Students often associate learning math with rote memorization and anxiety or low self-esteem. While anxiety and low self-esteem are clearly undesirable, relying on rote memorization also undermines the importance of mathematical thinking—the ability to use problem solving skills, struggle, and collaboration to learn—something that affects students beyond just their success in future math courses. Driven by compassion and a desire for students to thrive, I construct a new framework by creating an environment where all students participate in lively and supportive community, grow their mathematical thinking, and develop appreciation for the logical flow of mathematics.

For students to feel excited to come to class and comfortable working through challenges as they learn—a new experience for some--it is important that they feel known by me and their peers beyond their identity as a learner of math. To cultivate this unique atmosphere, I begin the first class by communicating how valued my students are and learning their names and interests. I then have them do the same with their peers. For each successive class we begin with a question each student answers, giving me touch points to follow up on. Some of my favorite questions include, "What has gotten you excited recently?" or "What is something you are passionate about?" Whether it be in class or in one-on-one situations like office hours, I take every opportunity to talk with students about their lives and my commitment to help them meet their life goals. By doing so, my students are willing to engage me and each other with math questions, life check-ins, study opportunities, friendship, and more. Overall, feeling known benefits my students' learning, their classroom experience, and their well-being.

To further remove barriers to learning, I provide students with information to help them stay organized and succeed. Throughout discussion, I leave a checklist of upcoming assignments and office hours in a corner of the board. Often students take a picture and comment on its usefulness. As the Lead Teaching Assistant for a large lecture, I leveraged my role for student success by providing other teaching assistants with materials for each discussion and updating deadlines, resources, grades, and feedback through the Learning Management System. During my time in this role, many of our students faced mental health or personal challenges. As I received their emails, I responded with compassion and connected them to resources around the university, making them feel seen, known, and cared for, even in a large lecture. This frees students from worrying about logistics and a lack of support, allowing them to focus on content.

As I deliver course content, I effectively guide students to mathematical thinking in engaging and meaningful ways. The first step is to model such thinking and explicitly teach students the necessary tools. So that I fully develop these problem-solving strategies and the flow of the mathematical logic, I prepare for class by finding ways to be transparent about any reasoning behind a step in the problem-solving process and use multiple ways to solve problems. For example, a strategy I often guide students through is manipulating a problem to be similar to something they have solved before. With practice, every student is equipped to solve problems on their own by replicating this logical thinking. Students are then free from relying on rote memorization of an algorithm and instead value understanding, making math more accessible and solidifying comprehension. This results in greater confidence in their abilities.

The next step in developing mathematical thinkers is to provide engaging opportunities for learning through varied instructional methods. In addition to collaborative activities like

group work and partner discussions, students learn mathematics through a combination of practice to hone skills and thought-provoking activities that cement concepts. To sharpen students' problem-solving skills through repetition, I often turn to gamified activities such as various puzzles. On the other hand, I encourage curiosity and higher-order thinking through discovery-based activities which guide students to discover and articulate their own mathematical conclusions. To provide an answer to the question, "Why are we learning this?" I motivate some topics with relevant real-life examples. In Mathematics for the Biological Sciences, I used anterior cruciate ligament (ACL) return to play protocol to motivate our study of angles. When teaching my own courses, I also plan to have students look for ways they see or can implement their new knowledge in the real world. This allows students to engage with mathematical material in a way that is motivating, meaningful, and relevant to their goals.

However, a critical component of mathematical thinking is embracing mathematical struggle--the idea that students need to practice their new skills and persevere through frustration to solidify understanding. To normalize struggle in my classroom, my students and I discuss it and investigate how we can use it to better inform our processes. Often this means me acknowledging my intentional or unintentional mistakes on the board and prompting students to think critically about what they see, what they would change, and why a mistake might have occurred. In addition, I will stop class and cue students to share a question they have with someone around them, giving them an opportunity to talk through it or potentially solve it. Furthermore, the problems I provide students with are curated in such a way that they increase in difficulty, so students of all abilities are challenged. When students get stuck, I encourage them to think logically, consult resources, or enlist their neighbors' help. In one-on-one settings, I patiently ask students questions to draw out the next steps, breaking the process into manageable chunks as needed, but rarely providing the answer. Because of the community that has been built, these conversations are a safe space for mistakes, scholarship, and learning in community.

Another tool I utilize to help students grow their knowledge and confidence is feedback. In class, I set a positive tone with verbal feedback, welcoming questions and responses, even incorrect ones. If needed, I shape responses into the correct answer by offering other considerations or questions. When providing written feedback, I constructively point out misconceptions, how to correct them, and where students excelled within a week of the deadline. In either form, I encourage students to embrace their unique way of thinking by responding with enthusiasm and accepting all correct methods, often stating "Use the method you like." To reap the full benefits of using feedback as a learning opportunity, I teach students how to access feedback and allow them to resubmit the first assignment after implementing it. Furthermore, I address misconceptions, reflect to improve my instructional methods, and meet my students' needs as they learn based on common themes I find in the feedback I give or receive. Whether it is simply reviewing common mistakes on quizzes or teaching the material in my discussion section, so students see it before lecture, I use feedback to benefit my students' learning.

While working in mathematics may not be the end goal for all my students, the components involved in mathematical thinking and my classroom are foundational across many areas of study and life. I know through my class my students will gain skills that aid them in their

future endeavors and, most importantly, know that they are valued as individuals and can be confident in their capabilities.