Math Teaching Philosophy

To many people, mathematics is seen as the manipulations of numbers and variables in order to solve seemingly purposeless problems. They see it as an isolated skill that is only important if you decide to continue your math education after high school. Several students seem to believe that math is only used to punish students and they will never use it after high school. I cannot count the number of times students have asked me, "When will I ever use this in the real world?"

To me, math is so much more. To borrow a phrase from one of my colleagues, I view math as a "way of logic and a way of life". I will help students move past the conception that math is simply a class that has been around since the beginning of school and help them consider how the study of mathematics developed over the course of history. For example, while teaching students about the complex number system, I included a brief history of the complex numbers and the historical context that brought their study to light. I want students to realize that the field of mathematics is making new advancements and discoveries just like the fields of English, history, and science. Everything they are learning had to be developed and proven by pioneer mathematicians at one point. I like to encourage students to explore these concepts from a similar viewpoint in order to produce a more organic and self-generated understanding of the material. I encourage this by creating self-directed projects and handouts that force students to engage with new mathematical ideas and perspectives.

In addition, I enjoy creating projects and activities that have multiple means of engagement and solution paths. Step-by-step procedures and memorized formulas can be easily forgotten and leave students with a hollow understanding of the material. I firmly believe the skills gained through mathematical inquiry can help students problem solve in other aspects of their life. The ability to break down and solve mathematical problems can transfer to other kinds of problems. I hope to give all students the opportunity to create a deeper understanding of mathematics and use their knowledge to advance both mathematically and personally through these projects and activities. Many students are prevented from going into the fields of math and science due to a poor mathematical background and are placed in remedial math courses when they get to college. My goal is to prepare students well enough that they can test out of these prerequisite courses and have the opportunity to pursue a degree in the field of their choice without being limited by their mathematical background. Two-thirds of all students who enter college needing remedial math, no matter what their intended degree, will not complete a degree program successfully. Since the field of mathematics is shown to be an important indicator of success, I want to give my students the tools they need so they do not have to fight this statistic and have a better chance at being able to pursue the degree of their choice.

Access to higher education is extremely important to me and I try to do everything I can to provide this to my students. For example, a student may lack the ability to factor a polynomial in order to algebraically calculate the zeros. This may prevent them from solving applications or other problems where finding the zero is essential. By teaching students to use graphing calculators effectively, not only will they be able to solve the given problem, but they can also be shown the connection between the algebraic and graphical representation of zeros of polynomial functions. I have closely studied ways to incorporate technology and hands-on activities in order to

increase student achievement and understanding; this a large focus of my teaching practice. There are far more technological advances in the field of education than there used to be and I think that it is important that educators utilize them whenever it is advantageous. As a mathematics educator, I feel that it is vital that we give all students access to higher mathematics. Each student should get the opportunity to use high school level math to analyze and interpret data to find a deeper and more meaningful understanding of the information found in the world around them. For many students, they are prevented from understanding the deeper mathematical concepts because they lack some of the basic math skills that should have been acquired in prerequisite courses. I believe that teachers should find ways to use technology, especially calculators, to help students understand the larger mathematical concepts without being stopped by the failings of their prior mathematical experiences. Through engagement in higher mathematics, I believe teachers can boost student skills that may have been missed in earlier math courses while generating an understanding of higher mathematics.

As I tell my friends and colleagues, "You can't expect students to get excited if you can't even get excited about the material. It's important to find ways to make it fun for you to teach. Students can sense that excitement and it becomes contagious." As a beginning teacher, I understand the difficulty that can be associated with planning an entire repertoire of engaging lessons. However, I feel that it is important to work towards accumulating as many as possible, tweaking and adding bits as teaching experience increases. Luckily, I already have a good start from my yearlong teaching internship with Michigan State University. I believe students can tell when you don't like what you're teaching, so I always work towards only teaching lessons that I really like. I plan to continuously evolve my lessons and the way I teach to keep both my students and myself enthused about my content. Many students see math as a very boring subject, so I constantly brainstorm ideas to help make the material more engaging for students. For example, instead of giving the routine instructions to my students of "please sit down, and take something out to write notes on," I created a mock airline safety presentation to prepare the students for class. The students seemed to enjoy the presentation and the explicit instructions helped focus the class for the entire class period. I believe that if you are bored teaching the material, it shows and causes you students to also be bored. I am continuously reflecting on my teaching practice in order to find new ways to present material that is enjoyable for both my students and me.

Overall, it is my hope that I can use my mathematical philosophy and classroom experiences to become an excellent math teacher and change the world for the better, one student at a time.