

# Teaching Statement

## Sebastian Troncoso

When I tell someone that I am a mathematician, the most common response I get is a very surprised and slightly confused look, followed by saying “that is impressive, you must be a genius!”. However, being a mathematician is not about being a genius; it is more about being someone who truly loves math and puts a good amount of effort into understanding it at a deeper level. This love translates to being an enthusiastic, passionate and motivated math teacher. Throughout this statement, I will explore the main dimensions that comprise my role as a teacher. I will start by discussing my teaching philosophy, how I conceive teaching and how I think it should be. Next, I will ground this philosophy into more concrete examples about how my teaching practice usually is. Finally, I will present some concluding remarks regarding the aspects that distinguish me from other teachers and how I address diversity from a teaching stance.

**Teaching Philosophy:** During my teaching career, I have had the opportunity to interact with college students from freshmen to seniors. The insight I gained into how students learn has made me the teacher that I am today. With this in mind, the main goal for a teacher is and should always be to achieve the best possible learning experience for each of their students. During the courses I have taught, I have learned that there are three major obstacles that students tend to face in math courses: first, learning math creates anxiety among students; second, is a lack of mathematical discussions regarding the concepts being studied; and third, students’ belief that math is boring. Therefore, my teaching philosophy is threefold; to eliminate math anxiety, motivate math discussions, and make learning about math an enjoyable process.

The anxiety that people feel about math is too common and it is one of the my main motivations to be a math teacher. I believe that a good teacher can eliminate the anxiety around learning math but a great teacher can also make math an enjoyable subject. I strive to minimize this anxiety in various ways. First, I avoid “tricking” or surprising students during quizzes or exams; I much prefer to be an approachable and honest teacher with a clear discussion of my expectation for the course. I also try to minimize student anxiety by making myself seem more approachable. For instance, I try to foster a friendly and positive environment by showing up early to class and talking with my students about math or how their weekend went. For me, being honest means being clear in the form of assessment and the standard problems that they should expect. Honesty decreases anxiety while at the same time helps to earn the students’ trust. After you earn their trust, everything else simply falls into place: they will be motivated to study, engage in discussions, ask meaningful questions, and even talk to one another about math. I have found that a third way to eliminate anxiety is to encourage students to have math discussions among themselves.

Discussing math with peers is a fantastic way to learn math and it encourages and motivates them to work collaboratively. Therefore, during the first lesson I stress to my students that talking to their peers about math will help them to really understand it and catch mistakes. I also give them take-home quizzes and encourage them to discuss the problems with classmates. When the material is appropriate (for instance, rate of change, optimization problems, etc.), I have the students work through problems in class in small groups, this allows me to walk around and see the common misconceptions as they happen. This method transformed me into an active facilitator. These techniques usually work since I see my students discussing homeworks before each lesson or

asking each other questions. The students working collaboratively usually demonstrate a deeper understanding in the questions asked at the session. In addition, these students normally improve their overall performance in the course.

Everything mentioned so far is undoubtedly relevant. However, I think the learning experience would be incomplete if we exclude the idea that math also needs to be enjoyable. I am a dynamic teacher that brings excitement into each lesson, using energy and enthusiasm to teach ideas while guiding students along a path where each new concept is a natural consequence of the previous and a natural precursor to the next. Indeed, shifting from boring lessons towards more enjoyable ones can be an effective way to complement the mathematical content and increase learning effectiveness.

**Teaching Style:** At the beginning of each lesson I normally take a few minutes to summarize different aspects of the course. First, I address organizational matters, like when the next quiz/exam will be, important dates, reminding them to use my office hours and all the different resources that are available to them. Second, I ask if they have questions and I summarize the previous lecture. These few minutes help the students keep track of everything in the class. Also, it helps them to warm up and get ready to learn new material.

One of the biggest challenges that a teacher faces is being able to reach all of their students; there is no single teaching style that works for everyone. To help them understand difficult concepts, I do examples on the board to emphasize proper notation and logical flow. After I have done an example on the board, I go back and highlight the important steps. Before moving on, I use Formative Assessment techniques to determine if it is appropriate to do so. To this effect, I ask key questions to my students to evaluate their understanding. Depending on their answer, the questions they asked, and their reactions, I either do another example of a similar difficulty or I continue with another, slightly more complicated example. I believe every class is different and what sets apart good from fantastic teachers is the ability to adapt techniques and styles.

A few characteristics that make me a unique teacher is that I truly care about my students, I am passionate about math and I am always looking ways to improve. One of the many things I do for my students is that, after our first exam, I try to set a meeting with the ones that are struggling in the class. I try to go over their studying methods, the resources they are utilizing, and encouraging them to keep working hard, since there is enough time to catch up and pass the course. This practice has been one of my favorites because it improves these students' performance, while helping create a stronger bond with them at the same time. For instance, I once had a student that was clearly struggling in my class. After we met, she decided to go to office hours every week. Not only did she pass the class, but she also completely surpassed her own expectations. The following next semester, I saw her at a coffee place and she approached and thanked me for all the help. That experience was - without a question - one of the most gratifying moments of my teaching career. Another technique that I use to improve is to do an anonymous midterm evaluation. In this evaluation I ask four simple questions: what would you like to keep in the class? what would you like to change? what would you like to start? and Comments. I usually address the feedbacks on the next class in that way the student realize that their voices are been heard and I am truly looking forward to improve their learning experience.

During eleven years of teaching mathematics at many levels, from algebra to differential equations, both as an instructor and as a teaching assistant, I can proudly say that I have learned

much as well. My success in teaching has been recognized by the Michigan State University Department of Mathematics, which offered me a Lead Teaching Assistant position, where I had the opportunity to observe and mentor TAs to become more effective teachers, supervise the Mathematics Learning Center, and host exam reviews for undergraduate classes.

Working in a liberal art college like Birmingham-Southern College have been enlightening. Its diverse curriculum gave me the opportunity to work with many people inside and outside the math department. For instance, I was invited by Dr. Barbara Domcekova to participate in her conversational Spanish class and to be part of the defense committee of two of her senior students. I also have been working with Dasha Maye on the tutoring center in which we will be implementing some exciting changes to motivate students and tutors. In the math department, I have a wonderful interaction with my students and I have been using different teaching techniques to facilitated their learning exprience. One of my students favorite activities is handouts and practice exam days. The students make small group and have the chance to discuss and work on math problems while I move around helping the class. I am also excited for the upcoming classes already schedule for the winter and spring terms. During the winter term I will work with Dr. Mullins in undergraduate research projects in mathematics. I will be in charge of three groups of students, each of them is working in a different topic. My role will be to provide guidance and encouragement as needed. I am also thrill to teach Calculus I, which is one of my favorite classes, and Abstract Algebra, which is an area close to my research interest, during the spring term.

As a member of the latino community, I know first hand some of the struggles that minority students have. I am very interested in working with diverse students, using the knowledge I have to help them increase their learning outcomes significantly. I also understand how challenging mathematics can be for bilingual students. An intentioned, pedagogical multicultural approach can help transform these challenges into valuable opportunities to learn, not only for minority students, but for everyone.

Working with younger students is inspiring and rewarding. I am very much looking forward to future opportunities in teaching and mentoring as a faculty member.

## 1 Instructor Evaluation Samples

Below I include some data from instructor evaluations filled by students at the end of the semester at Michigan State University. I also include average data as reference.

- I would definitely recommend this instructor to another student. He kept the class light with his positive and bubbly attitude, while maintaining a professional level of teaching. He broke down problems to the simplest terms and really helped everyone when they rose their hand at a question they did not understand. Overall he is a great instructor and I truly enjoyed his teachings. (MTH 132, sec16, Fall 2016)
- The instructor was fun but at the same tie got the material crossed easily and efficiently. MTH 132, sec16, Fall 2016)
- He cared that we learned the material and always was offering to help no matter what. The classroom environment was excellent for learning. MTH 132, sec16, Fall 2016)

- My instructor was fantastic and met with me for office hours three times a week to work on practice problems and pick apart whatl was doing wrong in problems. MTH 132, sec16, Fall 2016)
- He always knows his stuff and gives us tips on how to solve problems if we are struggling. (MTH 235, sec6, spring 2015)
- Sebastian is very positive and willing to help us understand the material. Unlike many TAs, he is not apathetic and seems like he actually cares about the students. (MTH 235, sec6, spring 2015)
- the problems he brings to class help explain the material. Sebastian is probably one of the best TA's I have had for making material easier to understand and easier to do. (MTH 235, sec7, spring 2015)
- He is passionate about math and our learning experience. (MTH 235, sec7, spring 2015)
- Strong teacher. Made the work easy to understand. Sebastian made you feel relaxed and I believe that is part of the reasons, the material was so easy to learn. There was not a stressful environment. (MTH 103, sec102, summer 2014)
- He always answered my questions in a way that I understood. (MTH 103, sec102, summer 2014)
- Sebastian is very good at fully answering questions so we can better understand the material, and he wants us to do well in this course. He is also very nice and very approachable. (MTH 133, sec5, fall 2014)
- Sebastian is the best math teacher I have ever had. He makes difficult concepts easy to understand. He is concerned about his students doing well.(MTH 124, sec40, spring 2013)
- Professor Troncoso is very strives for the success of each and every one of his students. He is always willing to elaborate on concepts and offers helpful examples to aid students. I really appreciate his willingness to meet with students at times that are convenient for students and is very helpful in office hours. (MTH 124, sec40, spring 2013)