

As a scientist, I hold teaching as one of the most valuable aspects of my academic career. I view my responsibility as an educator to transgress the mere depositing of knowledge from teacher to student, but instead to catalyze the intellectual and personal growth of each student by centering social and cultural interactions to co-create dynamic classroom experiences where anyone, regardless of background or future career path, can learn. My teaching philosophy is rooted in education as a form of empowerment. I achieve this by establishing student-centered learning environments, supporting authenticity through teaching and learning experiences, and engaging students in the scientific process, all with the overarching goal to increase confidence, community, and scientific literacy. Through serving as instructor of record as well as success in undergraduate research mentorship, my practice of inclusive pedagogy demonstrates my commitment to not only welcoming but *supporting* the future of diverse students in the sciences.

Student centered learning environments

I aim to foster spaces that support the agency of students in their own learning and scientific inquiry. Supported by my own biology education research, I embrace social learning as not only a best practice in retaining knowledge, co-creation, evaluation, and reflection of ideas, but also a way to create community within the classroom where students can feel included and valued. Although social learning is valuable for everyone, this strategy particularly embraces those from underrepresented backgrounds and is increasingly relevant as we aim to build a sense of normality as students transition into classrooms from primarily virtual learning environments induced by the pandemic.

As instructor of record, I have taken a non-traditional approach to assessments to further center student agency and build more equitable learning environments. Assessment is used to ensure that teaching aligns with learning objectives, but high-stakes summative assessments have recently been criticized. Specifically, traditional grading measurements often promote inequities, favoring those coming from well-resourced educational backgrounds and hurting those from minority backgrounds most. “Ungrading” is an alternative method that critically questions standardized approaches to assessment and has become increasingly popular among education scholars, with the goal to increase student empowerment and pedagogical inclusivity. Partaking as an instructor of record of my first course this year, as well as having experienced the negative consequences with “weed out” courses myself as an undergraduate student transferring to university from community college, I have independently sought out resources to successfully implement this assessment strategy in my own course. My non-majors’ environmental science course centered the individual by having each student create their own personal learning goals alongside the broader course objectives. I had individual meetings with each student at the mid-term and end of course to discuss progress and achievement of their goals, as well as discuss their projects, check in on difficult concepts, etc. Active learning assignments, projects (in place of exams), and weekly reviews were counted as complete or incomplete. I provided substantial feedback on each assignment, allowing students to reflect and re-submit assignments if their understanding of a concept was weak. Creating these spaces for feedback allows for failure, which is essential in the sciences. Students are often discouraged to pursue STEM due to punitive grading where they are taught to avoid mistakes at all costs rather than to use them as a tool to increase learning. The projects discussed above were also spaces for student-centered learning

where they had full creative freedom of their own final products which they were able to demonstrate higher-order thinking and communication skills making projects meaningful past our classroom curriculum. The student-centered relationships built allowed me to trust students to grade themselves. They were asked to provide evidence to support achievement of each learning objective and reflections on their work. Teaching these skills of meta-cognition and supporting one's arguments are skills that are also relevant beyond the classroom.

Authenticity throughout the teaching and learning experience

Exclusion of underrepresented groups in STEM continues to culminate throughout various stages of undergraduate education. To combat this through teaching, my philosophy is centered on bringing my full authentic self to the classroom. The foundation of my classroom is built on trust, respect, and reciprocity. As the educator, I am guiding students through their learning experience and learning alongside them as equals, consistently reflecting, evaluating, and evolving my teaching practices to best suit each group. I view one of my biggest strengths as an educator is relatability to the student experience, where I too struggled through the many barriers into STEM. By bringing my authentic experiences and allowing vulnerability, students like myself from excluded backgrounds are able to benefit, seeing themselves in science too. Additionally, by bringing my full authentic self, I encourage the classroom to be a place of excitement. As I enjoy teaching, I aim to emphasize joy within the classroom rather than decoupling these emotions from the academy and continuing traditional apathetic commentary often characterized in learning.

