"Regard man as a mine rich in gems of inestimable value. Education can, alone, cause it to reveal its treasures, and enable mankind to benefit therefrom." - Bahá'í Writings

Every day, we are in the process of learning, developing new ideas that will influence community development, and advancing civilization. This process of learning is not a passive experience, but one that involves listening, acting, extending the knowledge you gain, challenging yourself to a new level, connecting that knowledge to new topics, and communicating that understanding with others. My main goal for my students is for them to realize their capability to do mathematics and realize it is not merely a subject of memorization and calculation, but one that requires logical thinking. As a navigator of learning, I hope to inspire in them a confidence in their reasoning skills, a patient approach to problem solving, and an ability to explain their thoughts and methods to their fellow students.

"I just can't do math," is one of the most common phrases I hear from students. In my classroom, I work to help students change this perception of themselves by helping them to learn problem solving tactics and giving them challenging but accessible material. Throughout my experiences as an instructor and a recitation leader, I have witnessed that students learn at different paces and in different ways. I balance instruction, individual work, and group work to help students learn at their own pace and allow interaction with both me and each other. For example, after introducing a concept that may be review for some students and not others, I give four or five problems and ask for the students to work at least one. The first problem will be a basic question asking about the main concept, then the problems will gradually increase in difficulty, until the last problem will require not only mastery of the concept but also problem solving skills. This approach increases both confidence and communication skills. I ask students to pick a question, attempt it, and if it is too easy or too difficult, move up or down the list. I encourage the students to work toward solving the last problem over the course of the semester. While they are working, I can interact with them, offer feedback, and encourage them to help each other. I strongly encourage this peer-based learning, wanting the students to work together to learn. After they have a chance to work, I ask students to identify on their paper the steps and thoughts that led them to solve the problem, sharing both things that may not have worked and why. As a class, I ask the students for the most difficult ideas that they used, and the method they felt worked the best. This practice helps them strengthen their logical thinking skills as well as their ability to communicate their problem solving methods.

Through these and other exercises, I want the students to discover that making mistakes and trying methods that do not solve the problem are not failures on their part, but a natural part of mathematics. I see myself as a demonstrator of mathematical thinking – showing different possibilities in a given problem, explaining the reasons behind each possibility, and finally explaining why I choose a particular strategy. I want to show them that it is not necessary to know the correct solution in the beginning but reassure them that even people "good at math" need to try several different possibilities before finding a successful solution. I wish to model the behavior I am expecting from them – boosting their confidence in problem-solving by allowing and even encouraging mistakes. I know my students appreciate the diversity of instruction and options when they comment, "the most effective [part of the course] was becoming comfortable with the material and having confidence when working on math problems."

At the beginning of every semester, I ask the students to write down the part of math that they have found the most challenging or confusing. I use these responses throughout the semester

to frame my teaching. In a precalculus course, I had a remarkable number of students say that the hardest aspect of math was memorizing formulas, especially with exponents and radicals. To respond to this challenge, I developed an activity where the students explored the symbols of exponentiation, used the meaning of the symbols to work out examples, and lead them into writing the rules of exponentiation themselves. Then, later in the semester, as we worked through examples, I asked them to pull out their own work to remember the rules, or to translate the symbol into what the multiplication and division meant, to simplify. Through this activity, they were able to see the meaning behind the concept, rather than trying to memorize formulas and often apply them incorrectly because they don't know what the formulas mean. They develop logical thinking skills and move beyond memorization and regurgitation.

In any math classroom, handling questions is very important. From the instructor answering questions, the students see a model of communicating the reasoning behind a solution. From students answering each others' questions, they learn to communicate with their peers. First, I invite the students to not only ask me questions during class, but also to ask before or after class in person or by email. I have heard from several students that it is not acceptable in their culture to question an authority figure in front of others. I want all my students to participate, and this allows students to do so as they feel comfortable. Further, I ask questions of my students while we are investigating a topic – asking them why such a question would arise, why would we go about solving the problem in a particular way. Students say to me, "Why are you always asking us why?" or "I know, you're going to ask me why!" I want students to move beyond memorization by being able to explain why they go about a problem a certain way, to help them realize the problem solving process. Beyond asking me questions, I encourage the students to answer their questions among themselves, as the students can often understand each others' difficulties better than I can.

To teach them to learn independently, I want the students to practice assessing their own understanding. Before an upcoming exam, I ask the students to look over homework and quizzes, find two topics that gave them the most difficulty, and then write and work two new problems on that topic. Through this self-assessment, the students not only recognize the topics that they need to review, but also they need to analyze where those topics arise and give new examples. Then, I share those examples with the class and use them for review activities. In writing quizzes, I focus on concepts, wanting to see if students can identify new topics in the context of a problem, communicate the key ideas, and explain an approach to a solution. I continue this approach in the exams by asking several concept questions – asking students to give an example or counter-example of a certain statement and explain why that example fits. In addition, I always include a problem that uses a new idea but a similar strategy in solving the problem as the concepts on the exam. These questions help me identify if the students can synthesize the topics they study with new ideas, applying the techniques of problem-solving to a new situation. My exams and assessment must follow my own goals of teaching problem-solving, logical thinking, and effective communication of a solution.

Through these lessons, I hope my students not only learn mathematics but develop the capacity that each one of them has to solve problems, utilize the resources that they have, and explain their thought processes to others in order to further the development of their community. My goals for my students are developing logical thinking and problem solving skills, confidence in their ability in mathematics, and communicating their thoughts to their classmates. I know I have succeeded when my student writes, "I value the way that my instructor helped to eliminate my long-standing fear of mathematics."