

It is my philosophy that the classroom should be a place where students can learn biological concepts and apply what they learn in an environment that fosters collaboration. My aim is through inquiry-based learning to prepare students to share and apply their knowledge and ideas on conservation and human health, not only in my classroom, but in their communities and beyond. I believe that students with the skills to think broadly and engage with emerging technologies will be highly valued in the workforce. Likewise, professionals will want students who can connect basic biological principles and apply them across multiple disciplines and fields. I utilize a range of inquiry guided learning techniques in my teaching and below I include three examples of courses I developed and taught that incorporate some of these techniques.

#### Courses Designed and Taught

Currently at North Carolina State University I designed and am teaching, Conservation on Islands (*AEC295/BSC 295*) a two hundred level course with a broad range of undergraduate students. This is a lecture/discussion based course with several guest speakers incorporating various departments across campus. In the course I stress how conservation is a multi-dimensional science and that conservation is a human endeavor requiring human solutions. The course covers a range of topics including biogeography, invasive species, ecotourism, and island culture and politics. Each week a student presents a recent article relevant to the topic at hand. The final assignment asks each student to pick an island of their choice and discuss what its conservation needs are and how those goals could be met. Students write and forge connections across readings all semester to have this cumulate in a final paper. In addition, students create a 3 minute video project on their island and argue their case for what is needed in terms of conservation. The goal is to give students the opportunity to use different forms of media to communicate science, and to gain experience in presenting their findings. Digital librarians at NC state are brought in to help and all the technology necessary is provided at the university through the digital library services.

Previously at North Carolina State University I co-developed and taught *Ethics of Biotechnical Communication (Hon296)* an honors elective course that enrolled students in a wide range of non-science disciplines. The course was an in-depth discussion on technical approaches to genome manipulation with humanistic inquiry into ethical stances that guide approaches to communication. Students were asked to write and reflect often upon their own personal experience with biotechnology. For the course I incorporated some of my own research experience and discussed the ethics of gene drives and other genetic engineering techniques. Students also gained experience on how to perform public engagement and several participated at the North Carolina Museum of Natural Sciences SciTech expo demonstrating various tools of biotechnology. In addition, several students created their own community engagement booths exhibited at the 2017 NCMNS Genetic Engineering and You outreach event. Many students claimed that this was their first community engagement event and responded favorably during evaluation.

At East Coast Polytechnic Institute University I developed and taught a course on introductory biology – *Environmental Biology 122* – that explored ecological concepts and the influences humans have on the environment. This evening class mostly comprised of students working full time jobs which meant ensuring full engagement was key for this course. I did this by incorporating short labs and activities that the students could quickly conduct and then discuss as a group. For example, one lab students particularly enjoyed when we tested a local waterway for pH and fecal contamination. Students were intrigued to learn about the water nearby and could relate to topics at hand about drinking water and the need for sustainable resources.

#### Undergraduate mentoring:

In addition to teaching I work closely with undergraduate students to mentor them on their own research projects. Often my undergraduates write and earn undergraduate research grants. For these projects I guide the student through the research design, data collection and statistical analyses. I then follow-up by having students present their work at local conferences and incorporate their work into papers that are published. When teaching undergraduates in the lab I often follow a phased training method where-in I demonstrate the laboratory technique, I have the students perform the technique under my supervision, and then I have them run the procedure by themselves, making myself available for troubleshooting.

#### Potential courses:

I have been teaching biology now for over a decade. I'm comfortable teaching at both the high school and university setting. At the university level I taught undergraduate introductory biology non-major labs and then I had to switch to tailor my approach for teaching smaller discussion style courses. Several of the courses I have taught have been from an interdisciplinary perspective and I feel that this is the best way to approach biology today. Courses I am prepared to teach from an interdisciplinary perspective include introductory biology for majors and non-majors, ecology, animal behavior, conservation, biotechnology and herpetology.

#### Assessment and growth:

For reflection I often ask students for self-reflection by post-exam surveys. For written assignments I often employ self-designed rubrics for grading essay responses. I also reflect myself and will analyze exams for frequently missed questions. I read over comments on teaching evaluations and feel there is value in learning what student's took away from a course. Links to evaluations can be found on my website. Currently I am in Preparing The Professoriate, a program where I am learning new ideas and methods for teaching effectiveness. I also am a member of a local education and outreach network that frequently meets to discuss new teaching strategies and tools. I consider myself a lifelong learner and each semester new students and ideas challenge me to think about and try new methods. I have come a long way since my first semester of teaching and look forward to growing and developing as a teacher as I incorporate new material and reflect upon best practices in a data driven world.