Teaching Statement

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When I reflect on my past few years of teaching, three themes emerge: opportunity, responsibility, and practical application. I have had opportunities to teach new courses with a variety of techniques, take on leadership roles, and develop a better understanding of my students. When I started teaching, I focused on improving my explanations and exams, but as I gained more experience, I realized that I also have responsibility for the structure of the course. Acting as the Calculus course coordinator, I also have to think about how my decisions will impact the other instructors. I then live out those choices with students who are real people, in classes with curricula I did not develop, and all of this happens over a limited time. I have found learning how to apply my ideals to be just as important and rewarding as learning content structure and teaching methods. Each semester I reflect on these themes, growing as an educator over time.

As an assistant professor at the University of South Alabama, I have had the pleasure of teaching a broad range of courses, and I have taught these courses with varying methods and structures. My best teaching experience so far has been Linear Algebra. The year before I taught it, two colleagues redesigned the class to feature team-based learning and to focus on student inquiry. It was a challenge to merge this vision with my ideas, but through meaningful discussions with the designers, we worked together to improve it. Through this iterative process we brought the pass rate up dramatically while respecting the integrity of the material. This was so effective, that I decided to carry some of these methods forward, starting with my next class: Calculus. Using these principles, I planned out the course and developed activities. As a result of my initiative I was made the Calculus course coordinator, a position that allows me to provide materials to other instructors, administer assessment, build a common online homework system, and update the course syllabi. While teaching Calculus, I have also overseen graduate student teaching assistants. My roles as course coordinator and mentor of both graduate and undergraduate students teach me leadership and teach me to convey my methods to others.

It is my role as a mentor that is most satisfying to me. The first student I mentored was a chemistry major from a low-income background. He was in my multi-variable Calculus course and had a passion for mathematics. We read group theory and researched how to apply it to chemistry. He is now a math major with a focus on abstract algebra and has aspirations for graduate school. My second student is an electrical engineering major. We studied graph theory after she took my linear algebra course. She then expressed a desire to write an honors thesis in math. We are currently reading about Markov processes in order to complete a thesis on applications of interpolation to networks. With both of these students I have found study topics that leverage unexpected commonalities in math to complement their future careers.

When possible I have sought additional training. In addition to attending professional development from the university, this past summer I was accepted into Project NExT, a program that develops the teaching of early career faculty by providing evidence-based materials from excellent math professors and creating a support network of motivated instructors. In my courses this semester I am already applying tools I learned from project NExT and sharing my experience with the other fellows. Dr. Colarusso and I are also currently working on an NSF grant to support a redesign for Calculus I and II. We hope to restructure the course to cover real applications and the use of software to solve problems and approximate solutions.

I take my responsibilities as a teacher, mentor, and coordinator seriously. I must provide quality explanations and fair exams, but I also have a responsibility to foster an environment of personal growth, to set clear expectations, and to address social inequity. To improve my lectures I explore multiple ways to explain each topic. I also use programs like Desmos and Geogebra for visualizations and animations. However, my lectures are just the start of the process. Learning requires making mistakes and then addressing them. Mistakes are inevitable, but learning from them is not. This is especially true when errors are negatively associated with self-worth. To combat negative mindsets, I use class discussion and careful language to encourage growth. I also provide students with opportunities to show that they have learned from their mistakes. For freshman level courses I have the final exam replace a lower exam score, and in my Calculus courses I provide revision quizzes for exams. In Linear Algebra and Differential Equations I use mastery grading. In order to set expectations I design my courses from the top down and I find ways to tell the students not just a grade, but how well they have mastered course concepts. To build a course I focus on a few core objectives, then I generate specific topics from those, and lastly I plan lessons and assessments around those topics. Using these topics I provide students with detailed progress reports. Students enjoy being able to check off mastered material and also use the information to focus their studies.

Through research and discussion, I am constantly learning about new pressure points of inequality, and the ways the classroom helps reinforce those pressures. The University of South Alabama serves low-income students from the region who may not otherwise have been able to attend college. Some of these students have gaps in their knowledge and lack study skills. At the beginning of a new unit I give students work that focuses on prerequisite skills. In this way I communicate what I want them to know and give them a chance to learn the background. To build study skills I provide a structured review process. This gap in preparation seems widest in Precalculus and Business Calculus. This semester, I have applied elements of Think-Pair-Share to positive effect in both of these courses. Usually I will show the class an example, have students work a different problem and discuss it with their neighbor, and then call on someone to share with the class. I am currently using playing cards to call on people to ensure that everyone participates equally. This has helped in three ways: first, students stay actively engaged when asked to work problems, second, I get a snapshot of when students are confused in real time, and third, no one feels singled out.

While I enjoy the theories of teaching, what ultimately matters is my ability to apply the methods I have learned. With Calculus, one of our goals is a uniform delivery of the course across all instructors. This is where I have learned the most about practical application. I really enjoyed using mastery grading, but calculus is graded traditionally. I still, however, break the material down into learning objectives. In calculus I apply this breakdown to an exam revision process: students correct their exam and then take a quiz over topics that lack mastery. Correct answers on the quiz earns points back on their exam. Students appreciate the opportunity to learn the material and that their grade reflects their ability. I also found many benefits to team based learning, however, the calculus courses are primarily structured around lectures. To compromise, I do Think-Pair-Share in class and have the teaching assistant run group work based on the lecture material. Overcoming these challenges has allowed me to build a dynamic teaching toolkit.

I am fortunate to have opportunities to develop myself through training, leadership roles, and new courses. As I learn more about teaching, I become more aware that each choice I make carries meaningful consequences. This is true with courses of all levels and structures. When I apply techniques to teach classes at different levels, I learn how I can improve the class the next time I teach it. Every class I teach is filled with surprises, but my preparation has allowed me to adapt with each new semester.