Mckenzie West - Teaching Philosophy

At St. Olaf College, I found the higher education experience that I had hoped for, that of an elite liberal arts college. Without the instructors I had there, I would not have fallen in love with mathematics as I have. These people convinced me that mathematics was a viable path for my future, and I owe my success to them. I hope to do this, in turn, for my students.

Thus far, I have taught seven semesters of calculus, varied across calculus I and II, and have really enjoyed the experience. These are small lecture classes of 20-30 students that meet three times per week. My experience is far beyond that of a typical graduate student in that I have performed all course preparation including creation of the syllabus and writing of the exams. Every classroom has a unique environment and my teaching style adapts to this. For example, some groups will be highly motivated when working on exercises in class, while others will react to them by staring blankly. In any given lecture, I will introduce students to a number methods, and they will have to apply them to the assigned homework problems. It is through this work that the students learn the problem solving skills they will need for their future.

At the end of every semester, students are allowed to evaluate the course and the instructor. On a 9.0 scale, I have averaged a score of 8.0 from my students, well above 7.4, the average for all instructors teaching Calculus. My highest ranks come when the evaluation asks “Was the instructor enthusiastic about the material?” and “How concerned was the instructor with what the students learned from the course?” In the additional handwritten questions, students are given the chance to provide written feedback to their instructor. One student wrote “I just love [Mckenzie’s] teaching style. I actually recommended her to my friend.” and several others have mentioned their newfound appreciation for mathematics. Comments left by students allow me to continue strengthening my teaching and build upon the basis I have.

Due to my teaching prowess, I am the recipient of the 2015-2016 Emory University Marshall Hall Award for excellence in teaching. The award is given to one or two graduating members of the Emory Department of Mathematics and Computer Science department each year who have exhibited outstanding teaching practices during their time at Emory.

Small groups of graduate students meet weekly with an assigned faculty mentor to discuss the course we are teaching. It is beneficial to discuss our differing teaching practices and use this discussion to improve upon our own methods. Moreover, the more experienced instructors, such as myself, are able to weigh in with their advice. At one such meeting, the faculty teaching mentor suggested providing several short exercises to the students throughout a class period. I found this to be very helpful in getting students to talk about the problems, breaking up the class, and allowing them to absorb the material as we go. Collaboration assists in students’ ability to converse technically with one another. Further, they can often explain the topics to one another in ways that I, as a mathematician, would not have thought of.
During my semesters of teaching, I have experimented with the various ways to evaluate students, looking to find what will most benefit students’ learning. While at a conference, I was discussing this matter with a colleague. She suggested making weekly quizzes on which students could reference their written homework for a portion of the time. I believe that this way of evaluating students benefits them in two ways: they will write out their homework in detail, and they will recreate the material they studied for me. This addition has improved students’ performance overall in the course. It is important to seek out and implement innovative and effective teaching practices.

I have had the opportunity to coordinate and teach for the Emory Math Circle, a weekly session for mathematically inclined middle school students. This has helped to build my patience and flexibility in teaching; I will bring flexible lecture notes and a number of exercises to these sessions, and proceed as appropriate for the audience that day. I was most successful teaching these students when I had a clearly planned out lecture developed from my knowledge and the materials available to me. This experience will aid me in beginning such a program or joining in an existing one at my new institution.

At the two previous Arizona Winter Schools, an annual week-long intensive lecture and research conference, I watched experienced instructors from universities across the country. I have noted the importance of well-planned lectures and clear written notes. Each winter school incorporates multiple facets in which learning takes place; the morning and afternoon are made up of several lectures, and in the evenings, students are given the opportunity to collaborate. Students may choose to work on a project proposed by a lecturer, in study groups aimed to learn a specific set of lecture notes, or on problems related to the year’s theme. Having worked on a project and in a problem session, I have seen how these various facets assist in the learning process. I gained further experience with this format of learning and research at the 2015 Algebraic Geometry BOOTCAMP and the Local to Global Principles Workshop. These experiences will assist me in building reading courses or research groups for undergraduate and graduate students in the future.

My research lies in the intersection of number theory and algebraic geometry, so I am prepared to teach courses from introductory math courses to algebraic geometry. Moreover, I can spot connections between different fields of mathematics and help students to see them as well. My experience in mathematical coding allows me to teach students how they can use the computer algebra systems which are available, and I can integrate these tools into my courses by having students compute examples with them. It is important to utilize the growing accessibility and computational power of computers. Overall, I am an experienced and skilled instructor. I expect a lot from my students but am fair in my evaluation of them. I am eager to continue developing my teaching methods and repertoire in the future, and finding new ways to introduce my students to the art of problem solving. Most importantly, I want to be as influential to my students as my instructors were for me.