

TEACHING STATEMENT

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On the first day I taught recitation, the class was as silent as a grave. It dawned upon me that I used to be exactly like my students now. When I was in their shoes, I was too afraid to ask questions because I didn't want to appear foolish. I sought to connect with my students and be a positive influence on their learning experience. So, I appealed to their fears and lightened the mood with a joke "My, those crickets are loud." The class chuckled. The tension erased in that moment and I realized that putting my students at ease would help them learn more effectively and made them more willing to ask questions in class.

I strived to be an approachable teacher and to create a space that allowed for even students who struggled with math to follow and enjoy the class. I made sure to relate to my students and show them I cared. This really helped diffuse a lot of the anxiety and allowed my students to better receive the material. Keeping in mind that everyone has a different way of processing information and approaching solutions to problems, I also made sure to go into multiple ways of solving problems whenever possible. This seemed really alien to my students at first. When speaking to them outside of class, I found that many students coming out of high school are not taught problem-solving skills. The process they adopt is based on following a strict recipe to arrive at the answer. This mind set often led to students making very strange errors on exams, where they often would completely miss what a problem was asking for and just regurgitate what they vaguely remembered. Thus, I tried to dismantle this attitude of memorizing the steps of how to get an answer without really understanding the reasoning behind them. I started to stress the why whenever I discussed the process of solving a particular problem, explaining each and every step, even when it seemed redundant. I found remarkable improvement afterwards.

I also firmly believe teaching should not just consist of simply doing example problems for the students. Students who are told exactly what to do, are more prone to forgetting what they are taught. I find that students learn best when they figure out what to do by themselves. So whenever I go over an example, I ask the class what to do at each step and why, and I do not proceed until someone answers. As the semester progresses, students start answering more quickly. This helps them actively participate rather than passively learn and helps to establish a sense of community.

In order to encourage shy students to vocalize their progress and also foster communication with others, I created worksheets to be done in groups. However, I found that just having the students work on worksheets together wasn't always enough, since some students would still work by themselves. I then decided to pass out only a limited number of worksheets where each group had a single worksheet. This did the trick. I went around the room to answer any questions. After students were finished with the worksheet, I had one student per group come up to the whiteboard and write down their work on the board. I would then go over the solutions, correcting any errors that the students made. This process allowed class to be more engaging and made students more likely to ask questions.

My first experience teaching began with recitations of regular and honors sections of Analytic Geometry and Calculus III. Over time, I taught different subjects for recitation including Analytic Geometry and Calculus I and Elementary Differential Equations. I then became a course instructor for Precalculus during two summer sessions. While I was a graduate research assistant, I was involved in a few activities related to higher level material, including organizing a summer seminar on graduate level Numerical Analysis in which each student would present a different topic to help prepare for the preliminary exam.

While finishing up my dissertation, I was given the opportunity to take on a mentorship role for a joint research project with two junior graduate students. One of my responsibilities as the senior graduate student, was to get them up to speed on some of the background material in Numerical Analysis that I am an expert in, such as Kalman filtering. While I was mentoring, I also gained experience with using the iPad to occasionally lecture remotely through Zoom. During our weekly meetings, I adapted the nature of our session to their engagement. Sometimes I prepared lectures on conceptual material relevant to our research and other times I

worked with them on more concrete problems. One of the challenges I faced with this new role was how difficult it was to put myself back in the shoes of someone new to material that was so familiar to me. Interestingly, the experience gained in preparing for a high level talk at NIST for a broad audience had helped me organize the main ideas I wanted to impart. Since then, I have been careful at crafting lessons that are grounded and convey the big picture and relevance every step of the way.

I strongly believe that for optimal learning a combination of whiteboard teaching and, for small size classes, the use of flipped-classroom model, combined with the use of visual aids in the form of images, graphs, tables, on projection screens, are best. I am well acquainted with the use of technology in the classroom and plan to use it if technology compatibilities are available in the class.

I find teaching to be highly rewarding. I loved the feeling of being at the board of my classroom facing my students. It always boosted my confidence and was just fun. One of the things that was most rewarding for me was when a number of students would tell me that they didn't even like math, but they felt like they really learned in my class. Once, one of my students wrote a sweet note on her final exam saying how much she enjoyed the class with me. That made me so proud to be teaching. I loved knowing when I actually got through to my students. My hard work in preparing my class actually paid off, and my passion for math became contagious.