How to Create a Culturally Inclusive Course and Beyond

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Overview

The goal of this document is to provide resources and ideas for creating a culturally inclusive learning environment. This is also referred to as "culturally sustaining pedagogy," "diversifying the syllabus", and "decolonizing the curriculum." [For more background on culturally inclusive pedagogy, see the end of this document].

Before delving into this work, it is useful to reflect on the way Duke University itself has perpetuated and continues to reinforce patterns of racial, gender, and class inequality, as well as other forms of prejudice and discrimination. To get a better sense of this, consider reading Jessica Auer's (2020) dissertation on Race, Gender, and Class in a New South University Community, 1930-1980 and the 2018 and 2019 Duke Disorientation Guides. You might also visit the Duke Library Resource guides pertaining to the Cherokee Industrial School associated with Trinity College, Native Americans at Duke, and Black History at Duke.

Finally, this document does not explicitly address other forms of inclusivity, e.g., inclusive teaching for differently-abled or neurodiverse students. However, many of the recommendations included in this guide also promote inclusive conditions that extend beyond cultural inclusivity.

Decolonizing the Curriculum

Decolonizing the curriculum is a way of questioning and broadening academic practices and pedagogies to include and respect all cultures and belief syes, not just the cultures and belief systems of countries that participated and participate in modern colonialism, i.e., the process of gaining political and economic control of a region after occupying it with settlers . The countries typically considered as colonizers include Western European nations, as well as Russia, Japan (i.e., in Korea) and China (in Tibet and beyond), although these definitions shift depending on location and time period.

Please note that while decolonizing one's syllabus is important for creating a culturally inclusive learning environment, doing so without "having ever engaged with the long tradition of scholars who have written on decolonizing is sloppy and opportunistic" (Appleton 2019). Instead, Appleton (2019) recommends that faculty focus on diversifying your syllabus, devaluing hierarchies in and outside of the

classroom, moving beyond cited literature, and carefully considering the voices you bring into the classroom.

If you've never engaged with this literature, you're invited to visit the Decolonizing the Curriculum Duke University Library Guide, curated by Janil Miller. For another perspective on the language of "decolonization" consider reading *Frames* by Bri Alexander. If you're particularly interested in dismantling racism in the classroom, you might read this NPR Article with resources. Also, considering reading the following:

- Morreira and Luckett (2018)'s article on *Questions Academics Can Ask to Decolonise Their Classrooms*
- *Race, Whiteness, and Education* by Zeus Leonardo
- *Feeling White: Whiteness, emotionality, and education* by Cheryl Mattias
- *Pedagogy of the Oppressed* by Paulo Freire (N.B. This book isn't a teaching technique book, but is considered foundational literature in understanding the roles of colonization and oppression in education, see Annotated Biography below).
- Tuck, E. and K. W. Yang. 2012. Decolonization is not a metaphor. *Decolonization Indigeneity, Education & Society* 1(1): 1-40
- Paris. D. 2012. Culturally Sustaining Pedagogy: A Needed Change in Stance, Terminology, and Practice. *Educational Researcher* 41(3): 93-97
- *The Shock Doctrine* by Naomi Klein (2007) (An example of the use of science and academia to legitimize horrendous violence around the world, particularly in Latin America. Extremely heavy trigger warning for violence, torture).

Other disciplinary specific books to read include (Liboiron 2019):

- Chandra Prescod-Weinstein's Decolonising Science Reading List
- An entire reading list devoted to Decolonizing Conservation
- A reading list dedicated to Decolonizing Primatology, but with links to great reading and TEDx videos on the subject of decolonization.
- *Colonial Botany* by Schiebinger and Swan
- *Indigenous Statistics* by Walter and Anderson
- *Green Imperialism* by Grove
- *Ecology and Empire* by Griffith and Robin
- *Science and an African Logic* by Verran
- *The Rise of the American Conservation Movement: Power, privilege, and environmental protection* by Dorceta Taylor
- *Sciences from Below: Feminisms, Postcolonialities, and Modernitie*s by Sandra Hardings
- *The Land Was Ours* by Andrew Kahrl (discussing how capitalism and law has shaped the dispossession of Black coastal lands).
- *After Nature* by Jedediah Purdy
- *An Indigenous Peoples' History of the United States* by Roxanne Dunbar Ortiz
- *A Billion Black Anthropocenes or None* by Yussuf (geology/earth science) (summary of one chapter available in annotated bibliography below).

If you have a particular interest in indigenous ways of knowing and indigenous science, consider reading these books (adapted from Snively and Williams 2016):

- Snively, G. and W. L. William's (2016) *Knowing Home: Braiding Indigenous Science with Western Science.* Victoria, B. C. Canada*:* University of Victoria.
- Aikenhead, G., & Michell, H. (2011). *Bridging cultures: Indigenous and scientific ways of knowing nature.* Toronto, ON: Pearson Canada.
- Berkes, F. (2017). *Sacred Ecology,* 4th Ed. Abingdon, UK: Routledge Press.
- Cajete, G. (1994). *Look to the Mountain: An ecology of Indigenous education.* Skyland, NC: Kivaki Press.
- Cajete, G. A. (1999). *Igniting the sparkle: An Indigenous science education model.* Skyand, NC: Kivaki Press.
- Cajete, G. (2000). *Native science: Natural laws of interdependence.* Santa Fe, NM: Clear Light Publishers.
- Inglis, J. Ed. (1993). *Traditional ecological knowledge: Concepts and cases.* Ottawa, ON: International Development Research Centre (IRDC) Books.
- Menzies, C. R. (2006). *Traditional Ecological Knowledge and Natural Resource Management.* Lincoln, NE: University of Nebraska Press.
- Nelson, M. K. and D. Shilling. (2018). *Traditional Ecological Knowledge: Learning from Indigenous Practices for Environmental Sustainability.* Cambridge, UK: Cambridge University Press.

Context and connectivity are key elements of the practice indigenous science. These practices recognize human embeddedness in the natural world, which often is a stark contrast to the stance of objectivity that Western Science upholds. For a perspective on why context, particularly history, should be paired with Western Science, check out Saini's (2020) *Want to do better science? Admit you're not objective* (pers.comm, 25 Feb 2021, Dr. Elaine Gomez-Guevara).

Relationships Between the Environment & Inclusivity

Hardin's (1968) Tragedy of the Commons.

If you're feeling uncertain about why the environmental field might need to address colonialization in the classroom, consider the case of Garrett Hardin's (1968) "The Tragedy of the Commons, " a foundational reading in many environmental natural and social science courses. The Southern Poverty Law Center says Hardin's papers were "frank in their racism and quasi-fascist ethnonationalism" and that Hardin himself was a white nationalist. Scholars now understand that Hardin's had population control as a main aim of this piece. Moreover, scholars suggest that Hardin's work is not applicable to many cultural contexts, particularly high-context North American Indigenous cultures.

Learn more about this text and the perspectives that surround its here:

- Debunking the Tragedy of the Commons
- An Alternate Ending to the Tragedy of the Commons

Land Loss & Racialized Oppression.

In 1964, Malcolm X gave a speech explaining the relationship between land ownership and individual freedom, saying "Land is the basis of all independence. Land is the basis of freedom, justice, and

equality" (Lee 2021a). In this, he drew the connection among revolutions, including the American and French Revolutions, for increased justice and equality and control of the land.

Land is of particular salience to the environmental conservation movement, as it is the basis for our National Park System, ecosystem-scale preserves, and wildlife management. Moreover, land provides the basis for our agricultural system, which over the last century has become increasingly reliant on fossil fuels and a major contributor to global greenhouse gas emissions.

Yet, historically people of color have been removed from, coerced to leave, or forced to work the land for the benefit of white society in the United States. Forced and coerced removal of indigenous people led to the creation of National Parks in the United States. Forced removals, and racialized land loss, have powerful consequences for Indigenous people today. Quinn Smith, Jr (2021), writing as a rising junior at Duke University and a Chickasaw, explained that "[a]s an Indigenous person, it is impossible for me to do anything without feeling intense internal turmoil...I wake up every day with the guilt that I am living on another Indigenous peoples' land."

Moreover, some prominent European-Americans, like Frederick Law Olmstead, believed that "the power of scenery to affect man is, in a large way, proportionate to the degree of their civilization" with the implication being that indigenous people lacked a high degree of civilization and capacity to value nature (Kossorow and Braddock 2018, p14). In fact, Madison Grant, one of the first proponents of the wilderness park in the United States that informed the National Park System, explicitly advocated for "forced removals of indigenous populations" (Lee 2021b) to create uninhabited parks like Denali, Olympic, and Glacier National Parks (Lee 2021b) . Lee (2021b citing Treuer 2021) further explains that the Miwok people were driven off of the land that is now Yosemite National Park, and that Olympic National Park was born of a treaty violation by the U.S. government with the Quinault. Kossorow and Braddock (2018) describe the importance of what is now Yellowstone National Parks as a historical site of obsidian used for spearheads and as a food source to indigenous people in the 1870s and 1880s after European-American hunters devastated bison populations. Over time, artistic renderings of National Park lands as nearly devoid of people, such as those by Hudson River School artist Thomas Moran who accompanied the Hayden Team that surveyed Yellowstone before it was declared a National Park, led to widespread but false beliefs by European-Americans that these places were untouched wilderness areas (Kossorow and Braddock 2018).

The practice of forced or coerced removal of people of color in the United States are further evidenced by the Trail of Tears and a long legacy of removal of indigenous people, racist mortgage practices such as the redlining maps produced by the Home Owner's Loan Act of 1933, and more recent pressure from whites to force blacks from living in white-majority areas or recreating near white-majority areas. Regarding the latter, Andrew Lee (2021a) provides the example of Manhattan Beach in California: In the 1920s, the Ku Klux Klan, with the support of local white residents, drove out owners that opened their beach to black folks and families looking for an opportunity to enjoy the beach.

The issue of land loss and racialized oppression also connects to agriculture and health in communities of color. Tiffany Onyejiaka (2021) explains that there have been steep declines in the number of African Americans and Indigenous people in the United States that work as farmers. In fact, 98% of American farmland is owned by white people. In addition, many communities of colors are situated in food

deserts, or areas where access to fresh and healthy foods is limited. The lack of agricultural opportunity and knowledge about growing food, paired with the lack of access to healthy food, creates health disparities. Onyejiaka cites the National Institute for Health in saying, “Black, Indigenous, and Latinx youth have a significantly higher prevalence of chronic conditions due in part to food inequality”. To address the issues of agricultural education and food inequality in communities of color, initiatives have been developed across the country. These include Farm to School programs and specialized farms (e.g., Life Do Grow Farm).

It is recommended that conservation organizations, in particular, self-educate on racialized land loss and agriculture. Suggested readings:

- David S. Cecelski's *The Waterman's Song: Slavery and Freedom in Maritime North Carolina* addresses slavery and canal projects, indigeneity and colonization in the context of Eastern North Carolina..
- Natalie Díaz's *Postcolonial Love Poem* is an award winning poetry collection that addresses idea of erasure of BIPOC people with attention to relationships to the land
- *Black Nature* compiles four centuries worth of African American nature poetry.

Indigenous Science, Western Science, and the Environment.

According to Snively and Williams (2016) North American Indigenous Science, the science and science-knowledge that Indigenous people developed independent of Western science, is defined by a number of characteristics, including its emphasis on observation, place, context, the great good, balance and harmony, cycles and circles, inherent human connection to the natural world, spirituality, and reliance on elders.

Some educators have called for the inclusion of Indigenous Science in the Western Science Classroom because of “its wisdom practices that focus on balancing human needs with environmental requirements” (Snively & Williams 2016). In this, it is tempting to think about how a Western trained educator could take the “best” of Indigenous Science and incorporate it into Western Scientific approaches. However, this type of integration also opens the doors to continued European domination and assimilation of indigenous knowledge. This approach also contributes to the problem “that indigenous knowledge is consistently undervalued when it comes time to make environmental decisions” (Learn 2020). Professor Pamela Elwee, suggests that instead Western scientists work with Indigenous people from the beginning of ecological projects, particularly long term assessments.

By contrast, Learn (2020) suggests that “interweaving Indigenous and Western knowledge offers benefits to ecological understanding.” For example, Professor Pamela Elwee notes that “long-term observation is an area of special expertise among indigenous communities” (Learn 2020). This has been seen in Catherine Gagnon and Indigenous groups’ long-term monitoring of caribou in Alaska and Canada. This project may be the longest running collaboration between Western scientists and Indigenous scientists to date and has led to expanded understanding of the effects of global warming on caribou herds (Learn 2020).

Seafhha Ramos offers some best practices for reconciling Western Science with Indigenous Science, including incorporating native language into wildlife research, using language that recognizes the equal value of both approaches (*e.g.,* Traditional Ecological Science and Western Ecological Science, Traditional Ecological Knowledge (TEK) and Western Ecological Knowledge), and considering how ecological studies that practice TEK can "contribute to the resilience and cultural revitalization of [Indigenous] communities" (John 2018). Want to see an example of a research paper that showcases both Traditional and Western Ecological Science? Check out Bonta *et al.*'s (2017) Intentional Fire-Spreading by "Firehawk" Raptors in Northern Australia. Interested in learning about Indigenous systems of ecological care? Check out the work of Dr. Yuria Celidwen's work on ecological ethics.

Are you an undergraduate or graduate-student Indigenous scientist looking for more opportunities? If so, check out the U.S. Forest Service Native American Research Assistantship Program. The program "recognizes that traditional ecological knowledge {TEK} and expertise held by Indian people and tribal communities hold great promise for sustainable ecosystem management" and it addresses "regional wildlife issues, data gaps, and most importantly, wildlife management issues that are important to the subsistence, livelihood, cultural, or spiritual values of one or more tribes" (Hoagland 2016).

Indigenous Land Management

(see also "Indigenous Use of Fire" below)

According to Brindley (2022), the InterTribal Sinkyone Wilderness Council, a consortium of 10 tribes established by Priscilla Hunter - a member of the Coyote Valley Band of Pomo Indians in northern California - to protect and heal sacred land, currently manages over 4,200 acres of land in the Sinkyone region, about 200 miles north of San Francisco. Since 1997, the Council has allowed the region to heal, after it was heavily logged leaving only 2% of the original old-growth redwood forest. According to Hunter, "It takes a long time to heal an area that has been cut and cut." In December of 2021, the Save the Redwoods League turned over management of 523 acres - 200 acres of which include old-growth redwoods - to the Council. This region of ancient trees is called "Tc'ih-Leh-Dun" or "fish run place". Other council members include Mariah Rosales, Crista Ray, Buffie Schmidt, Mary Norris, Debra Ramirez, Michelle Downey, and Mona Oandasan.

Indigenous Use of Fire

For thousands of years, Indigenous people in North America have used fire to manage wildlife, decrease catastrophic wildfires frequencies, reduce pests, and to sustain ceremonial practices. Indigenous people lived in the Piedmont region of the southeastern United States for 12,000 years prior to European colonization. In the Southeast, Indigenous people historically burned the forest to improve hunting, to facilitate travel, and, for the last 1500 years, to clear fields for agriculture (Merrell 1989). This was ample time for creation of prairies and migration of both prairie animals and prairie plants into the Piedmont. Thus these practices were in part responsible for the widespread occurrence of savanna habitat in the Piedmont of the Southeastern United States.

Evidence suggests that prior to European settlement anthropogenic fires were the dominant source of fire in the Southeastern United States. These tended to be low intensity fires (Fowler and Konopik 2007),

and all reported historical observations of actual fires were made during the dormant season of the year (January 1701 by William Lawson, February and March 1720 by Mark Catesby, October 1728 by William Byrd). During these months thunderstorms and lightning-caused fires in southeastern North America are extremely uncommon (Barden and Woods 1974, Robbins and Myers 1992).

Burning the grassland and open woodland habitats had numerous benefits for wildlife. For example, grassland habitats sustained increasing rare grassland bird species, like the grasshopper sparrow, savannah sparrow, vesper sparrow, eastern meadowlark, northern bobwhite, American woodcock, loggerhead shrike, northern harrier, and wild turkey (Juras 1997). While burning temporarily destroys habitats for birds, it can also provide large numbers of dead insects for those birds to feed on.

However, fire suppression efforts historically led by the U.S. government (e.g., 1850 Act for the Government and Protection of Indians and 1905 U.S. Forest Agency prohibition of fire use on Karuk lands) has led to increased fuel loads and frequency of catastrophic fire events. Today, the U.S. Forest Service and western scientific conservationists regularly used prescribed fire to manage ecosystems and law are adapting as well. For example, California now has legislation (Senate Bill 332) that prevents the prosecution of those burning the land for ecological reasons, including indigenous peoples (Onyejiaka 2021c). Moreover, Karuk and Yurok tribal members have initiated the Prescribed Fire Training Exchange to educate firefighters about Indigenous fire stewardship (Onyejiaka 2021c).

Western Geology & Indigenous Peoples

In *A Billion Black Anthropocenes or None,* Yussof (2018) offers a chapter on "Geology, Race, and Matter" that explores how mineral resources have been the impetus for dispossessing indigenous peoples and the enslavement of others, connected to the theme of resource extraction as an impetus for colonialization. Yussof (2018) explains that racial categories were born around the same time as colonial mining projects began in the New World.

Geology is also intricate linked to human migrations. Indigenous trade routes in the United States, some of which are now major highways and interstates, provided means for trading copper and obsidian. Obsidian has long been an important resource of North American Indigenous people, with Nevle (2022) noting that "Obsidian, because it lacks the constraints imposed by an internal molecular order, can in fact be flaked into tools with edges many times sharper than a razor blade." Thus, as Yussof (2018) says, "Geology is more than a tool; it is a technology of matter, its formulation and the desire that shapes its incarnation."

Aldo Leopold, Intercultural Collaboration, & the Land Ethic.

