Reflections on Teaching and Learning

I have been fortunate enough to engage in some rather diverse teaching experiences, ranging from teaching English to secondary-school students in a small town in northern Mexico as part of a study-abroad program while I attended Fort Lewis College (undergraduate), to assisting with a Cell Culture and Virology Laboratory course here at Colorado State University during my graduate teaching assistant appointment. Furthermore, I had the opportunity to mentor/train several undergraduates and several graduate students new to the Ph.D. program in the Department of Microbiology, Immunology and Pathology here at CSU. These one-on-one mentoring/ training sessions with students that were new to research and (for the most part) just getting started learning about the scientific method and molecular biology/microbiology proved to be extremely valuable and (somewhat surprisingly) served as an important mechanism by which I learned more about my own academic discipline/specialty and how to manage students/researchers in the lab to promote productivity and learning.

Ultimately these experiences instilled in me an interest in learning more about how to effectively communicate and teach science to diverse students and/or audiences. Having the opportunity to participate in workshops/seminars through TILT and actively engage in the process of educating students of various ages in the sciences has enabled me to learn about novel techniques for actively engaging students in coursework/lab work and allowed me to practice using some of these teaching 'tools' here at CSU.

I decided to attend workshops and seminars that were focused on the following issues:

• How to promote and facilitate active learning in the lab and classroom
• How to put lectures and laboratory experiments/lessons into broader contexts to get students interested in the subject/coursework, stimulate discussions about concepts, and overall move towards creating an environment that encourages critical thinking
• Integrating social media and technology into the classroom/for homework to allow students to have discussions outside of the classroom and possibly engage
directly in science outreach activities (e.g. through a class’s twitter account)

I was quite interested to learn about the various methods that educators have used to promote active learning in the classroom in several of the workshops that I attended. For example, the use of ‘peer educators’ in the classroom was especially intriguing. A peer educator can act as an intermediary between students and teachers in the classroom and is oftentimes a student that previously took the course that is interested in facilitating productive interactions between students and educators. The use of peer educators in the classroom/laboratory class seems particularly useful in promoting effective communication among the class’s participants and serving as a less intimidating resource than the professor for students that might need additional assistance in the class. I was also very interested in learning about ‘reaction discussions’ as a method for getting students engaged in critically thinking about subjects and forming their own opinions about concepts/experiments/events that can be hashed out in the classroom to more fully develop perspectives and ultimately enhance learning.

However, for me one of the most important requirements of the Graduate Teaching Certificate was physically acting as a teacher/educator in the classroom/lab. Upon reflection (and putting together this ePortfolio) I was surprised to realize that I had well over the twenty required hours of teaching experience for the Certificate, but that I still felt like I had so much to learn about teaching. Furthermore, one of the most useful experiences I’ve had as a graduate student was working with undergraduates/ new graduate students in the laboratory one-on-one. I was surprised to find that as I tried to teach a new student in the laboratory about new techniques, or explain what our hypothesis was and how we might test that hypothesis, I was forced to gain more of an expertise in each technique in order to effectively communicate with the student. In essence, teaching students about lab techniques/research aided me in learning more about my own field of research. Unfortunately, I also recognized that during my own undergraduate (and early graduate) education, the science classes I attended did not prepare me very well for performing research in pursuit of a Ph.D. degree. As an educator in the sciences, I would very much like to ensure that each science course I
might teach (be it an introductory course in Biology, an advanced Virology course, or anything in between) aims to stimulate critical thinking and gives the student an understanding of the way that science is actually done (i.e. research, using the scientific method to solve important problems, and communicating results to many audiences). I am now very much looking forward to implementing some of the creative methods that I was able to learn about at TILT workshops in my own classroom.