STATEMENT OF TEACHING PHILOSOPHY

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As a graduate student in mathematics, I have been the primary mathematics instructor for more than 10 classes, including Calculus, Business Calculus, Trigonometry, College Algebra, Intermediate Algebra. The most important goal I have for my students is the ability to think mathematically, which can be very rewarding in their career. Problem solving, critical thinking skills flows naturally from a mathematical mind. As a person who has experienced the pain and joy of doing math since childhood, I believe that there are three stages of learning mathematics: memorizing, applying, understanding. Unlike other subjects, true understanding of a mathematical concept usually comes in the end of a learning episode. For example, I observed in my calculus class that students can’t truly appreciate integral without first memorizing a few basic facts and working out examples from physics and engineering that are impossible to be solved without doing integral.

For me, the most crucial goal while teaching is to motivate and challenge my students. Solving a challenging math problem is like looking for a hidden treasure in a dense forest. The role of instructor is to point out a few possible directions, then let the student do most of the searching. There may be lots of frustrations when a student is engaged in problem solving. I like to support them by praising what they have achieved. To implement the goal of making my students good mathematical thinkers, and eventually, sparking intellectual curiosity, I use the following tactics:

(1) I choose very intriguing examples when I introduce a new concept. Once in my calculus class, I started introducing infinite series, which had always been a challenging concept for college students, by discussing one of Zeno’s paradoxes, Achilles and the Tortoise, with my students. It turned out to be a vivid discussion, many students couldn’t find what part of Zeno’s argument was false in claiming Achilles could never overtake the tortoise. I concluded by pointing out that the sum of infinitely many time intervals need not be infinite—a crucial fact on infinite series they needed to bear in mind.

(2) Mathematics can be difficult to grasp in its most axiomatic form, and I have found some students to be uninspired by completely intangible constructions. Giving examples takes on a more nuanced meaning as the mathematical abilities of the students progress.

(3) Another tactic I use to enhance their mathematical thinking is mathematical discussions outside of class. I encourage my students to form study groups, and hold problem sessions. Discussing with their peers make them rethink concepts they have misunderstood and view things from various perspectives.

(4) In lower-level courses, I have found that suggesting to the class that they should think something over, pausing the lecture to give them the opportunity to do so, and then asking them to contribute from their musings works very well.

I always have a friendly demeanor and a comfortable classroom setting where questions and comments are welcome and highly encouraged, and flexible office hours. My students tend to appreciate my genuine concern for their learning and the time, thought, and energy I invest in my courses. My eventual goal is to become a very knowledgeable, agreeable professor who respects and knows his students, who encourages and supports his students to be better thinkers and problem solvers which will benefit them for the rest of their lives.