

Teaching Statement

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Teaching Experience

I have been teaching mathematics at various levels for over 10 years. Most recently, I have been teaching while being a graduate student at the University of Georgia:

- Full responsibility for a differential calculus class , Spring and Fall 2004
- Full responsibility for a precalculus class, Summer 2003
- Full responsibility for calculus lab classes using MAPLE, every semester since Fall 1999
- TA for problem help sessions for one year and for calculus lab help sessions for two years
- Participated in teaching seminars for two semesters

Before I came to the United States, I also taught in Seoul, Korea:

- TA for a calculus course for engineering students, Yonsei University, 1996–1997
- Mathematics substitute teacher at a private middle school, Fall 1996–Spring 1997
- Taught mathematics to elementary school, middle school and high school students at a private academic institute, Fall 1997
- Received a middle school mathematics teacher license while being an undergraduate student in the mathematics department at Suwon University, Spring 1994

Furthermore, I have been tutoring students (middle school, high school, and undergraduate mathematics students) since 1990.

Teaching Philosophy

I see the work of a teacher similar to that of a performance musician. Musicians work hard to understand a musical piece for performance and interpret the piece into their own style. When they perform they communicate with the audience through the music.

I think teaching mathematics involves communication with students. An important component of teaching mathematics is active interaction with students which is similar to the musician's communication with the audience. It takes a lot of effort to explain mathematics well to students and to be a teacher who can help them to interact and understand. I digest the material myself and think about an easy and clear explanation for students. From this process, I learn how to explain the things I understand to the audience. Thus I think teaching mathematics is important not only for mathematics teachers but also for research mathematicians.

To make a confusing concept clear, giving counterexamples is important. I want to help students think about concepts when they learn. I stress that mathematics is a [symbolic] language. When I introduce notation to a class, I explain its meaning so that students can be aware that they are not studying complicated dry symbols but rather condensed beautiful expressions containing meaning. At the beginning of each class, I draw the students' attention on the topic of the day

and stress the main subject we need to think and learn about during that class. Giving students problems related to the main subject before the lecture and returning to them during the lecture is another way of making students think during the class. Sometimes giving attractive examples before considering abstract concepts is effective.

Unlike musical performance, audience participation is vital when teaching mathematics, I believe when students start thinking they will ask questions and not be passive learners anymore. Students should work on solving problems to make sure their understanding is correct. While they are solving problems they will learn a lot and be able to measure how well they understand the concepts. I usually give students a quiz once a week to make them work on the material they are learning. When I give exams I always include one slightly bit challenging problem out of five or six problems to distinguish good students from others. I give students a careful solution sheet after each quiz. I communicate with students through WebCT (software that runs on a web server on the internet).

I enjoy reading books and articles related to mathematics to inspire students and myself to think that mathematics is not just only abstract logic but it has been always in our usual life. Mathematical Thinking by Robert Blitzer, A Mathematician Reads the Newspaper by John A. Paulos and The World According to Wavelets by Barbara B Hubbard were especially influential in developing my ability to understand the world through mathematics.

I sometimes introduce some applications from my research area during class. Because I think it is good to show students that their teacher is enthusiastic about mathematics as a researcher. Fortunately there application of my field, wavelet analysis, is in the real world.

In addition to calculus, I look forward to teaching courses in real analysis, complex analysis and numerical analysis. I am excited about not only teaching students but also learning through these experiences.