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Teaching Statement

I have been inspired in my teaching practice by my passion of mathematics and my desire to share this passion with my students. At the core of my teaching is the belief that learning math can be valuable and joyful for every student. My role as a teacher is then to create an inclusive and engaging learning environment, and provide my students with the tools that will allow them to develop their mathematical skills and their appreciation for how valuable math can be.

My teaching philosophy has transformed over time and evolved with a variety of teaching experiences I have had. From Pre-calculus and Trigonometry, to Analysis for undergraduates, along with lecturing for a summer school for graduate students interested in research in operator algebras, I have found that the best learning outcomes come from engaging students, making them active participants and helping them connect with the material. For instance, when teaching the sums of sines identity in Trigonometry, I showed a video of a guitar being tuned so they could hear how two sine waves of different frequency added together sound like a single sine wave with the average frequency and varying amplitude. This was a short and simple way to keep students motivated to learn a topic that might seem inconsequential at that moment.

Engagement is even more important in large format classes, as I noticed when giving a lecture in Calculus 2 for Engineering. As part of the University of Iowa Certificate in College Teaching, I had the chance to give two lectures in an auditorium with 150 students in Calculus 2. Maintaining the attention and interest of students in a large classroom can be challenging. In my second lecture I had students work on small exercises and concept checks with their neighbor and then submit their answers online so I could gauge their understanding in real-time. I could notice the improvement in engagement and attention compared to my first large lecture where I only asked direct questions and only had some replies from students in the front. When students get a chance to work with neighbors on low stakes learning assessments and submit their answers to get real-time feedback, they get more confident in their skills and more at ease to ask or answer direct questions during class.

Keeping students motivated and engaged is crucial for students to maintain an active role in their learning process. Learning math at any stage requires a combination of being exposed to new ideas and concepts, seeing examples of how these can be applied, and (most importantly) working through various examples and applications. When I teach, I make space for each of these components. I start my classes with a question from last class so my students recall what we have just worked on. This sets the stage for me to introduce the new topic via an example that connects to previous material. Seeing new topics through examples that are connected to previous work provides the scaffolding so I can then ask my students to work on similar examples by themselves and finally I give them a more general exercise that builds on the work we have done and prompts them to make deeper connections with

the material. In this way students are gradually building their knowledge and skills while actively participating and ultimately getting used to doing math. To me, math is something one gets used to by practice and incremental learning, rather than a topic one is taught.

As a mathematician, a recurring reaction I get when someone learns of my profession is "I used to hate math in school" or "I am so bad at math". One of my goals is to repeal these perceptions about math. Students in my classes come from different backgrounds, are enrolled in different majors and have different goals and expectations from a math class. It is very important for me to make sure all of them feel welcomed and valued in my classroom so they can have a positive and enriching experience and improve their confidence in their math skills. This manifests quite strongly in how I encourage students to participate and ask questions during class. Setting up a friendly and comfortable atmosphere for discussion improves their confidence and allows them to learn from each other both when they are correct and when they have misunderstandings. My policy is to encourage every question or comment from my students during class and treat them as an opportunity for everyone (including myself) to learn. For example, when seeing some polynomials as examples of odd and even functions in a Pre-calculus class, I had students asking if the parity of the degree of a polynomial corresponds to the parity of the function. Even though the conclusion was not correct, it did show the students were engaging with the material. In many other situations, questions can help identify and address misconceptions.

Another important part of making sure my students have a positive learning experience is ensuring my students feel they belong in this learning community. For instance, on previous occasions I have had students enrolling my course late (a few weeks in) and not feeling confident they are in the right place. I have made sure to set up an appointment so we can plan how they can catch up with the topics that have been covered and the assignments that have been turned in. On other occasions, I have had students that stop showing up for some days without notifying me of their absence. When something like this has happened, I have reached out to them to make sure I do what I can to help them get back on track and support their learning path. Providing understanding and flexibility in special situations when it is needed is important to me and appreciated by my students. At the same time, having clear goals and expectations from the beginning makes it easier for my students to concentrate more on their learning and less on the other course logistics (due dates, quizzes, etc.). Being transparent, clear and supportive plays a big part for me in maintaining good communication with my students.

Looking forward, I will continue my teaching practice under these guiding principles. I want to share my passion for math with my students, and most importantly, I want to sustain a conducive learning environment ensuring my students stay engaged and feel they belong in this learning community.