In his personal life and scientific work, Aldo Leopold embraced human diversity and sought to work with stakeholders to manage the land. This was particularly evident in his work in New Mexico, where most inhabitants around Carson National Forest were of Native American and Hispanic descent. According to Dr. Raul Valdez (2021), Leopold valued human diversity and saw it as closely tied to ecological diversity. Unlike his contemporaries, like wildlife advocate William Hornaday who "railed against" southern European immigrants, African Americans, and poor whites, laying the blame for the devastation of bird populations at their feet, Leopold took a wider view in understanding the relationships among culture,

poverty, and conservation. To learn more, check out Valdez (2021)'s article *'A Value Worth Preserving': Cultural Diversity Shaped Aldo Leopold's Life and Philosophy.*

Birding & DEI.

Fears (2021) describes "the racist legacy that many birds carry". In particular, many birds are given honorary names that are associated with racists. John James Audubon, John Kirk Townsend, and Alfred Russell Wallace, - associated with the Audubon Warbler, the Townsend's Warbler and Wallace's Fruit Dove - all had associations with racism.

John James Audubon "enslaved people and held white supremacist views" and the Audubon Society is currently grappling with this legacy (Nobles, 2020). So are Black birders and ornithologists, like Corina Newsome of Audubon Georgia who said, when wearing her organization's shirt "I felt like I was wearing the name of an oppressor, the name of someone who enslaved my ancestors" (Fears, 2021).

Additional racism and colonialism was exhibited by other men honored with bird names. According to Fears (2021), John Kirk Townsend sought to prove the inferiority of Indigenous people by digging up Native American Burial grounds and Alfred Russell Wallace frequently used the n-word. As of June 2021, only two such honorifics have been changed, including the renaming of McCown's longspur (McCown was a Confederate general) to the Thick-billed Longspur (Alonso 2021).

More generally, eponymous bird names typically reinforce colonialization by honoring European and European-American figures, with some exceptions (see Alonso 2021). As Fears (2021) points out European explorers "conveniently ignored the fact that birds had been discovered, named and observed by native people for centuries before their arrival." The American Ornithological Society is addressing this issue with the creation of a new, racially diverse committee. Moreover, efforts to make birding more inclusive have expanded, particularly after the creation of Black Birders Week, organized by The BlackAFInSTEM Collective. Recently, the Bird Union and the Chicago Bird Alliance changed their names.

However, in 2023, the board of directors at the National Audubon Society voted to retain its name. A representative of the National Audubon Society had said that its organization mission transcends the history of John James Audubon himself (Miller 2023). According to the National Audubon Society, "George Bird Grinnell, one of the founders of the early Audubon Society in the late 1800s, was tutored by Lucy Audubon, John James's widow, and chose the name because of Audubon's stature in the world of wildlife art and natural history" ("John James Audubon: A complicated history." n.d.) Other sources have claimed that the Audubon name recognizes Lucy Audubon as much as John James Audubon (Burns 2023).

Other environmental and scientific organizations are taking steps to address the legacies of racism and exclusion. According to Miller (2023): "In 2021, the Entomological Society of America began the Better Common Names Project to change the names of insects deemed inappropriate or derogatory. Astronomers have also advocated for the renaming of major telescopes that they say alienate people from marginalized backgrounds."

Neo-colonialism, Conservation & Ecological Science.

The Citizen Science Association (CSA) (2021) describes the ethical issues around Western conservation work in non-Western countries, particularly through the lens of citizen science. In this, CSA (2021) particularly identifies "parachute science," when researchers from abroad drop in on a host country, as practice that perpetuates colonialism abroad. De Vos (2020) further explains that parachute science represents a "conservation model where researchers from the developed world come to countries like [Sri Lanka], do research and leave without any investment in human capacity or infrastructure. De Vos (2020) further explains that this creates dependencies in external expertise and creates conversation paradigms based on outsiders perspectives, assumptions, and needs.

CSA (2021) also suggests that parachute science or colonial science can occur when "citizen scientists travel internationally from higher income countries to lower income countries, citizen science has the potential to contribute to these issues if these programs perpetuate the "white-savior" Western-view of conservation or do not effectively engage with researchers and other stakeholders in the host nation." The Citizen Science Association is compiling case studies and commentaries to help conservationists from all backgrounds engage deeply in the ethics of conservation.

In addition, conservation lands in the United States, in particular, are sometimes laden with offensive and racist names. To address this, The National Association of Tribal Historic Preservation Officers and The Wilderness Society recently released a "A Guide to Changing Offensive Place Names in the United States" to help local communities change offensive place names on public lands.

Clean Water.

Access to clean water is a key environmental justice issue in the United States. According to Cardoza (2021), "75% of Black Americans are more likely to live near polluting facilities than the general population [and] Hispanic American people are twice as likely to live in communities where the drinking water violates contamination laws." In addition, many Indigenous people live without access to reliable water sources, with over 65,000 Dine (Navajo) people living without tap water (Smith, 2021).

In some areas, poverty creates cascading environmental and health impacts. For example, leaking septic systems in Lowndes County, Alabama contaminate drinking water, but residents often lack funds to repair these systems. In 2014, the Flint Michigan Water Crisis left over 100,000 people reliant on lead-contaminated water, 57% of the population is African American (Martinez 2016).

Inequities in access to clean water are further exacerbated by the climate crisis, and its concomitant increase in the frequency and severity of storms and droughts. For example, severe winter storms in the southern United States in February 2021 "left tens of thousands of Black and Brown people without clean water for weeks due" (Lee 2021c). Moreover, Onyejiaka (2021a) highlights the role the U.S. government has had in impairing indigenous nations' access to water. This was done by situating indigenous reservations on the most arid land, allowing urban expansion near reservations that diverted water resources from indigenous lands, and sponsoring infrastructure projects that did the same (Onyejiaka 2021a).

Language and Invasive Species.

Samantha Nurmi, a graduate student in the Nicholas School of the Environment, has contributed the following to describe the nuances of language, and specifically, the xenophobic associations with the language around invasive species [modified and used with permission, 22 Sep 2021]:

> Every word has both a denotation, a literal meaning or definition, as well as a connotation, an emotional or cultural association. For example, environmental curricula commonly address "invasive species" and the negative impact they have on the environment. Unfortunately, terms such as "invasive", "alien", and "exotic" are problematic and confusing within both the academic and social spaces. Each term holds a slightly different scientific meaning, yet they also evoke political ideas. This is supported by the literature, and as Iannone et al. (2021) states, "Despite being synonymous with the term nonnative, these terms are often used when referring to global movement of humans". Thus, these words carry with them polarizing connotations and xenophobic tendencies. Scientific terminology should not evoke political debate, but rather should clearly explain what the species is and how it impacts the environment around it.
>
> Crawford (2018) suggests that "Consolidating around consistent terminology is [incredibly] important for the field, and for us to communicate to others … as we translate science into policy and management". We need to standardize the terminology so that it is clear and avoids xenophobic or racist connotations. The best way to aid this shift in terminology is to be cognizant of the origins and connotations of the labels we are using. For example, instead of saying that a plant is an "alien species" call it an "non-native species". This simple change in dialogue replaces a word linked to centuries of systematic oppression, xenophobia, and discrimination with a word that has the same denotation but does not carry any negative connotations.

Intersectional Environmentalism

The process of decolonizing classrooms that teach environmental content also supports INTERSECTIONAL ENVIRONMENTALISM. Intersectional environmentalism is a term coined by Leah Thomas and expanded upon by other scholars that emphasizes "[a]n inclusive form of environmentalism advocating for the protection of all people + the planet" and "identifies the ways in which injustices targeting frontline communities + the earth are intertwined" (Intersectional Environmentalism n.d.).

Intersectional environmentalism is closely tied to environmental justice, as it advocates for both social and environmental justice. However, *intersectional environmentalism* extends traditional conversations about environmental justice by explicitly acknowledging the ways that different forms of discrimination - based on identity components like race, gender, sexual orientation, language, ability, etc. - can overlap in regards environmental degradation, access to clean air and water, and other related issues.

Intersectional environmentalism is also closely tied to *ecofeminism*, which interrogates the degradation of both women and the environment rooted in patriarchy. According to Thomas (2020), intersectional

environmentalism differs from ecofeminism in its more expansive approach to linking various identities and environmental degradation.

The need for intersectional environmentalism as a solution to both social and environmental problems is exemplified by the case of the 1956 U.S. Federal Aid Highway Act and the resulting destruction or further segregation of Black property and Black communities throughout the United States. During the construction of these new U.S. highways, the routes were often planned in areas that allowed White communities to create a physical boundary of separation from Black communities. Moreover, Black neighborhoods then "lost homes, churches and schools" as the U.S. government took land by eminent domain (King 2021). In some areas, protests formed, but Dr. Deborah Archer notes that these efforts often were not successful if couched only in terms of social justice, but rather gained momentum and support when paired with environmental issues like habitat and parkland loss (King 2021).

For more resources related to environmental justice and/or intersectional environmentalism, check out this resource list (scroll to the end).

Understanding Context in Durham & Beaufort, NC and Duke University

"It is important to understand that the historical record is never complete."

- Andre Vann, Archivist and Historian, North Carolina Central University

[*In progress*]. Before delving into this work, it is useful to reflect on the context of our teaching. In particular, we need to understand and reflect on the history of the places we teach, especially the towns of Durham and Beaufort, NC, as well as the history of Duke University itself.

Indigenous Communities. The land that Duke University sits on in Durham, NC was historically the territory of several Native nations, including Tutelo- and Saponi-speaking peoples. The names and communities of many Native nations have shifted through time, especially as many of their communities were displaced or killed through war, disease, and colonial expansion. For example, a combined village of Adshusheer, Eno, and Shakori people existed along the Eno River, near Hillsborough around 1701. Soon thereafter, the Eno nation disappeared from the European-American historical record, with some sources suggesting that the remaining Eno were incorporated into the Catawba nation or the Shakori band. If you're interested in a visualization of overlapping indigenous territories, check out this online map.

Today, the Triangle is surrounded by contemporary Native nations, the descendants of Tutelo, Saponi, and other Indigenous peoples who survived early colonization. These nations include the Haliwa-Saponi, Sappony , and Occaneechi Band of Saponi. Moreover, North Carolina's Research Triangle is home to a thriving urban Native American community of Native nations from across the United States.

Beaufort, NC is the traditional land of the Coree Indians. European colonizers established "Fish Town", a fishing village in the 17th century, and the town of Beaufort was officially established in 1709, buildling an economy based on fishing, whaling, lumber, and farming. According to Barbara Garrity-Blake "the earliest settlements documented were of the Woodland period, and partly due to pottery styles

archaeologists recognize 2 coastal plain culture areas: the northern and southern w Neuse River as the dividing line. Northern were Algonkian speaking people and southern Siouan - at least by time of European contact... The historical record (John Lawson and others) describe the Coree tribe of Carteret and Craven, and Lawson claimed the Coree had a distinct language from Algonkian and Siouan speakers. The Coree were decimated by contact, and joined the Tuscarora during the Indian wars." More information about the history of Pivers Island can be found here. [*Beaufort information in progress,* special thanks to Drs. Grant Murray and Tom Schultz for investigating this.]

In North Carolina, eight tribes are currently recognized by:

- Coharie Intra -Tribal Council
- Haliwa-Saponi Indian Tribe, Inc.
- Lumbee Tribe of Cheraw Indians (also known as Lumbee Regional Development Association Inc. and Lumbee Tribe of North Carolina)
- Meherrin Indian Tribe
- Metrolina Native American Association
- Occaneechi Band of Saponi Nation
- Sappony
- Waccamaw-Siouan Development Association

In addition, check out these more general resources on Indigenous History and Resistance, as well as this interactive map on the Invasion of America and this map of Native Land. To get a better understanding on the sources and effects of false narratives and lack of knowledge of indigenous communities, check out Crystal EchoHawks's article Stolen Land, Stolen Bodies, Stolen Stories. In this, EchoHawk discusses how indigenous invisibility in Western education and media leads to false assumptions and contributes to toxic narratives about Native people, including false ideas that Native peoples are vanishing, conquered, corrupt, or caricatures. She also shows that over 70% of Americans want to learn more about Native peoples and support changes to K-12 education that includes indigenous peoples.

There are some books available on Indigenous History in North Carolina. Some of these resources are older, with a distinctly Eurocentric lens, others are more recent: Isenbarger's *Nature Americans in Early North Carolina*, Right's *The American Indian in North Carolina*, Keel's *Cherokee Archaeology*, Dickens's *Cherokee Prehistory*, Ward and Davis's *Time Before History: The Archaeology of North Carolina*.

Racialized Oppression & Race-Relations. In addition, we must acknowledge the overlapping histories of the land that makes up Duke University today, including past violence and ongoing harm produced by the legacy of racialized slavery and oppression. The land that is now Duke University, including over 7,000 acres of the Duke Forest, was historically agrarian land, farmed by colonizers of European descent and their descendents. What is now Durham, was a relatively poor farming community made up of yeoman farmers, many of whom did not own enslaved people. However, many farm owners and shop owners did own enslaved people. For example, we known of at least three sites where slavery was practiced on what is now considered Duke Forest land, including the Alexander Hogan Plantation in Blackwood Division, the Couch Farm (near the Duke Farm), and the Robson Mill in the Korstian Division.

Horton Grove, a local Triangle Land Conservancy nature preserve adjacent to and working with the Stagville Historic Site, in north Durham County has been engaging in creative community work to wrestle with the legacies of slavery, the history of the land, and conservation. The Stagville Plantation was once home to over 900 African American enforced laborers, enslaved by the Cameron family. To learn more about the work of the Triangle Land Conservancy and Stagville Historic Site, check out this video: Healing on the Land at Historic Stagville. Diquan Edmonds, the Education and Outreach Manager for the Triangle Land Conservancy, is also featured in the article *Building an Inclusive Outdoor Culture*.

Slavery was abolished in North Carolina by presidential decree during the American Civil War (1861-1865), howeover, racialized oppression continued through unjust tenant farming arrangements, segregation of citizens by race, and Jim Crow policies. Despite these incredible obstacles, the Black community in Durham produced a thriving Black Wallstreet. W.E.B. DuBois praised Duke University during this time, suggesting that it's role in the following words: "influence of a Southern institution of learning of high ideals; with a president and professors who have dared to speak out for justice toward black men . . . has made white Durham willing to see Black Durham rise without organizing mobs or secret societies" (DuBois 1912 in Horn n.d.).

W.E.B. DuBois (1912) provided other details on the relationship between black Durham, Duke, and the Duke family. For example, DuBois (1912) reports that Washington Duke sought to build a monument on what is now Duke's campus, then part of Trinity College, to honor formerly enslaved people. Washington Duke consulted with the Black community in Durham and found that the community preferred to use the funds that would create the monument to found a hospital. Washington Duke then gave $20,000 to the Black community to build and equip a new hospital.

While DuBois (1912) notes that the White population in Durham, which then represented two-thirds of Durham's population, was less inclined to put up additional barriers to Black business and enterprise, compared with other Southern cities of the time, like Atlanta, it is clear that Black entrepreneurs in Durham had to search out resources in creative and difficult ways, particularly when compared to their white counterparts. For example, DuBois (1912) related a story of C.C. Amey, who built a successful hosiery mill in Durham. Amey originally sought to learn more about mill machines and manufacturing from White hosiery mill owners in Durham, but they refused. Amey then went up to Philadelphia to learn the trade, eventually building a hosiery mill in Durham that employed Black workers and could produce up to 720 men's socks per day. DuBois (1912) also noted that getting capital was difficult for Black entrepreneurs, who had to raise funds from primarily within the Black community. Pauli Murray, who grew up in Durham in the 1910s and 20s, said that the whole city was segregated - from housing and public transportation to libraries and cemeteries - and that "[t]he world revolved on color and variation of color" (Segal, 2021).

Despite these obstacles, Black entrepreneurs built a thriving Black Wall Street - one of the most successful and profitable in the country. DuBois (1912) notes that the 5,000 Black residents of Durham in 1912 owned $500,000 worth of property, which is equivalent to nearly $14 million dollars in 2021. These properties included "fifteen grocery stores, eight barber shops, seven meat and fish dealers, two drug stores, a shoe store, a haberdashery, and an undertaking establishment," as well as "five manufacturing

establishments which turn[ed] out mattresses, hosiery, brick, iron articles, and dressed lumber" (DuBois 1912).

Black Durham continued to be a force for racial justice in the coming decades. This was necessary, as even into the mid-1950s, in nearby Guilford County, over 75% of white respondents fully supported school segregation and the majority held explicitly prejudiced beliefs about Black folks (Segal, 2021). For example, one of the first sit-in's protesting inequality perpetuated against blacks by whites occured in 1957 in Durham, when blacks from a local church group went to the Royal Ice Cream Parlor - where they were barred due to the color of their skin - and refused to leave. Moreover, Duke students were involved in the more famous Greensboro sit-ins. More information about Durham Civil Rights can be found at the Pauli Murray Project online. To learn more, check out Milteer's *North Carolina's Free People of Color, 1715-1885*.

However, racialized oppression continued. Between 1929 and 1976, over 7,000 women, including children as young as 12, were sterilized through North Carolina's eugenics project. Eugenics is a social movement aimed at "improving" the human race by encouraging the reproduction of people with "desirable" traits and discouraging the reproduction of those with "undesirable" traits. Moreover, after the Civil War, the Ku Klux Klan was known to be active locally. In neighboring Orange County, the horrifying documented activities of the Ku Klux Klan include lynchings.

It is important to note, as well, that North Carolina is considered the Cradle of Forestry. Gifford Pinchot developed the country's first modern forest management plan for the Biltmore Estate. Later, Carl Schenck launched the first school of forestry at the Biltmore Estate. However, many early conservationists and modern foresters were associated with the eugenics movement. In fact, Gifford Pinchot himself was a delegate to the International Eugenics Congress in 1912 and 1921; and a member of the advisory council of the American Eugenic Society from 1925-1935.

