

Teaching Philosophy

I view learning as a mutualistic interaction within a dynamic ecosystem. Both teachers and students are involved in a mutually-beneficial transfer of knowledge: teachers provide guidance, support, and expertise to students through the learning process, and students inform teachers how to be more inclusive, effective, and impactful. Like all interactions, learning depends on the environmental context; therefore, it is important to understand how the learning process is affected by the environment and adapt to changing context. In other words, **learning is an ecology.**

CREATING A SUPPORTIVE, ACCESSIBLE, AND ACTIVE LEARNING ENVIRONMENT

I believe that universal design for learning provides the foundation for a positive learning environment. **I want students to be engaged in learning**, so I try to make connections to their everyday lives, build a sense of community, and have students develop self-assessment and reflective skills. For students to be engaged in learning, **I am responsible for creating a learning environment that is inclusive and accessible.** This can be as simple as recording a lecture with captions and providing extensions on assignments, or I can design alternative forms of assessment. It is essential that students are represented and included in the learning process. Engaged and represented students still need the opportunity to demonstrate their learning, so **I provide multiple means of assessment and expression.** I use low-stakes formative assignments, such as reflections, group worksheets, or lecture activities, to see what students are learning and if there are any gaps or misconceptions. Summative assignments, such as term tests, exams, lab reports, and group projects, allow students to show what they have learned and what skills they have developed.

I make every effort as an instructor to construct a supportive and accessible learning environment. I want students to have a space where they can express their curiosity and uncertainty without anxiety or judgement, which is essential to have a sense of belonging and community in STEM fields. The process of learning can bring about discomfort, but I want places of learning – lecture hall, classroom, laboratory, field course, online environment – to harness this discomfort and channel it towards learning. I know every student can grow and learn, and it is my role to provide a learning environment where this can become a reality.

To achieve this aim of supportive and accessible learning environments, I try to consider every aspect of the learning environment. **I want my lectures to be active and engaging**, with questions during the lecture using Mentimeter and additional activities that work through problems and case studies. I design the activities to make the best use of the physical space available for any activities. I also provide multiple means of engagement during lectures: some students prefer to work on their own, so I allow for group- and individual-based work. I also like to get frequent feedback from students, so I use check-in and check-out questions to monitor student learning. If students are still struggling with a concept, I will revisit a topic so that they feel comfortable with their learning. Students are also able to submit questions anonymously during the lecture, so every student can get the support they need. I also record my lectures with captions which contributes towards accessibility and allows students to continue the learning process at their own pace.

REFLECTIVE PRACTICES AND METACOGNITION

Reflection and metacognition are essential components of my pedagogy. I like to use reflections as a way to monitor student learning. I want to know what students learned, how they learned it, and what

confusions remain. Not only does this provide me feedback about the efficacy of lecture content and activities, but I see how students will identify different aspects or find different topics exciting. **In a way, reflections demonstrate the diversity of learners and what and how they learn.**

Alongside the reflection activities, **I encourage metacognitive practices.** I want students to start documenting their learning process: what works, what does not work, how to make the learning process more effective, and time management. **Documenting the learning process allows students to become more effective learners,** and these skills are transferable to any course or job.

I also engage in my own reflective practices. I reflect on each lecture, lab, and assignment. I ask myself: What worked well? What could be improved? What was most effective? What did I find challenging? **I am connected to students in the mutualistic interaction of learning,** and I view it as my responsibility to find ways to make a lecture, lab, or assignment more engaging and effective. **I am constantly trying to find ways to adapt my pedagogy in response to changing environments and to meet the needs and intersectional identities of students.**

HOLISTIC ASSESSMENT AND UNGRADING

When I evaluate student learning, I follow the principles of ungrading. I believe the most authentic and valuable assessment involves self-evaluation by the students. I want evaluation to be more of a conversation between teacher and students. Because learning is a process, I do not believe it can be reduced to just a letter grade or numeric value. **Ungrading allows for a holistic evaluation of learning.**

MENTORING

I am responsible for teaching, training, and mentoring the next generation of scientists. **I know that research experiences are critical for recruiting and retaining undergraduate students,** particularly those from historically-excluded fields. **It is therefore my moral and ethical obligation to provide as many opportunities as possible for students to gain these experiences.**

I have had the privilege of mentoring three exceptional young scientists on different projects. Elana worked on a project testing for feedbacks between ecology and evolution in species interactions, where she took the experiment through the entire scientific process: conceptualization, experimental design, conducting the experiment, analyzing data, and presenting the results in a poster presentation. I also mentored Fan Peng and Fathima on a macroecological study in river and stream ecosystems, where both were essential to re-envisioning the analytical approach to the study and interpreting the results.

EXPANDING THE MUTUALISTIC NETWORK OF LEARNING

Moving forward, I want to build connections with local K12 schools. I have skills and expertise that would complement the knowledge and expertise of K12 science teachers and get more students directly involved in science. With input from educators about what would most benefit their students and curriculum, I will design classroom activities and research projects that align with science teaching standards while **expanding what science instruction can be.** I also will design the research projects to provide opportunities for K12, undergraduate, and graduate students to be involved in data collection, analysis, and publishing the work. I think this initiative would **build lasting connections in an expanding mutualistic network of learning.**