Teaching Statement

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Learning mathematics is more than mastering methods of calculation. Ours is a discipline that enabled ancient agriculture, architectural marvels, colonial violence, partisan gerrymandering, modern medicine, nuclear deterrence, and the contemporary surveillance state. A good math teacher creates space for students to think about how the tools we teach are contextualized by human struggles and, accordingly, to pursue self-determination as workers, global citizens, human beings, and maybe even as mathematicians.

The practice of mathematics is enriched when we make transparent the ways in which our institutions have privileged some at the expense of others. By the same token, our practice is incomplete unless we investigate the rich advances made by those who have been invisibilized in or violently excluded from the discipline. These are the hallmarks of true inclusivity, not simply telling “normal” students that it’s okay (for others) to be different.

As a child, I was told that it’s okay to speak Spanish; as an adolescent, I was told that it’s okay to not be straight; and, as a graduate student, I was told that it’s okay to be depressed. Yet, only in the last few years have I made any serious efforts to reclaim my native tongue, embrace my queerness, and prioritize my mental health. We who are outside normalcy know from our lived experiences that something is not okay. Without a critique of white supremacy, heteronormativity, colonialism, and other violent forms of oppression, “tolerance” is plainly insufficient as a means to include the marginalized. Teaching math within a social context is necessary because students deserve classrooms willing to embrace their complex identities.

Thus, I strive to foster an environment in which students see themselves in their math and math in their surroundings. To accomplish this, I facilitate inclusive spaces where students feel safe to reflect honestly on oppressive institutions in their lives and communities, to think actively about what it could look like to dismantle them, and to connect these thoughts to the act of doing math. After handing out the syllabus on the first day of class, I ask students to write down anything they’d like me to know about them—I have received answers ranging from favorite math topics to learning disabilities to public speaking anxieties to immigration status. Next, I ask them to participate in communally establishing a code of conduct for all future conversations to be held within—we all agree to hold one another accountable. These practices and those that follow are rooted in my background as a community organizer.

Horizontal facilitation, wherein participants contribute sincerely to a gradually unfolding collective vision, is an important aspect of inclusivity in my classroom. This means, besides the lecture format, empowering students to learn with one another through collaborative activities. Establishing such an environment is possible while covering the standard curriculum in a calculus sequence or in interdisciplinary courses specifically designed around the interplay of social sciences and math. I designed the most recent class I taught, a six-week mathematical survey course via Python as part of a summer enrichment program for high schoolers, where cooperative learning-by-doing was emphasized over lectures whenever possible. While iteratively computing square roots in the Babylonian style, we also examined the Eurocentric erasure of math in Egypt and the Near East. Between exploring Mandelbrot sets and Newton fractals, we analyzed indigenous fractal architecture in Zambia. And, as we trained a neural network to recognize hand-written numerals, we considered the implications of training data bias and Microsoft’s notoriously racist Twitter-educated chatbot.

Another aspect of community organizing that I carry into my classroom is an understanding of power in a dynamic world, so that students can critically interrogate past and existing institutions while also dreaming of a better future. From the deliberate acculturation of colonial societies via mathematics to the geometry of gerrymandering, we intentionally make connections between math and power. Class discussions include sharing the feelings elicited by our readings, carefully unpacking the tensions that followed, and concluding via ungraded individual reflections. From a teaching evaluation:

> *"To be frank, as a student with a special interest in STEM, the structure of the course was a bit foreign and off-putting to me. Weekly readings, class discussions, written reflections -- all of these teaching methods were not customary to the STEM courses I have taken. However, this structure is what made the class so meaningful and effective, and I cannot imagine it done any other way."*

Aside from open-ended inquiries to inspire thought, these discussions are entirely student-led. When posing difficult questions, either mathematical or social, I give students time to think, to practice expressing themselves, and to learn from uncomfortable silences. I am consistently impressed by their ability to engage in good-faith dialogue, to be vulnerable with one another, and to hold accountable to the codes of conduct they established together. Learning to trust students to take charge of their learning, not only in solving math problems but in leading difficult conversations, has been critical in living out the principle of horizontal facilitation which is key to my teaching philosophy.

As a mathematician, I recognize that even math emerges from a particular social context which complicates the ways different people participate in its institutions. As a teacher, I am dedicated to learning with my students. The trust I have come to place in them gives me hope for our capacity to collectively build a better future together. I look forward to being part of a community of critical educators, developing curriculum for courses that engage with the political contexts of science, and continuing our collective struggle towards self-determination.