Racialized oppression also continued in Durham with the practice of red-lining and through discriminatory city planning efforts. Between 1931 and 1964, Duke University itself perpetuated racial segregation by selling about 300 housing lots, each of which contained a racially restrictive covenant, to Duke faculty and staff (Wagner 2019). Andrew Wagner, a Duke University School of Law student from 2015-2018, offers a comprehensive overview on the subject in his paper, *Buried Monuments: The Legacy of Racial Covenants in Duke Forest*, from which the following summary is derived. Please note that here "Duke Forest" refers to the Duke Forest Neighborhood of Durham, and not to the 7,000+ acre Duke Forest Teaching and Research Laboratory.

The practice of using racial covenants at Duke University started in 1930, when the university began construction of ten homes on Pinecrest Road as part of a faculty recruitment plan. The recruitment letter to prospective faculty offered desirable housing with amenities such as sidewalk and sewage lines. The letter also included a list of building restrictions, such as property set-back distances and fence height limits. The deeds also contained these restrictions, as well as one that was not included in the recruitment letter:

> "That the lot hereby conveyed shall not be sold, transferred, conveyed, leased, or rented to persons of the negro blood, proved that this shall not be construed to prevent the

> living upon the premises of any negro servant or servants whose time shall be employed for demoestric purposes only be the occupants of the dwelling house" (as cited in Wagner 2019).

A close reading shows that Black servants were allowed on the property, but otherwise Blacks were not allowed to own or rent the homes. Duke University later expanded the use of these covenants as they expanded their housing project into what is now known as the Duke Forest Neighborhood. While these racial covenants became legally unenforceable after 1948, when the Supreme Court found them to be in violation of the 14th amendment, they continued to serve as a signal of exclusion until 1934 (Wagner 2019).

Although the Duke University administration tenaciously held onto the inclusion of the racial covenants into the Duke Forest Neighborhood leases, Duke faculty and students did resist particularly in the 1960s. For example, in May 1960 nine faculty members, who also owned lots in the Duke Forest Neighborhood, wrote a letter to the Comptroller asking that the racial covenant be removed from the deeds; the request was denied by the Duke University Executive Committee (Wagner 2019). In 1963, the school newspaper, *The Chronicle*, included a special report on racial discimination spurring some introspection by the Duke University administration into policies of oppression (Wagner 2019). In the same year, Dr. Peter Klopfer, a Quaker faculty member wrote to Duke University President Knight, describing the racial covenant as "insulting" and asking President Knight to "eliminat[e] the last vestiges of intolerance" at Duke (as cited in Wagner 2019). Shortly thereafter, Duke University quietly drafted deeds lacking racial covenants and slowly began the process of phasing out institutionalized discrimination in housing (Wagner 2019). Duke University graduate students, led by law student Ed Rickards, demanded that the Duke University administration offer public and symbolic condemnation of the racial covenants by publicly announcing the opening of the racially unrestricted housing (Wager 2019). Learn more about racial covenants in Durham property deeds, beyond those controlled by Duke University, by visiting the Hacking into History website.

For example, in the 1960s and 1970s Durham city planners built the Durham Expressway to provide access to Research Triangle Park. This was constructed to go right through the heart of Durham's African American community, the Haiti neighborhood.

In fact, the legacies of racialized oppression in Durham can be seen in nearly every aspect of daily life. For example, African American burials in Durham were historically segregated from White burials. This can be seen at Geer Cemetery, which was established in 1877, the year that reconstruction ended (William Starkey, Friends of Geer Cemetery, 2021). WIlliam Starkey explains that those buried at Geer Cemetery built the City of Durham itself, establishing churches and universities (e.g., James, E. Shepard 1875-1947, founder of NCCU), and they were taxpayers, yet those tax dollars were not used to support the care and preservation of historically Black spaces in the city (Friends of Geer Cemetery, 2021). Moreover, those buried in Geer Cemetery helped make Durham a "mecca of modern southern Black life" attracting W.E.B. DuBois and Booker T. Washington, among many other Black leaders (William Starkey, Friends of Geer Cemetery, 2021).

Angela Thorpe, the Director of the African American Heritage Commission, notes that in 2019 her organization partnered with "the North Carolina Office of State Archaeology to launch an African

American cemeteries and burial grounds preservation initiative"; this partnership is *unfunded*, but allows experts to come together to identify communities across the state for pilot initiatives that grow support strategies for cemetery preservation (Friends of Geer Cemetery, 2021). If you're interested in other aspects of African American heritage in North Carolina, check out Cain & Quillan's (2021) article, *10 NC Black history lessons you likely weren't taught in school (but should have been)*.

Other forms of racialized oppression have continued to affect Duke University and African American communities in recent memory. For example, Duke University's Trent Center for Bioethics, Humanities, and History of Medicine shares the following history:

> "On November 3, 1979, members of the Ku Klux Klan and American Nazi Party drove into an African-American neighborhood in Greensboro, North Carolina to disrupt an anti-klan march planned by the Communist Workers Party. The KKK and Nazis opened fire on the demonstrators, killing five labor and civil rights activists, three of whom - Dr. Mike Nathan, Dr. Jim Waller, and Cesar Cauce - had ties to Duke University. Sandy Smith and Bill Sampson were also killed on that day. Two all-white juries subsequently found the shooters not guilty of state and federal criminal charges. Later in a civil suit for wrongful death, the KKK, Nazis, and City of Greensboro were found liable." - Trent Center, 10 Dec 2020

LGBTQ+ Community. Durham's LGBTQ+ is strong and vibrant. The first gay rights march in Durham happened in 1981 after the brutal beating of four men at Little River, which also resulted in the death of Ron Atonenvitch. Some of our very own Nicholas School staff, including Nancy Kelly, proudly attended that march. Nancy Kelly not only attended, but was in charge of the drinks booth. The next march occurred in 1986 when the AIDS epidemic was ravaging the LGBTQ+ community. Today, the city celebrates the LGBTQ+ community enthusiastically and annually. More information about Durham Civil Rights can be found at the Pauli Murray Project online.

Duke Specific History. It is also useful to reflect on the way Duke University itself has perpetuated and continues to reinforce patterns of racial, gender, and class inequality, as well as other forms of prejudice and discrimination. To get a better sense of this, consider reading Jessica Auer's (2020) dissertation on Race, Gender, and Class in a New South University Community, 1930-1980 and the 2018 and 2019 Duke Disorientation Guides. You might also visit the Duke Library Resource guides pertaining to the Cherokee Industrial School associated with Trinity College, Native Americans at Duke, and Black History at Duke.

Duke University was officially established in 1924, but it was born from an already established educational institution: Trinity College, established in 1838. When Trinity College in Durham began to transform into Duke University, under the leadership of president William Preston Few, more land was needed. Few is quoted as referring to himself as a "stout Cortez" when he "stood on a hill, looked out over this wooded tract, and realized that here at last is the land we have been look for" to construct West Campus (Huler 2020). The reference to Keat's "stout Cortez" suggests a sense of continued European American imperialism.

At least one president of Trinity College, Braxton Craven, owned enslaved people (Gillespie 2020). Moreover, Trinity rented enslaved labor. After the Civil War, Trinity hired black workers, but they were

not always treated respectfully (see 1921 yearbook, Gillespie 2020). Please see above to learn about Washington Duke's work with Black Durham to finance a Black Hospital in the City.

After Duke University was established, segregation continued on campus. The West Campus Union was designed by a Black architect named Julian Abele, but the floor plan itself had separate dining areas for the "white help" and "black help" (Gillespie 2020). In the middle of the 20th century, all major areas of Duke's campus were segregated: bathrooms, the football stadium, Page Auditorium and the Duke Chapel itself; even visiting Black academics were banned from the dining halls (Segal, 2021).

By March 1961, under pressure from the student body - who in 1955 called segregation "anti-democratic, anti-Christian...and incompatible with the idea of a university" in a *Duke Chronicle* article - and at risk of losing millions of dollars in government funding, Duke University began to integrate the student body (Segal, 2021). First, graduate programs were integrated, with the first Black graduate students entering in the Fall of 1961, later, in September 1963, 5 Black undergraduate students arrived on campus (Segal, 2021). In 1966, Duke hired its first back faculty member, Samuel Dubois Cook (Gillespie 2020).

In 1968-8, students fought for improved treatment of Black workers at Duke with vigils and the Allen Building takeover (Gillespie 2020). Before this period, Duke University was compared to a plantation because Black workers were relegated to unskilled positions, e.g., the housekeeping staff was all-Black and one of the first Black undergraduates on campus would comment on watching the all-Black lawn maintenance crew rake leaves in the morning outside his window (Segal, 2021). In 1964, 86% of the 1,230 laborers and service workers on campus were Black (Segal, 2021). In addition, these Black workers had no leave or holiday pay and they were grossly underpaid (Segal, 2021). In January 1966, the highest-paid Black janitor still earned $200/year below the poverty threshold (Segal, 2021)

In more recent years, some Duke faculty have begun initiatives to uplift Black achievement academically. For example, in the late 1970s, scholars founded the Oscar Micheaux Society to study and promote his work and achievement . Oscar Micheaux was the first black feature film maker in the United States, and he produced over 40 films emphasizing themes including racism and passing, including *Symbol of the Unconquered*. From 1993 to 2003, the Society produced a newsletter - edited by Professor Jane Gaines (Duke University) and Charlene Regester (UNC). The Duke Library keeps the Oscar Micheaux Society papers, 1976-2004.

Culturally-Relevant Education

Culturally-relevant education (CRE) refers to a framework created to promote diversity, equity, and inclusion in the education system and to decolonize our pedagogy. As written in NSOE's Undergraduate Diversity Strategic Plan (Cagle et al. 2019):

> CRE recognizes students' cultural backgrounds, experiences, and interests as partners in teaching and learning. In a CRE framework, teachers use relevant cultural references to empower students intellectually, socially, emotionally, and politically (Knight-Manuel and Marciano 2018). This empowers students from various cultural backgrounds, makes the learning experience more meaningful, and gives students pace and support to challenge

hegemonic forces. CRE is based on two frameworks: culturally responsive teaching and culturally relevant pedagogy (Aronson and Laughter 2016).

Numerous books that deal with culturally-responsive teaching and culturally-relevant pedagogy in some form have been written, some recommendations include:

- *Teaching Across Cultural Strengths* by Alicia Fedelina Chavez and Susan Diana Longerbeam - this is aimed at college-level teaching and is really fantastic.
- *Culturally Responsive Teaching and the Brain* by Zaretta Hammond, clear explanations of neuroscience and appropriate teaching methods, really well done.
- *For White Folks Who Teach in the Hood: Reality Pedagogy and Urban Education* by Christopher Emdin (includes fantastic examples of cooperative classroom structures)
- *Teaching Through Challenges fue Equity, Diversity, and Inclusion (EDI)* by Burrell Storms, Donovan, and Williams
- *The Integrative Mind* by Tobin Hart
- *Diversity and Equity in Science Education* by Okhee Lee and Cory A. Buxton (check out p24-8, *Is Science Independent of Culture?*)
- *Cultural Competence: A Primer for Educators* by Jerry Diller and Jean Moule
- *Teaching for Diversity and Social Justice* by Adams, Bell, Goodman, and Joshi (eds)

Other quick guides online to culturally-inclusive pedagogical practices include:

- University of Denver Inclusive Pedagogy module(s)
- Haar and Robicheau (2007)'s Strategies needed to create cultural inclusive learning environments
- Developing an inclusive classroom culture

Useful journal articles include:

- Dewsbury (2019)'s *Deep teaching in a college STEM classroom*. Dewsbury (2019) builds on Freirian principles and the work of Gay (2010) and Aronson and Laughter (2016) to offer a teaching model based on (1) self awareness of the educator, (2) empathy for students, (3) active learning pedagogy melded strongly with liberation pedagogy (i.e., instructor-student dialogues, student agency) and centering marginalized voices (4) developing a trusting classroom climate, and (5) leveraging networks to create a broader sense of community around STEM.

Quick Guide: Culturally-Inclusive Pedagogy in the Classroom

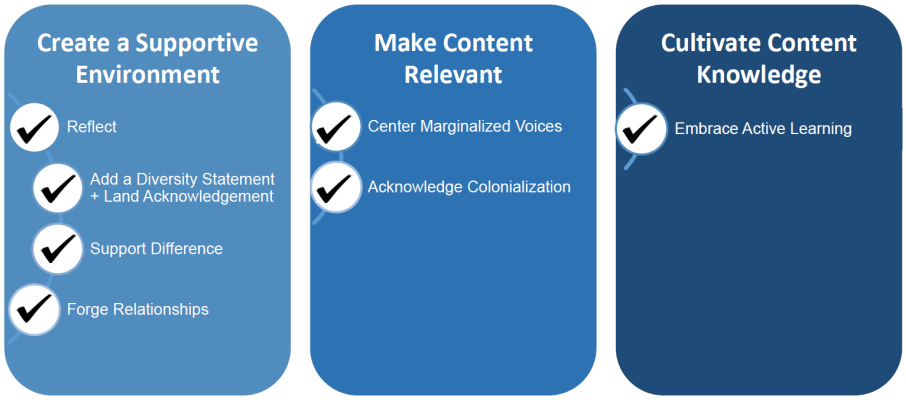
Why Culturally Inclusive Pedagogy? We recommend using culturally-inclusive teaching moves in your class because students deserve them, students demand them, and students learn more when teachers use them. If you still have some questions about this, consider reading *How to Make Your Teaching More Inclusive,* which also has a great common question guide.

How does learning happen in the brain? To learn, students must first feel socially and emotionally supported, allowing their amygdala to relax. If the amygdala is triggered, it stops students from being

able to pay attention to course material. Next, students must be engaged by the material, which means stimulating the Reticular Activating System (RAS) in the brain. To be engaged by material, students need to connect to the material. Finally, students can really start building those neuronal connects, which means they are learning new facts, skills, and modes of thinking.

How do culturally-inclusive teaching techniques help students learn? Culturally inclusive teaching techniques focus on (1) creating a supportive environment (calming the amygdala), (2) making content relevant (stimulating the RAS), and (3) cultivating content knowledge (connecting neurons).

What does a culturally-inclusive pedagogy look like in the classroom?



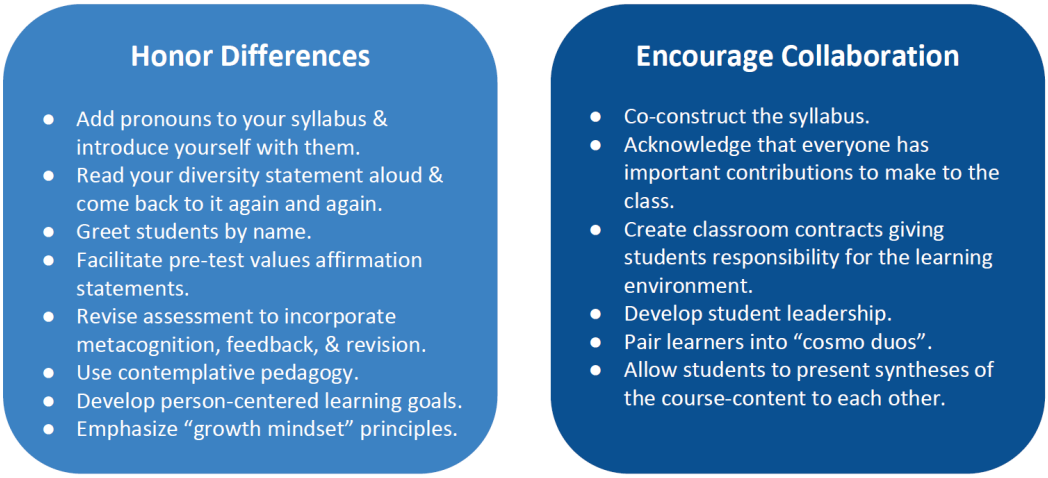
Where can I learn more about Diversity Statements and Land Acknowledgements? Diversity statements and land acknowledgements signal your commitment to inclusivity in the classroom.

Check out Brown University's Harriet W. Sheridan Center for Teaching and Learning for more guidance on Diversity Statements. Check out Amnesty International Canada's Land Acknowledgement Resource for more guidance on land acknowledgements and the Native Governance Center's Tip Sheet. To learn more about land acknowledgements, and to find a link to an example, read this Land Acknowledgement Pre-Reading Handout.

Also, check out John Fay's GIS-based Land Acknowledgement and this map of Native Land, but note that these resources haven't been explicitly done in collaboration with Native peoples. Please note that maps of Native lands are often inaccurate, due to changes in Native land boundaries and to the erasure of Native history that was concomitant of colonialization. In the Southeast in particular, it is difficult to be precise in due to the intensity of the colonial project here. If you want to post the GIS-based Land Acknowledge, we recommend informing folks with the following disclaimer:

"Disclaimer: We acknowledge the significant impact of colonization on Indigenous communities, which has made it challenging to provide a fully accurate representation of Indigenous territories. This map is a living document, continually shaped by the contributions of Indigenous communities. We encourage you to engage directly with Indigenous nations to deepen your understanding of their territories and histories. (Adapted from the Native Land website)."

How can I support difference in the classroom?



How can I forge relationships with my students?

1. Express interest in your students by using a pre-class survey and making chit-chat before class starts.
2. Encourage open communication with you by soliciting feedback from students during class, allowing students to give anonymous feedback with a link, & indicating your availability for office hours.
3. Create a warm classroom climate by sharing personal, but appropriate details about your life & using a warm tone in your syllabus.
4. Create positive group dynamics by adding discussion guidelines to syllabus, encouraging reflection and discussion, & developing a learning community among students.

