TEACHING PHILOSOPHY

CATHERINE NEWMAN

My primary teaching interests are in **evolution** and **genetics**. I also look forward to teaching a variety of courses as needed, including systematics, ecology, herpetology, conservation, biogeography, as well as developing new lab- or field-based courses such as bioinformatics, population genetics, and field zoology. Courses outside my research focus that I have taught in the past and would also be able to teach at ULM include human anatomy and physiology, and introductory biology.

PHILOSOPHY OF TEACHING AND LEARNING

"**As a teacher, it is my responsibility to teach my students how to think and investigate.** When students are given the opportunity to investigate and figure problems out for themselves, they take ownership of their learning, and the learning experience becomes more meaningful to them." I wrote that in 2004 during my undergraduate coursework in elementary education. Twelve years later, and with students 7+ years older, my philosophy is still the same. As a biologist with a formal background in education, I am uniquely positioned to combine my pedagogical knowledge with my skills in the sciences to create meaningful learning experiences for students. I believe a teacher is more of a facilitator than an instructor. Instead of exclusively lecturing during a lesson, a teacher should facilitate discussions and encourage students to think through their questions to solve problems, both collaboratively and individually. Instead of simply transferring knowledge, a teacher should provide students with opportunities to discover and build their own knowledge. **My goal as a professor at ULM will be to help students learn as much as possible about biology and the nature of science, be critical thinkers and problem solvers, and become lifelong learners and citizens of their community.**

I recognize that not all students will love learning science as much as I do, and I believe one of my most important jobs as an instructor is to **display excitement about science to motivate students**. This is especially true in introductory or non-majors classes, where my class may be a particular student's only exposure to college-level biology. I take this responsibility seriously, especially after I received the following feedback from a former student in my introductory biology lab at LSU: "I really enjoyed this class, and that's saying a lot because I really hate the other biology classes I took this semester. Your class stopped me from dropping out of pre-nursing, so thanks." **I believe that learning should be as fun as possible.** The undergraduate biology experience should be exciting and engaging to retain quality students who might otherwise get left behind and drop out of science.

CLASSROOM INSTRUCTION

Research shows that active learning leads to better student performance than pure lecture (Freeman et al., 2014). When I lecture, I minimally include some form of peer-to-peer discussion activity using effective methods such as Think-Pair-Share. When appropriate, **I also include hands-on activities, even in a large lecture class**. At the University of Alabama, I taught a well-received guest lecture to a general biology class of 250 students, where some of the class time was spent with students working in groups on an acid rain experiment using vinegar, chalk,

and various random objects. One of my own best experiences as an undergraduate at the University of Alabama was an introductory physics class that was taught in a combined lecture/lab format ("studio physics"), where both lecture and hands-on activities were provided in the same integrated class period, rather than separate lecture and lab sessions. I would like to explore potential opportunities to implement this format in my own teaching.

Collaborative student learning is an important component of classroom instruction (Kim et al., 2013). My students tend to pay attention better and enjoy assignments more when they are allowed to work in groups. In addition, their oral and written responses to questions improve in quality – both in thoughtfulness and in content accuracy – when they share ideas with each other. When I taught genetics problem solving sessions, students worked collaboratively on in-class problems, which also made my teaching more efficient, as students helped each other.

Cross-discipline inquiry-based education enhances student learning, and I am a firm believer that providing "hands-on, minds-on" experiences with real science is the best way to teach concepts and correct students' misconceptions. **I strongly defend the value of field, laboratory, and research-based courses.** When I taught herpetology with my advisor at LSU, the weekly field trips were the highlights of the semester; students became scientists in the field, grinning while successfully using field guides to identify amphibians and reptiles they themselves found and captured.

When teaching, I also use examples from my own research, other published research, and life experiences in my lectures to show students how the concepts they are learning are applied in the real world. For example, in a biogeography guest lecture I taught to an evolution class at LSU, I talked about my salamander phylogeography research and led students in a Think-Pair-Share activity based on my research and the concepts they had learned in class that day. As part of another evolution lecture on the role of evolution in medicine, I told students a relevant personal medical story of my own. **I plan to incorporate a strong writing component into all of my classes**, such as writing critiques of published scientific papers. One of my graduate classes had us write mock NSF grant proposals.

Research experience is also a valuable component of undergraduate education (Linn et al., 2015). I know professors who have recruited students in their own classes to join their labs to participate in research. Often, such students are able to jump-start their careers with a publication from their undergraduate research. I have mentored several students and trained them in DNA molecular lab techniques and the process of scientific research. Undergraduates who I have mentored have published their research in peer-reviewed journals. Not only do students learn about being a scientist, but they also learn valuable life skills such as teamwork and responsibility. I will use my own research as a hands-on teaching tool for students.

LEARNING ENVIRONMENT AND ASSESSMENT

I aim to establish a safe learning environment. I reduce my students' fear of giving wrong answers by modeling logical thinking – for example, while working through genetics problems – and emphasizing that we are all learning together. Students have different learning styles and needs and come from different cultural and educational backgrounds. To meet the needs of all of my students, I present content in a variety of ways, incorporating PowerPoint lecture, videos, discussions, group activities, and individual writing assignments. As an elementary teacher, I worked extensively with English Language Learners to devise appropriate accommodations for their additional needs. Because of that background, I am especially sensitive

to undergraduate students with these needs and will be open to discussing accommodations in my classes.

I aim to create authentic assessments, in a variety of formats, to evaluate students' understanding. During my time as a K-12 teacher intern, and then a full-time classroom teacher, I gained extensive experience designing and implementing paper/pencil tests (e.g., multiple choice, short answer), grading rubrics, and student projects. I have used some of these methods as a teaching assistant at the university level. I am especially keen to incorporate semester-long individual projects into my classes. I would also like to implement a variety of student self-assessment tools (Dochy et al. 1999). During my formal training in education, I learned the value of **instructor reflection and self-assessment** as another critical component of enhancing student learning. I also look forward to the professional development opportunities provided by the Extended Learning and Quality Enhancement program at ULM to further improve my effectiveness in the classroom.

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