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TEACHING PHILOSOPHY

The breadth and complexity of chemistry drew me in, its pertinence to both the massive and the miniscule. Early in my undergraduate career, an influential mentor showed me that many problems across a range of disciplines could be understood, in part, with a knowledge of chemistry. As a student and instructor of chemistry, I've continually been inspired by professors, classmates, and students, recognizing that whether or not one classifies themselves as a "science person", there is something for everyone in this discipline. This is at the heart of what I aim to instill and inspire in my students as an instructor. While each student may not want or need to know all the intricacies of the subject, my aim is that through my teaching they may gain an appreciation for the expansive relevance of chemistry and the scientific method.

Broadly, my goal as an educator is to encourage students to notice the vibrant, ubiquitous role chemistry plays in their lives. More specifically, I aim for my students to understand chemical concepts, extrapolate their relevance, critically analyze scientific information, and communicate with broad audiences. I use evidence-based teaching methods such as problem-based experiments and case studies, small and large group discussions, and peer instruction to engage students in learning. Explicit learning outcomes, backward design, and assessment of student progress continually inform my teaching throughout the semester.

I use a mixture of the traditional lecture format and engaging students in active learning through small and large group discussions and activities, real-world examples and case studies, and assigned practice problems. In the laboratory, I emphasize the connections between concepts learned in lecture, laboratory observations, and the broader context of the phenomena. I integrate peer reviewed journal articles and patent applications as a way to show students that science is always moving forward. I would like to employ problem-based laboratory experiments, peer-reviewed journal articles and case studies of industrial discovery in my laboratory courses. This approach emphasizes problem solving and critical thinking and gives students an idea of what a career in science looks like. Chemistry's cross-disciplinary role provides a wealth of resources to accomplish this goal and motivate students to learn by emphasizing relevance to topics relating to their major area of study.

My current role as a teaching assistant has not yet given me the opportunity to put these methods into practice, but I have taken inspiration from numerous professors and educational techniques that I am familiar with. Between tests and quizzes, I plan to ensure that students are adequately progressing by employing feedback in my classroom through a mixture of rapid-response technology and large/small classroom discussion. These formative assessments will allow me to gauge the effectiveness of my teaching methods and modify my approach in order to meet my students' needs. In preparing quizzes and exams, I will utilize both conceptual and technical questions, encouraging students to understand both the material and its broader significance. Additionally, allowing students to correct quiz or exam mistakes for partial credit minimizes the perceived risk of making a mistake and encourages students to see the value of knowing what one needs to study further. In addition to immediate oral feedback in the chemistry teaching laboratory, I strive to foster an environment where use of the scientific method is valued and understanding is prioritized over having the "right" answer or a high yield of product. Assessments in my laboratory classroom would therefore focus on the skills and subject at hand, the

presentation and analysis of data, and conclusions, along with the application of the scientific method as evidenced in a written laboratory reports, notebook records, and oral presentations. Peer review of reports and presentations allow students to hone oral and written communication skills, further informing them of the importance of different forms of communication in the life of a scientist.

I've experienced firsthand the benefit of having excellent mentors. As such, I seek to provide constructive mentorship to my students in the classroom, laboratory, and research settings. I am forward with my failures and the lessons I've learned in order to encourage students to feel comfortable asking questions and learning from mistakes. In the laboratory and research setting especially, I've found that open discussions encourage students to feel ownership of their project. Given the importance of practice in building research skills, I plan to scaffold my support of students as they work toward independence in my research program.

My teaching activities are bolstered by a commitment to diversity, equity, and inclusion in the classroom and field of chemistry. I ensure my courses and learning materials are accessible to all students by including them in the course learning management system. While university students are indeed adults in control of their education, I establish explicit expectations and direct students to department and university resources. Through these methods, I seek to support first generation students and those who may have differing abilities.

Beyond the classroom, I am a firm believer in scientists' responsibility to enhance public understanding of science. I have worked to improve my communication skills through outreach activities, including developing hands-on activities and lead workshops as a member of my local section of the American Chemical Society and several student organizations. My experience has shown me that curiosity and the excitement science can foster has no upper or lower age limit. In addition to continuing to volunteer my time, I plan to encourage my students to participate in outreach as well. It is an excellent avenue by which students can learn, share their excitement for science, and develop written and verbal communication skills. In a broader context, the opportunity to share scientific knowledge and enthusiasm with individuals of all ages, backgrounds, and levels of understanding allows scientists to spread scientific appreciation, literacy, and understanding in the community.

Ultimately, I see it as my responsibility to help students build scientific literacy and critical thinking skills, as well as instruct them in communicating their chemical knowledge. Upon completion of one of my courses, my students will be able to connect chemistry concepts and the scientific method to future courses, their careers, and global events. While the individuals who pass through my courses will go on to have diverse careers around the world, I hope that they will show the world that chemistry connects us all.