Teaching Statement

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Background

My undergraduate program was in the combined field of mathematics and math education. Thus I was simultaneously submerged in the study of abstract mathematics, along with the study of how to communicate mathematics to young people. Though I did not pursue a career in secondary education, my experience in studying education has stayed with me and has shaped my views about teaching.

I am struck by the dichotomy of preparation for educators at the secondary level as compared to preparation for educators at the collegiate level. As an undergraduate preparing for secondary teaching, I felt that far too much time and effort was spent examining issues peripheral to the material of mathematics. When I instead chose to focus my studies on the mathematics itself, I found the opposite extreme. In advanced undergraduate and graduate study, I was taught by too many faculty who expertly commanded the material, but seemed disinterested in presenting it effectively. It is not uncommon to hear from fellow grad students or faculty the phrase, "I have to teach." I *want* to teach. Of course it is hard work, but there is something very rewarding about thinking back to what it was like when I first learned a concept, explaining it by highlighting precisely the most difficult parts, and seeing the "light turn on" in my students.

It was clear to me immediately from my first day as a graduate Teaching Assistant—even instructing College Algebra—that the college level was where I wanted to teach. I have relished the dual role of studying research-level mathematics while at the same time teaching mathematics to undergraduates. We are always told that the number one priority is progress toward the degree, and that teaching comes second. In recent years, however, I have noticed that I am itching to dive headfirst into my teaching. I am looking forward to structuring courses, planning lessons that go significantly beyond the book, and being available to my students to a level that is difficult for a graduate student to achieve because of time limitation pressures.

Experiences

One of the opportunities I have had as a graduate student was to be the Teaching Assistant Coordinator for two semesters. My job was to visit the courses of first-semester teaching assistants and give them constructive feedback on their teaching effectiveness. I very much enjoyed using my experience to help guide the new teachers. It was rewarding to make a return visit to each class and see that many of the TAs had significantly improved by implementing some of my suggestions.

I also had the opportunity to be a Workshop Instructor for the Emerging Scholars Program (ESP) at UIC. Students work in groups for two hours twice a week to solve thought-provoking problems related to the topics of a math course they are taking concurrently. Unlike many courses where students work routine problems and can check their answers in the back of the book, this program is designed to mimic how researchers do mathe-

matics: everyone works together in groups on difficult problems, but nobody knows the answer. This encourages a depth of understanding and a focus on the process as opposed to just getting the right answer. The first major challenge for the instructor is to develop problems that push the students, yet are not so difficult that the students need extensive help from the instructor to solve them. The second major challenge is to help a group that is stuck to get on track without explaining how to solve the problem. It was a joy to motivate students to think deeply and to create their own clever solutions.

Currently, I am enjoying a rare opportunity for graduate students. I am the lecturer for a section of Applied Linear Algebra. I invite you to view my interactive web syllabus at `http://www.math.uic.edu/~grizzard/Teaching/Syllabus.html`. This has been an exciting teaching experience for me.

Philosophy

The crux of my teaching philosophy is well-expressed by the phrase, "Mathematics is not a spectator sport." Math classes too often turn into a situation where only one person is talking the entire time and everyone else is furiously and often mindlessly writing down what is being said. As TA coordinator, I often explained to new TAs that simply "covering" material by lecturing on it does not mean that students are understanding it. My philosophy of teaching is to shift the burden of the material from the teacher to the students as much as possible.

One way to accomplish this is by implementing group work. I was first exposed to this idea in my undergraduate math education curriculum, but did not get a chance to use it effectively until participating in the Emerging Scholars Program. This type of program has had a great deal of success at campuses around the nation, and I witnessed this success firsthand for many semesters. After working together to solve the problems, students also have to communicate their ideas to others, which solidifies their understanding. Group work is ideal for situations where students are getting a lecture apart from the group work setting.

As a current lecturer, I can see some of the limitations of group work, particularly with the time constraints of a course that meets only three hours per week. I make sure to keep students thinking and working during lecture by having them fill in steps, work at their seats, and answer questions in class. Still, some concepts can best be learned or solidified in groups by a well-crafted worksheet or project. I also require each student to present a problem to the entire class sometime during the course of the semester to help keep them motivated and to develop their communication skills. I can see myself developing courses with under-utilized ideas such as group work and seminars as a major part of the curriculum. I am excited about this possibility as I take the next step in my career.

Conclusion

My career path has alternated between focusing on the study of mathematics and the teaching of mathematics. It is now converging to an ideal position combining my knowledge of mathematics with my desire to teach in the college setting. I look forward to this opportunity.