

Teaching Statement

My Philosophy: I prioritize creating an environment that engages curiosity and promotes self-driven exploration for my students. I want my students to go beyond understanding so that they can apply their knowledge across disciplines. In order to achieve this, I plan my lessons to have thought-provoking examples, probing questions, and breakout sessions. I also strive to create a welcoming environment so that students are not alienated from the learning experience and do not hesitate to approach me with questions and concerns.

My Experience: My teaching experience in mathematics spans across 7+ years in multiple settings, including high schools, colleges, and learning centers. I have Master's in Mathematics Education and taken courses through the UTeach program as an undergraduate. Currently I work as a Teaching Assistant (TA) at UT Dallas for the course Linear Algebra. In prior semesters, I have been the TA for Differential Calculus and Integral Calculus. Alongside teaching two review classes a week, my responsibilities include lesson planning, holding weekly office hours, preparing notes and quizzes, grading assignments, proctoring exams and attending professional development meetings.

My Method: Over the years, I have observed that student better understand mathematical concepts when they are shown multiple representations of the concept. So using the resources available to me as a TA I incorporate physical/numerical models, graphs and diagrams, and even examples from my own graduate research. By doing so, not only am I enhancing my students understanding, I am also exposing them to real-world applications of these concepts. Here are a few instances where I have done so:

- In integral calculus, one unit tackles differential equations. As an example, I showed my students the classic SIR model (epidemiological system) and how I modified the system for my particular research.
- In linear algebra, to demonstrate a useful purpose of Singular Value Decomposition, I ran MATLAB code that displayed an image, computed the singular values and then displayed the image again using a different number of those singular values. Through this exercise it is made clear to the students that with a few singular values we can obtain the original image; an important application of image compression.
- Our department has 3D printed models of conics and hyperbolic surfaces that I can borrow and pass around in my classes when appropriate. This gives the students both a visual and physical representation of what is considered a difficult concept.

Once students have seen the concepts in use the next step is to have them tackle it on their own. Generally, this is done by assigning students homework. However, before students attempt homework problems, I have students work on some problems in class in small groups. My approach is to dedicate a portion of class time to have breakout sessions. During these sessions the students work in groups of 2 to 3 on a set of problems in varying difficulty. If the classroom has multiple whiteboards, I encourage students to use the whiteboards. As they work, I can walk around the classroom and assess the students based on the discussions they are having among themselves and ask probing questions regarding their solutions. Not only does this encourage critical thinking but also results in the students receiving useful feedback from both their fellow classmates and me. It also helps me determine which concepts the class has grasped and which I need to provide further clarification.

My Classroom Environment: For me to be an effective educator, it is important that I create a welcoming atmosphere for all of my students. Such an environment requires my students to feel safe and comfortable in my classroom. I engage in four main steps to do so.

1. My first step is to learn my students' names as soon as possible. I accomplish this by asking students to say their name out loud the first day of class along with their major and an interesting fact about themselves. An added advantage of this is that they also learn each other's names.
2. Next, I create opportunities for the students to get to know one another. The breakout sessions are a great way for the students to interact with each other. In many instances, by the end of the semester some of the students also become friends.
3. Furthermore, I stay conscious of any necessary accommodations and modifications that need to be made for some of the students. For example, one of my students was visually impaired. Hence, I made sure a chair close to the front of the class was always available for him. Also, I would write on the board much larger than I normally would, along with printing a copy of the quizzes with larger font for him.
4. Lastly, I keep myself updated on the many resources the university has to offer. Among undergraduate students, the college setting is new and intimidating. Students can often feel overwhelmed and do not know where to go. If students come with concerns not related to my course I can guide them towards the appropriate resource.

My future goals: Looking back to when I was an undergraduate student, my perspective of mathematics was extremely naïve. This was largely due to how mathematics is taught in secondary school. It is shown to be very procedural in nature and most examples are related to economics or physics. Therefore, as a mathematics educator I plan to continue to modify and improve my teaching approach so my students can apply these concepts across disciplines in interesting ways. Also, I want to develop teaching methods that eliminate any doubts students have towards their ability to learn mathematics, furthering their education with a positive outlook.