How do I center voice of groups that have been marginalized* in the classroom? You can center marginalized voices in the classroom by (1) using materials representing marginalized groups (e.g., book chapters, case studies, podcast); (2) using created by authors representing marginalized groups (e.g., guest speakers, academic work, essays, popular media) and 3) having students bring in materials they locate or find personally meaningful. *Note on terminology: there is no agreement on the proper terminology to use to describe those groups that have been historically and are currently excluded from conversations and power. We used the term marginalized here to show that one group has historically had and used power over other groups.

How do I acknowledge colonialization? To acknowledge colonialization in the classroom allow for sustained discussion about the origins and backgrounds of your discipline, key ideas, and key sources. Remember, you don't have to have all the answers, but you do need to provide space for these conversations to happen.

How do I embrace active learning? Active learning is an umbrella term for teaching techniques that actively engage students in the learning process, rather than having them passively take in information. These are most effective when they include metacognitive reflection. Find active learning activities here.

Cultivating Joy in the Classroom: A Pedagogy of Care

The author suggests an expanded approach to pedagogies of care that seeks to cultivate joy in the classroom. If our goal is to help students "live lives of meaning, value and success as they define it" (*sensu* Hart 2014), then educators need to reduce suffering and create inclusive spaces to allow our However, as Fred Bryant says, not being down isn't the same as being up (22 Aug 2023, Hidden Brain: You 2.0 Slow Down!). In the same sense, not being held down isn't the same as being held up. According to Shawn Archor (2010), the author of *The Happiness Advantage*, a meta-analysis on scientific happiness that examined 200 studies on happiness, show that happiness leads to success (not vice versa) "in nearly every domain including work, health, friendship, sociability, creativity, and energy." To do our job fully, educators must help students learn how to find joy.

This means that we need to use positive practices in the classroom, that teach students how to find and stay in states of happiness, including:

- Savoring the moment or an experience (Bryant 2023);
- Listing 3 good things from the day (Emmon & McCullough 2003 as cited by Surzyn 2018);
- Acknowledging the good things that students do in the classroom;
- Encouraging students to select a strength of theirs (e.g., creativity, humility) and use it in a "new and different way" in class (see Newman 2016 for rationale)
- Doing affirmations before tests where students select important values and describe how they live up to them (Surzyn 2018);
- Scaffolding major assignments with small manageable tasks that set students up for success (Surzyn 2018);
- Creating a positive social atmosphere in the classroom (see Section titled Steps to Diversify and Decolonize Your Syllabus and Classroom - Supporting Difference);
- Teaching outside - which has lots of psychological benefits;
- Using sensory activities; and
- Engaging in mental time travel, which creates time for prospective and retrospective savoring and joy (Bryant 2023).

Reflection: The Work of an Educator

To become an effective educator, it is important to reflect on the content that you are teaching (see Decolonizing the Curriculum above), your teaching methods (see Culturally Relevant Education above and Steps to Diversity and Decolonize Your Syllabus and Classroom below), and your own biases. As Emdin (2016, p40) says, "To be an ally...the teacher must unpack the indoctrination we have all been subject to."

Moreover, this type of reflection is critical to developing cultural competence. Cultural competence is especially important for science educators, as research indicates that students don't leave science because of lack of ability, but because they are "unwilling to assume a cultural identity defined by science" that ignores problems relevant to their own cultures and communities (Tanner and Allen 2007). In particular, research shows two cultural values commonly presented in scientific fields that dissuade

Black, Latina, and American Indian women from continuing their studies: 1) science without context and 2) science as a meritocracy.

To confront your own background and biases, it is highly recommended that you read and reflect prior to, while, and after decolonizing your curriculum. This could mean reviewing some of the myriad book on bias and becoming anti-racist: e.g., *Blind Spot* (Banaji), *White Fragility* (DiAngelo), *How to Become an Anti-Racist* (Kendi), *Me and White Supremacy* (Saad), and *Mindful of Race* (King). Check out these reading lists if you're interested in more resources:

- Duke University's Anti-Racism and Black Liberation
- Kendi's Anti-Racist Reading List
- NC Live's Anti-Racist Reading List
- Flicker and Klein's Anti-Racism Resources for White People

This might also mean participating in caucus groups, joining a reading group, taking workshops addressing various aspects of diversity, equity, and inclusion, taking implicit bias quizzes (e.g., Harvard University's Project Implicit), and journaling. Those that are quite serious about this journey might consider finding a coach to work through the Intercultural Development Inventory.

Action steps for teachers recommended include:

- Exploring your own values and life commitments (CIRTL INCLUDES n.d.; Storms et al. 2020, p104 citing Lee 2007),
- Articulating where and how you developed your own world view (CIRTL INCLUDES n.d.),
- Analyzing your personal privilege (Storms et al. 2020, p104 citing Lee 2007),
- Learning about the nature of oppression (Storms et al. 2020, p104 citing Lee 2007),
- Working to become multiculturally literate (Storms et al. 2020, p104 citing Lee 2007),
- Developing your own social justice ethos (Storms et al. 2020, p104 citing Lee 2007), and
- Inviting students to give you feedback on your facilitation and assessment styles (CIRTL INCLUDES n.d.)

Moreover, researchers have noted that "empathetic people are more likely to understand and appreciate the perspectives of others, which leads to less prejudice, more positive social overtures, and less stigma and discrimination" (Storms et al. 2020, p11 and references cited therein), and as educators we have the capacity to increase our own empathetic abilities and decrease bias through mindfulness-based practices (MAP) (Storms et al. 2020, p76). In addition, teachers who practice mindfulness are better equipped to help students engage with EDI issues, since mindfulness addresses biased behaviors that result from unconscious processes and help "create new neural pathways of self-awareness, self-regulation, and compassion" (Storms et al. 2020, p76). This is well-supported by research.

Culturally responsive teaching tenets also suggest that we as educators must develop both cultural competence and critical consciousness. In developing cultural competence, educators need to understand and respect the culture of their students. In developing critical consciousness, educators must reflect, map the development of their own socio-cultural consciousness, and analyze their teaching

practices to ensure they are culturally responsive. Educators can use "mindful learning" practices (sensu Langer 2016 *The Power of Mindful Learning* and Langer's body of work, Kumagai & Lypson 2009)

For additional readings that will help stimulate your own reflection, could possibly be used in class, and can help contextual the need for this work, check out this reading list from a recent ASLE post on teaching about race and nature (that also includes a look at a class assignment):

- Purdy, Jedediah, "Environmentalism's Racist History," The New Yorker 15 August 2015
- Brave-Noisecat, Julian, "The Environmental Movement Needs to Reckon with its Racist History," Vice
- Cronon, William, "The Trouble with the Wilderness; or, Getting Back to the Wrong Nature," Uncommon Ground: Rethinking the Human Place in Nature, edited by William Cronon, W.W. Norton & Co., 1995, 69-90.
- Selections from Dunbar-Ortiz, Roxanne, *An Indigenous People's History of the United States*. Beacon Press, 2015.
- Selections from Estes, Nick. *Our History is the Future: Standing Rock Versus the Dakota Access Pipeline, and the Long Tradition of Indigenous Resistance,* Verso, 2018.
- Selections from Finney, Carolyn, *Black Faces, White Spaces: Reimagining the Relationship of African Americans to the Great Outdoors*. U of North Carolina P, 2014.
- Selections from Spence, Mark, *Dispossessing the Environment: Indian Removal and the Making of the National Parks*, Oxford UP, 2000.
- Whyte, Kyle, "Our Ancestor's Dystopian Now" and "Indigenous (Science) Fiction"
- Tuck, Eve and K. Wayne Yang, "Decolonization is Not a Metaphor." Decolonization, Indigeneity, Education & Society 1, 1, 2012, 1-40.
- Selections from Yusoff, Katherine. *A Billion Black Anthropocenes or None*, U of Minnesota P, 2019.

Steps to Diversify and Decolonize Your Syllabus and Classroom

Here are some steps you can take to diversify and decolonize your syllabus and classroom. Remember, these must be done authentically and with care.

1. **Reflect**. Instructors should reflect on their own implicit biases, backgrounds and training, and disciplines before entering the classroom. Please see the section above on "The Work of an Educator" for more details on how this can be done. In addition, consider working through this guided reflection, reading this article, or crafting a teacher identity memo (see Ramos 2020). Brookfield (2017) also has a chapter on race in his book, *Becoming a Critically Reflective Teacher*. Remember, as Ramos (2020) contends, inclusive teachers must adapt to new research on evidence-based practices to be truly inclusive.

2. **Add a Diversity Statement and Land Acknowledgment.**

Add a Diversity Statement. Read it aloud on the first day of class and go back to it from time to time. N.B. Diversity Statements and Land Acknowledgements added to syllabi without other efforts to make a course culturally-inclusive can be offensive.

Depending on the class, statements of diversity may refer to: a) the content of the course and resources, b) the mechanisms and criteria for evaluation/assessment, c) the faculty member acknowledgement of her/his own limitations in being sensitive and her/his willingness to learn for the students, and d) expectations and guidelines on how students can help create a productive and inclusive learning environment.

Brown University's Harriet W. Sheridan Center for Teaching and Learning recommends that you consider the following questions as you write your diversity statement:

- "What are your discipline's conventions and assumptions? How might students with varying backgrounds respond to them?
- What role does your respect for and engagement with diversity in the classroom play in your personal teaching philosophy?
- What positive learning outcomes can come from respecting difference in the classroom? How can you highlight these?
- What do you want your students to know about your expectations regarding creating and maintaining a classroom space where differences are respected and valued?
- Is your statement inclusive of different types of diversity, including, but not limited to: race, gender, ethnicity, sexual orientation, age, socioeconomic status, religion, and disability?
- Which campus resources would you like to direct your students to for further support?
- What kind of classroom environment would your students like to see? How might you include them in the conversation about standards for classroom civility?" (from Brown University's Harriet W. Sheridan Center for Teaching and Learning n.d.)

Other resources for writing a diversity statement include:

- Carnegie Mellon University's Diversity Statement on a Syllabus resource.
- Diversity statements from Cagle's syllabi (N.B. I'm not an expert, but I thought it could be useful to see how other people in NSOE write these, if you have one of your own, please add a link here).
- Need sample language? Visit Brown University, California State University - Chico, Carnegie Mellon, and UM Inclusive Syllabus Language
- You might also want to check out this Inclusive Syllabus Checklist.

Note that additional syllabus statements should be included in your syllabus that communicate an instructor's willingness to discuss and accommodate students that are neurodiverse and intellectually differently-abled (Storms et al. 2020, p20). Details on what to include in statements of this nature are included in Christoff (2017).

To support neurodiversity in your syllabus you might also follow this recommendation from Elise Mueller and Darla Swan (Duke Faculty Advancement 2022): "Consider how to streamline your syllabus. Add

white space and avoid dense text. Think about integrating graphics. Add a table of contents. Create separate pages for some content (like assessment instructions) that are linked to in the syllabus so it's easier for students to find later. Allow students to download a PDF version of your syllabus so students can make formatting changes to help with visual processing. "

You might also consider adding a *Welcoming Statement* for international students, acknowledging that their perspectives enrich your learning environment and that you recognize they face a unique set of challenges. Also, add links to support services specifically for international students on campus.

Other supportive language can be useful, like flexible attendance policies and links to mental health resources. Duke University has provided sample language here.

Write a Land Acknowledgement. Land acknowledgements are an "act of reconciliation" (Munjee et al. 2021). Land acknowledgements also honor the connection between indigenous people and the land, and at their best, emphasizes the sovereignty of indigenous groups. This means acknowledging that "there is not a university in this country that is not built on what was once native land" (Gould 1992 as cited in Storms et al. 2020, p27). While land acknowledgements are firmly linked to indigenous people's, they can also serve as an acknowledgement of other types of relationships that different groups have had with the land (see link to Cagle's syllabus below). Developing a land acknowledgement should "include a collaborative process through reaching out to local Indigenous communities and/or those with ties to the land" (Garcia 2018, Beck 2021).

Best practices for developing a land acknowledgement include deep self-reflection, asking yourself *Why am I choosing to craft and recite a land acknowledgement? What unconscious bias may be operating within me? Am I using Indigenous people just to benefit my organization? Does my land acknowledgement empower indigenous people? How do I plan to share this land acknowledgement? What are the implications of sharing it?* (Munjee et al. 2021). Moreover, Quinn Smith, Jr. (2021), writing as a rising junior and Chickasaw, tells us that land acknowledgements are meant to "help us in the healing process," but "a land acknowledgement is not enough; reparations are mandatory."

Remember, the land acknowledgement should be guided by Indigenous people's visions for the future, such as Quinn Smith, Jr.'s (2021) vision for himself and his children:

> "I want my future Chickasaw children to be supported in remembering their culture. They will know how to stomp dance and to cook *pishofa*, and it will be as easy for them to learn as baseball or Christmas. I want them supported in being different instead of fighting to be equal."

Your land acknowledge should also include (Munjee et al. 2021):

- A commitment to act in support of Indigenous communities, e.g., by contributing resources to land-back campaigns to "get Indigenous lands back into Indigenous hands" (NDN Collective 2020),
- Opportunities for people to learn more, including phonetic pronunciations of Indigenous nation's names, a description of traditional practices, and the history of colonialization,

- All verb tenses to indicate tribes past, present, and future connection to the land.

What do you do with your land acknowledgement? Read your land acknowledgement aloud on the first day of class and go back to it from time to time. N.B. Diversity Statements and Land Acknowledgements added to syllabi without other efforts to make a course culturally-inclusive can be offensive.

Need more resources and examples of land acknowledgements? Check these out:

- NSOE recommends using the following Land Acknowledgement, generously provided by Drs. Ryan Emanuel and Malinda Lowery of the Lumbee tribe, until Duke University completes the process of working with tribe members statewide to come to agreement on a Duke-wide land acknowledgement. Also, check out John Fay's GIS-based Land Acknowledgement. Before using these resources, it's strongly recommended that you read the Land Acknowledgement Pre-Reading Handout.
- Felicia Garcia (Chumash)'s *A Guide to Indigenous Land and Territorial Acknowledgements for Cultural Institutions*
- The Native Governance Center's Tip Sheet and Guide to Indigenous Land Acknowledgements.
- Amnesty International Canada's Land Acknowledgement Resource.
- Northwestern University's Land Acknowledgement (with a beautiful poster and an explanation of what a land acknowledgement is and why we have them).
- Land Acknowledgement from Cagle's syllabus (N.B. see bottom of this page, please be aware that land acknowledgments are contentious and without working with tribal representatives, you are likely to misstep).
- Land Acknowledgment from Sunrise Movement Durham training in November 2019 (also not an expert, but an example of a spoken land acknowledgment in a presentation context).
- Need another example? Here's one from Houston, TX: ""We want to begin this gathering by recognizing that Indigenous Peoples have been an irreplaceable presence of this place (Houston, Texas) for over 10,000 years, are still very much here today, and will be here tomorrow. Today, we conduct this meeting on the ancestral lands of the Karankawa people, a people who were forcibly removed from their land. We are also mindful that we share this place with over 10,000 species of native plants and wildlife that have lived here for thousands of years."

Looking for ways to go beyond the Land Acknowledgement to recognize and celebrate Indigenous people? If so, check out these recommendations modified from Larry Beck's (2021) article *This Land is Their Land*:

- Expand on your land acknowledgement in other class materials, like lectures and readings,
- Incorporate Indigenous Wisdom, views of interconnectedness, relationship, and land management practices in the classroom (see below on Indigenous Science),
- Display Indigenous art,
- Organize a lecture series or guest speakers with local tribal members (and compensate your speakers),
- Foreground the disproportionate impact of disease on Indigenous peoples,

- Incorporate current struggles for maintaining or repairing the environmental integrity of traditional territory.

Looking for resources specific to Canadian First Nations?

- The Truth and Reconciliation Report – Calls to Action #71-76 deal specifically with Missing Children and Burial Information: http://trc.ca/assets/pdf/Calls_to_Action_English2.pdf
- Overview of the residential school system in Canada: http://www.anishinabek.ca/wp-content/uploads/2016/07/An-Overview-of-the-IRS-System-Booklet.pdf
- Truth and reconciliation: https://reconciliationcanada.ca/ and https://indigenouspeoplesatlasofcanada.ca/section/truth-and-reconciliation/
- The Yellowhead Institute has produced "Land Back" and "Cash Back": https://redpaper.yellowheadinstitute.org

Please note that maps of Native lands are often inaccurate, due to changes in Native land boundaries and to the erasure of Native history that was concomitant of colonialization. In the Southeast in particular, it is difficult to be precise in due to the intensity of the colonial project here.

3. **Support Difference.** Learners require a supportive socioemotional environment to focus on class material and learn effectively. Supportive socioemotional atmospheres also result in increased student engagement with course material. Some examples of how to do this can be found at Yale's Resource on Inclusive Classroom Climates. To create a supportive socioemotional environment, you can support difference by **honoring differences** and **encouraging collaboration**.

To **honor difference:**

- **Add pronouns to your syllabus & introduce yourself with them**.
- **Add how to pronounce your name to your syllabus and email signature** (check out: https://namedrop.io/).
- **Read your diversity statement aloud & come back to it again and again**.
- **Greet students by name**. Note that often white teachers find it easier to remember names common in European cultures - if this describes you, reflect on it and work to change this because knowing someone's names and using it affects how often they're praised and acknowledged in class (see Tanner and Allen 2007). Learn how to pronounce students' names correctly. Check out Anpu London's guide, How to Pronounce My Ethnic Name.
- **Learn about your students' needs.** Ramos (2020), and others authors, suggests using a "reference sheet" or short form that asks students about their preferred name, pronouns, and learning needs on the first day of class.
- **Facilitate pre-test values affirmation statements**. Encouraging pre-test values affirmations (like naming their most important value and why it is important to them) has shown to increase test scores among women and minoritized students, particularly in STEM disciplines (e.g., Miyake et al. 2010)
- **Revise assessment to incorporate metacognition, feedback, & revision**. Give students detailed and constructive feedback and allow them to make revisions. Revise traditional assessments to

incorporate self-assessment, mindful assessment, think about giving written feedback rather than grades, provide space for revision from feedback. Give students multiple ways to demonstrate their competency with course material (Storms et al. 2020, p21).

