

Teaching Statement

I love to teach mathematics because it allows me the opportunity to share and explore the beautiful world of mathematics with others. I am also motivated by the belief that everyone has the ability to engage meaningfully with mathematics and that such an engagement is empowering to students. It is especially important to me that future teachers of mathematics develop a sense of their own mathematical power and hold a view of mathematics as a rich, creative, and meaningful discipline as their attitudes about mathematics will influence many young minds.

As a teacher, I see myself as a facilitator who provides an environment that allows all students the opportunity to engage in mathematics in ways that allow them to grow in their mathematical knowledge, their ways of doing mathematics, and their sense of who they are as a mathematician. In order to create an appropriate environment, I develop teaching plans for each course using the backward design process developed by Wiggins and McTighe (2005). This begins by developing a set of essential questions students should be able to answer at the end of a course. Based on these questions, I develop both content and disposition learning goals that consist of what students should be able to know, understand, and do. The content goals always include conceptual understanding along with appropriate procedural skills.

The next step in my planning is to consider how to assess the degree to which students are meeting the course goals. Then, I work on individual lesson plans. The specifics of my lesson plans are informed by my belief that students construct their knowledge and this construction process is mediated by students' existing knowledge, understanding, beliefs, attitudes, and values about mathematics, mathematics teaching, and who they are as mathematical learners. While I have since learned there is a name for this perspective on learning (constructivism), I developed it through experience. My students simply learn better when they are allowed and encouraged to be active, rather than, passive learners. Because of this perspective, I flexibly adapt my lesson plans to the particular backgrounds and needs of my students. I also adjust and adapt each lesson during class based on student responses. After each lesson, I reflect upon how the lesson went and evaluate students' work. I then use this information to plan subsequent lessons.

For lesson ideas, I look to the standard course materials, other published lessons, other resources I may have, and activities other teachers are willing to share. I also enjoy creating my own activities to blend the particular set of objectives I have for a lesson. In both middle school and college, I have collaborated with other teachers to develop units and projects. In middle school, I collaborated with the art teacher to develop 7th and 8th grade units that integrated art and mathematics. In college, I collaborated with a fellow graduate student to develop a data modeling and analysis project for college algebra. The project involved having students graph, interpret, and write about patterns in U.S. Census data of average salaries broken down by demographics. (We subsequently published research related to this project.)

I value having a large repertoire of pedagogical tools I can implement in the classroom. I have successfully used direct lecture-based instruction, interactive lecture, whole class discussion, small group cooperative learning, group and individual project-based exploration, student presentations, modeling tools (e.g., Excel, Geometer's Sketchpad), writing assignments, self-reflection activities, and portfolios in the classes I have taught. Being able to draw on a variety of teaching techniques allows me to create diverse lessons and multiple ways for students to access

the course content and demonstrate their learning. In addition, I am able to model different instructional methods for future teachers.

It is important to me that my students are thoughtfully engaged in the mathematics during class. To accomplish this, I consider how to accommodate the different rates with which students do activities, how to support students who struggle, how to make the content interesting and worthwhile, and how to get students to question and evaluate rather than move through the material mechanically. I also consider how I can assess student thinking during class. This almost always involves hearing students talk. To support this, I foster a classroom environment in which students' questions and ideas are respected by me and fellow students.

I am highly respectful of the fact that my teaching affects people. This is one of the great joys of teaching and also a great responsibility. So, having positive relationships with my students is very important to me. Besides creating a supportive atmosphere in the classroom, I encourage students to visit me outside of class and contact me via email. I am interested in pursuing other ways to communicate with students outside class, for instance by using tools like Skype and Elluminate.

I enjoy teaching a variety of courses. I have successfully taught middle school mathematics, lower level college mathematics, mathematics for pre-service elementary teachers, higher level college mathematics, and mathematics for in-service middle school teachers. I have also conducted professional development for in-service 5th grade teachers. While I would welcome the opportunity to teach any of these courses again, I also hope to expand my teaching experience. I have spent a significant amount of time studying the teaching and learning of linear algebra, which has included observing the teaching of linear algebra, grading linear algebra work, and interviewing students taking linear algebra. As such, I am particularly interested in teaching linear algebra. In terms of interdisciplinary courses, I would love to design a course about the role of mathematics in navigation that would include map making and navigation techniques from the ancient mariners to modern global positioning systems.

I aim to grow continuously in my teaching practice. To do this, I read extensively both the research-based and practice-based literature. I ask for feedback from my students. I discuss teaching with fellow teachers, observe others teaching, and invite people to observe me. I then spend time reflecting on how to integrate this information into what I do as a teacher.

The fact that perfection in teaching can never be achieved makes teaching both challenging and inspiring for me. But the fulfillment I find in teaching is derived from helping students to value knowledge in general and mathematics specifically, to learn how to learn and think critically, and to engage in the process of exploring themselves and the world around them.

References

Wiggins, G., & McTighe, J. (2005). *Understanding by design* (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.