

## Statement of Teaching Philosophy

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Biology, the science and study of life and living organisms, is what fascinates me. I became interested in biology when I was young and living in Pennsylvania on my parents land that contained sections of fields, woods, and streams that I was able to explore. I never realized I wanted to teach at first; I wanted to perform research and learn more about specific areas of biology that captivated me. As I continued to learn more about my chosen fields of ecology, entomology, and aquatic ecosystems, I found that I wanted to share my knowledge with others interested in those areas and that I took great joy in educating others.

One of my primary goals in teaching is to help students understand the many intricacies of biology. This can include how a system functions or is organized, what a specific taxonomic group is, and the natural history and behaviors of an organism. I find that when I am teaching biology I use several different styles of teaching to help the students learn. Not all students learn the same, so I like using PowerPoint presentations in my lectures that both integrate text and pictures into the slides as I verbally lead the students through the material. An example of this is when I teach my students about malaria, being able to see pictures of the small organisms that cause the disease can really help them visualize what I am talking about. Often I find I have to describe a process in several different ways to help students learn. By having text and visual aids, students of different learning styles are able to better understand the lecture. Often I present varying lengths of lectures in my classes and bring in different techniques to help break up the material. I break up lecture material by asking questions about how the current topic of discussion relates to material already covered, ask what different terms mean, and also if they have had any experience with specific organisms or topics. Sometimes I have them place their responses onto notecards or design questions around the material covered which I use to question the class. I feel it helps my students enhance their ability to engage and absorb the material. Along with asking the students questions I allow the students to ask me questions at any time. This helps to clear up any confusion that they may have on a topic and allows me to explain it better. During the labs I like to walk around as students conduct the lab to assist them and ask them questions individually or in small groups. I think these techniques encourage students to be more involved and comfortable to more concepts covered in the lab and to myself as a lecturer.

Many of my students are biology majors or minors with a large number wanting to pursue medical or scientific professions. Because of my students' interests in these professions, my second goal is to help teach students how to think like a scientist and how to conduct research. These skills can help them with any field that they are interested in because these skills deal with problem solving, generalizing ideas, testing ideas, and conducting research of any type. One way of accomplishing this is by teaching them about the scientific method. This includes formalizing questions and hypotheses, researching what is known about the subject, how to conduct an experiment, how to record and interpret their results, how to compare their findings with previous studies and share their results with the world. I have students conduct their own experiments as groups or as individuals. The students record all steps of the experiment in their own scientific notebook that is graded weekly. I give them feedback on each of their notebooks and how they can improve for the next week. By doing this, students are able to learn and experience how the scientific process occurs. Then I have them write a research report on their experiment so that they are able to practice reporting their findings. I find that many of the students have not had much experience

conducting experiments, recording observations, and reporting their results in the previous classes they have taken. Often it is the first time many of the students have kept a scientific notebook. Because of this, in the labs that I teach I think it is vital that I teach them these skills.

Biology as a subject is not just about reading and listening to lectures, but also about the students actively learning. My third goal is to get my students involved in the subject and get their hands dirty. Within limits of specific courses, I like to incorporate both visual and hands on techniques. I find that lab is a very vital component of a biology course. Labs give students a chance to have hands on experience within many sub-disciplines within biology. Allowing a student to conduct a dissection of an organism, like a sea star, allows them to see firsthand the anatomy of the organism and can help to combine information that they viewed during lecture about the anatomy, functions, and location throughout the body. In my courses that focus on invertebrates, I like to have students create invertebrate collections. This project alone allows them to use several different skills. The students have to think about where they need to go to find their specimens, how to capture and preserve their specimens, and then how to identify and display their collection of specimens. In the end they have had to think about an organism's life history. This leads them to explore the world outside of the classroom, and correlate information and techniques they learned to understand the body form and structures of their specimens so they can correctly preserve and accurately identify their invertebrate. Finally they have to research and use keys to identify the specimens they collected.

When it comes to assessing my students learning of the material, I like to use a combination of assignments, projects, quizzes, and exams. For many of the general biology labs I teach, I use pre-lab quizzes to test the students for both reading of the assigned material and for understanding of previously taught material. These quizzes are used to make sure students are arriving to lab prepared to conduct the lab activities in the allotted time and to make sure they have a general idea of what each lab is going to cover before I lecture. Quizzes can consist of multiple choice and short answer questions. Tests can be in several different forms depending on the courses level. For some courses, many that are lecture focused, I like to use the format of multiple choice questions along with short answer and essay style questions. I like to give this style of test because it causes students to think and use what they have learned in several different ways. For other courses, mainly taxonomic driven labs, I like to use practical style tests which require the students to answer questions about the specimens that are displayed at a series of stations. I use this style of test because it allows me to test students' ability to recognize the organisms we have been studying and to answer questions based on the specimens at the stations.

As I teach, I like to bring in my enthusiasm for biology into the classroom. I find that by being animated and upbeat as I teach it, keeps students attentive and hooked to the presented lecture material. I also like to add little bits of interesting information into my lectures that are not always in the student's textbook to help keep their attention. These pieces of information can consist of my own personal experiences about a topic, relating the subject to my student's career goals, or it could be presenting interesting facts about an insect or invertebrate that I know or current events that involve the topic being covered. In the end, if I can share my love for biology, get students interested in new areas of biology, and teach them skills that they will be able to use after they leave my class, I feel that I have done my job as a teacher.