

## Teaching Philosophy Statement

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Biology, as any science, is an ever-evolving field. Thus, to be effective scientists, we must also become life-long learners, perpetually seeking and synthesizing new developments in our fields. I believe the primary role of a science educator is to teach students how to think scientifically and how to become learners themselves. I also believe this way of thinking and learning can and should be accessible to every student, regardless of their background. I aim to make science and scientific thinking approachable and equitable for a diversity of learners by taking the students' backgrounds and aptitudes into account, and by adjusting both their goals and my teaching as we work together.

### Experience

Even before graduate school, several key experiences at Columbia University helped my teaching philosophy take shape. My first experience was as a TA for 'GIS for Sustainable Development'. GIS is an enormously complex programme, and my role was to guide students in learning how to learn GIS. In other words, my goal was to teach them how to find the answers themselves. Seeing how much this "teach to learn" approach empowered students has shaped my view of my role as an instructor ever since. I then served as a TA for 'Genetics'. I clearly remember one occasion where I was explaining what an allele was, a concept a student was not grasping. With the additional difficulty of a language barrier, none of the traditional explanations had gotten through. Eventually it hit me: "imagine a gene is a t-shirt: alleles are different colours of the same type of t-shirt". The student's face lit up with understanding. For me, this moment encapsulates the thrill of helping others understand the scientific world, which has driven me to work to become a better instructor.

During my time at Duke, I have been fortunate to teach in a range of classroom settings, from large lecture classes like BIO202, to mid-sized, writing focused courses like BIO267, to smaller discussion and field-based classes like BIO565. This wide exposure has allowed me to test different strategies to help students grasp novel concepts or develop new skills. For example, my students' understanding of BIO202 material has greatly improved in more recent years, when I have brought in techniques used in smaller courses, such as jigsaws and think-pair-share. Students have mentioned that activities such as these, which force them to grapple with a problem on their own, have been helpful in gaining understanding.

### Student Learning

While teaching a broad range of courses has exposed me to a variety of structures, it has also made clear that teaching students to learn is essential in every setting. For example, I avoid "giving the answer" to my students but instead guide them through questioning so they arrive at the answer themselves. By letting them struggle with problems on their own, either individually or in partners, I hope to encourage my students to problem-solve. To reinforce flexible thinking, I work to tie together the concepts we are studying: between labs and lectures, between the classroom and biology more broadly, and between biology and the world at large. In BIO202, for example, I will reference ideas from lecture while explaining lab activities, but I also bring back topics covered earlier in the semester and ask students to explain how new ideas tie in. I'll also explain how what we're covering influences my research, or is related to the news. Students have told me making these connections helps clarify abstract ideas and makes concepts easier to understand and remember. To further practice learning to learn, I let students teach each other whenever possible. Teaching is a great way of learning, and often highlights the areas we least understand.

Crucially, I find ways to encourage everyone's involvement. One semester, I had a shy student who was not speaking up during discussion section despite participation being graded. However, I saw from their assignments that they were very bright. After realising that this student probably felt uncomfortable with speaking in class, I added a written component to my discussion sections: I made up a few prompts that I'd rotate through that asked the students to reflect on their reading (e.g. a Venn diagram comparing two readings, or listing what they thought the three most important findings were). Providing flexibility ensured that all students could succeed, even if they might have done poorly with traditional metrics.

Most importantly, I start off the semester by creating an atmosphere of collegiality and mutual respect within the classroom, and by highlighting that, although I may be their instructor, I can learn as much from them as they think they'll learn from me. I always encourage them to provide me with feedback on my teaching throughout the semester (anonymously or not). Additionally, I try to get to know them a more closely as people by chatting with them, and by using ice breakers that reveal a little more of their background than traditional ones might. By asking my students what their favourite meal was during the past break, for example, I can prompt a wide range of responses that shed light into what my students value and where they come from.

### **Professional Development**

In addition to building a teaching philosophy through practical experience, I have endeavoured to bolster my teaching skills through formal pedagogical training. I am enrolled in Duke's Certificate for College Teaching, under which I have completed courses on 'Teaching College Biology' and 'College Teaching and Course Design'. These courses have exposed me to a range of pedagogical research and techniques that I have tried to implement in my teaching, such as providing alternative assignment formats. In addition to my classroom experience, I have also been the research mentor to three Duke undergraduates, which has helped me better understand the experience and challenges of being a student at Duke.

As part of my commitment to increasing equity and inclusion within learning settings, I have worked to provide trainings in these areas for myself and the Biology Department at large. As founding member of the Biology Department's Graduate Diversity, Equity, and Inclusion Committee, I have worked since 2016 to facilitate workshops aimed at increasing equity and inclusion, e.g. by training community members in cultural competency, in developing more objective assessment metrics, and in improving disability resources. Part of this work has been funded by Graduate School Professional Development Grants. I also serve as one of the core facilitators training new TAs to build inclusive classroom environments. Through this work, I have gained a greater understanding of the range of challenges that face both the educator and the student, in addition to gaining practical skills that aim to solve some of these problems.

### **Equity and Inclusion**

I believe that outlook is as important as methodology: equity is essential to effective learning, and I am committed to improving equity in Duke's Biology Department and the academy more broadly. As part of this commitment, I have worked to be more conscientious of the variation in skills and needs that exists amongst my students. I keep track of the types of questions I receive from each of them, and make sure they understand more fundamental concepts if I notice misunderstanding. I try, as much as possible, to also provide help to those whom I feel are struggling by reaching out and by engaging them in different lines of questioning. For example, I noticed a student has having trouble grasping that certain species of beetles did not 'decide to move' into urbanised areas. I reframed it as seeds dispersing in the wind to highlight how they would land in good or bad environments by chance, and then either thrive or not. By think about issues from several angles students are exposed to views that may be easier to understand while also making their thinking more flexible to considering different perspectives and to how they relate to each other.

While I am not certain where my career path might take me, I am focused on finding a job that includes teaching. My commitment to education is deeply rooted in my experience as a woman of colour. We often hear that it is important to see people like us doing the things we might want to do. It is hard to explain the feeling of breakthrough, of deep understanding, of being at home, that I have experienced when interacting with other minorities serving in positions still dominated by the majority. Further, as somebody with a recently developed disability, I have again seen the way in which traditional education often fails marginalised groups, and leaves them with fewer skills than their colleagues. My life's work—be it teaching or research or mentoring—is to uplift every person (for ultimately we are all in this work together), to help them access the resources they need, to make sure they have a seat at the table.