- **Use contemplative pedagogy**. Using contemplative pedagogy, e.g., communion, connection, and awareness, and Mindfulness Awareness Practices (MAPS) (*sensu* Forest and Thompson 2020 and Gill-López 2020 in Storms et al. 2020 referenced below), which supports Freire (1970/2010) anti-oppression pedagogy. See summary of Barbezat and Bush's 2014 *Contemplative Practices in Higher Education* below.
    - Instruct students to pay attention to an anchor - breath, sounds in the room, body sensations for 1-2 minutes.
    - Instruct students to close their eyes and take a moment to identify one word that describes how they're feeling in the moment.
    - For sharing dyads where students might share something they have applied from class or their biggest challenge in the class thus far. This is a metacognitive reflection that helps students become better learners.
- **Provide moderate structure so students can have more equal footing in the classroom.** Moderate structure has been shown to increase course performance for all students, but especially first-generation and black students; moderate-structure interventions include using graded pre-work (like reading questions), graded review assignments, and providing clear avenues for class participation (Eddy and Hogan 2014).
- **Develop person-centered learning goals**. Developing person-centered teaching and learning goals (Morrison 2020, p103 in Storms et al. 2020), defined learning that "protects and promotes students' innate creative capacities of learning from their experiences and to promote wholeness and integration in the individual by focusing on their personal growth, creativity, and development into competent members of society." This is closely related to Tobin Hart's emphasis on teaching to help students create "lives of meaning, value, and success".
- **Emphasize "growth mindset" principles** (Wheeler, 2017).
- **Make grading criteria transparent and easily accessible.** Not everyone comes from the same background or has the same understanding of what a particular assignment should look like. Be sure to level-set the classroom by providing rubrics and clear instructions.
- **View culture as an asset to learning** (Tanner and Allen 2007). Valuing and engaging what students bring to the table (Ambrose et al. 2010, *How Learning Works: 7 Research-Based Principles for Smart Teaching*).
- **Give visual and oral cues for all that is said.** For example, you might used closed captioning, photos and diagrams, and voice over. (Hogan & Sathy 2020, *Inclusive Communication in the Science Classroom* presentation)
- **Allow multiple modes of participation.** For example, give students options to write, talk, use small groups, and participate anonymously (Hogan & Sathy 2020, *Inclusive Communication in the Science Classroom* presentation)
- **Invite students to share their own cultural experiences** (CIRTL INCLUDES n.d.).
- **Help students identify differences and similarities in their opinions** (CIRTL INCLUDES n.d.).
- **Use learning technologies in a culturally inclusive way.** CIRTL INCLUDE (n.d.) recommends the following ways to do so:
    - Post class materials online;

    - Post sample assignment submission;
    - Use 12-14 pt san serif font;
    - Include captions on videos; and
    - Provide PDF versions of handouts in a readable size.
- **Ensure that field activities and opportunities outside of class are accessible to all.** In particular, we recommend reading Maio and Cagle's (2019) research on the role of gender, race, and ethnicity in identity development, as this paper shows examples of how field experiences can exclude some students. Also, consider adding resources and language to your syllabus to help people stay safe while doing outdoor and/or fieldwork:

  Sample Language:

  Resources & Readings Regarding Identity & Fieldwork:
    - Forest Stewards Guild (2022) Preparing for a Queer-Minded Field Season - the Forest Stewards Guild has put together this resource guide to make forestry and field more accessible to LGBTQIA+ people.
    - Demery & Pipkin (2020) Safe Fieldwork Strategies for At-Risk Individuals

  Are you concerned that your identity might put you at increased risk in field situations in this class? If so, please reach out to your instructor and/or TAs right away so we can mitigate risk together.

- **Acknowledge the power dynamics of the classroom**, *i.e.*, you are the faculty member and you have power. To mitigate this consider:
    - ❖ Developing student leadership;
    - ❖ Encouraging discussion and student feedback; and
    - ❖ Acknowledging that everyone in the classroom has an important perspective to contribute.

To **encourage collaboration:**

- **Co-construct the syllabus**. Ramos (2020) invites us to think of the syllabus as an "evolving document" that reflects our own understanding of learning rather than a static contract and also suggests that "students are likelier to follow [the rules] if they have a say in their making" (Ramos 2020, p260). Landau (2021) conceives of co-construction of the syllabus as a type of *constitutive communication* that helps construct social realities and identities.
- **Co-construct group norms** (CIRTL INCLUDES n.d.) (see also developing discussion guidelines below).
- **Acknowledge that everyone has important contributions to make to the class**.
- **Create classroom contracts giving students responsibility for the learning environment**. Embracing "cosmopolitanism", i.e., an ethos of shared responsibility to each other and the learning environment that serves to foster inclusivity (Emdin, 2016). You can also have students come up with group contracts that address individual skills, communication, expectation, group

meeting times, and problem solving (Hogan & Sathy 2020, *Inclusive Communication in the Science Classroom* presentation).

- **Develop student leadership**.
- **Give students clear roles during group work.** For example, the person with the most vowels in their name would be the scribe, most vowels would be the reporter, and the third member would be the facilitator (Hogan & Sathy 2020, *Inclusive Communication in the Science Classroom* presentation).
- **Pair learners into "cosmo duos"**. Creating systems that can pair up students strong in content with those that are weaker in content. Emdin (2016) calls this model "cosmo duos" and once the duos are formed, he monitors quiz/test scores and if the student who was weaker in content increases their quiz/test score, the student who was stronger in content gets a boost on their test score equal to that which the weaker student had gained. Note that this communal style of education is typically anathema to Western European pedagogical practices, but embraces "communal aspects" often valued by other cultures (Emdin 2016, p121), including neoindigenous students. Another term for this "co-constructing a relational space for learning" (Storms et al. 2020, p86).
- **Allow students to present syntheses of the course-content to each other**. Develop a learning community among students (Tanner and Allen 2007). Rehumanize learning by allowing students to "synthesize course materials, class discussion, and their own embodied resonance into resonant texts and present them to each other" (Storms et al. 2020, p87). Allow students to teach each other with peer-to-eer explanations (Ramos 2020).
- **Make space for students to question and engage in dialogue** (Ramos 2020). Landau (2021) suggests the following techniques for facilitating student-centered dialogue:
    - *Conversation roles*: Students are assigned roles (e.g., questioner) to ensure that different viewpoints and marginalized voices are heard.
    - *Conver-stations*: Some students rotate stations while others stay in place to bring new ideas to conversations.
    - *Fresh person standing summary*: Students talk with someone they don't know well and share what they learned from the other person with the whole group.
    - *Podcast*: Students interview other people, ensuring that marginalized voices are heard.
    - *Speed dialoguing*: Students sit face-to-face and chat with someone they don't know well.
    - *Tape recorder*: One student listens, and later paraphrases, while the other talks.
- **Add explicit discussion guidelines to your syllabus**. Better yet, co-construct the terms of discussion. Ramos (2020, p31) gives us some guidelines on questions we can ask students as they form discussion guidelines, *e.g.,* how do you define a productive and/or good discussion? What makes some issues challenging to discuss? What happens when people don't respect each other during a discussion?
- **Provide multiple mechanisms for participation.** These could include clickers, small groups, etc (Eddy and Hogan 2014; Ramos 2020)

While collaboration is a key component of culturally inclusive pedagogy, **small groups can exacerbate identity-based power dynamics and bias**. To avoid these issues consider:

- Explicitly outlining the expectations and norms for interpersonal interaction in small group work;

- Sharing common problems in small groups and solutions;
- Emphasizing the importance of developing skills to embrace human differences;
- Using teacher-assigned groups for small stakes group work, but allowing students to choose their own groups for high stakes group work (pers. comm. Jamie Browne 9 Apr 2021);
- Using observations of small group observations for low stakes group work to determine which folks would work well together on a higher stakes group assignment (pers. comm. Jamie Browne 9 Apr 2021).

4. **Forge relationships.** Students need to forge positive relationships to succeed in the classroom. Also, consider your teaching persona - students learn best from "warm demanders" - those teachers that are both supportive & open, but also have and acknowledge their high expectations. This means, maintaining high expectations for all students (Tanner and Allen 2007). Don't forget to cultivate individual relationships with students (Wheeler 2017).

To express interest in your students (University of Kansas Center for Teaching Excellence n.d.)**,**

- use a pre-class survey,
- make chit-chat before class starts, &
- Meet with students outside of scheduled class time (CIRTL INCLUDES n.d.).

To encourage open communication with you,

- solicit feedback from students during class,
- allow students to give anonymous feedback with a link, &
- indicate your availability for office hours ("many students from marginalized groups assume they should not bother instructors" University of Kansas Center for Teaching Excellence n.d.).

Create positive group dynamics,

- add discussion guidelines to syllabus,
- be aware of nonverbal communication (CIRTL INCLUDES n.d.),
- encourage reflection and discussion, &
- develop a learning community among students.

Create a warm climate,

- create personable and encouraging introductory exercises (CIRTL INCLUDES n.d.),
- share personal, but appropriate details about your life,
- tell students that they belong here (and even share your own struggles with imposter syndrome) (Hogan & Sathy 2020, *Inclusive Communication in the Science Classroom* presentation) &
- use a warm tone in your syllabus (see this University of Utah resource on tone).

Remember, it's important to cultivate an empathetic relationship with students, acknowledging one's own perspectives and how a particular student's background may impact student learning (modified

from Storms et al. 2020, p21). Landau (2021) suggests that instructors pay particular attention to the affective or emotional domain of the classroom, recognizing that repressing emotions as we cover course content can be dehumanizing and exclusionary.

Moreover, we should aim to "create a class climate in which students feel comfortable critiquing the instruction, including the selection of topics, materials, and pedagogy." (University of Kansas Center for Teaching Excellence n.d.) To do this, we must understanding what constitutes a true "safe space" and create it (Adamo 2020); note that the discourse on "safe spaces" is complicated and the goal here is to create an atmosphere where people are included and dialogues that make people feel unsafe (rather than simply uncomfortable) are excluded.

Note on COVID: Check out this supportive course introduction message from NCSU addressing COVID

5. **Center Voice from Groups that Have Been Marginalized***. Here are some ways you might do this:

- **Present course content in a variety of ways**, e.g., multiple forms (videos, readings, podcasts, etc.) and multiple means of engagements (Storms et al. 2020, p21);
- **Challenge racist and prejudicial material,** including remarks made in the classroom, in course materials, or that form part of the historic basis of your discipline (CIRTL INCLUDES n.d.),
- **Make a vow that only X% of your readings come from white folks**. For example, what if your class only had 25% of its readings written by white people? What if marginalized authors dominated the literature covered? (See list of BIPOC environmental scholars, activists, and leaders below.);
- **Have students bring in literature from authors representing marginalized groups**;
- **Have students read biographies about scientists from marginalized perspectives** (e.g., the Biography Project by the Society for the Advancement of Chicanos and Native Americans in Science);
- **Bring in speakers from marginalized perspectives**, e.g., black, brown, Asian, Latinx, differently abled, English as second language speakers, LGBTQIA, etc. (Warren-Grice 2018). (See list of BIPOC environmental scholars, activists, and leaders below.);
- **Use local examples** (CIRTL INCLUDES n.d.), for example, you might use local guest lecturers, readings written by local authors, examples drawing from local history or current events.
- **Consider whether "literature" has to be only academic papers published in journals**. Can you include opinion pieces, essays, and book chapters? What about videos, podcasts, and curated social media? See Edutopia's Lopez and Paniewiez 2020 for more discussion.
- **Use technology to implement Universal Design Principles** (UDL), like video streaming, clicker polls, etc. (Storms et al. 2020, p21);
- **Discuss how diversity enhances education and science with students** (Wheeler, 2017);
- **Examine the lack of diversity in your discipline through discussion and projects** (Wheeler, 2017);
- **Craft assignments that allow for "life history interviews, personal stories of survival, and autobiographical writing"** as these activities can both personalize and diversify student experiences in the classroom (CIRTL INCLUDES n.d.);
- **Assign readings on diversity in the discipline** (Wheeler, 2017); and

- **Explicitly state when "covering a theory or research by a member of a marginalized group"**, and perhaps "show an image of the person; students in the same group benefit from seeing examples they can clearly identify with, just as in traditionally dominant groups do in their own lives." (University of Kansas Center for Teaching Excellence n.d.).

*****Note on terminology: there is no agreement on the proper terminology to use to describe those groups that have been historically and are currently excluded from conversations and power. We used the term marginalized here to show that one group has historically had and used power over other groups.

6. **Acknowledge Colonialization**. Here are some ways you might do this:

- **Acknowledge any Eurocentric foundations of the discipline you teach**, and discuss relevant associations with racism, sexism, and prejudice of all forms.
- **Include readings about diversity, equity, and inclusion** (Hogan & Sathy 2020, *Inclusive Communication in the Science Classroom* presentation). If you teach a biology-based course, check out Project Biodiversify for resources for educators and students.
- **Invite students to discuss "how anti-racist policies and procedures can be implemented inthe classroom"** (Ramos 2020, p46).
- **Talk about the backgrounds of the authors of the literature you are reading in your class**. Where were they trained? By whom? Did they hold racist ideas themselves?
- **Talk about the origin of key ideas in the classroom**. Examples:
    - If you are using Linnaean taxonomy in the classroom, then discuss how Linnaeus also used the 12th edition of *Systema Naturae* (1767) as a place to classify humans in a racist and dehumanizing way.
    - Garrett Hardin as an eugenicist and "nativist." Article about his lesser known (at least to me) beliefs. Interesting article about he and his partner's chosen double suicide.
- **Generate new cultural connections within the context of your discipline in the classroom** (Tanner and Allen 2007).
- **Address tensions that arise in the classroom** (Ramos 2020).
- **Develop the relevance of the content to the room of people that are learning** (Tanner and Allen 2007).
- **Use global course content so students from various backgrounds can connect to the material** (Virguez 2020).
- **Use non-stigmatizing and bias-free language.** Some terminology commonly used in the college classroom and university settings can stigmatize students or reveal underlying bias, and much of this language has its origins in colonialization. For example, using "pre-history" instead of "pre-contact" or "stakeholders" instead of "rights and title holders" can be offensive to indigenous people (Indigenous Corporate Training, Inc. 2017). If you need more sample language, think about stakeholders as collaborators or contributors, community members, intended users, or organizational leaders (Robinson 2021). It is also important to remember that people are people first. They are not vulnerable or disabled people or groups, instead they are groups that have been disproportionately affects or groups that have been marginalized or people with disabilities (CDC Health Equity Style Guide 2020). Our objective is to maintain humanity in the language we use. You'll notice that some of the figures in this document violate

this rule, using “marginalized voices” instead of “voices of people/groups that have been marginalized”.

Other resources for acknowledging colonialization:

- See the Wilderness Society’s curriculum on public land, which addresses race and land use legacies.
- See Ruth Tyson, *An Open Letter to the Union of Concerned Scientists: On Black Death, Black Silencing, and Black Fugitivity* (2020) (important perspective on living and working within White dominated spaces).
- See *The Characteristics of White Supremacy Culture from Dismantling Racism: A Workbook for Social Change Groups by Kenneth Jones and Tema Okun, ChangeWork, (2001).*

7. **Embrace Active Learning.** This means providing space for students to construct knowledge themselves. Edmin (2016) uses the terminology of cogenerative dialogues and coteaching to facilitate students’ senses of autonomy and efficacy, key precursors to effective learning. Other researchers indicate that it is important to pair active learning activities with metacognitive reflection, i.e., reflecting on one’s own learning (Ambrose et al 2010).

It also means becoming familiar with a myriad of techniques and terms (e.g., think-pair-share, minute papers, peer instruction, team learning, case-based learning). If you want to learn more about active-learning, especially in the context of diversity, equity, and inclusion, check out Miller and Tanner (2015) *A Portal into Biology Education: An Annotated List of Commonly Encountered Terms.*

To practice active-learning consider:

- **Co-creating the syllabus each semester with your students**;
- **Inviting students into a sustained dialogue on your pedagogical practices in the classroom**, this might mean invited feedback on (from Emdin 2016, p74-5):
    - How to close and open classroom sessions,
    - Positive practices that you engage in that you should more often in class, and
    - Practices students and teachers can do together to engage students effectively.
- **Centering active-learning in the classroom**. This might include:
    - Providing students with teaching materials you’ve used in the past and giving them free rein to modify them and create new materials and have them teach the topic in your stead (Emdin 2016, p93),
    - “Creating space for peer-to-peer teaching” (Emdin 2016, p99)
- **Guiding and providing opportunities for metacognition** (i.e., reflecting on the learning process).
- **Providing multiple ways for students to demonstrate competency with course material**, including ability to propose assignments based on your learning objectives (Storms et al. 2020, p21-2).
- **Using transformative learning approaches** (*e.g.*, Acceptance and Commitment to Empowerment-ACE, Wong and Hilario, 2020).
- **Creating opportunities for real-world classroom assignments.** Students can give public presentations, engage in service learning, or work with community partners.

- **Emphasizing transferable skills rather than rote knowledge** (e.g., analysis, communication, synthesis; think: higher order Bloom's taxonomy).

N.B. While Paulo Friere and Donaldo Macedo, authors of *Pedagogy of the Oppressed*, recommend not teaching facts or relying on memorizing, pedagogical literature suggests that innovation and mastery of higher order skills requires a firm foundation of facts and knowledge. This is the basis of Bloom's taxonomy, but also shown in more recent pedagogical reviews, e.g., *Make It Stick* (find a review and partial summary here).

