

Preparing for my first real lecture in the Cell Biology lab, I reflected on my favorite science teachers in both high school and college and realized they all had two things in common. First, they made learning advanced biology feel like anything but the monumental task it can often initially seem. Second, they always had some interesting tidbit of information that not only piqued our interest in the material, but was simple enough that could interest even someone with no passion for science.

A large part of my personal teaching philosophy embraces these two characteristics. Biology can be a very beautiful yet intimidating web of information, and students often feel trapped and confused and give up all too easily. I try to present material to my students in such a way so that we start off with material they already know in order to make them feel comfortable and not overwhelmed. While building on the subject matter throughout the course of a lecture, relating similar concepts to one another and helping the students see the bigger picture with the details in place allows them to work through biological principles at varied levels of complexity. This, I feel, gives them perspective on the material, as well as the confidence to link concepts together they are already comfortable with to new ideas. I think that much of understanding and excelling in science, or any subject, is the ability to link pertinent information together to see the larger picture.

Just like the headline on a newspaper, students also need an “attention-grabber”. Students have their minds racing, and a difficulty that many teachers face is not only capturing, but also retaining their attention. Therefore, I like to start my lectures with an interesting bit of trivia that gets the students interested in the subject matter. In the Organismal Biology lab that I supervise as head TA, I always have a list of “factoids” for my TAs to impart to their students. For example, as an introduction to the lab in which students observe the mixed microbial community in the termite gut, I have the TAs explain to the students that it is misleading to suggest that termites are eating the wood in someone’s house. Instead it is really the bacteria in its gut that produce the cellulase that breaks down the wood, so that the termite can digest it and continue to eat. It may seem gimmicky, but students always remember information that is interesting enough to share with friends that aren’t in their class. This serves two purposes. First, it captures their attention so they are interested in how the bacteria in the termite gut are able to live symbiotically with the termite, and second, it provides a gateway to discuss the connection between the factoid and their lab or lecture. Having an attention grabber that is easy to understand will help them understand at least some of the material because they will want to remember something interesting that they didn’t know previously, and hopefully, will take away some of the things you teach subsequently.

I think on a more emotional level, a large part of my teaching philosophy is based on the untapped resource that is the forum to connect with students at a number of levels that are not that much younger than myself or other graduate students. Teaching provides us with the opportunity to not only help build student confidence in the ability to learn the material for your course, but to also boost their confidence in their ability to think logically in general. If you give students the tools they need to learn successfully and challenge them to utilize these tools independently, they can apply this same reasoning and logic to excel in different situations, academic and otherwise.

This process can be even more successful when there is the realization that as graduate students, we are not that far removed from where our students are currently. If we reflect on the fact that it was not that long ago we were sitting on the other side of the lecture, then we can consider all of the things we both loved and hated about lectures and tailor our teaching styles accordingly. There also exists a smaller age gap in most cases, between a graduate student and an undergraduate. Thus, it is important to be knowledgeable and approachable, in order for students to openly voice their opinions. As an example, when I was a TA for the Cell Biology lab, some of my students learned I had previously attended medical school for a year before deciding to pursue a career in research. Because many of these students were at the crossroads of deciding what kind of post-graduate scientific career they wanted to pursue, I was able to discuss with them my decisions and ideas while fielding their questions and offering guidance where I could.

I think that the bond between teacher and student is multifaceted and can be one that ideally fosters both student and teacher learning. If we excite and challenge the students to become better versions of their academic selves, then maybe that excitement they feel when learning a new technique or finally understanding a difficult concept will stay with them and motivate them in future academic and personal arenas.

This interaction between teacher and student is one that I will continue to pursue throughout my career. Although my goal is to become a career scientist, I fully intend on incorporating teaching into my professional development. I would like to teach a curriculum at a university level that fosters scientific development of students at the beginning of their college careers to help encourage any interest they may have in science, while educating them on proper scientific technique and potential careers in this field. Additionally, having spent the better part of this academic year working at an underprivileged Atlanta area high school, I would like to work with a museum or organization to develop programs that provide labs, instruction, and resources to middle and high school students interested in science. So often many schools have capable teachers, but are severely lacking in the resources to that provide hands-on instruction and learning. Having watched many 1520 lab sections, I know that students learn the most when they are performing tasks themselves, and facilitating this kind of an interaction at an early age promotes student learning and development in science and other fields.