As an ecologist, my work directly involves an array of hot topics that citizens engage with daily. Topics such as climate change and evolution are particularly challenging for students, yet they are asked to make decisions on these and other scientific topics on a regular basis. Additionally, as humans are part of the environment, there are a variety of other socially relevant topics that must be discussed within the classroom. My job is to inform students and provide them with tools to recognize misinformation and inequalities, therefore I have intentionally participated in multiple science communication workshops to hone these skills to best communicate information with ease. In my classroom, I prioritize authentic learning where students are working through real-world problems, which further encourages inquiry of the world around them. For example, my environmental science course focused heavily on science such as climate change, invasive species, and genetically modified organisms but also included social topics such as environmental racism, policy, and urbanization. Final projects within my course had students choose a local issue in relation to the environment and work through causes and solutions. By choosing authentic learning situations, students connect course material to life outside of the classroom, assisting them in becoming better informed individuals.

Engaging students through the scientific process

My teaching experiences so far have solidified the need for students to be active participants in the scientific process. I combine a variety of teaching tools including active and project-based learning as well as field methods, citizen science and engagement with primary literature to ensure students have opportunities to work with information in a variety of ways. Specifically, I have previously received funding to create a field ecology lab where students practiced standard

Kylea Garces—Teaching Portfolio

methods for evaluating and comparing plant and pollinator species diversity metrics using green spaces around campus. I have also implemented citizen science using resources such as nature's notebook with the Redbud Phenology Project. These evidence-based education tools were first introduced to me in my undergraduate career where I was a science literacy scholar focused on improving biology courses from the student perspective. Since then, I have continued to be committed to informing myself on best practices through science education research, conferences, and workshops to improve my teaching. Alongside science communication workshops, I have participated in various pedagogy groups, courses and even conducted and presented my own pedagogy research at multiple conferences.

Fostering meaningful research experiences that empower undergraduate scientists is core to my values. I have advised 13 diverse undergraduate students, where 8 conducted independent research projects, 5 presented their findings at university-wide research symposiums, 3 obtained independent research funding, 3 are co-authors on manuscripts and 1 successfully defended a senior honors thesis. By bringing students past the classroom and into the lab, they can further their discovery by directly working through the scientific process.

Ultimately, personal experiences have driven my determination to continue to breakdown unjust learning barriers within STEM to ensure all students have equal opportunity to not only access information but view themselves as active members in the scientific process. I achieve this goal in my classroom through a teaching philosophy that is student-centered, authentic, and engaged. I would be excited to teach at a variety of levels, with a diversity of courses including introductory biology, plant taxonomy, botany, and conservation biology.

Student Evaluations

Below are examples of student feedback from my environmental science course in 2022 at Spalding University and comments from when I was a teaching assistant for biology labs at University of Louisville in 2020 to show evaluations of my teaching in different environments.

4 - Please make any constructive comments or explain any answers you provided regarding your engagement with the course.	
Kylea Garces	
Response Rate	3/12 (25%)
<ul style="list-style-type: none">• I have never been the best at keeping up in any class, especially not classes that are based around the intake of a large quantity of raw information. In this class though, the professionalism, helpfulness, and understanding that Professor Garces showed up with made it easier on me to take the class at my pace and get things done without feeling like I had buried myself; and believe me I did my best to bury myself.• Professor Garces made learning an engaging and interactive experience that helped me learn better as a student.• The class had a fun and peaceful environment.	
15 - Please make any constructive comments or explain any answers you provided regarding your course content and organization.	
Kylea Garces	
Response Rate	4/12 (33.33%)
<ul style="list-style-type: none">• The "un-grading" structure of this class was well communicated to us, and afforded each student an equal opportunity to get out precisely what they put in.• The activities we did in class were probably the best I've done in a science class. They really helped me understand the content from different angles. All of our discussions were very fulfilling and interesting. I came out of class glad to have talked about these tough topics and happy I was able to talk about things that actually mattered.• We were given reviews in which we were to describe the content we had just learned in our own words.• It was nice to get a better understanding of science and environmental problems.	

Comment on instructor strengths and/or weaknesses: (Kylea Garces)

very friendly and cool, but also knows how to control the class. knowledgeable about each topic and the experiments that go with them.