Are you looking for even more tips for creating a culturally inclusive classroom? If so, check out the CIRTL INCLUDES Inclusive Pedagogy Framework.

Online Teaching and Inclusivity

Are you looking for resources on how to teach online in a more culturally inclusive way. If so, check out these suggestions from the *Chronicle of Higher Education* (get past the fire wall by signing into Duke Library first).

- Darby, F. July 23, 2020. 6 Quick Ways to Be More Inclusive in a Virtual Classroom. *The Chronicle of Higher Education.* Key points include:
    - Apply Universal Design for Learning (UDL) paradigms online, specifically by offering lots of choices. For example, use pre-recorded videos that also include captions and/or transcripts. If you assign students to read a text, consider offering a version of you reading that same text aloud (e.g., like an audiobook). Offer options for assignments (e.g., written or video).
    - Apply culturally responsive pedagogical techniques. First, remember that the students that learn best online are self-directed learners that do well in individualist (think: white, Anglo-centric culture) cultures. Use other techniques to build community and attend to emotion, e.g., co-create classroom values online, have students share pictures of how they're feeling, remind students you're there to help,
- Hogan, K. A. and Sathy, V. April 7, 2020. 8 Ways to Be More Inclusive in Your Zoom Teaching. *The Chronicle of Higher Education.*
    - Have students edit their names and add pronouns when they sign onto Zoom.
    - Establish group norms around Zoom meetups, e.g., keeping audio muted, how to leave a session early, etc.
    - Give students multiple ways of participating, e.g., raising online hand or chat box
    - Close Zoom meeting with intention, e.g., try a metacognitive reflection technique like having them identify the muddies point. Also, invite students to chat informally with you after the Zoom session.
    - Use the breakout-room tool for small group work. Assign students to report back to the full group, e.g., the person with the largest pet. Use Google doc work to hold folks accountable.
    - Provide resources for asynchronous learning, e.g., recorded videos, audio files, etc.

- Harriet W. Sheridan Center for Teaching and Learning. 2021. Inclusive Strategies for Student Camera Use During Zoom Class Sessions. Brown University.

Inclusion in the Workplace

As educators, we must ensure that the workplace in which we are embedded models and embraces inclusive practices. Doing so allows for enhanced teamwork, better problem solving, and a more welcoming community for students. We can create more inclusive workplaces by embracing recommended practices for inclusion and communication.

Best Practices for Inclusion in the Workplace

Michelle Kissling (2021), an ecologist and member of The Wildlife Society, provides five best practices for workplace inclusion, and recommended behaviors to support those best practices. These include (and are paraphrased from Kissling 2021):

1. Develop and Value Personal Capabilities
    a. Incorporate “personal capabilities” - such as diplomacy, communication, and conflict resolution - into hiring processes and performance reviews
    b. Conduct “360 reviews”
    c. Assess the breadth and depth of personal capabilities in your organization regularly.
2. Hire and Cultivate Inclusive Leaders
    a. Invest in hiring processes that include criteria focused on inclusive leadership capacities
    b. Conduct multi-level 360 reviews of leadership
    c. Offer inclusive leadership training to students and early-career professionals
3. Provide Access to Resources
    a. Provide access to trainings
    b. Offer trainings on available counseling and mediation services
    c. Assess the efficacy of mediation services
    d. Keep a list of professionals outside your organization that can provide these services
    e. Appoint a neutral ombudsperson for conflict mediation and confidentiality
4. Adopt Inclusive Policies and Procedures
    a. Adopt new policies that explicitly address inclusion, separate from diversity and equity
    b. Address microaggressions, bullying and favoritism in these policies
    c. Clearly define inappropriate behaviors in a way that minimized subjectivity
5. Be a Good Ally
    a. Be a good listener.
    b. Own your mistakes.
    c. Be open-minded.
    d. Stand up against disrespect publicly.
    e. Appreciate that everyone has their own story

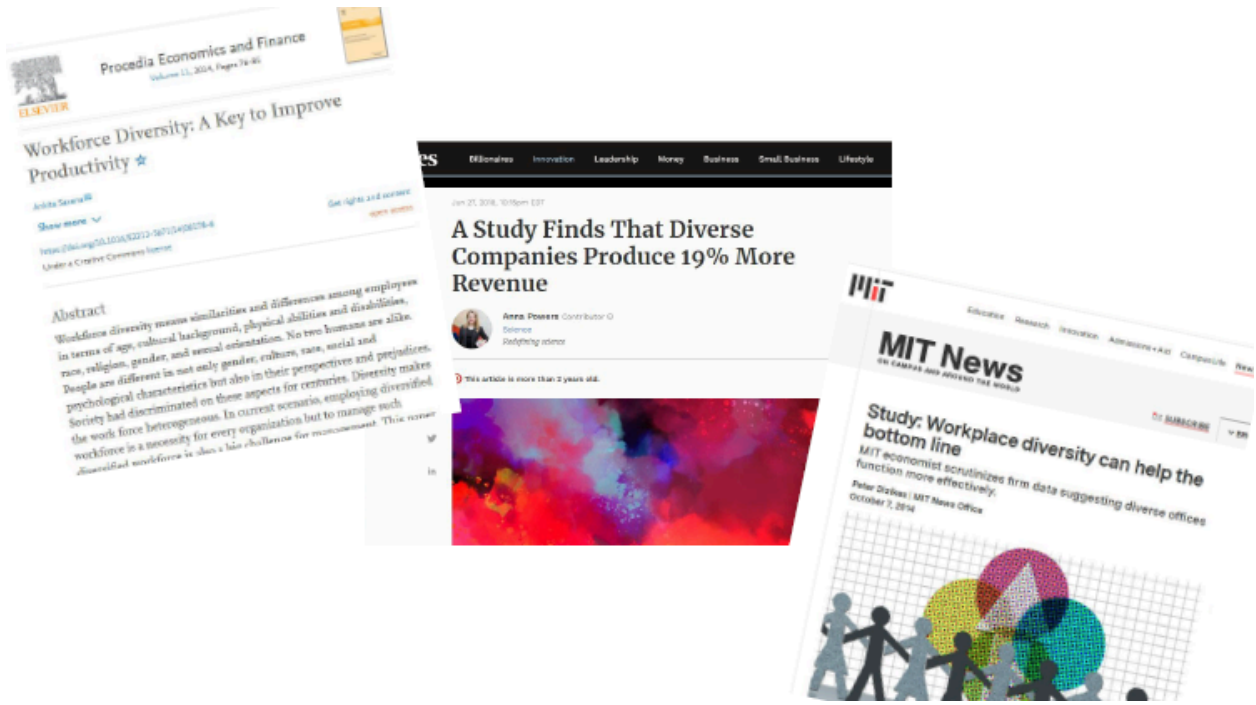
Culturally Inclusive Communication in the Workplace

What is Culturally Inclusive Communication? Culturally Inclusive Communication allows us to use one element of the workplace environment, communication, to create a culture of inclusion. This means that we are using communication – a way of exchanging information – in a way that allows everyone, no matter their background, to feel they belong.

Being a culturally inclusive communicator means being flexible, seeing how others are responding, and making adjustments. Remember, our goal is to create a space where everyone feels they belong, so the guidelines below might not always be appropriate.

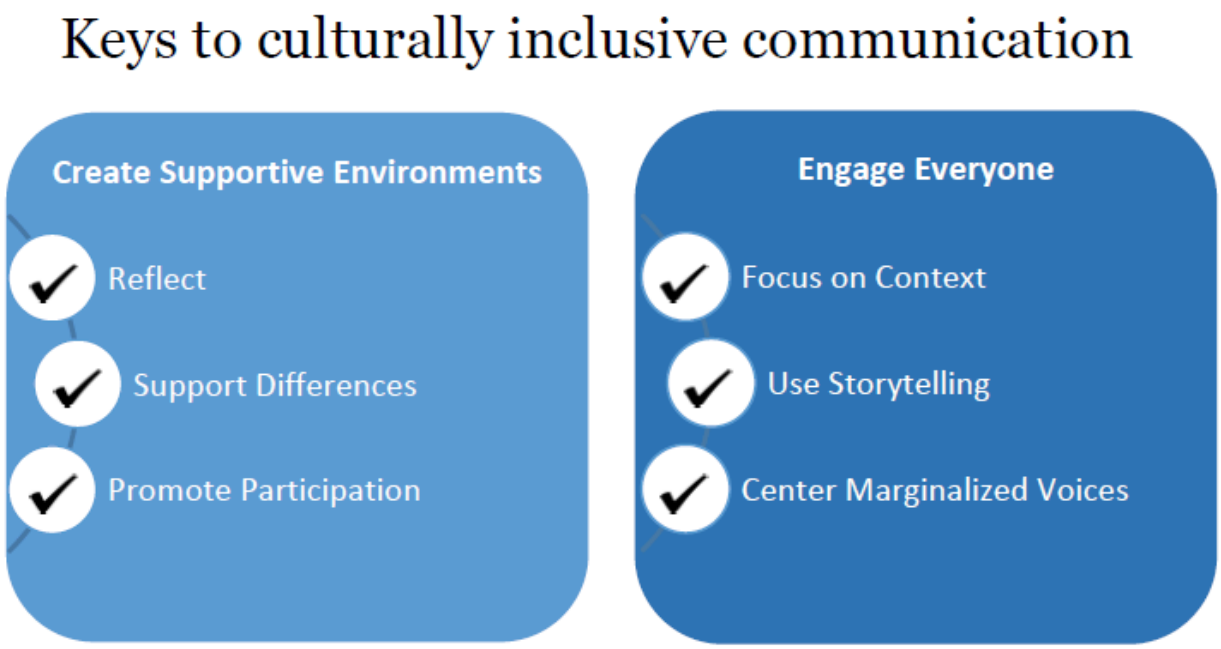
Why do we need culturally inclusive communication in the workplace? It's the right thing to do. The golden rule – "do unto others as you would have them do unto you" (Matt. 7:12) – is found across cultures. In Islam, it is expressed as "No one of you is a believer until he loves for his brother what he loves for himself." In Taoism it is said that you should "regard your neighbor's gain as your own gain; and regard your neighbor's loss as your own loss." The golden rule is part of the human compact and it is important in this context because nobody likes being excluded.

The second reason to embrace culturally inclusive communication is that we need it: Racism, colorism, discrimination, and prejudice in the American workplace and education system has resulted in a continued loss of agency for many workers. When people in power appropriate the agency of folks from non-dominant cultural backgrounds, both the workplace and education becomes exclusionary. Exclusionary practices lead to lower performance, including lower revenue, productivity, and problem-solving capabilities.



Finally, cultural differences really exist. We find different orientations to time, hierarchy, and commitment to others along international, regional (i.e., intra-American), religious, ethnic, racial, gender, and sexual-orientation continuums.

How do we communicate in a way that is culturally inclusive in the workplace?



Interested in learning more about these six recommendations? Check out this video**.**

Reflection.

Mindful Reflection

Mindful reflection is an *active process* where we embrace curiosity and:

- Monitor our own thought processes and emotions,
- Grapple with ambiguity,
- Consider different perspectives,
- Look closely,
- Use metaphor and analogy, &
- State overarching principles and themes.

The benefits of reflection are manifold.

deepens learning | enhances critical thinking skills | increases creativity | improves retention | promotes transfer | reduces anxiety | increases feelings of well-being | improves social skills | boosts concentration | enhances emotional regulation

(Langer 1998; Moscardo et al. 2017 and more)

Use mindful reflection in the workplace.

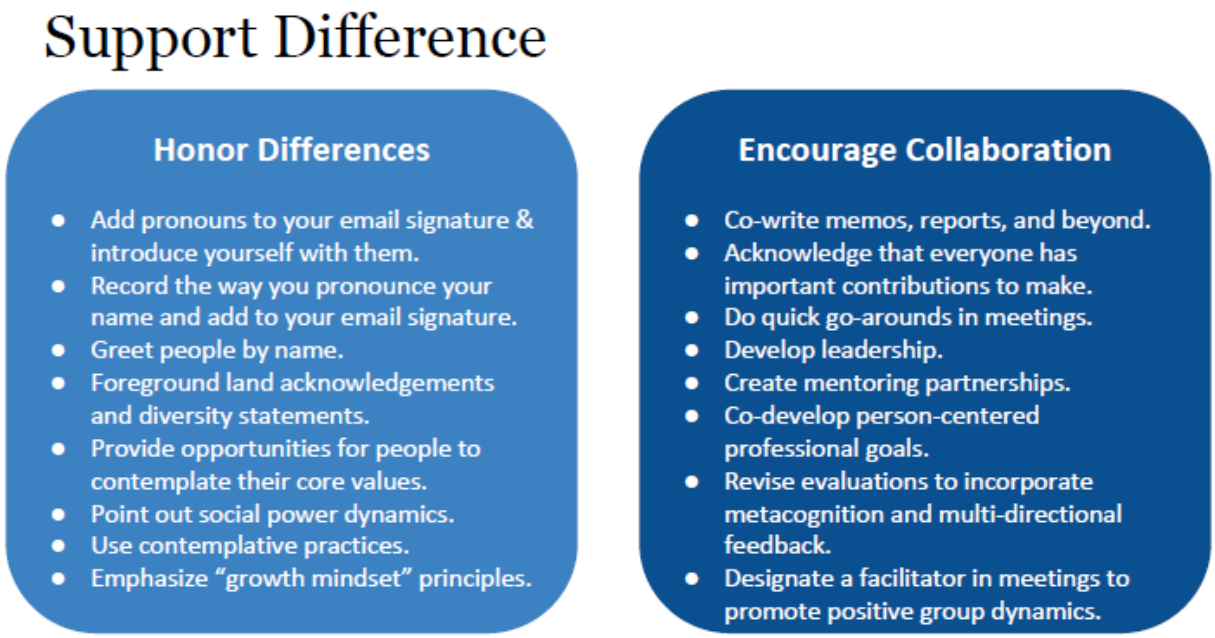
What questions can you ask?

- **Self-monitoring**: How do you feel right now? What does this make you think about? How are your feelings influencing your thinking?
- **Ambiguity**: What is unclear about this? Is this an either/or situation?
- **Different perspectives**: How might someone from a different background see this? How will this be viewed in 10 years? 100? How might an "expert" see this? How might a community member see this? Can we approach this differently?
- **Look closely**: What are the details of the situation? How might they be influencing outcomes?
- **Metaphor & analogy**: What does this remind you of? What other systems operate similarly?
- **Overarching themes**: What is the theme here? What values are at play? What are the common narratives around this topic?

If you are working with colleagues or interacting with the public...

- Encourage people to participate in reflection-oriented workshops.
- Make time during meetings and presentations for mindful reflection.
- Ask questions, both rhetorical and real.

Support Difference.

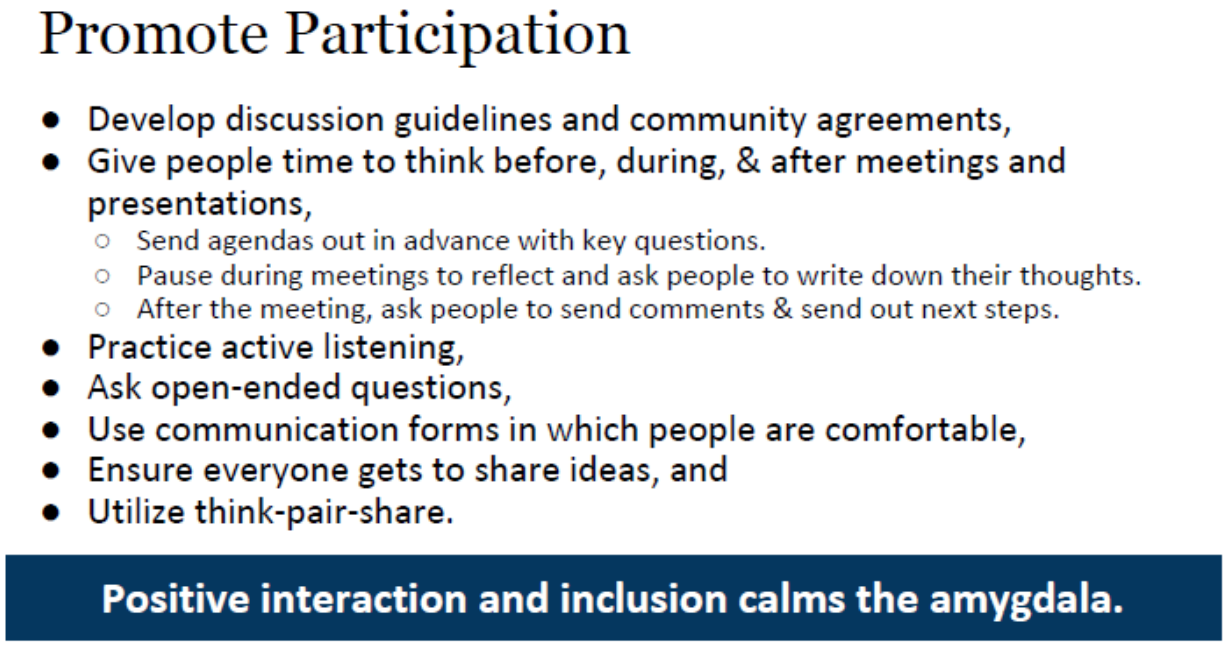


We can also support difference by **using non-stigmatizing and bias-free language.** Some terminology commonly used in the workplace and university settings can stigmatize staff, faculty, or students and reveal underlying bias. Much of this language has its origins in colonialization.

For example, using "pre-history" instead of "pre-contact" or "stakeholders" instead of "rights and title holders" can be offensive to indigenous people (Indigenous Corporate Training, Inc. 2017). If you need more sample language, think about stakeholders as collaborators or contributors, community members, intended users, or organizational leaders (Robinson 2021).

