

CO-TEACHING BIOLOGY 1100 WITH DR. JASON GEE

by

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A Senior Honors Project Presented to the

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by

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Co-teaching Biology 1100 with Dr. Jason Gee

For my Senior Honors Project, I participated in co-teaching an Introductory Biology, or Biology 1100, class alongside department faculty member Dr. Jason Gee. My overall goals for this project were to better master the concepts of basic biological principles as set forth by the course material, as well as, to become experienced in the art of projecting what knowledge I had learned in the field of biology from myself to the students who attended introductory biology. It was my hope that through this experience I was able to give back to the university that has given me a quality education while simultaneously setting me up for success.

The Senior Honors Project is the capstone of any undergraduate career and is required of all Honors College members at East Carolina University. Every honors student must submit a proposal during their Junior year expressing what project they are considering. I chose co-teaching because I have previously done research during my Sophomore and Junior years and wanted to try something new. I emailed Dr. Gee at the end of my Junior year asking if he would be my mentor for this project and he graciously accepted.

The first semester was mostly preparation. In order to prepare me for teaching a large number of students Dr. Gee had me read a book entitled, "Teaching the Large College Class." This book helped show the ins and outs of what it would be like to step in front of hundreds of students for the first time and how to best engage them in what I had to say. It is interesting to note that Dr. Gee read this book as well in order to get him prepared for lecturing a large number of students when he first became a professor. I also studied the freshman biology textbook *Biological Science* and became familiar with the material that I would soon be

teaching. In order to narrow down my choices on what topics interested me, I wrote a synopsis on multiple chapters and why I thought I would be well suited to teach them.

The second semester I decided upon a chapter to teach. My final selection was Chapter 16 "How Genes Work" from the *Biological Science* freshman biology textbook. Dr. Gee had me create my own Power Point to be used when I got up in front of the class to lecture on the chapter material. The Power Point itself is an original creation of mine that I developed by meticulously sifting through the chapter material and taking detailed notes. My Power Point is essentially a supplement to the material given in the textbook and highlights the major themes and key ideas presented in the chapter. I also created an Active Learning Exercise which required the students to apply the knowledge they learned from the lecture and then immediately use it in a real world biological problem solving scenario.

The Active Learning Exercise was designed to be a supplement to the student's lecture notes. At certain points during the lecture, I would stop and have the students refer to a question number on the handout they received when they came to class that day. The question they were trying to figure out was directly related to the material I had just went over. This way, the students were not simply sitting in class for an hour and fifteen minutes listening to one man speak, but instead were actively applying the knowledge they were learning about every fifteen minutes. This type of active learning promotes retention of material, interactive cooperation among the students and prevents them from becoming mentally fatigued, thereby allowing me to deliver a more effective lecture.

Throughout the Senior Honors Project I learned a great many things and have a newfound respect for professors and the teaching community as a whole. When I first began

this project I had no idea the amount of time, nor the responsibilities that would come about from teaching. The littlest, most minute details, such as, how your lecture slides are put together, how the lecturer handles the time constraints and treating the part of the lecturer as an “acting job” can all go a long way in making or breaking a successful lecture.

How I assembled the lecture and put it together was just as important as delivering it to the students. Throughout my undergraduate career the vast majority of lectures I have seen given is through the use of PowerPoint on the computer. For the most part I believe it to be a very effective way of presenting information as it can be displayed on big screens, include written notes and the audience can view pictures or videos to help supplement the material. My lecture on Chapter 16 How Genes Work, from the freshman *Biological Science* textbook followed this format.

It became clear that every lecture should have a beginning, middle and end. This is a valuable tool to incorporate as it gives the presenter a good handle on whether or not they are going too fast through the material or too slow. This gave me around 15 minutes to get through a fourth of the lecture and allowed me to incorporate what I call “mental breaks.” It is no secret that there are multiple themes within one chapter, therefore, I found it productive to break these themes into sections. When I finished one theme I could look at the clock and gauge how well I was utilizing my time. A big fear of mine initially was that I would make a lecture too short or even worse, make it too long and not be able to cover everything. However, after multiple “dry runs” and practice sessions, I honed my techniques for time management and my fears were never realized.

While there are certainly time constraints, I had to do my best to get through all the material for my lecture. One giant obstacle that I had to take into account was attention spans. Lecturing continuously for an hour and fifteen minutes almost certainly guarantees a “mental death” within the freshman student’s ability to focus. It has been found that incoming freshmen have about a 7 minute attention span and that information absorption decreases exponentially if there aren’t any “breaks” incorporated into a lecture. A break, in this sense, is a 1-2 minute hiatus from the material at hand to give the presenter a chance to recapture the audience’s attention. For example, when I was in Dr. Gee’s Microbiology class I noticed he would often accomplish this by telling a short story about his family and in the end tied it into the material he had either just talked about or was going to talk about next. This little mental break provided just the right amount of comic relief that my brain needed to overcome my listener fatigue and get back to learning the material. It is amazing how something so simple can have such a dramatic effect on the audience and the overall atmosphere of a lecture.

