

Sean McAfee

Teaching Statement

Background

The path that has led me to a career in education has been nontraditional. I disliked high school, and this was reflected in my very poor grades. Instead of attending college, I took a job as a clerk at the Chicago Stock Exchange where I eventually became a trader, a position I held for 10 years. This was an exciting but unfulfilling career, and in 2008 I made the decision to leave and pursue a degree in English at UIC, which I then changed to a philosophy major, followed by a (final) change to a mathematics major in my junior year. I fell in love with math and the mathematical community, and when I began teaching classes my first year of graduate school I was delighted to discover a love of teaching as well.

I think my experience on the trading floor helped develop skills such as conflict resolution, administration, and dealing with unexpected situations, and these skills have transferred well to a teaching environment. Perhaps more importantly, though, I believe my experience as an indecisive twentysomething has given me sympathy and the vocabulary to deal with students who might be unsure of what they want to do with their lives, and in particular of what benefit there is to taking a math class.

Philosophy and Methods

My goal in teaching is, in the broadest sense, to provide a positive mathematical experience to all students, regardless of their background or initial level of interest in the subject. It is my job to provide students who are already on 'team math' with reinforcement and directions for further study. It is also my job to engage enthusiastically with students who are skeptical about the usefulness of mathematics by providing concrete examples of mathematical applications to their areas of interest. I try as much as possible to drive home to these students the idea that mathematical thinking does not necessarily involve numbers: the underlying concept of taking a complex situation and methodically breaking it down into more easily understood pieces is something that applies to situations in all areas of life, not just engineering or computer science.

More specifically, I have a philosophy of **prioritizing both student engagement and course clarity**. I make a point to arrive in class before my students and engage in non-math small talk before class; I find that this energy tends to carry into the lecture in the form of more student participation. I try to give my lectures a conversational tone which encourages casual discussion and minimizes the anxiety students often have when asking questions. I am happy when students give different answers to a question asked to the class, and facilitate (friendly) debate whenever this occurs. I genuinely enjoy interacting with students, and I feel this is reciprocated in my students' high attendance and willingness to interact in class.

I mention above that I prioritize course clarity as well as engagement. I believe that in order for any teaching technique or philosophy to be effective, there must be a very strong basis of organization in both presentation of material and course structure. This serves the purpose of removing distractions from my primary task of fostering student understanding of the material. Math will invariably be confusing at times, and this is a good thing, but student confusion should only come from processing new concepts.

To give a few examples: I believe that grading systems should be simple, course expectations and topics should be plainly laid out in the syllabus and in lecture, student email should be answered promptly and productively, graded work should have constructive feedback and be accompanied by well-written solutions, course announcements should be concise and unambiguous (and not too frequent), and ideas in lecture should be presented clearly, simply, and with well-chosen examples that isolate the content of a new idea.

My teaching has been informed by constantly asking myself "Is this working?" and making adjustments when necessary. For example, early on during the quarantine I was excited to incorporate Zoom breakout rooms into my remote lectures in the interest of encouraging student discussion and teamwork. Partway through the quarter I had students complete a Google form with feedback on various aspects of remote learning, and the breakout rooms were a common complaint (the usual reason being that most students in the rooms would have their camera off and not speak.) After trying several tweaks to the breakout room format, the problems persisted and I responded by phasing out breakout rooms in favor of student-led classwide discussion of particular problems, with encouragement to students to send private messages in chat with their suggestions. I found this system much more effective at engaging students, and I am glad I didn't cling too tightly to my preconception of what breakout rooms 'should be' at the expense of the student experience.

One other major source of growth as an instructor has been through both observing other teachers and receiving feedback on my own teaching. As a grad student, I received a grant to mentor other student instructors by observing them in the classroom and having frequent conversations about what they felt was or wasn't going well. It was illuminating to see various teaching techniques work for different personality types, and it drove home the fact that effective teaching is more than simply following best practices; it involves a good amount of personal reflection and finding a teaching style that complements your strengths. I meticulously read my student feedback looking for (productive) comments on how I can improve, and I always learn something new when my instructor peers observe my lectures and offer feedback.

Future Goals

My current teaching interests deal with ways to improve student interest in mathematics and accessibility to learning materials. I am currently under a grant to help develop an open source calculus textbook for Northwestern University students. Aside from the cost savings to students, I am excited about the adaptability such a resource could provide in tailor fitting a course to specific student needs. In particular, I would like to collaborate with other departments whose major requirements include mathematics to develop small projects which directly to apply to the student's area of study. I think a library of such projects incorporated into an online resource would go a long way towards fostering student interest in mathematics. I am also quite interested in pursuing educational research. I am admittedly new to this field, but I am eager to work with experienced

educators to collect and analyze data on how pedagogical and structural changes affect student success.

I expect that I will always be in the process of modifying my teaching style and practices, and that is one of the reasons I enjoy my job so much; the dynamic nature of teaching is what makes it so rewarding. I have been lucky enough to work with a number of highly talented people who have helped inform how I approach my teaching, and I look forward to learning from and collaborating with others throughout my academic life.