Teaching Statement

My teaching philosophy is informed by my experience as an instructor. I was a graduate teaching assistant for two years at Oregon State University; in this capacity I taught recitation sections for college algebra, discrete math, vector calculus, and differential equations. I have been a graduate teaching assistant for five years at University of Arizona; here I have been the instructor of record for college algebra, precalculus, and calculus courses. In addition, I have had a very unique teaching assignment-- I was the primary instructor for courses on Fourier analysis and probability offered to a group of French exchange students.

As both a student and an instructor, I have learned the value of interactive lectures. An extreme example-- as an undergraduate I remember a physics lecture where the professor insisted that the entire audience get out of their chairs and “be an electric current” by forming a single file circle, and walking a lap around the room. Although I only grudgingly went along at the time, this lesson will forever remain a part of my intuition for electric circuits. As an instructor, I've found that it doesn't necessarily take this much creativity to keep students engaged. For example, if I solve an exercise on the board during a lecture, I will make this activity more interactive by asking the audience to supply the steps.

It has been my good fortune to have small audiences (most semesters < 35 students). With this in mind, I believe strongly in learning the students' names. In the classroom students choose whether to work on a problem I pose to them; or instead to do nothing, but appear deep in thought. Their choices are based on how they feel, not what will maximize their learning. When I address students by name, it makes the class more of a community, and less like a motion picture. My goal is to create an environment where students feel personally accountable to me to do the work, and where nobody has the sense that they are “falling through the cracks”.

Teaching college algebra and calculus, I have learned to use class time in ways that emphasize both knowledge and problem solving. I like to put a problem on the board, walk around for five minutes to take questions (and make sure the students are working), and then demonstrate a solution on the board. In my opinion, this is better than using the five minutes to do another example. By engaging the students in the lecture, this activity is both making a stronger impression, and forcing students to practice problem solving skills. To understand a concept, students need to interpret it in the context of an equation, a graph, a table, and in words. This always informs my choices of lecture content; for example, when teaching the product rule, I ask students to calculate \((fg)'(2)\) using formulas for \(f\) and \(g\), graphs of \(f\) and \(g\), and tables of \(f, f', g,\) and \(g'\).

Let me describe one unusual teaching opportunity that has influenced me as an instructor. During Spring semesters of 2013 and 2014, I was invited to teach a course on Fourier analysis and probability to a group of French exchange students visiting Arizona's AME department. Teaching students from another culture taught me to know my audience; I learned that in France, teachers are a little tougher in the classroom. At first the students took my familiar speech and flexible expectations as a sign of weakness; but I adapted to be more demanding of them, and we found a productive middle ground. Being a graduate student, it was great to teach these advanced classes. I learned that concrete examples are just as important in Fourier analysis as they are in college algebra. I also learned the value of animations for communicating mathematics, for example I used an animation of the Gibbs phenomenon to demonstrate the difference between \(L_2\) and uniform modes of convergence.

With these ideas and experiences under my belt, I'm ready for whatever course I will teach next. I will continue to learn about teaching mathematics, and to grow as a professional educator.