My dad is a lawyer and often tells me that when he goes to court to defend his clients that it is essential for him to put away his normal persona and become an actor in order to appeal to the jury and get them to like him. Before the Senior Honors Project it had not occurred to me that teaching would be much the same as what my dad does. From the beginning of lecture to the end I was charged with all the duties of an actor in keeping the audience focused on what I had to say. In today’s lecture hall, there are many distractions in which the typical freshman student can engage in. The ever present cell phone and all the internet applications that are associated with it; along with the best friends who sit beside each other and talk to one another the entire time can all cause disruptions that ultimately result

because the student is bored or not engaged in the material. As a lecturer, it was my job to overcome this by keeping the student's attention. A joke here, a story there and even something completely unexpected like a student involved demonstration can go a long way in "mixing things up" and keeping the attention of the audience.

There are 5 important elements when it comes to delivering a lecture, the first of which is voice. Microphones play a huge role in the large college class environment. They allowed for every one of the 100 students in the room to hear my voice clearly and concisely. A classroom where the students cannot hear the voice of the instructor does not promote a good learning environment as you will never be able to get through the lecture because everyone will be asking, "What did you just say? What was that? Can you repeat that?" I also tried to eliminate space filling words such as um, you know and yeah. Pauses are also a great way to emphasize that what I just said was important and will probably come up again either in later lectures or on an exam. For example, the pauses in Martin Luther King's "I have a Dream" speech give it emphasis and power. It is no secret that Dr. King's speech would be a lot different without them.

Hand placement and body language are more important than I had previously believed. The hand and body posture I assumed could actually have been detrimental to how the lecture was interpreted by the students. For example, let's say I was up giving a lecture with my arms crossed. Psychologically I am portraying to the students that I don't actually care or want to be there, thus giving them the notion that what I am saying is not all that important. However, let's say I keep my arms behind my back and occasionally bring my hands out and use them as visual punctuation marks to emphasize a point. Then the students are more likely to recognize

that they should remember that point for future reference. Therefore, it was this strategy of body language that I tried to utilize. However, as any seasoned professor will tell you, the posture of one's body and the placement of one's hands can either be their worst enemies or their best friends when presenting. Luckily, I found them to be the latter for me.

When it comes to auditoriums at ECU some are definitely better than others. The Sci-tech ones are nice in the fact that they're big and can fit a lot of people, however the acoustics are horrendous. The ones in Bate are better, however from the student perspective, I feel like I'm always towering over the instructor and feel very disconnected from them. It seems to me that Howell B 103 is by far one of the best auditoriums on campus and is where I carried out the lecture for this Senior Honors Project. It has a wide and shallow base so that everyone can fit, but no one is up in the clouds. It has three methods for viewing material; two projector screens and a massive white board to write things on. The acoustics are also not that bad either as I can clearly hear a professor talk without a microphone.

I haven't had too much of a problem with auditoriums effecting how I was able to learn, however, this may not be the case with everybody and I certainly understand why. The auditorium is where students learn the material and take their tests. It is essential that they feel comfortable with that environment from the beginning otherwise it is likely they will suffer. For me I like to be as comfortable as possible while learning and it certainly makes a difference in my ability to retain information when I am not. Therefore, it is important that students feel comfortable, not only with me, but with the environment in which they are learning.

The fifth and final element is audience. It is important to keep in mind who exactly it is that I am talking to as it had an impact on how my lecture was organized and presented. It is not surprising that a 4000 level senior class is structured remarkably different than a 1000 level freshmen course. The audience is completely different in both their maturity levels and what they expect from a lecture. I hate to say that freshmen need to be spoon fed information, but that's how high school treated them and they may not have had the time to adjust to a real college class yet. Freshman are still going through a transitional stage at this point and it is important to note this when preparing a lecture. One has to keep it simple at this stage and resist the urge to go too in depth. The goal of this class is to provide a basic understanding. The deeper biological principles comes later on in their biology undergraduate careers.

The Senior Honors Project served to enhance my undergraduate career by affording me the opportunity to work with a faculty member in my chosen field of biology and interact with students. Through this project I have enhanced my understanding of the principles of biology and will utilize them in my future career of being a physician. This unique experience has furthered my communication and leadership skills by allowing me to interact and take charge of a group of students in their journey toward earning a bachelor's degree. It is in this way that I have been able to give back to the university that has provided me a quality education, while preparing me for success in the professional world.