She does an excellent job of facilitating conversation and showcasing her passion for the subject.

Personable and informative.

She's very helpful, anything you struggle with she can explain it more better and understanding. Loved this biology class

Strength— gives us the material and information we need to know very well. Is super willing and excited to help us whenever we have questions. Makes the labs fun and interesting so we enjoy learning and doing the work

Always was willing to help resolve issues with group members and stay late to help answer questions or concerns she definitely knew all of the material and you could tell she was very passionate about the course

AMAZING

Very friendly and made very student feel comfortable in the course. Definitely helped with getting everyone excited about classroom topics.

Let me take a minute to tell you how amazing she is... I have waited all semester for this course eval. Jules has been super helpful and has made the class so much fun and very interesting. At the beginning of the semester I was dreading the class because I was not a huge fan of biology, but after this semester, I have been able to appreciate the real world biology around me with the help of fun-spirited Kylea! If she could be my TA/Prof for every class I would NEVER want to graduate. She has been an amazing TA and has taught this course so well.

She is very fun and honest with her students.

Although the class consisted of busy work, Kylea made the class fun. She was easy to communicate with and understood what we needed as a class not just what was given to her by her department.

She is so fun and cool. She helped the class understand the material

She was great and very knowledgeable! She made class fun, but also encouraged learning. I learned so much and wanted to come to lab because of her and her teaching style.

Example Assignment

This project titled, *Teach Your Family (or Friends!)*, was implemented in my environmental science class, and scaffolded in multiple parts described below. This example assignment showcases creative freedom for students to explore science in the medium which best suits them, autonomy for their topic to make the learning experience exciting and meaningful, engages them in the scientific process through research followed by communication of their findings and highlights the importance of science communication by taking topics relating to the environment that students often find difficult to understand and having them explain these topics in their own terms to people they are more comfortable with. It was also built into the class to be due before they had to give their final oral presentation in front of the class, allowing practice of their presentation skills with friends or family first to ease their nerves.

Assignment details: In this assignment, you will show your instructor—and your family or friends—what you've learned in our class. You will pick a topic and teach your family about it. Family is broadly defined: it could be your parents, your roommates, your best friend, etc. Your teaching can be done in-person or virtually—choose the context that works best for you!

Go deeper on any topic we are studying together. Is there something that you found particularly interesting, and wanted to learn more? This is your opportunity to choose something you care about and deepen your knowledge on it. To get started, remember that there are topics we haven't gotten to yet in class that you may be interested in—refer to your schedule to see what we will be covering. Make sure you incorporate at least two new elements not discussed in class when teaching your family.

An important component of this assignment is that you think creatively about how to teach something that excites you, and to teach it in a way that is accessible and interesting to your family! Other than the items you need to submit for “grading” (see below) you can create and present your lesson any way you want to, meaning, you don’t have to teach like me, you don’t even need to use PowerPoint slides if you don’t want to! Make a video, make art, be traditional, be non-conventional, just do you!

Submitted materials:

- Proposal- At the mid-term, proposals for this project were due. Students were given an entire class period before the deadline where I constructed groups for peer feedback. Before the proposal deadline we also had mid-term individual meetings to check on progress where I was able to discuss their proposals with them, giving constructive feedback and encouragement on ideas as they continued with their projects.
- Final Materials-
 - Teaching materials- This consisted of whichever medium students created to aid in their teaching. Due to the creative freedom given, I had a variety of projects including infographics that were shared to social media on invasive species, puppets to explain trophic cascades to children, an artistic video with photography and climate facts that was played as background behind local rock band, posters, and other more traditional methods as well.
 - Audience evaluation- This was a rubric given for the student’s friend or family to complete asking questions of information, preparedness, and creativity.
 - Student reflection- I use reflections as a strategy used to promote metacognition and increase the growth mindset, further building self-efficacy as they achieve their goals. Reflections make personal connections between learning, course goals, and the wider context of the field of study in relation to the world around them. Each student was asked to turn in a brief reflection on their experiences in engaging with the scientific process by researching a new topic and communicating their findings to their audience of choice.

