

Teaching Statement

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Teaching has been an important part of my academic life since 2003, the year I started my graduate studies. Since then, I have had opportunities to interact with a diverse population of students in different settings. Those settings include being a tutor in math learning centers, being a teaching assistant in calculus classes and being the primary instructor for various mathematics courses. So far, I have taught three types of courses: College algebra, calculus, and differential equations.

My first teaching experience was in Middle East Technical University as a teaching assistant for a first year calculus course that is specifically designed for math majors. The course was intended to teach the students how to do mathematical reasoning through proofs, a skill that can not be obtained easily in high school. My duties included conducting review sessions, preparing and grading homeworks, quizzes and exams. The homeworks were assigned to groups and the questions were intended to challenge the students in order to encourage them to share their ideas and to show them there can be more than one way leading to the correct solution. In order to check my students' conceptual understanding, I expected them to show their reasoning skills on familiar and unfamiliar problems. My students needed a lot of help to fulfill the course requirements and we had long discussions on their problems during my office hours. The students were not the only ones that benefited from these discussions. While discussing problems with my students I realized that teaching a subject actually helped me to master it.

During my Ph.D. program in Michigan State University (MSU), I taught college algebra, calculus, survey of calculus (calculus with emphasis on applications to finance), and differential equations. To improve my teaching skills, I value any kind of feedback and would like to give a few examples on how I benefited from such feedbacks. Prior to teaching in MSU, I attended a six weeks long orientation program for international teaching assistants in order to get familiar with the norms of teaching in United States. As a part this program, each participant gave a sample lecture which was videotaped. When I watched my own lecture, I noticed that my hand writing was very small and some of the characters were hardly distinguishable especially for those who sit at the back of the class. I have been writing bigger since then. Another feedback came to me from a fellow TA. In MSU, classes taught by junior teaching assistants are closely supervised. Occasionally, senior teaching assistants pay a visit to these class to observe how they were doing in the classes. One day when I was teaching a college algebra, my lead TA Alberto Condori visited my class. Later, he reported to me that he had been sitting in the class for at least 10 minutes without me noticing him. From that moment on I have tried to keep the eye contact with the students and not to turn my back to the class for a long time.

I also developed various strategies that are useful for my teaching with the feedback I got from my students. In my teaching, I sometimes faced challenges because the background of my students were quite different: While some of them already learned the whole course content in high school, some did not. Group quizzes helped me a lot to overcome this difficulty especially when the more knowledgeable students are distributed to the groups because I figured out that sometimes students can learn from each other in an easier way than they do from their instructor. Another difficulty I had faced with was that the pace of my classes were really slow. I figured out that this was mainly because I had tried to write down every small detail on the board. Later I quited that habit and wrote down only the what is essential and gave the other details orally. In another occasion, while discussing a long problem in a differential equations course, I skipped some of the steps in the argument in order to gain some time for other examples. One of my students told me that I should not skip the final integration to get the answer because that step was exactly the point she had hard time with. That integration was presumably learned in a prior calculus course and its discussion would diverge the attention of the other students. Later, I decided to post detailed solutions of such sample problems online on my web page. These solutions also contained quick reviews for the necessary techniques from calculus.

I also get responses from my students about things I am doing right so that I keep doing them. The following are some quotes from my recent evaluations forms that are written by my students. “ In all Mr. Karakurt presented the material in an interesting and effective manner ”. “He is always very well prepared with different examples that help keep the class interesting ”. Here are some quotes from my students that emphasize on my concern. “(Cagri) seemed to do a lot to make sure we learned”. “As a teacher this TA is very patient in explaining problems and answering questions”. “(He) tried to make sure all students were confident and understanding of the material”.

It is my belief that in order to learn mathematics, one should be ready to get his/her hands dirty. That is why I always encourage my students to work on sample problems themselves and let them discover different aspects of any given subject by themselves. For example, when students come to my office hour or math learning center, rather than directly solving a problem, I ask them to start working on the problems themselves. When they get stuck refer them to a previous problem where a similar technique is applied. Likewise, when I do a review session before a test, I hand out some exercise questions and ask my students to work in groups on these problems and I just write some of the key steps of the solutions on board. Since my students generally performed better with this kind of review, I am convinced that it is more efficient than the classical reviews where the instructor simply solves the questions on the board.

Mathematics is my passion and I enjoy it even more when I teach it to my students. In the future, I hope to add more to my experience by teaching higher level undergraduate courses such as linear algebra , analysis and abstract algebra as well as graduate courses like calculus on manifolds and algebraic topology which are also related to my research.