At Wesleyan University, I team-taught Introductory Calculus three times and independently taught a section of differential calculus. The team teaching structure was incredibly important in shaping my teaching style and philosophy. The team was headed by an experienced faculty member and the other instructors were mostly, if not all, fellow graduate students. We met weekly to discuss the material for the upcoming week, plan and write homework, quizzes, projects, and exams, and discuss the previous week of teaching. Each instructor was assigned a task for the week, such as writing the quiz, writing a group project, or assigning and writing up solutions to homework problems. The tasks were done independently and then we would meet to discuss what each of us had developed. I experienced both the benefits of learning to create my own course material and being able to refine it through the thoughts and comments of the fellow instructors. One of the challenges in instructing the Introductory calculus students is their perception of math. These students have typically struggled with math in their previous experiences which has led them to have a not so positive outlook on the subject. I try to change their perception by showing great enthusiasm for the material and by assigning interesting inquiry based learning assignments. I find it rewarding when I can get a student engaged in a subject that they usually dread. In the section of calculus that I taught independently, most of the students have had prior experiences with calculus and seek a more conceptual understanding of the material. The students are open to being challenged, so I try to assign difficult problems for them to struggle with. For example, I have challenged to prove that a limit exists using the $\epsilon - \delta$ definition of the limit and asked them to prove that a function has a root using the Intermediate Value Theorem. After having team-taught three times, it has been fun being able to assimilate all my teaching ideas into running my own course.

Through the team teaching experience, I was exposed to two concepts which now are the foundation of my teaching philosophy. The first concept is Inquiry Based Learning. The Introductory Calculus course was scheduled so as to have an extra session of class on Monday afternoons. We used this time to have the students work in groups on an assigned project. We gave them a task with some steps to reach the goal, but our objective was to foster an environment where students talk through the problem and arrive at the answers themselves. One such memorable assignment involves a train which can adjust its speed to match its distance from a station. Through this assignment, students discovered the definition and importance of e. During this time, I always kept in mind a phrase from our faculty mentor: Be the guide by the side, not the sage on the stage. I have found that students are more engaged and take ownership of their own learning in an inquiry based learning format. The second concept is the rule of four. We try to present every idea in a variety of ways including numerically (via a table), visually (via a graph), verbally (a written description), and algebraically (via a formula). Each student learns differently, so I do my best to introduce each new idea in a multitude of ways. I also like being able to stress to students that there are multiple ways to think about a single concept and that each perspective can lead to an increase in understanding. It makes the course material seem more fluid and dynamic, rather than teaching students that there is one set way to carry out each task.

In a typical class, I like to split time between lecturing and group work. I use the lecture portions of class time to introduce new concepts and provide a couple of examples. Then, to promote actively learning the material, I give the students some example problems to work through in groups. I find that the strong students solidify their knowledge by helping explain concepts to the students who may be struggling with the material. In turn, a student who is struggling gets the benefit of learning the concept with someone to help guide them. As the students work in groups, I walk around the classroom and talk to each group. If they tell me that they have the answers, I ask them to explain. If they seem to be struggling, the group can ask me questions and I can lead them in the right direction. Group work time fosters working relationships between the students which extend beyond the classroom as students often end up working together on homework problems. It makes me more approachable, since I interact with them more on a personal level, beyond just lecturing to the students.

When I was an undergraduate taking the standard calculus sequence, I found myself becoming disillusioned with mathematics. The rules, formulas, and algorithms were not stimulating my interest. In fact, I felt much like a derivative computing program. The classroom often lacked excitement and energy. Hoping to find something more engaging and completely unaware of the joys of higher level math, I switched my

major to psychology. I needed one more math class to have a minor in math, so I decided to take it. The course was titled Introduction to Mathematical Reasoning and it is a course designed to lay the foundation for higher level math by introducing concepts in logic and basic proof techniques. This is where I met Dr. Kirtland and why I am on the path to becoming a professor today. His class reignited my passion for mathematics. His course was challenging and engaging and provided me with a new perspective of mathematics. I switched back to a math major and eventually worked on an honors project with Dr. Kirtland. His enthusiasm and willingness to both challenge and support me changed my life. I realized that I want to be the Dr. Kirtland of my story for other students. All it takes is one person teaching one course to interest a student in mathematics. My experience instilled in me a desire to make math more fun and engaging by using techniques like inquiry based learning and by showing great enthusiasm for the material.

One of my goals as a professor is participate in undergraduate research in knot theory, which is my area of study. Take a length of string, jumble it all up, and seal the ends together. What you have just created is a knot, the object of study in knot theory. Knot theory challenges your spatial thinking and the basics of knot theory very rarely make use of algebraic formulas. Many concepts are defined through use of diagrams and require very little mathematical background. Thus, it is the perfect field of study to attract students to mathematics and dispel myths about higher level mathematics. My friends and family are usually under the impression that I just do extremely difficult calculus type problems. They are pleasantly surprised when show I them that a lot of my thinking happens by visualizing and drawing pictures. I think it is important to demonstrate that higher level mathematics is a much richer subject than most people think. Knot theory can help attract talented visual learners who may otherwise think that mathematics is not suited to them. I want to use the accessibility of knot theory to introduce students to the concepts of higher level math that they might not see in a standard calculus sequence. So, I jumped at the chance to do knot theory research with undergraduates.

In the summer of 2015, I worked as a mentor at the Seattle University REU, which was directed by Allison Henrich and Jen Townsend. The REU focused on recruiting students from historically underrepresented groups and students from colleges and universities (including community colleges) which have limited resources for use in undergraduate mathematics research. These students were excited and grateful for this opportunity, which made the experience of working with them very rewarding. We had 7 students in the knot theory group, who later split into two subgroups focusing on different problems. We followed an inquiry based learning format to familiarize students with the basic concepts in knot theory. One particularly fun exercise is making knots with pipe cleaners. A major challenge we encountered was getting one of the students more involved in the project. He was not the typical REU student. Some of the other students in his group of 4 had a stronger mathematical background and would often take control of the project. During their meetings, the student would often sit quietly and not actively participate. In preparing and speaking at their weekly presentations, this student often had a minimal role. We could see that this student felt out of place and that he was getting discouraged. In an effort to get him more engaged, we paired him with another student and split the group of 4 into two groups of 2 for their weekly presentations. It quickly became clear that while, at the moment, he may not have the skills to write an elegant proof, he did have an incredible spatial intuition. By challenging him and his partner to make their own presentation and have a more active role, we began to see his talents emerge. When they presented in pairs, we could see his confidence grow and that he was developing his own voice. The other students took notice and when they worked as a group of 4, this student began taking a more active role and became a strong asset for the group. It was incredibly rewarding to see this student flourish. My hope is that we made this student feel like he did have a spot in the mathematics community and that his input and work are valuable. In talking with Dr. Henrich, she has mentioned that he has thanked her and that he appreciated his experience at the REU. The moments like that are why I want to be a professor and pursue research with undergraduates.