

TEACHING STATEMENT

LEWIS DOMINGUEZ

My goal is to provide my students with a safe and supportive learning environment so they may experience the same feelings of reward and creativity which I've grown to love within mathematics, and that they may someday see where it naturally hides in our everyday lives. I look forward to their improvements in self-evaluation and problem solving, so they'll continue to grow in their knowledge outside of courses, and find new and interesting ways to advance themselves, just as I hope my teaching style continues to adapt over the years. Finally, I want to provide my students with the opportunity to experience and overcome setback, as eventually they will leave my purview and need to face new challenges. Sometimes the greatest adversity can be overcome with the simple question of "Can you show me what I'm doing wrong here?", and I want to imbue them with both the curiosity and humility required to always consider asking someone.

I've learned that students can often use assistance in developing the skills they can use to advance themselves. This has been especially noticeable with communication, problem solving, and self-evaluation. When I taught College Algebra with Co-requisite support, it was an eye opening experience, as a significant portion of my time as an instructor wasn't taken up by the mathematics itself, but by working on how students learn and improving their capacity for it. While there was some lecture each class period, students would primarily complete interactive assignments on Desmos as groups, which often involved visual concept aids for the material, such as guessing the solution to a linear system by drawing the lines and finding the intersection point. I would visit each group to find hitches, as well as discuss and strategize how to tackle problems the class as a whole was concerned about. For many of those students, this strategy kept them engaged and allowed them to use their collective group knowledge to cover gaps in understanding. One of the important tools in crossing these gaps is self-reflection and self-evaluation, as a student who knows their shortcomings can use this to better address them.

To that end, I've created a selection of assignments designed to help students improve with self-evaluation. For my College Algebra course, this included a series of written assignments where students would learn about various study techniques, attempt their choice of them for a time period, and later reflect on which worked well for them and how they could continue to apply these to the course or other courses. Additionally, they had optional assignments on discussing how they viewed mathematics and how these views might shape their experiences. These were not universally successful, as some students already had a solid idea of effective strategies for themselves, but others learned about new ideas they had never considered, such as spaced retrieval practice. In my Geometry For Middle School Teachers class, I incorporated a more direct form of self-evaluation, as the students were intended to be future educators. After they completed an exam, I would go over possible solutions for the problems and the associated arguments for these answers, then ask students to grade their own exams, or if they were comfortable doing so, grade a partner's exam. Following

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this, I would revise the grading appropriately and give notes on if they were overly harsh or lenient in grading. This led to them having a better idea of what constituted a strong answer, where the final set of exams was graded well by the students after they saw the appropriate solutions. However, these techniques only address how students are treating themselves, and as such, I have developed other methods to adaptively tailor my teaching over the semester.

While I do my best to present an environment suited to as many students as possible, I try to recognize my style may need modification for each class. Thus, I make use of anonymous forms for my students to regularly submit comments and requests regarding my teaching, as well as requesting anonymous feedback around once a month. One student during College Algebra asked if I could include more examples for linear systems, and I realized most of my examples had been overly simple to avoid complicated answers. This was later helpful, as while discussing a complex example prior to a quiz, a student asked if answers had to be integers. I was able to clear this misconception, which was especially relevant as the quiz contained non-integer solutions. When adapting, my goal is to create a path of minimal resistance for students to grow, though tempered adversity in the classroom can prepare students for future challenges.

I aim to help students expect and accept difficulties or setbacks they might encounter, as many students will experience these throughout in their education. By helping them have a stronger idea of their confidence level in their own solutions, they can prepare to face future challenges directly. I've also begun discussing the concept of a "growth mindset" with students for this same reason in addition to having them read articles relating to it, as I want students to be familiar with mistakes as a part of learning. All of the courses I've instructed have made use of consistent and low-stakes assessment to help catch these issues before they become significant, in addition to some using alternative grading systems. In the case of my College Algebra course, the coordinator had designed a series of six topics which the students would take five short quizzes on over the semester. Many students would not pass the first or second quiz on a topic, but only two passes were required for proficiency, giving them an opportunity to see what needed more practice. For my Geometry course, I allowed revisions on homework and exam questions within guidelines, and their overall grade was determined by having a sufficient number of correct problems in each category. Both of these strategies helped students remember to address old content and continue to improve on it.

While these grading systems have been helpful, I also work to adapt the presentation of materials so students remain interested and engaged. When I taught Introduction to Contemporary Mathematics, the class covered four topics with noticeable real-world applications: voting theory, probability, fair division, and graph theory. Rather than introduce voting theory as an abstract concept, I included a question on a first day survey to rank some listed animals from one to four, and used this data to create a ballot for each student. Each time we introduced a new voting system, this data would be reviewed to see if the winner changed. Humorously, the winner was always horses, but there were always differences in the calculation. It was a grounded, albeit simple, example the students understood and could see their involvement in. I found it helped motivate how different voting systems mattered.

I've found there's more to consider than the lectures and assignments themselves, namely creating a classroom environment in which students feel comfortable, respected, and included. This requires consideration on a number of fronts, from ensuring the course design

doesn't make use of unnecessary abbreviations or jargon which some students may be unfamiliar with, to considering I communicate my interests for the course concisely and clearly. On the first day of class, I have students fill out a 'first day survey', which includes their preferred name, pronouns, some general information, as well as a question of anything else at all to let me know about. This has helped me see the difficulties students are experiencing that might not directly manifest in class, such as having a child, helping a family member with reduced mobility, or mental health concerns, and it enabled me to make more informed decisions when accommodating them. In turn, if I notice a student is missing class, homework, or performing poorly on assessments, I reach out to them and request they attend office hours or make an appointment so I can help them understand the course, face their mistakes or challenges, and direct them to the appropriate services they may need.

I hope to create an environment in my classroom where most feel comfortable to explore, grow, and sometimes even fail. I hope they can see where mathematics has been hiding in their everyday life, and that they can use apply the skills of self-evaluation and self-assessment to their other courses. And as I look forward to the future of my students, I also wonder how different my teaching may be in just a few years as I strive to improve.