

# Teaching Statement

Ksenija Simic-Muller

October 4, 2007

## *Objectives in teaching mathematics*

Over the past ten years, I have worked with a wide range of students: from Latino/a third-graders through senior math majors to MBA students, and have found that, at least in my opinion, there are no universal objectives in teaching mathematics. Rather, they are as diverse as the students, their backgrounds, and interests.

For example, when my audience consists of students who already enjoy mathematics, I focus on the beauty of the subject. I like to talk about the elegance of proofs, mention whimsical theorems, tell anecdotes about mathematicians. When working with populations who have yet to be convinced that mathematics is a worthwhile subject to study, however, I focus more on its pragmatic aspect. In the liberal arts mathematics class I taught, I discussed topics such as predatory lending and credit card debts. At the end of the semester, I received positive feedback about these topics from the students: they said they appreciated learning about how mathematics is applicable to their lives. I find this aspect to be especially important when working with minority students. I believe it is important to convince them of the importance of math literacy in their everyday lives and of the importance of performing well in school mathematics for the sake of their future careers.

Though there may be no universal objective in my teaching, there is a common thread: striving to develop critical thinking skills in the students.

In upper division courses, such as linear algebra or mathematical logic, my goal is for students to learn to pose their own questions. In these courses, rather than exclusively lecturing, I rely on the Socratic dialogue. This means having a learner-centered classroom; sometimes having to be flexible with the curriculum, and stray from the lesson plan to discuss an issue that arose during class. An instructor willing to take this approach needs to be knowledgeable in the subject as a whole and be able to help the students see the big picture. For example, when teaching linear algebra, I gave my class an assignment which required them to write how the different concepts they had learned (matrices, vector spaces, linear transformations) were related.

In mathematics courses for pre-service teachers, my goal is to help the students understand elementary mathematics and explore in depth topics that are typically taught through memorization of algorithms, such as fraction multiplication, or the long division algorithm. I accomplish this through incorporating many hands-on activities, frequent use of manipulatives, and asking many questions, or, in words of one of my students, "playing devil's advocate." My hope is that,

when they become teachers, they will strive to develop critical thinking skills in their students as well.

In the work I have done with Latino/a children, our goal (I was part of a larger team) was to use mathematics to develop the students' critical thinking skills about the world they live in. To this end, we created mathematical projects about topics such as immigration, community mathematical practices, or park placement in their neighborhood.

### *Strategies*

I avoid lecture as the primary method of instruction. Instead, I incorporate other methods, most notably group work. I usually assign problems and activities that students need to complete in pairs or larger groups (though they are always given the option of working on their own), and sometimes I give group quizzes, or allow the groups to begin working on homework during the last 5-10 minutes of class. I am also very fond of whole-class discussions. I have found this approach with all students: from college freshmen to in-service teachers.

Almost all the courses I have taught contained a project component. For example, in mathematical logic and linear algebra, the students were to write a paper on a more advanced topic of their own choosing that had not been covered in the course, in pairs or individually. In one of the content courses for preservice teachers, the students chose an article from a practitioner journal and shared with their peers an activity recommended in that article.

In order to be able to accomplish the goals I set for myself in the courses I have taught, I feel that the students need to have a voice in the classroom: I give early course evaluations, discuss the responses with the students, and try to incorporate their requests (the ones I find reasonable); we spend more time on topics they find difficult; I allow them to interrupt lecture to ask for clarification. I believe that a successful classroom is achieved as a collaboration between a teacher and her students.

Furthermore, I find it especially necessary to care about the students and their academic success: to get to know them a little; to chat briefly before and after class; to meet with them outside of class for additional help; to respond to e-mails with questions and concerns promptly; to have sympathy for their troubles and difficulties. I have found that, when treated with respect, students will be respectful and hard-working, and a pleasure to work with.

### *Further development*

Though I believe I have greatly improved as a teacher in the last three years, I feel there is more room for growth. For example, I feel that group work is not always as successful as I would like it to be. There are always those students who sit in the back, seldom participate, and refuse to ask for help. Many students study for the grade, and not for the knowledge. They forget the material too easily. I would like to find better strategies to address these issues.

I am also concerned about the performance of minorities and women in mathematics. Having been brought up in a country where no distinction was made between boys' and girls' capabilities, I was not exposed to the belief that girls cannot do math until I came to the U.S. I wish to encourage and inspire young women to pursue careers in mathematics and the sciences.

I believe that teaching is my calling in life. I am dedicated to becoming the best teacher I can possibly be.