Designing Geosciences for All

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Late last summer, right before the start of my first semester as a professor, my inbox started ding with notices from the accessibility office about accommodations for students that would be in my classes. Admittedly, it felt overwhelming to think about having to meet these accommodations in addition to creating new course content and converting materials for required online or hybrid teaching modes. But as scientists and educators, we often pride ourselves on our ability to adapt, problem solve, and persist through challenges for advancements in our research and betterment for our students. This past year, we found ourselves in unimaginable situations where we had to make “accommodations” for everyone out of necessity for our safety during the COVID-19 pandemic. We redesigned the way we conduct our science and teaching to be more universally accessible because we had to. We have shown we can adapt in the face of challenges. So instead of dreading making accommodations for a few students, why can’t we adapt our geosciences courses to be more accessible and equitable for all?

Accessibility and equity issues in the geosciences is not a new problem—they have persisted for decades and have been boldly and clearly highlighted by several studies, such as the “No progress on diversity in 40 years” article by Bernard and Cooperdock (2018). The nature of traditional geosciences courses, where there may be fieldwork, laboratory settings, or specialized assessments, is really only accessible to the average student. By modeling our courses to be fit to the average student, we, at best, create situations that require
accommodations for students outside of the average, and at worst, create situations where students feel unwelcome in and excluded from our field.

A recent article by Higgins and Maxwell (2021), discusses the value of implementing the educational framework known as Universal Design for Learning (UDL) as a way to increase accessibility and equity in the geosciences disciplines. Under the UDL framework, educators work to design a course where accommodations are minimally needed because the course design allows for multiple means of engagement with the materials—a kind of “something for everyone” buffet of options. Offering the course content through several means allows all students, not just those deemed as ‘average’ learners, the ability to engage without needing to ask for many accommodations. The authors discuss that the removal of barriers in courses may include providing several choices for students to pick from, giving all students more time to access materials, making documents screen reader-friendly, creating videos, and developing alternate assignments beyond papers and exams.

Of course, engaging with the UDL framework is not necessarily a straightforward rollout, especially in the geosciences where the traditional course settings may create additional barriers. Higgins and Maxwell (2021) mentioned several studies that investigated disability-related, social, and institutional barriers which will not be simply solved by introducing UDL to the geosciences. But even if we as educators can find portions of our geosciences courses to reconsider under the UDL framework, we can surely make some dents in the inaccessible armor that the geosciences fields have donned for too long.

As I fretted over the idea of making accommodations for students this past year, I quickly realized that many of the emergency adaptations of materials I was making to reconcile with teaching during this virtual year were meeting the needs of the student accommodation requests. Lecture notes were posted and available to all students before class. Recordings were available if any student needed to revisit material or if they had missed class due to other circumstances. Assessment time limits could be adjusted easily online. All students had their own set of samples or equipment to work with without the pressure of having to quickly make
decisions so the next student could use it. “Fieldwork” was limited to local, easily accessible locations or virtual visits.

Students collecting field data at an accessible metro park in the Cleveland, Ohio area. This local field camp is in place of the "normal" field camp that would be run out west in South Dakota and Wyoming. (Credit: Molly Witter)

So, as challenging as this past year was, please don’t toss aside all the hard work we’ve put in to make “accommodations” for all, just to go back to the inaccessible past that we’ve had. I realize this may sound like a call to action when we’ve barely had any rest this past year, but after a hopefully restful summer, maybe we can find those incoming Fall semester student accommodation notices as an opportunity for Universal Design for Learning rather than an obstacle.
References:
