**Teaching Statement**

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I will describe my teaching philosophy and then provide a brief description of my teaching history. We then discuss my beliefs pertaining to mental health in our classrooms and conclude with a note on how computational methods are included in my curriculum.

**Teaching Philosophy:** I have come to recognize several pillars which I believe to be foundational in the teaching and learning of mathematics.

1. Mathematics is a hands-on subject that requires participation and discussion.
2. Mathematics is understood differently by each individual; a teacher should act as a guide to help students find their individual optimal method of learning.
3. The classroom must be intentionally inclusive for the above methodologies to work.

These pillars guide how I approach mathematics as both a student and as a teacher, both inside the classroom and out. We will now delve a little deeper into each of them with examples from teaching calculus.

**I.** As a student, nothing is worse than sitting down at home, reviewing a lecture, and realizing that you are unable to recreate the math that was done. Just because everything made sense while the lecturer was speaking, does not mean that we *understood* what was being done. This is often because the lecturer was making the logical inferences for us, and we were agreeing. Such agreement does not mean that we can make those inferences on our own! Because of this, I have made my classroom more of a hands-on environment; **I want my students to have the opportunity to learn how to make those inferences while they are surrounded by their peers and have their teacher there as a guide.**

My favorite example of this is in calculus while evaluating limits where there is often a simple trick to be used (applying conjugates, factoring, creating common denominators, etc.). If I do an example problem on the board and I use one of these, there is generally a murmur of agreement. However, if I then put up another example and ask how to start, I am greeted with a number of blank stares (again, it is easier to agree with the right answer than to make that logical leap on one’s own). Instead of having the students reach this roadblock at home, I prefer to tackle it in the classroom. I can then turn the problem to them, reminding them of the tools they have, and allow them to think for a bit for themselves. After some time, I then have them speak to their neighbors. I believe that this small group time helps all parties involved. Those who found the solution are then able to explain to their peers around them, and in teaching it, further their own understanding. Those who did not find the solution, are then being taught by their peers, allowing them to have the math described to them in words other than my own. During this time, I can walk around, listen, and help where needed. This allows me to both cater to the individual needs in a small group setting, while also seeing where the classes’ understanding is at as a whole.

**II:** Everyone learns differently. I believe that it is our job as educators to guide students on their journey to actualizing their own optimal learning style. Further, we must then be able to cater to those learning styles. At the beginning of the semester, I encourage students to come talk to me in office hours about their previous learning experiences and reflect on what worked for them. We also address this throughout the semester. If a test or a homework did not go as well as planned for a specific student, I encourage them to sit down with me and reconsider their learning techniques.

**To cater to as many learning styles as possible, I provide my course work in a multi-modal manner.**  Beyond just providing them with a text book for reading, I create my own notes and videos for them to use as well. Some students benefit more from putting their full attention towards participating in class and the act of taking notes takes away from their learning. Having the notes online then allows them to focus better during our in-class time. Many students benefit from taking notes, where their learning style requires writing for retention. They can then compare their notes to my own and review/add to them after class. Some students learn best through auditory and visual learning. My videos then give them the opportunity to review material in their preferred medium, rather than forcing them into the traditional book/notes routine. The goal is to show them that we all have different strengths and by taking advantage of those strengths, we can all be successful in mathematics.

**III:** Our students come from a diversity of backgrounds with varying mathematical histories (especially now as we transition from online learning back to in person). Those who were not given the depth of STEM opportunities that others may have had will often feel alienated. My attempts at attacking this in the classroom have been two fold: **one, by creating an inclusive environment where mistakes are expected, encouraged and validated, and two, by maintaining a flexible lesson plan which respects the need to fill in holes left by underprivileged curriculum.**

As stated above, my classroom is rooted in small group discussions, which only work when students feel comfortable enough to participate. I have found that even the most engaged students will go quiet if they are shut down even once. To prevent this, I facilitate classroom discussion in a manner that promotes the acceptance of all contributions. If a student offers an incorrect answer, I do not tell them that they are wrong and move on to another student. Instead, I meet them where they are at, explain why they may have thought the way that they thought, and then steer them in the right direction. This often results in the student coming to the correct answer and they leave the interaction with a sense of accomplishment and confidence. Mistakes are merely the first step to a correct answer.

When lesson planning, I often make room for multiple different paths of lecture. While students are working on group work problems, I can then choose what direction to go for the next portion of class. This allows me to cater the contact time to the individual needs of the students in that class. In general, I believe that it is our responsibility as educators to instill confidence in our students and show them that regardless of their previous coursework, they can still succeed in their current and future work.

**Teaching History**

I began my undergraduate degree as a secondary education in mathematics major. Baylor’s approach to educating future educators was very hands-on. Not only did we work with students at a local Middle School, but we were given the opportunity to tutor at McLennan County Challenge Academy, a juvenile justice alternative education program, which gave me a wide scope of educational exposure from the very beginning. I eventually changed my major to Mathematics, but I never lost the enthusiasm or passion for teaching.

During a semester gap between my BS and MS programs, I signed up to be a substitute teacher in my hometown and was given the opportunity to be a long-term substitute for a math teacher who was out for 8 weeks. Since then, I have continued to work in tutoring centers at my respective institutions and have accumulated nearly 9 years of instructing at a smaller private university, a community college, a larger public university, and now a liberal arts college. I have enjoyed teaching around the country in Texas, Michigan, Chicago, New York, and Minnesota, working with students at different stages of life and from varying backgrounds.

**A Note on Mental Health**

This is more important now than ever as we transition out of quarantined life and begin to navigate a new form of in person learning. While my degree is not in psychology, I make sure that my students know that I care and can be a resource. I start out the first day of the semester telling my students that whenever they are ready for help, I can help them find help. Our institutions often have a number of resources available to students for mental health. As their teachers, we can make sure that they have the ability take advantage of these resources as they need them.

I also acknowledge the reality of testing anxiety. While take-home exams and other modes of testing are prevalent in upper level math courses, the calculus sequence often relies on sit down timed exams. Since this does fit everyone’s learning style, I have a few policies in place to protect those who suffer from anxiety. The first is a point trading agreement. One major side effect of anxiety is memory loss. Instead of a student loosing all 5 points for a derivative problem on an exam because they forgot the quotient rule, I allow them to trade one point for the algorithm. This way the student can still show me that they understand the material, and have their grade reflect it, even if their memory fails them in the heat of the moment. The second policy is an optional post-exam take-home test. I allow students to complete this take home exam to earn back up to one third of the lost points on their in-class exam. Both of these policies are in place so that a student’s grade better reflects their knowledge and understanding of the material, rather than their ability to complete traditional examinations.

**Computational Methods in the Classroom**

The use of computational methods goes beyond my professional and undergraduate research and into my teaching. At the lower lever courses (calculus sequence), we use Desmos and Geogebra to help understand the course material. The fun really starts in Linear Algebra, where my coursework uses Mathematica “labs” that teach students the basics of coding. The fun then continues into my Abstract Algebra I and II courses, where we use Sagemath (based on python) to write software to follow along with (and enhance) our coursework.