

As a scientist, I believe that scientific inquiry is a powerful tool for understanding and improving the world. Since my first time leading a group discussion as a high school student in an Advanced Placement chemistry course, I have been driven to use chemistry education to bolster positive human impact. Teaching enables me to positively impact the world by engaging and uplifting my community while assisting in others to have their own impacts. In my classroom, I prepare students for i.) increased curiosity, questioning, and reasoning in their academic, personal, and professional lives; ii.) participation in a democratic society that uses evidence-based practices; and iii.) further exploration of science through traditional courses. Chemistry—a science that intersects all areas of life, is the perfect vehicle for catalyzing student growth. The open-mind and curiosity garnered in chemistry encourages personal exploration of the world (where one treats everything like an experiment, with iterative improvements) and personal development. I encourage students to develop a curiosity for the physical world, approach questions with an open mind, and provide them with skills to critically evaluate experimental data. The ability to solve chemistry-based problems and thoroughly analyze, evaluate, and critique scientific data will bolster students' academic success in any quantitative course. Students should be able to: identify and explain the steps of the scientific process, articulate which questions science can and cannot answer, defend the assertion that hypotheses can only be disproven. These outlooks benefit all students, regardless of their major, since quantitative analytical skills, with sound communication abilities, are desirable for any employer. Students will explore careers within the sciences and the impact that scientific knowledge and thinking can have/has had on careers outside of science.

When first meeting students, I introduce myself and my background, including my personal struggles as a first-generation college student from a lower socioeconomic status, and assert that I am here as a resource for student success, both within and beyond my classroom. I view the relationship between teachers and students as one that is dynamic and focused on student growth, yet responsive to the needs individual students. Students are responsible for showing up, exerting effort, and maintaining an honest dialogue with their teachers. Teachers are responsible for setting expectations, providing adequate resources for those expectations to be met, and doing their best to support student growth. In my classroom, students should expect clear, direct, and honest communication regarding the course and their performance. I consistently set and maintain explicit grading rubrics and defined benchmarks for success whenever possible. Students should expect that I treat them with respect and genuinely listen to their concerns, questions, and input. As a teaching assistant for both general and advanced chemistry courses, I have helped mitigate student distress and anxiety through active listening. I have learned to first seek to understand the sources of my students' frustration and then act to directly address my concerns within the confines of my position.

Since I am concerned with the personal growth and success of my students beyond the one course they may have with me, I am always seeking to use teaching practices that benefit different student populations and provide opportunities for students to learn from their mistakes and misunderstandings. As a teaching assistant, I have employed active learning whenever possible, informed by evidence from pedagogical literature and feedback from my students. For instance,

when students in an advanced chemistry laboratory course informed me that the original materials and directions were unclear, I identified misconceptions and created a document with clear guidelines and grading benchmarks. My teaching practices continue to develop overtime because I am eagerly listening and responding to student input.

A variety of assessment tools, including tests and informal discussions, allow me to gauge student learning. As a teaching assistant for a general chemistry discussion section, I learned that simply pausing discussions for a moment and asking students if any clarification is required creates a space for addressing misconceptions. While grading lab reports for advanced spectroscopy lab courses, I learned the value of inquiry learning. I had tasked students with recreating a classic experiment and generating their own values to compare with the currently accepted literature values. Students had to use an investigative process to generate their values through data analysis, and ultimately demonstrated a greater conceptual understanding of the steps of the data analysis—that is, *why* each step in the analysis was needed in that particular order—than I had anticipated.

I am currently working on expanding my knowledge of evidenced-based pedagogical practices and developing courses I may want to teach in the future. Moving forward, I plan to use clicker questions for real-time feedback to gauge student outcomes and presentation-based assignments for developing my students' communication skills. As I have transitioned from student to instructor, I have realized that teaching is an ongoing experiment. I used to believe that the best teaching practices were already known and being put to use. I have grown to understand, however, that, while the traditional lecture system may have worked for me, it does not work for all, and there are many more teaching practices to explore and enact in the classroom to benefit all students.