

Teaching Statement

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“From the first class in the semester, Professor Marks showed his genuine enthusiasm for Math and his students. He carried this enthusiasm throughout the course, and class sessions were always both enjoyable and informative, filled with small jokes about the material and helpful group activities. Professor Marks was equally excellent in individual settings, and his office hours always resulted in a greater understanding of the material. Professor Marks undoubtedly combines passions for both Math and teaching, an impeccable combination that created such a strong class.”

-Fall 2013 Functions of a Complex Variable student, Bowdoin College

The stylistic overtones of my teaching style were composed as early as middle school. An avid puzzle-solver throughout my childhood, I found leisure in cracking logic conundrums and deciphering riddles. My 7th grade math teacher captivated me with a creative flair, combining weekly challenge problems, friendly speed-factoring competitions, clowns, zoids, and the number 47 to create an atmosphere for learning pre-algebra that felt strikingly like my at-home logic games. I suddenly realized how enjoyable the study, and teaching, of mathematics could be. Within the year, I found an opportunity to assist younger students in mathematics through the role of tutor. I maintained frequent tutoring employment after that point, discovering that what some would call labor, was for me, hobby. In fact, it was within this context that I first noticed my natural inclination towards sharing and communicating mathematical concepts. In addition, the interactions within tutoring relationships offered me great personal fulfillment.

The vision for my future as a teacher developed further in high school. My geometry teacher, being largely inexperienced, would often appeal to me for assistance with the course, allowing me to teach material to the class. Fellow students affirmed that my explanations were indispensable. During my senior year of high school, I stepped into this role again through a teaching practicum course. I designed and delivered lectures for a few freshman geometry class sessions under the supervision of the instructor.

Although I entered college as a computer science major, by the spring semester I had switched to mathematics. I realized that, while I was talented as a programmer, my deepest academic passion was in mathematics. In particular, I knew that I did not want to work in an office cubicle on a computer, but rather with people. This desire was clarified during my junior year, when I decided to pursue a PhD in mathematics with the goal of becoming a professor.

Colorado State University provided wonderful opportunities for me to develop as a mathematics educator. I am thankful that I was given the responsibility to manage a section of students in Calculus for Biological Sciences during my first semester. This prompted me to quickly overcome oration timidity and supplied the experience of being

a full instructor, not simply a grading assistant or recitation leader. Within the span of my graduate studies at CSU, I taught Calculus for Biological Sciences I and II, Calculus for Physical Sciences I, II, and III, and Matlab and Maple programming courses. Furthermore, based on my strong teaching record, faculty at Colorado State University selected me to serve as a Graduate Teaching Assistant (GTA) mentor to develop the teaching abilities of incoming math GTAs. During one summer, I had the privilege to help with a weeklong Math Circles program for 7th, 8th, 9th, and 10th graders by teaching a highly interactive logic lesson built around truth tables, the board game Mastermind, and Gödel's First Incompleteness Theorem. In fact, during the following summer, Math Circles adopted "Logic and Games" as the inspiration for the entire week, recognizing the popularity and success of my logic lesson. With frequent positive feedback from my students and peers, I am certain that teaching is not simply my joy, but an expression of my natural gifting. To abandon my role as an educator would be to ignore part of who I am.

The success of my students is my top priority. I believe that each student is unique, and that this uniqueness implies the need for patience. A single explanation method is not always sufficient to establish the mathematical thinking necessary for success. During class, I reinforce significant ideas by writing out my thought processes and reiterating from a variety of perspectives. Additionally, I find that group work is an effective way to proliferate understanding. As such, I design small group activities that embed smoothly into my lessons. On the other hand, during office hours or tutoring I tailor my words to the individual. I make a point to respect each question, selecting an answer to best respect the student while guiding them towards truth.