Assignment was Adapted from Rachel Mesch, Alyssa Goldstein Sepinwall, and Annette Joseph-Gabriel, “[Teach Your Family: A Pandemic Assessment That’s Here to Stay](#),” Perspectives on History, November 2021.

Example Syllabus

Below are brief sections taken directly from my syllabus that I feel echo themes of student autonomy and authenticity presented in both my teaching and diversity statements.

COVID Concerns:

Out of consideration for all our safety, most assignments can be reworked to be completed remotely if needed. While you will miss out on class discussion and activities (where a great deal of learning takes places), you will not be penalized for being unable to attend class but do contact me to be able to make up work remotely. The most important priority is your health and that of your loved ones. Please always take care of yourself first. Communication is key in

this class and a skill needed for your futures, if you ever have any questions about assignments, please send me an email and we can schedule a virtual meeting as needed.

Given all the uncertainty surrounding the global pandemic, it is OK to not be OK. Please know that I will never judge you or think less of you because you are struggling during this time. Believe me when I say that I am in the same boat. Alongside the resources provided above (*In my course syllabus I have a section containing contacts for services such as campus health, local food pantries, mental health resources, women's shelters, etc*), here are some guidelines that will help us all form a collective community of care:

- You never owe me information about your health (mental or physical), nor are you required to disclose any other type of personal information.
- You are always welcome to talk to me about what you're going through, whether academic or otherwise. Please note that I am a mandatory reporter (see Title IX above)
- If I can't help you, I can usually point you toward someone who can
- If you need additional help, need to miss class, or need more time, just ask. I will work with you. I promise.

Evaluation:

There is a great deal of evidence to suggest that grades don't *actually* measure learning, but instead reflect factors like students' socio-economic status, food and housing (in)security stress and anxiety etc. (*I link articles & books here to support my grading policies such as, Ungrading: why rating students undermines learning and what to do instead by Susan D. Blum*). Therefore, I subscribe to a philosophy of assessment call "ungrading" where there are no grades on individual assignments in this course. Instead, this course is designed for you to explore YOUR interests in the environment, without having grades hanging over your heads daily.

Just because this class is "ungraded" does not mean you do not need to work hard, your efforts will determine your grade. Ungrading breaks down systemic barriers, decreases anxiety, personalizes the course to be space for your own improvement but still requires engaged learning like any other course. My hope is that all students in this class can engage with course materials and lessons in a way that is respectful, inspiring, and useful. However, I'm aware that reaching this goal might look different for different students. If there's an aspect of this course that is disproportionately difficult for you (e.g. due to a disability, life experience, etc.), please reach out to me as soon as possible.

While it is required that I provide you with a letter grade at the end of the semester, your grade for this course will be based off your labor, effort, and assessment in your personal ability to meet course learning goals, but also those you set for yourself the first day. There will be no exams or quizzes. While every assignment will be adjudicated on a red light/green light (based simply on if you met the criteria for the assignment), what grade you want to achieve overall will be up to you and how much time and effort you can or want to put into this class (see labor-based contract, adapted from Labor-Based Grading Contracts: Building Equity and Inclusion in the Compassionate Writing Classroom by Asao B. Inoue). Through all our activities, I

will be providing feedback based on your responses. If you receive a 1, you have received the credit, although I will still be giving feedback so, please engage with that. If you receive a 0 on an assignment, I will give feedback on where needs improvement and you will be given a week to re-do that assignment to receive a passing “grade” counting towards your contract.

Ultimately, I aim for you all to achieve a growth-mindset rather than feel you are defined by numerical evaluations. The intention here is to help you focus on working in a more organic way as you might in your future careers, rather than traditional way as you think you are expected to achieve a grade. Your grade will ultimately be determined through self-assessments, the work you do, and meetings with me. Although this is a small class and I will be able to provide feedback on our progress as needed, I will trust you all to be honest about their grades in these self-assessments.

If this process causes more anxiety than it alleviates, see me at any point to confer about your progress in the course to date.