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Teaching Statement

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Teaching has been a lifelong passion for me. In fact, as a child I was the teacher of an imaginary class of first graders. Since those illustrious days, I've volunteered and worked as a substitute teacher in high school and elementary school classrooms; assisted at academic summer programs; tutored both struggling and academically advanced students; and taught in my own middle school classroom, at gifted programs, and finally at the college level. I have taught introductory courses where the challenge was to interest students in mathematics and convince them it was actually something they could do successfully. I have also taught higher level courses for math majors where I found myself carefully considering how to be a good mathematical role model, nurturing students' interest in math while expanding their ideas about what and who a mathematician could be.

When I chose to attend the University of Massachusetts, I did not know how varied my experiences as a teaching assistant would be and how much I would learn from them. I have taught recitation sections of calculus courses and assisted in the introductory proofs course for math majors. I have also had the opportunity to instruct my own sections of a few different courses. One of these was the basic math course for students needing to satisfy university requirements, but I also was able to teach sections of multivariable calculus and linear algebra. For these courses, my duties were the same as faculty members teaching the course. This involved planning and teaching all the lectures for my class of 25 to 35 students, assigning and grading their homework, keeping track of their progress, meeting with them during office hours, and working with the other instructors to design and grade midterm and final exams. Additionally, I was allowed to run an independent study in ring theory for an undergraduate student.

I think my style in the classroom can be described as organized and calm. I plan lessons carefully and aim to present topics in a very clear and logical way, trying to give the students a feeling for the reason the next topic arises naturally from the current one or another area of math where they might have seen a similar progression of ideas. For example, when teaching multivariable calculus, I like to remind students often of a type of problem in the single variable case and how they used certain tools there. Then I bring us to functions of two variables and how the statement of the problem and the solution need to evolve. After this, we can discuss bringing the problem to an even higher dimension, where the physical situation may not be imaginable to us, but the math still lets us ask the question and find the answer.

Putting so much time into planning allows me to be relaxed in the classroom. When I have a clear idea of what I want my students to learn, I can enjoy the experience of leading them to that insight. I know my students feel this and they usually catch on quickly to the fact that I want them to ask me questions, interrupting me if need be. Also,

when I pose a question to the class (which happens frequently during the course of a lecture for me), they soon realize that I expect them to answer and I am willing to wait for the answer. This allows me to create a real dialogue in my classroom that I certainly enjoy, and which I hope the students enjoy.

One aspect of teaching that I have been focusing on lately is a different sort of dialogue, the one between students. I know from my own experience that students often learn more from each other outside of class than from the lecture during class and I want to find ways to encourage this collaboration. I have found two successful methods that I want to continue to use and develop.

First, I hold at least some of my office hours each week outside of my office, even outside of an academic building. I meet with students in the main cafeteria in the student center. When I started doing this a year ago, I soon realized that these office hours were better attended than any I had ever held before, and that students were showing up to them an hour beforehand to work with each other. These were exactly the results I had hoped for, and they happened completely naturally from the students' perspective, without any encouragement from me. These "office" hours have continued to be a great success, letting the students get to know each other and find study partners, and letting me really see them at the task of problem solving.

Along the same lines, several other graduate students and I voluntarily designed and ran an extra session for the first semester calculus students during the spring semester of 2007. We called the two hour, one evening a week sessions Additional Calculus Experience (ACE) and tried to encourage students from every section of the large course to attend, especially those who were worried about passing, had failed a previous semester, or just felt like they needed extra support. I know the students who attended these sessions learned a tremendous amount from them, but the four of us who ran them possibly learned even more.

We began with the idea that the first hour of each session would involve a discussion about that week's focus. Some topics we thought we might discuss were how to develop study skills, how to approach a word problem, or how to read and use a math textbook. The second hour would let the students practice these new skills and ideas. We would give them some problems, maybe related to the topics they were covering in class but maybe not, and let them work together in small groups on the many blackboards in the room we were using.

The group work hour was such a success that the discussions we had planned for the first hour quickly disappeared and the collaboration lasted the full two hours. The students came in ready to get to the boards and start their work. It was incredibly exciting to see three or four students gathered around a blackboard with a problem they had no idea how to solve and, bit by bit, to come up with a solution that all of them had participated in and understood fully. After the semester ended, the four of us who had organized these sessions talked a good deal about what had happened, what had worked and what could be better. There were discussions about how to continue the program at UMass, and I

know we all hope to find ways to use what we learned about encouraging and managing that kind of student collaboration in our future work at different colleges and universities.

Through all my experiences with different aged students, different levels of material, and different classroom environments, I have found that I enjoy thinking about curriculum from two different standpoints: what topics we feel it's important for the general population to know, and how we should train young mathematicians. I am very excited about continuing to think about these things as I teach and design new courses. I have also learned a lot about myself as a teacher, my strengths and weaknesses and where I feel I belong in the diverse world of math education. The realizations came slowly and sometimes painfully, but I feel I have been moving in the right direction, and I am anxious to start the next step in my evolution as an educator.