Teaching Statement

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Why am I so excited about teaching mathematics? I fully embrace the opportunity we have as mathematicians to help students learn to unpack complex ideas and think creatively about technical issues. More than this, we are particularly well poised to foster the pursuit of beauty and simplicity in the technical and complex. As an educator, I get to walk into the classroom and pose simple questions that engage students' curiosities, and then use that engagement to expand their facility with intellectual tools. Even students who arrive with technical phobias can have their preconceptions of their own limitations broken through being challenged and supported mathematically. The moments where students laugh in surprise at how mathematical concepts can come together with such grace convince me that I could not ask for a better job.

I began thinking seriously about education as a student at a small liberal arts college, where undergraduate education and community were a high priority. In this environment, I learned the importance of challenge and collaboration to the process of personal growth. Once in graduate school, I began work immediately towards an education minor. I participated in seminars which designed training programs for teaching assistants; I took a course on curriculum development and the history of math education in the US; I took another course in informal science education, where we engaged in several outreach projects. Each of these experiences enriched my perspective on our role as educators and reinforced what I already knew about the value of challenging students and encouraging them to support each other through their education. Collaboration helps motivate students to stick with difficult problems, while pushing their intellectual boundaries helps build their confidence. Educational research tells us that these teaching practices work for both the strongest students and the students who struggle.

Taking these lessons to heart, I have employed the use of collaborative and active learning as much as possible in my own classrooms. Even when time was scarce, I have worked hard to balance traditional teaching and evaluation with getting my students up on their feet and working together. I particularly got to focus on encouraging active learning as an instructor for the Wisconsin Emerging Scholars program, modeled after Uri Treisman's efforts to motivate students from underrepresented groups. In this program, students are placed into small discussion sections which meet for six hours per week, where they work together to tackle highly challenging problem sets. I witnessed my students bonding, growing as learners, and becoming more and more excited by the material. They, in turn, excelled in their coursework and built a support network for future semesters.

I believe that it is also important to ensure that students take the lessons which they learn together and solidify them on their own. By taking the time to write

out their ideas clearly, my students can better gauge their own understanding. To this end, I place a strong focus on mathematical writing; I often include a writing component in their grades and assign weekly summaries wherein they distill the ideas from class in their own words. I reinforce clear communication in my own presentation by taking time to talk about how students could enhance their written solutions in efficient ways.

My interest in education has also always been rooted deeply in a philosophy of mentorship and outreach. I was hooked by teachers who took personal interests in supporting me, so I in turn work to foster mentorship connections in many contexts. This can manifest as large projects, such as co-organizing a Sonia Kovalevsky Mathematics Day for middle and high school girls here at Dartmouth. This can also manifest in small gestures, such as sharing articles like the recent "Why Science Majors Change Their Minds"[1], which lead to students seeking me out for conversations about the issues in pursuing an education in the sciences.

I served as a Teaching Assistant Coordinator throughout graduate school, wherein I was responsible for helping to train new teaching assistants by running practice sessions, observing discussion sections, and talking with them about their own goals and philosophies. This summer I will be co-teaching the Graduate Teaching seminar, which trains new graduate students in a wide range of pedagogy, introduces them to common issues in the classroom, and gives them their first experience teaching a class. Serving as a teaching mentor has done as much to teach me about being an educator as it has to support new teachers in their own growth.

I also worked for the Mentorship Program for Women in Math and Science at the University of Wisconsin, a semester-long program in which high school girls meet weekly to work in small groups where they tackle mathematical projects. The real success of programs like this and the Sonia Kovalevski Math Day was showing these young women that there is room in mathematics to puzzle and experiment and find their own intellectual strengths. Whether or not they are awakened to a new love of mathematics itself, helping students find confidence in their abilities to conquer the complex and intimidating is my favorite part of the job.

Every time I speak about mathematics—with my students, in the women's mentorship program, at children's outreach fairs, or sharing with my peers—I have the same goals in mind: (1) to expose people to new exciting ideas in mathematics, (2) to show them that understanding and appreciation of these ideas is within their grasp, and (3) to plant seeds of new ways of thinking. Amongst my fellow mathematicians, I am deeply satisfied by opportunities to help foster community, thus supporting intellectual growth, through the development of mentorship ties. I am dedicated to my continued growth as an educator and active contribution to the community throughout my career.

[1]Drew, C. "Why Science Majors Change Their Minds (Its Just So Darn Hard)." The New York Times, 4 Nov. 2011