



GeoContext:

*A social and political context
for geoscience education*

<https://geo-context.github.io>

Teaching Philosophy

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Summary

This collection of teaching modules aims to be a resource to assist educators in integrating topics on racism, colonialism, imperialism into subjects commonly taught within geoscience departments. This resource consists of modular lecture slides with accompanying lecture notes, suggested discussion questions, and further reading to promote in-class engagement. This resource is freely available and geared towards flexibility: rather than being a standalone course, it allows educators to pick and choose content for incorporation into their existing lectures.

Each module uses a particular anecdote to provide a historical context for the geoscience topic at hand. Each module focuses on an aspect of imperialism or colonialism in the history of geology, including (1) justification of Western knowledge over Indigenous knowledge; (2) continued extraction of knowledge, labor, and land; (3) scientific racism aimed at justification of racial hierarchies; and (4) scientific racism through the use of geologic or geographic features to justify racial difference.

Through storytelling, our aim is to illustrate how geoscience is implicated in colonial and imperialist projects.

Audience

These modules are appropriate for undergraduate and graduate students in geoscience courses. For undergraduates, the material in these modules provides a social context of the history of sciences that is often not incorporated in science curriculum.

For graduate students or upper level undergraduates, these modules supplement training as a geoscientist. This material teaches students about the history of a discipline in which they are practicing scientists, and challenges them to contextualize and interrogate their own research training, methods, or topics of inquiry.

Rationale

The teaching approach that drove the creation of these modules is informed by feminist philosophy of science and critical race theory. In the material presented, we attempt to decenter the dominant narrative about the history of geoscience, and geoscience practices, past and present. Feminist standpoint theory posits that knowledge is socially situated (Haraway 1988). In contrast to a “scientific objectivity” that is assumed to be value-neutral, “strong objectivity” requires us to understand the practice of science in a social context, where the political, economic, and social values of the scientific community control the entire scientific process (Harding 1992).

We seek to take one step towards “strong objectivity” in geoscience education by creating modules that retell the narrative of the history of geology from a perspective that begins with those harmed or marginalized in the process of scientific pursuit. These histories serve as a kind of counter storytelling (Solorzano & Yosso, 2002), reframing the scientific discovery of geologic principles as an outcome of a colonialist project aimed at maintaining white supremacy. Rather than defining what colonialism looks like, we hope these anecdotes immerse students, such that students can make judgments for themselves on how to interpret geoscience in the past, with a fuller context of the social and political ramifications of previous work. These stories provide another angle to the unilateral training we’ve often received in geoscience (implicitly or explicitly) about the social neutrality of science and the heroism of individuals that are considered the founders of our discipline.

Furthermore, having this knowledge of the history of geoscience as a discipline can help students to understand its culture today, especially the ways that scientific practices mimic imperialist endeavors. Epistemic injustice refers to structural prejudice that limits access to shared resources or knowledge for interpreting social experiences (Fricker 2007, Dotson 2011). By sharing this knowledge, we hope to empower students with epistemic resources that would help them understand the issues they will experience as they navigate the discipline, such as the cultures of whiteness, masculinity, and exploitation. We see these modules as one toolset that can be used towards addressing epistemic injustice in the geoscience classroom.

Dotson, K. ‘Tracking Epistemic Violence , Tracking Practices of Silencing’, 2011

Fricker, M. ‘Hermeneutical Injustice’, in *Epistemic Injustice: Power and the Ethics of Knowing* (2007)

Haraway, D. (1988) ‘Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective’, *Feminist Studies*, 14(3), p. 575. doi: 10.2307/3178066.

Harding, S. G. (1992) ‘Rethinking Standpoint Epistemology: What Is “Strong Objectivity”?’, *Feminist Epistemologies*, 36(3), pp. 437–470. doi: 10.2307/23739232.

Solórzano, D. G. & Yosso, T. J. (2002). Critical Race Methodology: Counter-Storytelling as an analytical framework for education research. *Qualitative Inquiry*, 8(1), 23-44.

Approaching Difficult Conversations in the Classroom

Several of the historical anecdotes contain sensitive, uncomfortable, and at times, disturbing information regarding racism and exploitation. For some students and teachers, this information may hit close to home. In order to foster a safe space around these discussions, expectations and guidelines (such as “ground rules”) should be clearly communicated before lessons. Educators should let students know that it is ok to take a break or express their feelings. Emotional responses are a valid and important part of any lesson involving open dialogue and reflection; we, as teachers and students, can bring our emotions with us to the classroom to strengthen this lesson. We are inspired by bell hooks’ concept of “engaged pedagogy”:

“When education is the practice of freedom, students are not the only ones who are asked to share, to confess. Engaged pedagogy does not seek simply to empower students. Any classroom that employs a holistic model of learning will also be a place where teachers grow, and are empowered by the process. That empowerment cannot happen if we refuse to be vulnerable while encouraging students to take risks... When professors bring narratives of their experiences into classroom discussions it eliminates the possibility that we can function as all-knowing, silent interrogators.”

We recommend that educators seek out additional resources on how to present such information in ways that minimize harm to students. For example, many guides on “how to talk about race in the classroom” mention that self-reflection of one’s own biases is a first step towards preparing oneself to lead discussions on racism. Furthermore, leading classroom discussions about social justice content requires considering how student’s comments may act either to reinforce or counteract dominant group perspectives (Bailey, 2017).

Bailey, A. (2017) ‘Tracking Privilege-Preserving Epistemic Pushback in Feminist and Critical Race Philosophy Classes’, *Hypatia*, 32(4). doi: 10.1111/hypa.12354.

hooks, b. (1994) Chapter 1: Engaged Pedagogy, *Teaching to Transgress: Education as the Practice of Freedom*. New York: Routledge.

Key Learning Ideas

- Assess how science is socially and politically situated and is influenced by subjective biases and values.
- Explore how science plays a role in producing social hierarchy.
- Understand in what ways and to what extent the origins of sciences are rooted in imperialism and colonialism. Assess how practices from the past might be carried through to today
- Consider how scientists today have a responsibility to be critical about the social and political implications of their work

Additional Resources

Pedagogy

- Freire, P., (1970), Chapter 2: The “banking” model of education, *Pedagogy of the Oppressed*
- hooks, b. (1994) Chapter 1: Engaged Pedagogy, *Teaching to Transgress: Education as the Practice of Freedom*. New York: Routledge.
- Bailey, A. (2017) ‘Tracking Privilege-Preserving Epistemic Pushback in Feminist and Critical Race Philosophy Classes’, *Hypatia*, 32(4). doi: 10.1111/hypa.12354.
- Creating the Space to Talk about Race at your School, NEA EdJustice
<https://neaedjustice.org/social-justice-issues/racial-justice/talking-about-race/>