It is also important to remember that people are people first. They are not vulnerable or disabled people or groups, instead they are groups that have been disproportionately affects or groups that have been marginalized or people with disabilities (CDC Health Equity Style Guide 2020). Our objective is to maintain humanity in the language we use. You'll notice that some of the figures in this article violate those rules, using the term "marginalized voices" instead of "voice of groups/people that have been marginalized."

Promote Participation.



Provide Context. Research shows that context matters. To communicate effectively, we have to contextualize our work in reference to the cultures in which we're embedded. We have to acknowledge that what we emphasize is a function of culture and our culture isn't always fair.

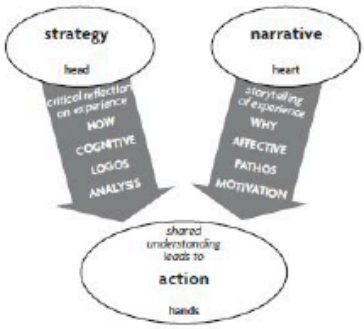
If we don't acknowledge this, we trigger the amygdala, we trigger social and emotional threats and people can't engage fully.

Use Storytelling.

Use storytelling to engage others.

Why Storytelling?

- Storytelling is a universal communications style.
- Storytelling stimulates mirror neurons.
- Storytelling is memorable.
- Storytelling is critical for action.



How Do We Tell Stories?

- **Make it stick.** Simple. Concrete. Credible. Unexpected. Emotional.
- **Present the community context.** Who is affected? Why do they care?
- **Provide a plot.** Overcoming a challenge!
- **Use universal concepts.** Love. Birth. Death. Joy, Family. Suffering. Change. Community. Power.
- **Connect tangibles with intangibles.**
- **Present non-polarizing values.** Interconnectedness. Ingenuity. Protection. Stewardship.
- **Adopt a calm and friendly tone.** Moderation is key.

(Lopez 1986, 1989,Paris 2013, Tallmade 2011, Visser 2010 - Image from Ganz 2011)

Center Marginalized Voices. Note on terminology: there is no agreement on the proper terminology to use to describe those groups that have been historically and are currently excluded from conversations and power. We used the term marginalized here to show that one group has historically had and used power over other groups.

Center Marginalized Voices

Materials Representing Marginalized Groups

- Readings
- Case studies
- Journal Articles
- Podcasts

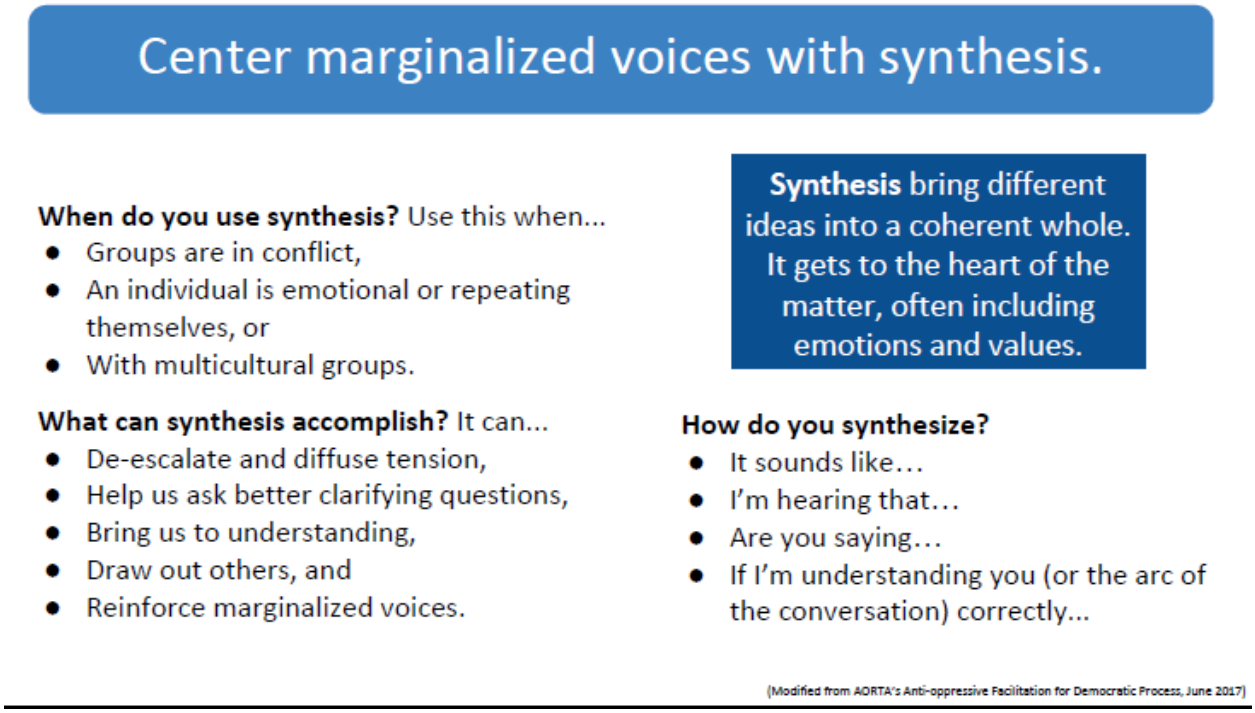
Materials by Authors from Marginalized Groups

- Guest speakers
- Academic work
- Essays
- Popular Media
- Social Media
- Podcasts/Videos

Materials Provided by Audience

What materials can participants bring and contribute?

How can participant's own experiences and cultures be brought into the discussion?



Creating Inclusive Organizations and Leadership.

As a continuation of Elizabeth Lesser's (2020) ideas on Old Power Ways vs New Power Ways as presented in *Cassandra Speaks*, or White Supremacy Culture vs Inclusive Culture, Brené Brown offers us a pathway to organization change and leadership to create a more inclusive and innovative culture.

Brown (2021b) uses the term "armored leadership" to describe conventional or old power leadership. Armored leadership is based on self-protection. Alternatively, "daring leadership" represents ways of leading that are based on "empathy, accountability, and learning." Brown (2021a) particularly emphasizing the quality of *wholeheartedness*, which she defines as "engaging in our lives from a place of worthiness, cultivating…courage, compassion, and connection."

Brown (2021a, 2021b) categorizes different categories of armored leadership, their indicators within an organization, and their alternatives, referred to as "daring leadership":

Armored Leadership: Acting like one knows it all already.
Indicators:
· Being afraid of saying "I don't know." Instead, we should encourage folks to ask clarifying question, to learn want to learn more, to say "I don't understand." We can challenge our team to ask questions. Brown (2021a) saying that "the best, most transformational leaders do not have answers, they have stunning, I mean breath-taking questions."
· Feeling that asking for help is a weakness. Brown's (2021a) research shows that asking for help from a superior actually cultivates trust. Asking for help shows that you care and that you will be open about uncertainty and mistakes.
Alternative: Being a learner and cultivating learners.

Armored Leadership: Tapping out of hard conversations.
Indicators:

· Failing to have hard conversations. Hard conversations including "performance feedback, conversations about race, gender, class, or other complex subjects" (Brown 2021a). Healthy organizations have difficult conversations and people are trained how to do it.

· Thinking that "kind" and "honest" are mutually exclusive. The kindest thing to do is to give people honest feedback; it can help them grow, gain respect, and even keep their job (Brown 2021a). Honest feedback still must be given with empathy.

· Tolerating bad behavior. In daring leadership, "[e]veryone gives feedback, everyone receives it, everyone values it" (Brown 2021a).

Alternative: Leaning into vulnerability and discomfort.

Armored Leadership: Using shame and blame to manage others and ourselves.
Indicators:

· Finding it difficult to take risks.

· Being reluctant to speak up because of fear of belittlement. We need to model empathy and compassion so folks can speak up (Brown 2021a).

· Back-channeling. That is, talking about people or thinking about how others are wrong rather than discussing it openly with them or at a meeting

· Blaming and finger-pointing.

· Showing favoritism. This makes those that are unfavored feel diminished.

· Gossiping.

· Harassing.

· Using "the invisible army". Talking to someone using "we", e.g., "we've all been talking and…" or "we're all really concerned…" (Brown 2021b). Instead, we should get everyone in the room and talk about it or be strong enough to share our own opinion without invoking the "army".

· Nostalgia. This is when we say "we didn't do those kind of things before." Brown (2021b) suggests that loving the way things used to be is code for wanting everyone to "know their place" again.

· Perfectionism. Brown (2021b) describes this as a "20-ton shield that we carry around" to protect us from judgement, shame, and blame.

· Ranked performance. Brown (2021b) suggests that there is no data that ranking people "does anything but crush innovation, creativity, and collaboration."

Alternative: Leading from a place of empathy, accountability, and learning.

Armored Leadership: Fostering scarcity-driven culture.
Indicators:

· Choosing not to acknowledge good work. Data show that celebrating small wins keeps folks motivated.

· Using fear and uncertainty to drive productivity. Instead, leaders can name and normalize fear and uncertainty, deescalating its affects rather than leveraging them.

· Rewarding exhaustion. Alternatively, leaders can express the need for healthy work-life boundaries and balance, noting that late hours and all-nighters are not sustainable.

· Tying value to performance. Leaders should value people as people and help them see their value. For example, Brown (2021b) suggests having employees or team members prepare a statement sharing where they think they contribute a lot of value.
· Using comparison and rankings. We can foster healthy competition by creating competitive situations that foster collaboration within the group.
Alternative: Committing to and modeling that we are and have enough.

Armored Leadership: Driving a fitting-in culture.
Indicators:
· Feeling like one needs to be a different person at work. Brown (2021b) says we need to "stop alternating and start integrating, one-person, one [me]". This ties tightly with diversity, equity, and inclusion, as the alternative leadership style helps people bring "themselves, different viewpoints, diversity representation, inclusion, equity across the board at all intersections."
· Not practicing professed commitments to DEI. In a belonging culture, "the commitments to diversity, equity, and inclusion are priority practices" across every area of the organization, vertically and horizontally (Brown 2021b).
· Holding people to a narrow standard. Instead, we can acknowledge people "for their unique gifts and contributions" by rewarding and prioritizing diverse perspectives through our hiring, reward systems, and framing of issues (Brown 2021b).
· Dismantling systemic bias reactively. The alternative is to develop a proactive approach to DEI that allows the organization to continuously dismantle systems of privilege.
· Ignoring the importance of care and connection. Brown (2021b) says that "[i]n a belonging culture, care for and connection with others are seen as irreducible requirements for leading."
Alternative: Cultivating a belonging culture.

Armored Leadership: Leading reactively.
Indicators:
· Having scattered and reactive delegation processes. Instead, we should have deliberate and integrated "ongoing organizational strategies" (Brown 2021b).
· Being action-drive. The "get it done now" mentality leads us to find suboptimal solutions to problems because we haven't adequately defined the problem itself. Brown (2021b) quotes Einstein here, who said "If I had an hour to solve a problem, I'd spend 55 minutes defining the problem and five minutes solving it." The alternative is "invest[ing] in problem identification and definition" (Brown 2021b).
· Not cultivating systems for conflict resolution. Here, Brown quotes James Clear who says, "We don't rise to our highest goals. We fall to the level of our most broken systems." Brown also advocates for processes that allow us to confront mistakes, talk them through, learn and improve.
Alternative: Leading proactively and strategically.

Armored Leadership: Resisting change.
Indicators:
· Feeling fear of irrelevance. When we fear change, it's often because we fear that we will become irrelevant. So we shut down to learning and curiosity. Instead, we can drive a culture based on continual skill-building, which bolsters confidence and increases adaptability.

· Becoming territorial, cynical, or critical. The alternative is being "open, collaborative, and curious about the future and what is possible" (Brown 2021b).
Alternative: Embracing change.

Reverse Mentoring.

Brene Brown also interviewed career coach Patrice Gordon to discuss the practice of reverse mentoring. Reverse mentoring is when a junior team member, often from a historically marginalized group, mentors a senior staff member. In this, the leader must lean into vulnerability so that the junior mentor can give them difficult feedback and amplify the voice of underrepresented people, particularly in decision making.

This approach then serves two purposes, first it can help leaders grow and avoid what Brene Brown calls "the biggest shame trigger at work," which is fear of being irrelevant. It can also increase the confidence and power of the younger mentor.

Gordon also notes that the following conditions need to be met for successful reverse mentoring; the process must:

- Begin in an emotional safe working environment where the organization has already acknowledged ways in which they've mis-stepped or done wrong in the past;
- Have a clear structure with a stated purpose and outcomes,
- Include an independent person for mentees and mentors to talk to about the relationship or any problems that arise, and
- End with a shared, group space to reflect on the experience.

In addition, the younger mentor and the older mentee must enact certain relational stances, for instance:

- Mentor and mentee should start the process by talking about who they are rather than what they do;
- The mentor must be ready to receive feedback even if it's given in a raw or clumsy way;

Gordon also notes how important it is to be surrounded by love to feel that we can take healthy risks and to have role models as we develop. Gordon also let's go of what some might perceive as missed opportunities or closed doors, saying "what is meant for you, will not miss you".

Looking for more resources? Check out Patrice Gordon's TED talk.

Allyship

Hauck (2021) also recommends creating a culture of allyship in the workplace, particularly encouraging those from the dominant caste - white, cis-gender, men - to work to support those from groups that have not traditionally held positions of of power and privilege. Doing so increases the job satisfaction, mental health, enthusiasm, confidence and commitment of members of marginalized groups while

increasing support from others (Hauck 2021). There are several ways to be an ally and the following list has been modified from Hauck (2021):

1. Go public with your intention to be an ally,
2. Embrace a growth mindset and tell others that you are ready to listen and learn,
3. Reflect, read about, and watch media about privilege,
4. Talk with folks from underrepresented groups and ask if folks need mentorship or require particular resources and training or need some other form of support,
5. Become partners with women and folks from marginalized groups,
6. Speak up when you see microaggressions,
7. Take a step back and allow others to take the lead, especially those from marginalized groups,
8. Model new power ways, inclusive leadership, and daring leadership (sensu Elizabeth Lesser and Brene Brown),
9. Acknowledge the impact that your words may have or have had and invite feedback,
10. Encourage positive professional interactions among folks from all groups at work and recruit others to take on allyship roles, and
11. Invite other folks to attend discussions about equity in the workplace, especially those from traditionally dominant backgrounds.

Inclusive Online Discussion Guidelines

Whether sharing ideas in a comment thread, an online forum, or an email chain, it is important to communicate inclusively. Following the inclusive guidelines below helps people to hear your ideas more clearly and allows them to feel comfortable responding.

Abide by Common Commenting Standards. Commenting standards allow people to engage in informed debate on difficult topics, without creating hostility. Typical standards include no name calling, no personal attacks, no obscenity, no vulgarity, and no SHOUTING[i].

Stay on Topic. When engaging in online discussion, be sure to focus on the issue at hand. Staying on topic helps us avoid insulting others or bringing up past issues that aren't relevant to the current one. Staying on topic allows everyone to focus and understand the issue at hand.

Using the best practices of professional writing can help you stay on topic: use topic sentences, only include as much detail as necessary, and be succinct.

Provide Evidence. Back statements with evidence and sources, this will help others understand your thought process[ii].

Express Yourself without Blaming. When we have a personal or emotional connection to a topic, it is especially important to express ourselves in a way that works toward *mutual understanding*. One technique is to use non-violent communication (NVC), which emphasizes our own responsibility for our feelings rather than placing blame. To practice NVC:

1. **State Observations:** Without any judgment, observe what is happening that you like or dislike. These observations should include only what you can see or hear, not how you interpret it ("When I saw…").
2. **State Feelings:** Say how you feel when you observe this action ("I felt…").
3. **State Needs:** State the important needs you have that are connected to those feelings ("because my need for X isn't met").
4. **Make Requests**: Make a specific request that might help attend to those needs ("Would you be willing to…")[iii].

(Modified slightly from Non-violent Communication: How to Use it at Work, 2021, which is a good place to go if you want to see some examples)

Push Back Politely. When a statement is made that lacks evidence or seems inconsistent, be open to understanding and politely ask for more evidence or point out inconsistencies that you see.[iv]. Example sentence starters include[v]:

· "I'm curious and I want some clarity on X."

· "Could you share what led to this conclusion to help me understand your perspective?"

· "I'd like to see the data to understand . . ."

· "Could you point to a specific example or occasion?

· "Let's clarify expectations so we can get on the same page."

· "I hear your concerns on X. Perhaps we could find a compromise with Y?"

(Sentence starters from Non-violent Communication: How to Use it at Work, 2021)

Acknowledge Mistakes. If you failed to abide by the guidelines or believe that you have caused damage unintentionally, acknowledge your mistakes. This is a brave practice that promotes civil discourse and accountability.

Speak up for Civility. Pledge to speak up when you read or hear name-calling or stereotyping. As leaders in our fields and role models to our students, it's important that we model good citizenship[vi].

References

[i] "Comments," Help, accessed August 22, 2021, https://help.nytimes.com/hc/en-us/articles/115014792387-Comments.

[ii] Katherine Schulten, Michael Gonchar, and Caroline Crosson Gilpin, "Ideas for Productive Discussion: Reflections on Our Civil Conversation Challenge," *The New York Times*, December 15, 2016, sec. The Learning Network,

https://www.nytimes.com/2016/12/15/learning/lesson-plans/ideas-for-productive-discussion-reflections-on-our-civil-conversation-challenge.html.

[iii] "What Is Nonviolent Communication and How Can It Benefit You at Work?," Nonviolent Communication: How to Use it at Work | Grammarly Blog, March 17, 2021, https://www.grammarly.com/blog/nonviolent-communication/.

[iv] Schulten, Gonchar, and Gilpin, "Ideas for Productive Discussion."

[v] "What Is Nonviolent Communication and How Can It Benefit You at Work?," Nonviolent Communication: How to Use it at Work | Grammarly Blog, March 17, 2021, https://www.grammarly.com/blog/nonviolent-communication/.

