

“Tell me and I’ll forget. Show me and I may remember. Involve me and I’ll learn.”

– Benjamin Franklin

Science is an interdisciplinary field that is continuously evolving and advancing due to research; teaching science should be conducted in the same manner to increase learning and understanding. I believe increasing inquiry-based learning in the classroom is a critical component in facilitating a deeper understanding of biological concepts. As the quote mentions above, involving students in their education increases learning, this can be seen in many studies in cognitive psychology. The theory of cognitive load is an instructional method that considers how information is processed in memory. It aims at reducing extraneous load (unimportant information), managing essential load (the organizing of important material in working memory), and fostering generative processing (the construction of schemas). I aim to incorporate many supported techniques and theories into my teaching such as creating integrative courses that are based on student learning, incorporating the theory of multimedia learning, and using feedback to promote learning. By re-designing courses and presentations that focus on student learning and reducing extraneous cognitive load, I will free space in working memory to engage students in the scientific process, allowing them to discover how amazing and exciting biology is through experimentation and discussion, which will ultimately foster generative processing.

I have three main goals that motivate my teaching style. First, I seek to create a significant learning environment that considers students’ educational backgrounds and experiences while engaging them in the learning process by using knowledge probes and posing alternative scenarios. Second, I encourage the exploration of the scientific method and induce problem solving through active learning activities. Thirdly, I promote the communication and understanding of results to better prepare students for the world outside the classroom. An overarching focus of mine is to provide students with the skills needed not only in the sciences but also in other disciplines on how to assess a problem, conduct research, analyze results, and explain their findings. I also aim to convey the knowledge of the core concepts and competencies of biology to students based on the “Vision and Change” study. I want to prepare students by giving them an arsenal of knowledge and inducing problem solving so they can tackle the issues our world faces today.

Another major concentration of my teaching style is that I strive to create an integrated course, in that my learning goals, teaching/learning activities, and feedback and assessment procedures are all integrated and based on the situational factors of the course, meaning my students. While creating an integrative course is beneficial to the students, I also aim to incorporate the cognitive theory of multimedia learning (CTML) to ultimately reduce extraneous processing, help maintain essential processing, and to foster generative processing in my students.

To achieve my teaching goals, I implement a variety of teaching and learning activities such as weekly quizzes for retrieval practice, muddiest point reflective papers, and class discussions. At the beginning of any lesson, I feel it is important to gauge my students' prior knowledge on a topic therefore I always implement a background knowledge probe where I ask students to write a few sentences of what they know about the topic. I can then tailor the learning activities and discussions based on their answers; this also engages students, which is another goal of mine. I also believe that using formative evaluation techniques are critical for managing student learning and my teaching. Formative evaluations provide feedback as an ongoing process throughout the duration of a course, which alerts students of their progress and helps students take charge of their learning.

Overall, I am uniquely qualified to take on a teaching position. My experience includes teaching assistantships as both an undergraduate and a graduate student, a science tutor at the high school and college level, I have taken courses such as college teaching, course design, and multimedia learning at the graduate level, and I will acquire a cognate in college teaching during my graduate studies. I believe that integrated courses, inquiry-based learning, CTML, and learning through feedback are great methods in relaying the core concepts and competencies in biology to students. Overall, I want my students to leave my classroom prepared for the real world with communication skills, problem solving skills, and knowledge of the sciences to address any problem that comes their way.