

DIVERSITY STATEMENT

As a first-generation college student, my initial exposure to higher education was at Scottsdale Community College. I enrolled there because it was affordable and near my family. In my first biology course, the professor, Dr. John Nagy, announced that any student who performed well in the course would be asked to join his research team. A light bulb went off in my head. Could I be a scientist? I hadn't the slightest clue of what a scientist did, but I admired Dr. Nagy and my other professors. They dedicated their lives to teaching and advancing our knowledge of the natural world. Eventually, I joined one of Dr. Nagy's research teams and I was hooked. Dr. Nagy mentored a team of undergraduates from a wide variety of backgrounds. His research teams included student-veterans, single mothers, and students with disabilities. Each of our unique perspectives combined into successful team projects. If it wasn't for Dr. Nagy, I—along with all of his other mentees—could have easily been overlooked by the educational system. Because of these experiences, I have worked hard to increase representation of under-served communities in STEM and to cultivate an environment in my classroom that is both equitable and inclusive.

Throughout my courses, I use anti-racist principles and other best practices to promote diversity and inclusion. For instance, I present historical figures—from a variety of backgrounds—in biology. This both humanizes the science and shows the diversity of scientists that have contributed to the field. I use anti-racist principles to highlight problematic areas of our field (e.g. eugenics) that are often ignored in traditional courses. In line with best practices, I use teaching techniques (e.g., flipped classes, experiential learning) to de-centralize the role of “knower” in the classroom in order to promote openness and creativity among my students. For example, I use a case study of genomics and human skin pigmentation in an introductory evolution class. Instead of providing a traditional lecture, I have students work with genomic data, map variants on the globe, and discuss how this relates to current issues of systematic racism.

Building on my experiences, I see at least three reasons diversity in the classroom is important. First, there is abundant evidence that more diverse teams are better able to solve difficult problems (Page 2008). This is particularly relevant in my courses where students have to work collaboratively to solve problems. For example, students tend to gain a lot of perspective on these ideas during a case study on endangered species prioritization. I use a jigsaw activity that forces students to consider priorities from stakeholders beyond conservation biology, including socio-cultural considerations. Second, we need more students choosing STEM fields so they can be prepared for the jobs of tomorrow. It is estimated that between 2012 to 2022, there will be a 13.6% increase in the number of jobs related to the sciences requiring a master's degree (NAS 2018). We are missing out on a vast pool of talent if we are not inclusive of traditionally under-represented communities (Gibbs 2014). This is especially relevant for my own research and teaching in a quantitative discipline where systematic inequities throughout the K-16 pipeline have traditionally excluded certain groups, especially women. Lastly, and most importantly, we need to increase diversity simply because of issues of equity given the systematic barriers that have marginalized communities.

I promote equity and inclusion both inside and outside of the classroom through three different mechanisms: teaching, mentoring, and service. I have worked with diverse student populations throughout my career. At the University of California-Davis, a Hispanic-Serving Institution, I designed a summer biology bridge program. The program was created to support students in their transition to university courses. The program served students from traditionally under-represented minority groups. As in all my classes, I taught the bridge program using a variety of active learning techniques, including flipped lessons and case-study exercises. Active learning is especially important for students from marginalized communities, reducing the achievement gap between students from different backgrounds

(Haak et al. 2011). My inclusive pedagogy approach included introducing students to a diverse set of other scientists working on campus. As a white cisgender male, I do not have the same lived experiences as my students. Therefore, I organized a panel where I brought graduate students in from around campus to give their own unique perspectives on a STEM career. I also had students visit the local botanical conservatory. Students met with conservatory staff, which included a past participant of the summer biology bridge program, whom identified as Latinx. Through his own story, the staff member demonstrated one path of success after graduation.

In my current role at the University of Vermont, I teach the graduate program's core course, *Foundations of Quantitative Reasoning*. In the course, I lead students from diverse educational backgrounds such as computer science, math, and biology. In addition to intellectual diversity, my students come from different socio-cultural backgrounds. This diversity in the classroom is its greatest strength. To harness this diversity, I had each student teach a single lesson during the semester. For one assignment, students taught a small lesson. One student, named Anoob, chose to talk about landscape ecology. A perfect fit for the class. He began with a devastating story about forest destruction in his small Indian town. This is why he was interested in landscape ecology, so he could prevent this from happening again. No matter how many papers or textbooks I consumed, I would not have been able to tell Anoob's story. The class learned more because he was willing to share his story. This was only possible in a classroom with a culture of openness. I largely attribute this to a shared document of course norms and expectations that I produce collaboratively with students at the start of each semester.

Another way I have demonstrated my commitment to equity and diversity issues is through mentorship. I have been fortunate enough to serve as a mentor for 17 undergraduate students. This has been across a wide variety of institutions including community colleges and universities. I have recruited students to my research team primarily through the diverse group of students in my summer bridge program. For each student, I use a set of principles called inclusive mentoring (Hund et al. 2018). This involves treating individual students as individuals and building a culture of openness and trust. I also mentor students on other life skills, including applying for jobs and writing. My style of mentoring is more in line with being a guide or coach for each student on their unique pathway. My mentees have been able to shine with the development of their own research projects. Under my guidance, several of my current mentees presented their work at a local research conference.

Within my academic institutions, I have served on committees focused on increasing representation of under-served communities. Despite a diverse population within the local community, my PhD program lacked diversity along several axes. Out of this frustration, I founded a student-run diversity committee for my graduate program. Along with several other students, we worked to increase diversity in our applicant pool, to create a more equitable admissions process, and to build support structures for students once they arrived. This included a mentoring program for incoming students. In my current role, I serve on the leadership team for a new quantitative biology graduate program at the University of Vermont. As a team we have worked to cultivate a diverse student body through our recruiting efforts and admissions process. We also create spaces to discuss diversity, inclusion, and equity in our seminars and retreats.

References

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