TEACHING STATEMENT
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The college mathematics classroom is a place which encourages student growth, learning, and experimentation in the field of mathematics. In order to create such an environment, I strive to implement various instructional strategies which actively engage students in their learning. This approach not only teaches students the *whats* of mathematics, but also affords students the opportunity to learn the *hows* and *whys* of mathematics. In my classroom, this is done by planning my lessons around the students’ interests and abilities and assessing accordingly.

In my classroom, my main focus is motivating the students to learn and apply mathematics. This is done by focusing the direction of the class towards students’ interests and abilities. For instance, while teaching as a graduate student at Bowling Green State University, one of my advanced precalculus courses consisted of mostly biology majors, and when planning examples, I would choose examples which were rooted in biology but stayed faithful to the mathematics we were covering.

While covering such topics, I often ask students to use reasoning and sense making to verify the validity of their answers by using common sense or by using simple mathematical arguments. An excellent example of when I do this is when students are optimizing profit in Business Calculus. Examples of questions I often ask are: Is the optimal profit positive? If the profit function is quadratic, does its graph open upwards or downwards?

An exercise I have found to be helpful throughout any teaching or tutoring I do is to have students discuss or write about mathematics informally before attempting problems. The purpose of this is twofold: it allows me to gauge the level of the student’s understanding and I am able to quickly correct any misconceptions without having to guess what the misconceptions are from only seeing incorrect work. After thinking about mathematics informally, students also gain confidence in solving problems as they are required to think through problems completely before attempting to solve them.

I often use informal discussions to motivate new concepts. I have found the more carefully I move from informal discussion to formal discussion on said concepts, the longer I can keep students’ attention and the more they are willing to participate in class. An example of where I do this in my teaching is motivating the necessity of logarithms. I do this by asking students to solve two equations such as $2^x = 16$ and $2^x = 72$. The first one is quickly solved by using the methods we learned when studying exponential equations. For the second, most students quickly realize $x$ cannot be solved for exactly, and I encourage them to use their calculators to approximate an answer, from there I point out that even that answer is not exact and that we need a new function to solve equations like these, the logarithmic function. Then from here, the presentation of logarithms comes quite naturally.
I have found that students often struggle to make connections between different topics learned throughout the semester. I remedy this by frequently referencing previous sections. For instance, in the three precalculus courses I have taught at Bowling Green, graphs of linear functions arise in the first chapter, but the necessity to graph polynomial, exponential, logarithmic, and trigonometric functions arise throughout the course, and as I teach these sections I commonly reference the strategies we have used to graph simpler functions. By the end of the course it is simple to generalize the methods we used to graph functions to graphing conic sections.

As an instructor, I highly value student feedback. During a typical semester, I give students a prompt for written feedback biweekly. This gives students the chance to critique my presentations and ask questions without having to speak in front of the entire class. I have found this is beneficial for me and the students as I take note of the students’ suggestions and am able to improve the lesson for the next time I teach it, and often, I am able to reteach material that has confused some students.

The combination of these pedagogical strategies have worked well for me in a variety of classroom settings. While using these strategies, my students leave with an understanding of material which can be incorporated throughout their studies both inside and outside of the mathematics classroom.