

TEACHING STATEMENT

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My first grade teacher was Mrs. Holzapple. I have few concrete memories of what her class was like, but there is one that has stayed with me: Career Day. In a costume party of sorts, each of us dressed as what we wanted to be when we grew up. There were kids in white doctor's coats, fireman's hats and police uniforms. I wore a flowered dress and carried a notebook and red pen. I wanted to be a teacher.

Since then, my notion of what type of teacher I would become has evolved considerably. By the time I was a freshman in college, I knew that teaching mathematics at the college level was what I wanted to do. Of course, this still leaves many options: whether to teach majors or non-majors, large classes or small, abstract algebra or college algebra. While at Texas A&M and West Point, I have had the opportunity to gain experience with various types of classes and students. Though every course and every student is different, I try to use my time both inside and outside the classroom to meet students' needs and inspire them to understand, appreciate, and even grow to *enjoy* mathematics.

A teacher's traditional place is inside the classroom, and I truly enjoy being in a room full of students. Before class, I like to chat with my students about what is going on in their lives. I think it's important for me to get to know them and for them to know me. I typically try to start class by allowing time for questions, in case anyone is unclear on what we covered in the last class or what may have been in their homework or reading. Then we begin the day's lesson. This usually consists of me lecturing at the board, while asking plenty of questions to ensure my students are following along and understanding as we go. Sometimes this portion of class will continue for the remainder of the period. More often, though, I like to allow some time for students to test their own understanding of the material by working a few exercises at their desks. At West Point, where class sizes are capped at eighteen, I have them work individually or in pairs, and I circulate the room to answer questions and see how everyone is progressing. I may notice a common mistake and stop the class to clarify, or ask a student to present to the class his or her solution to a challenging problem. In their end of semester feedback, many students have said that this balance of lecture and individual work has been a valuable way for them to learn. Of course, not all classrooms can have such a small number of students. In larger classes, such as those I taught at A&M, students can also benefit from a combination of lecture and group work. In this environment, I tend to spend more time at the board, while still maintaining an interactive atmosphere. I do this by asking questions that require the students to think as we go, so that class feels more like a conversation than a one sided speech. Sometimes I break up my time at the board by having students work a problem in groups. This way, I can circulate among them and students have the benefit of an example they have completed on their own, rather than adding to a list of examples I have worked out for them. As an additional perk, they can meet their classmates and begin to form study groups.

Though I have taught classes ranging in size from one to 80 students, I always try to create a dynamic that balances high expectations with a comfortable learning environment. I encourage students to enter my classroom ready to participate. I expect them to focus on the material, ask questions, and genuinely put their minds to work. One of the most important challenges I issue to my students is that they learn to communicate their ideas effectively. Before college, many students' concept of a solution in mathematics is a jumble of scratch work and a boxed number. Starting in the lecture, I show students how to present their written work in a clear manner, and I expect such coherent

presentation from them in their assignments. This is especially important in an introductory proof writing class, since the skills students develop there will be very important as they go forward in mathematics. In my Foundations in Mathematics course at West Point, I often began class by having a student present a proof from the previous night's suggested homework. Afterwards, I encouraged the class to ask questions and offer ideas and suggestions on how the proof writing could be polished. This heightened students' awareness of the importance of their communication skills, both written and oral. Having high expectations of my students is an essential ingredient to taking an active role in their education, and thus encouraging their success.

An effective teacher must not only have high expectations, but must also ensure the classroom is a comfortable place for students to learn. Since every class is different than the next, flexibility is key to making each student feel at ease. The contact I have with students during class time helps me to understand their various learning styles and struggles and adapt accordingly. Some students learn well in groups, others via lecture, and others enjoy the competition of an occasional game to break up a typical class day. Flexibility on my part can often relax students and increase their confidence. In my experience, their fear of the course soon decreases, and real learning can begin. Perhaps the biggest part of creating a comfortable classroom is the teacher's personality. I try to be friendly and interactive with my students while I teach. Questions are always welcome, and being approachable is essential to this. It is also important for students to know that I am human! I admit if I do not know the answer to a student's question, and if I make a mistake, I do my best to handle it gracefully. Allowing my personality to show while I teach lets the students know that I genuinely care about their learning and makes for a more comfortable environment for both them and me.

A teacher's actions outside the classroom are equally important as class time. Meeting with students in smaller groups has been one of the most rewarding aspects of my career so far. I make a concerted effort to encourage students to take advantage of office hours, and if a student is seeking help, I try to be flexible enough to be sure they can get it. I have found the smaller office setting to be an invaluable resource for getting feedback, as it helps me to better see where students are having trouble with a particular concept. One thing I have discovered in this setting is the importance of encouraging students to vocalize their specific questions. If a student says "I don't get induction," and I simply repeat what we have already covered in class, often nothing is gained. If instead they have to think about what is at the heart of their question and articulate their thoughts, it helps both of us to better grasp their level of understanding. Sometimes students realize they know more than they thought, and most importantly, I am able to give them more personalized instruction.

Even after class and office hours, a teacher's interaction with students is not complete. I think it is important for college teachers to remember that most students are in school with the end goal of finding a job. Not every math major wants to become a teacher or a research mathematician, and faculty members need to make an effort to understand other interesting ways that students can put their degrees to good use. At West Point, as one of two academic counselors in a mathematics department of 70 faculty, I have enjoyed mentoring and counseling students about what a degree in mathematics has to offer. I have found it is not enough just to be excited about mathematics, but it is important to be motivated to help and encourage students to find a career that utilizes it.

Effective teachers must involve themselves in their students' education, not only while in the classroom, but also beyond. Regardless of the setting, I try to challenge my students to meet high expectations, while doing my best to create an atmosphere that is flexible and encouraging for them. I truly enjoy watching students gain an understanding of mathematics, and though I still have much to learn, I look forward to the experiences that a lifetime of teaching is sure to bring.