My value for each student goes beyond their mathematical success. I am interested in engaging them as multi-faceted individuals, and I treasure opportunities to function as a mentor. This involves nurturing towards maturity as scholars, breadth of knowledge and experience, depth of character, and accomplishment of their personal ambitions. As such, I am proactive in connecting with my students. Office hours often contribute to the development of mentoring relationships. Within the classroom, I have used a bonus quiz question as an effective tool for discovering students' hobbies, backgrounds, and aspirations. I celebrate the diversity of my students. I appreciate when they share stories regarding their countries of origin, families, cultures, athletic endeavors and musical performances. Recently, I was encouraged by one of my students who overcame significant socioeconomic barriers to reach college. In fact, this student grew up in a notoriously troubled city adjacent to my hometown.

I have developed class rapport in a number of ways. I share snippets from my life, such as my journey in academia and photos from key events including my sister's wedding and my summer travels. I have developed the tradition of hosting my students for a game and pizza night each semester. In this setting, I am able to get to know my students in a relaxed atmosphere and show my appreciation for them as individual people. Furthermore, I take a class photograph with each class each semester. These activities encourage participation from students in class and during office hours, and, I believe, add to a sense of inclusion amongst the students.

As a 2014-2015 Project NExT Fellow, I had the opportunity to receive pedagogical training from mathematics educators across the country. During the 2014 MathFest, 2015 Joint Math Meeting, and 2015 MathFest, Project NExT Fellows convened for workshops, networking, and brainstorming. I was most deeply impressed by the simple yet profound notion of asking good questions. I came to recognize that a well-designed question can

expose the heart of a conceptual misunderstanding, assess the progress of a class in a particular topic, and prompt internalization of an idea beyond note-taking. Motivated by this compelling theory, I have been using clicker technology frequently in my calculus classes. Following the introduction of a new concept, I display multiple choice or true/false questions and collect student clicker responses with Socrative software. I follow up with a class discussion and a revote, when necessary. My students have communicated passionate support for this classroom activity, and they claim clicker questions are one of the most effective components of our class time. I am implementing many other experimental teaching techniques, such as calling on students at random to answer questions, randomizing the selection of groups for group work, and, especially in statistics, providing investigative worksheets in place of standard lecture. Two important lessons have arisen as I have taken creative risks with my teaching craft. First, there is no one-size-fits-all teaching method. The unique character of each class of students and the flavor of each mathematical topic necessitate pedagogical adaptation. Second, no matter which teaching technique I may utilize, it is essential that it is infused with my own personality and style. I cannot simply adopt materials from other professors and expect to see success. All in all, I am excited to witness the colorful enrichment of my teaching, and I thank Project NExT for being a catalyst.

Another catalyst for growth in my teaching craft has been math department teaching seminars. These seminars provide dedicated time for constructive brainstorming, course troubleshooting, and the exchange of pedagogical insights gained via experience and/or via articles and books. Motivated by my participation in the exemplary Bowdoin math faculty teaching seminar, in Fall 2015 I organized and launched a teaching seminar for instructors in the math and computer science department at Wesleyan. At Gonzaga, I participate in the Math Teaching Circle and pedagogical discussions hosted Center for Teaching and Advising. I appreciate that these groups offer a continuing opportunity to unite with my colleagues in prioritizing excellence in teaching.

Aware that I require constructive criticism from both professors and students to optimally enhance my teaching craft, I have maintained open channels for feedback. I solicit student feedback through anonymous online surveys and in-class “state of the course” discussions. I invite comments from my students regarding confidence with material, comfort in classroom participation, course features which help or hinder learning, and difficulty of exams, and I make adjustments in real time. I invite classroom visitations from professors and I visit the classrooms of other professors to glean from alternate teaching styles.

Forty years from today, when I survey my lifetime as an educator, I expect to see faces of the many students on whom I have had a positive impact, both mathematically and personally. I hope to have sustained relationships with many of these people, to witness them grow, mature, and reach their goals. Finally, I would like to observe evidence of my genuine enthusiasm for math contagiously transferred to the next generation.