Being in various teaching and mentoring roles for over ten years now, I am aware of the subtle dynamics of the learning process. At the beginning of the previous semester, I passed around index cards and asked students to write their names and feelings about math. A majority harbored negative emotions, had great math anxiety, or have had bad experiences with former teachers. Some shared that they merely enrolled in my course because of some university prerequisite, and they wanted to get through calculus and never think about math again. I may not be able to undo a lifetime of damage or bring my love of math to my students, but that never precludes my trying. My teaching goals are simple and will serve my students long after they leave my instruction. I strive so that everyone exits my course with a heightened sense of academic confidence, a more powerful communication style, and a strong commitment to self awareness.

I start building confidence early by working through proofs of simple theorems, calling on students to explain to me why one statement implies another and to highlight when an assumption is utilized. Together we concoct various counterexamples to show necessity of all hypotheses in a theorem. These fun necessity puzzles build understanding and intuition for the students who initially look at theorems as jumbled messes of symbols and jargon. In this instruction I emphasize the idea that their knowledge is helping me to prove the theorems. This process starts off slowly, but by the third week of class, students are more comfortable with proofs and attain a level of confidence and understanding that rote memorization alone cannot provide. I regularly give students the chance to come to the board and explain solutions to the class. It has been my experience that other students benefit from seeing the confidence of their peers during these presentations.

At every level of teaching, I notice a large discrepancy between what a student intends and what the student actually communicates. This phenomenon is in no way unique to my subject, but such a large communication gap is not compatible with the precise language of mathematics, and it leads to much frustration for both instructors and students. Early on I strive to instill in my students the universal importance of effective communication and clarity of presentation. I have been fortunate to have a very high degree of classroom participation in every course I have taught, and all student input provides me an opportunity to correct some fundamental misunderstanding or praise solid reasoning. Sometimes it is clear that a student is trying to convey the correct notion but lacks verbal precision. It is crucial that I recognize this, praise the right idea, and help the student formulate the notion precisely. I also give short discussion questions to analyze communication styles and to document changes throughout the semester.

One of the most difficult challenges I face as a teacher occurs when students believe they understand a concept only to find out too late that they did not. During my first semester teaching, a student with poor test grades came to my office hours late in the semester to express concern. He attended all lectures and worked many extra practice problems. I sensed full sincerity when he asked me why his test grades were so low given that he tried so hard. After some investigation, I isolated what I thought the issue was and offered my advice for better study habits, but the semester drew to a close and this student failed. I later regretted we had not had that conversation earlier. I now incorporate comments into my lectures indicating poor and proper routines, and periodically I ask my class to reflect on the semester and truthfully evaluate their effort and expectations for the course. This is crucial especially with the advent of technology-based homework assignments in which students can recognize answer patterns without ever understanding any assignments.

I love mathematics, and I bring my enthusiasm to every class hoping to share a glimpse of what math is to me. Even if I am unable to successfully convey the importance and beauty of math, my practices ensure that my students will be better prepared to succeed in their future endeavors.