connect with the professor or create study groups, but for those without those skills as well. Zoom allowed me to connect with students who were too shy or worked too much to physically come to office hours and, with my explicit direction, to meet with each other. Short Google form surveys allowed me to learn about the classroom experience for all my students, not just those who are vocal. Desmos allowed me to work toward more equitably sharing student thinking. As I build out my syllabus and LMS site for the fall, one key question on my mind is, where can I create *structures* that build social and academic community, and can technology help me in places where I once thought the task was too great. While I plan to continue using Google surveys, online office hours, and Desmos and Google Slides, since they are simple to implement, grading mandatory video conversations of homework problems was too time-intensive. Finding a way to increase the number of students who participate in a study group, beyond those who would naturally do so, without the enforcement of a mandate or the workload of grading video, is an unanswered question as I prepare for the fall.

## References

- Harris, P. (2020, November 21). *People over math: Using restorative practices to build community*. Distinguished Teacher Lecture [Conference Presentation]. Northeastern Section of the Mathematical Association of America, Virtual.
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