

STATEMENT ON TEACHING

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Every moment in the classroom is an opportunity for both the students and the teacher to learn. My goal is to make the most of these moments by inspiring and motivating my students while I grow as a teacher. These learning opportunities have made me what I am today: a dedicated, enthusiastic teacher who is passionate about mathematics. I have learned to balance traditional lectures with classroom discussions, group work, and computer explorations. My methods have become as diverse as the students I have encountered. My experiences have helped me realize that visualization, communication and interaction are essential tools in the classroom.

Students' acquisition of mathematical concepts is greatly enhanced by visualization. I frequently provide my students with hands-on activities in order to improve their visualization. During a unit on tiling I give students cutouts of various shapes to manipulate. While learning about properties of functions or performing integrations, I encourage students to explore ideas with *Mathematica* or a graphing calculator. When students are able to make changes and manipulations, see the results, explore their own conjectures, and develop ideas and intuition, their learning is enhanced. I also frequently draw on the chalkboard or use transparencies to help students visualize concepts. Students remark that these visualizations strengthen their understanding and help them to better assimilate the key ideas.

It is very important that students learn how to verbalize and articulate ideas. By communicating with me and with their classmates, students can locate gaps in their own understanding, and can learn new perspectives and methods. Working together, students will often consider an idea from different viewpoints, giving all the benefit of hearing alternative explanations. I firmly believe that the best way to build an understanding of a concept is to teach it. In order to explain an idea, the student must thoroughly understand it. Even if the students struggle to provide satisfactory explanations, all will benefit from thinking through the details.

I frequently use group work to engage students in discussions about mathematics. For example, in a graph theory unit, I have my students solve the traveling salesman problem. Specifically, I give them graphs and let them formulate ideas rather than telling them how to use the nearest neighbor, brute force, or cheapest link algorithms. I encourage creativity and exploration. I generally respond to their questions with some of my own. When groups can cooperatively discover facts and ideas for themselves, they are often more interested in the material and develop a deeper understanding of the concepts.

Visualization, communication, and interaction offer invaluable learning opportunities for me as well. For instance, I have learned that when I raise my expectations of the students, they rise to the occasion. Over the years I have grown from simply lecturing on the material to letting students discover the material through exploration. I have replaced answering questions at the chalkboard with open classroom discussions. In the end, I find that students can, and do, become more active participants in the learning process. They take responsibility for their own learning,

and they understand that I will match their efforts. Additionally, I have learned that sometimes good teaching requires more listening than speaking. Sometimes it is better to ask questions than to answer them. I constantly reflect on my teaching and strive to improve my methods so that students will develop a better understanding of concepts in the course.

I know that my teaching has had an impact on my students, since most semesters my student evaluations have earned me a spot on the *List of Teachers Ranked as Excellent by Their Students*. My peers have also recognized my dedication, as I have also been honored with teaching awards at both the department and college levels.

Using each teachable moment as it comes, I have learned how to challenge my students to excel in mathematics, to challenge myself to become a better teacher, and how to meet the challenges of teaching mathematics in the college classroom.