Buysse: Teaching Philosophy

Scientific literacy is a critical skill for navigating our world yet my own work and the work of others shows that we struggle to teach students science literary skills (Gormally *et al*. 2012). Whether through media or informal conversations, we are confronted with scenarios that require scientific literacy skills like identifying valid arguments, interpreting data, and justifying conclusions. These skills are transferable outside the classroom and useful in introductory biology classes where students have diverse backgrounds and diverse career goals. Thus, my teaching aims to center science literacy through inquiry activities focused on keeping content relevant to real-world applications (Mesci *et al*. 2025). I have extensive experience as a teaching assistant for a variety of undergraduate and graduate-level courses at MSU. I have fully engaged with each of these classes; one student even commented "I usually considered her to be a co-instructor as I felt like I could contact her or the professor for help on an equal basis."

On a typical day in my classroom, students will develop science literacy by working with data to discover course concepts that are then reinforced through short lectures, discussions, and homework. For example, I plan to provide students data collected as part of my PhD to demonstrate how both genotypic and environmental variation contribute to fitness in an evolution course, how differences between groups can depend on multiple factors and the interaction of those factors in a biostatistics course, or how quantitative phenotypic variation is shaped by many genes across the genome in a genetics course. Through these activities, students work in groups just as scientists do. Each student is responsible for their own portion of the activity, and the group must work together to create a final product that demonstrates their science literacy by presenting their data-supported conclusions to their peers.

I foster inclusion by creating a classroom environment where students know I want them to succeed and students are comfortable asking questions. This has been successful so far; students have consistently rated me above average in "interest in teaching", "concern with whether the students learned the material", "encouraged students to express opinions", and "receptiveness to new ideas and others' viewpoints" in multiple courses. On end of semester evaluations, students say things like "she actually cared about my education and helping me learn the content" and "she would make sure I understood in the best way possible before moving on" from students in an introductory biology lecture or "Sophie was always approachable and not judgmental when we asked her questions" and "Sophie did a great job nudging me in the right direction without actually giving me the answer. It definitely helped me learn better" from students in a graduate level statistics course.

I also foster inclusion through course content. As a teaching assistant for an upper division genetics course, I encouraged the major professor to include resources from *Project Biodiversify* and re-wrote course assignments to demonstrate the distinction between chromosomal sex and gender identity. I have also attended workshops on increasing diversity representation when using pedigrees and racial noticing in the classroom. I am currently completing a course called "Creating a Transgender Inclusive STEM Environment." I will continue to adapt my instruction to the needs of my students each semester and pursue training opportunities to increase the accessibility and inclusivity of my classroom.

My goal as an educator is to center science literacy skills through inquiry. My role in this process is to guide students through activities focused on applying content outside the classroom with frequent feedback. With these teaching practices, students leave my classroom with knowledge and skills they can transfer to their everyday lives and their future careers.