[vi] Katherine Schulten, "Talking Across Divides: 10 Ways to Encourage Civil Classroom Conversation On Difficult Issues," *The New York Times*, September 29, 2016, sec. The Learning Network, https://www.nytimes.com/2016/09/28/learning/lesson-plans/talking-across-divides-10-ways-to-encourage-civil-classroom-conversation-on-difficult-issues.html.

Understanding Race

Dr. Elaine Gomez Guevara, an evolutionary biologist and geneticist at Duke University, has also curated resources that help us understand the concept of race and genetic science tells about race. Please note that this is a work in progress and not all available resources are represented.

Historic Background on Race:

- Throughline (history podcast) episode: The Invention of Race (more on the history of the concept of race, including in anthropology)
- Why does human hair vary in shape and color around the world? (Arch & anth podcast episode with Tina Lasisi, with bonus discussion about underrepresentation in science)
- Throughline (history podcast) episode: A Race To Know (a history of racial categories on the US census)
- Race: The Power of an Illusion (documentary available to view online through Duke library website). Note that this documentary is a little older now and the genetic tests the students did were very simple, but everything they discuss has only been confirmed by or is consistent with more sophisticated methods.
- 2019 BBC Eugenics (documentary available to view online through Duke library website).

Race/Ethnicity & Genetic Science:

- Genetic Study Shows Skin Color Is Only Skin Deep - Smithsonian Magazine article
- To claim someone has 'Viking ancestors' is no better than astrology: Exaggerated claims from genetic ancestry testing companies undermine serious research into human genetic history - by Evolutionary Genetics Prof Mark Thomas for the The Guardian

- Genetic Race? An Exploration of Ancestry Testing and Racial Identity - Mellon Sawyer seminar series featuring Duke professors Trina Jones and Jessica Roberts
- Genetic genealogy can help solve cold cases. It can also accuse the wrong person. - PBS
- DNA ancestry tests may look cheap. But your data is the price - The Guardian
- You're Descended from Royalty and So Is Everybody Else - Nautilus
- Will the Alt-Right Promote a New Kind of Racist Genetics? - The Atlantic
- DNA reveals we are all genetic mutts - Harvard Gazette
- How much of your genome do you inherit from a particular ancestor? - Blog Post by geneticist Graham Coop

Race, Social Inequality & Health Science:

- Animal and human studies reveal health impacts of social inequality (feat. Duke Ev Anth Prof Jenny Tung's research)
- No, "Racial Genetics" Aren't Affecting COVID-19 Deaths
- Why America's Black Mothers and Babies Are in a Life-or-Death Crisis - NYT article
- Myths about physical racial differences were used to justify slavery — and are still believed by doctors today - NYT
- How Prejudice Can Harm Your Health - NYT (2017)

Understanding Disability

According to Rajkumar (2022)'s recent article, disability is often difficult to address and discuss due to the pervasiveness of "ableism." Ableism, like racism, is a system based on socially constructed conceptions, with ableism emphasizing social constructions of concepts like physical and mental normalcy. When discussing disability, experts offer a number of recommendations includes:

- Avoid tropes about disability that objectify disabled people for the benefit of non-disable people, *e.g.,* the inspiration narrative of overcoming disability,
- Focus on how to dismantle barriers for disabled folks, such as "inaccessibility and lack of accommodations,"
- Recognize that "[d]isability isn't a monolith," e.g., ask individuals about their preferences, especially in terms of labeling disabilities, discussing disabilities, and addressing barriers that might show up in education and work contexts,
- Avoid infantalizing disabled people and don't assume that an individual can't advocate for themselves,
- Center disabled voices,
- Recognize that disability can be viewed through multiple lenses, e.g., a medical model that problematizes disability and a social model that "emphasizes the need for social change in order to accommodate disabled people,"
- Do you research and be sure to learn about (1) ableist language and (2) universal design principles in education,
- Address intersectionality - like in other spaces, the voices of "white men with physical disabilities have been centered and uplifted the most historically."

Need more resources about Disability? Check out **this list**.

Contemporary BIPOC Scholars, Activists, & Leaders in Environmental Fields

Check out DiversityEEB to find a list of women and under-represented minority scholars, you can download an Excel version to more easily sort by race/ethnicity. Also check out The Biography Project by the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), Airtable Women & People of Color in STEM, and Diverse STEM Influencers (compiled by Melendrez-Vallard & Ramsey 2020). The Wildlife Society has started publishing Wildlife Vocalizations, which include the personal perspectives of a diversity of folks involved in the field of wildlife conservation. The Wildlife Society also lists resources regarding women and LGBTQIA+ perspectives in wildlife science. Also, check out the lists belows (including one with lists related to Women in Science).

Local Organizations (consider as project partners/guest speakers):

- Occaneechi Homeland Preservation Project (Mebane, NC)
- Black Family Land Trust (Durham, NC)
- Land Loss Prevention Project (Durham, NC)

Duke and Local Environmental Justice Groups and Organizations

- NC EJ Network
- Haw River Watershed Mapping Environmental Justice site.
- The Duke Human Rights Center has lots of programming on environmental justice, including an **ongoing series on Indigenous Human Rights**. Contact Emily Stewart (emily.stewart@duke.edu) for information for upcoming events.
- The Duke University Environmental Justice Network is spearheaded by graduate students Brandon Hunter, Katy Hansen, Walker Grimshaw, Wen Wang, and Elsa Haag. To date, this has been largely graduate students, but they are considering opening to the entire Duke community.
- A team of undergrads previously created links to EJ resources

Climate Change

- Kari Fulton (climate change activist)
- Dr. Warren Washington (atmospheric science)
- Nicole Hernandez Hammer (climate scientist and activist)
- Dr. Ayana Elizabeth Johnson

Ecology

- Dr. Maydianne Andrade (evolutionary biologist)
- Dr. Nyeema Harris (conservation biology, community ecology)
- Wangari Maathai (tree replanting via Green Belt Movement)
- Dr. Charles Nilon (wildlife ecologist)
- Dr. Tommy Parker (biologist)
- Audrey and Frank Peterman (environmental conservation activists)

- Dr. Stewart Pickett (urban ecologist)
- John C. Robinson (birding)
- Justin Robinson (forest ecology, local, LinkedIn)
- Dr. Ayana Elizabeth Johnson (marine biologist, founder of Ocean Collectiv)
- Dr. Rae Wynn Grant (ecologist, National Geographic Society fellow)
- Dr. Robin Wall Kimmerer (botanist, writer)
- Dr. Ryan Emanuel (indigenous hydrologist, native to NC, professor at NC State)

Environmental Educators/Interpreters

- Diquan Edmonds (Triangle Land Conservancy, Communications and Outreach)
- Shelton Johnson (NPS interpreter)
- Akiima Price (environmental educator)
- Dr. Regina Campbell-Malone (marine biologist - including a summer at DUML- now high school biology teacher)

Environmental Activists (general)

- John Francis (Planet Walker)
- Quentin James
- Marc Bamuthi Joseph (art and environment)

Environmental Justice Scholars and Advocates

- Carl Anthony (Urban Habitat Program)
- Dr. Robert Bullard (environmental justice)
- Majora Carter (urban environmental justice)
- Dr. Diane Glave (African-American Environmentalism scholar, green space access advocate)
- Winona LaDuke (indigenous land preservation)
- Van Jones (Green For All)
- Autumn Peltier (indigenous dorcetawater protector)
- Marjorie Richard (Shell pipeline)
- Nicky Sheats (Center for the Urban Environment, Thomas Edison State College)
- Dr. Dorceta Taylor (environmental sociologist)
- Dr. Beverly L. Wright (environmental justice scholar, Deep South Center for Environmental Justice)
- Marce Gutiérrez-Graudiņš (environmental justice advocate, founder of Azul)
- Dr. Andrew Curley (indigenous scholar/political ecologist at UNC)
- Dina Gilio-Whitaker (indigenous environmental justice activist/author)
- Adriana Quintero (founder and director of the Natural Resources Defense Council's Latino Advocacy program)
- Manuel Pastor (Professor of Sociology and American Studies & Ethnicity at the University of Southern California, directs the Program for Environmental and Regional Equity)
- Ann Lopez (https://www.sacnas.org/team/ann-lopez-phd/).

- Alexandra Valladares (with BOOST at Duke), also co-Chair with Carina Barnett-Loro for the Environmental and Climate Justice Action Team with the People's Alliance, working to bring forth green initiatives for a Green New Deal in Durham, NC
- Check out NC DEQ Secretary's EJ and Equity Board (local, https://deq.nc.gov/outreach-education/environmental-justice/secretarys-environmental-justice-and-equity-board-0)

Food & Farm Activists & Experts

- Bryant Terry (food justice advocate)
- Emanuel Hayden (Hipcamp Host of Homestead Asili)
- Leah Penniman (Soul Fire Farm co-founder, author of *Farming While Black*)
- Michael Twitty (culinary historian, culinary justice)
- Nikki Silverstri
- Rob Horton (Trap Garden, founder)
- Savonala Horn (Land Loss Prevention Project)
- Dr. Shakara Tyler (underserved farmer development specialist)
- Will Allen (Growing Power, Inc.)
- Delphine Sellars (Chair/CEO - Urban Community AgriNomics (UCAN), Local in Durham, check out this video).
- Crystal Cavalier and Jason Keck, (local resource, Occaneechi Band of the Saponi Nation)
- Tahz Walker and Zulayka Santiago (local resource, Earthseed Land Collective)

Looking for more local organizations thinking about minority agriculture? Check out the American Farmland Trust, NC Department of Agriculture's Small and Minority Farm Program, the Black Family Land Trust, and the National Young Farmers Coalition.

Marine Science and/or Policy

- Dr. Ayana Elizabeth Johnson (marine biologist, founder of Ocean Collectiv)
- Dr. Regina Campbell-Malone (marine biologist - including a summer at DUML- now high school biology teacher)
- Check out Head Above Water: https://www.headabovewaterslb.org/the-team

Outdoor Recreation

- Ambreen Tariq (Brown People Camping)
- Danielle Williams (Melanin Base Camp Team Blackstar Skydivers)
- Jessica Newton and Tin Louis (Black Girls Hike Global)
- Mirna Valerio (author of Fat Girl Running blog)
- Morgan Dixon (GirlTrek, co-founder)
- Nailah Blades Wylie (Color Outside, founder)
- Pinar Ates Sinopoulos-Lloyd (Queer Nature, co-founder)
- Ranita Anderson (Outdoor Afro, Triangle leader)
- Raphael Darden (Xplore Kayak Tours)

- Ron Griswell (HBCUs Outside, founder)
- Rue Mapp (Outdoor Afro)
- Scott Briscoe (We Got Next, founder - amplifies adventure stories from URM communities)
- Sonya Wilson (Deaf Climber - https://www.apu.edu/articles/sonya-wilson-97-climbs-her-mountains)
- Teresa Baker (The Outdoor CEO Diversity Pledge, founder)
- Tyrhee Moore (Soul Track Outdoors, founder)
- Vanessa Garrison (GirlTrek, co-founder)

Statistics

- Dr. Lorin Crawford (biostatistics)

Sustainability

- Ibrahim Abdul-Matin (stewardship)
- Lisa Jackson (former head of the EPA, current environmental director at Apple)

Environmental, Professional, and Outdoor Organizations Emphasizing Inclusion

- A Walk on Water - surf therapy for children with disabilities
- Black Girls Hike Global
- Black Kids Adventures - empowering black and brown families to explore outdoors
- Brown People Camping
- Climbers of Color
- Color the Water - anti-racism and surfing
- Color Outside
- Colour Africa's Outdoors
- Colour the Trails
- CorpsTHAT - supports deaf and hard of hearing participants in conservation and outdoor programs
- Diversify Whitewater - BIPOC, allies, and paddling
- Earth Science Women's Network: https://eswnonline.org/
- Everybody Climbs - Latinx owned and operated climbing guide service
- Fat Girl Running
- Fat Girls Hiking - body activism, camping
- Edge Outdoors: https://edgeoutdoors.org/ (Women of COlor Snow Sports Initiative)
- GALS: https://sciencegals.org/
- GirlTrek
- Here Montana - BIPOC outdoor program based in Missoula, MT
- Inclusively Outdoors: https://www.inclusivelyoutdoors.com/
- Institute for Tribal Environmental Professionals: http://www7.nau.edu/itep/main/Home/
- Hispanic Access Foundation: https://www.hispanicaccess.org/
- Love is King
- Melanin Base Camp Team Blackstar Skydivers

- National Association of Black Geoscientists: https://www.americangeosciences.org/society/national-association-black-geoscientistsOutdoor Afro
- Native Women's Wilderness
- Outdoor CEO Diversity Pledge
- Outdoor Journal Club - women, mindfulness, and nature
- Queer Nature
- Radical Adventure Riders - gender inclusivity and racial equity in bicycle adventures
- SACNAS – Society for Advancement of Chicanos/Hispanics and Native Americans in Science: https://www.sacnas.org/sacnas-biography-project/ Soul Track Outdoors
- Unlikely Hikers - body liberation, anti-racism outdoors
- Water Researchers of Color: https://docs.google.com/spreadsheets/d/1qlW0jFdig6Hu-VRvZ1yd1N6Fl6dAndNnskmvM_myes/edit#gid=571566776 We Got Next - amplified adventure stories from URM communities
- Xplore Kayak Tours

Annual Environmental, Professional and Outdoor Events Emphasizing Inclusion

June
- Black Birders Week: https://www.google.com/search?q=black+birders+week&oq=black+birders+week&aqs=chrome.0.69i59j46i275i433j0j46j0j46j0j46l3.4210j0j4&sourceid=chrome&ie=UTF-8

July
- Latino Conservation Week: https://www.hispanicaccess.org/news-resources/news-releases/item/1450-eighth-annual-latino-conservation-week-kicks-off-this-weekend-july-17-25

September
- Taking Nature Black: https://anshome.org/taking-nature-black/
- Black Mammalogists Week: https://blackmammalogists.com/

Historic BIPOC Scholars, Activists, & Leaders in Environmental Fields

- MayVynee Oshun Betsch (1935-2005, coastal preservation)
- Solomon G. Brown (1829-1906, Smithsonian illustrator, esp. natural history)
- George Washington Carver (1864-1934, botanist)
- Dr. O'Neil Ray Collins (1931-1989, botanist and mycologist)
- Harriet Tubman (1822-1913, naturalist)

Resources about BIPOC, LGBTQIA+ & Women and Environmental Disciplines

The resource list below was compiled by Duke University librarians, Brittany Wofford and Jodi Psoter, and is used here with their permission.

Databases:

- 500 Queer Scientists Database: https://500queerscientists.com/
- 500 Women Scientists: https://gage.500womenscientists.org/
- SheSource: https://www.womensmediacenter.com/shesource/
- Diverse Sources: https://diversesources.org/
- Black Women in Biology, Ecology, Evolution, and Marine Science: https://docs.google.com/spreadsheets/d/1chSLhqclJbOEHrkk-0gEp_73bR54BepM133LJW2p54o/edit#gid=0
- Women in Soil Science: https://docs.google.com/spreadsheets/d/128r71XIVYW6nknER37fpAeT990zp8EYyYsRBPrI6hY4/edit#gid=0
- Diversify Plant Science: https://docs.google.com/spreadsheets/d/1ygduel8h-BSq1irE-guLD-CbFrSHdykHHXFGt5PiW9Y/edit#gid=1813523959
- DiversifyEEB: https://diversifyeeb.com/
- Diversify STEM Conferences: interactive tool by Diversify STEM Conferences
- Finding diverse sources for science: https://www.theopennotebook.com/finding-diverse-sources-for-science-stories/
- Database of Geoscientists of Color: http://www.jenniferglass.com/Jennifer_Glass/Inclusion.html

The below list features indexes focused on BIPOC issues and a selection of local BIPOC-led news outlets that may feature the work of BIPOC scientists:

- Ethnic NewsWatch
- Chicano Database
- Hispanic American Periodicals Index
- Hmong Times
- The Circle: news from an American Indian perspective
- World News Connection

The Journals Online (JOLs) project aims to provide increased the visibility, accessibility and quality of peer-reviewed journals published in developing countries so that the research outputs produced in these countries can be found, shared and used more effectively: https://www.inasp.info/project/journals-online-project

Organizations:

- SACNAS – Society for Advancement of Chicanos/Hispanics and Native Americans in Science: https://www.sacnas.org/sacnas-biography-project/
- Earth Science Women's Network: https://eswnonline.org/ :
- Institute for Tribal Environmental Professionals: http://www7.nau.edu/itep/main/Home/
- Water Researchers of Color: https://docs.google.com/spreadsheets/d/1qlW0jFdig6Hu-VRvZ1yd1N6Fl6dAndNnskmvM_myes/edit#gid=571566776

- National Association of Black Geoscientists: https://www.americangeosciences.org/society/national-association-black-geoscientists

Twitter hashtags and accounts:

- @BlackandSTEM
- #BlackandSTEM
- #BlackinClimate
- @BlackInEnviron,
- #BlackInEnvironment
- #BlackEnvironRollCall
- #blackinenvironweek
- #BlackinGeoscience
- @BlackWomenSTEM
- @EEB_POC
- #LGBTinSTEM
- #outinstem
- #queerinstem
- @STEMWomen

Slack: This Slack workspace is open only to geoscience community members who self-identify as AAPI or those of Asian- and Pacific Islander-descent working in U.S.-based institutions: https://www.aapigeosci.org/getinvolved/slack/

Conservation

- The Aldo Leopold Foundation Diversity, Equity, Inclusion, and Justice in Conservation Resources List. This includes an extensive annotated book list, including links to articles and other organizations working at the intersection of social justice and the environment. Please note that this resource list isn't solely focused on BIPOC.
- DEEP Collaborative Resource List. Pulls together resources examining JEDI in environmental fields, Environmental Justice, and Environmental Education.
- The May/June 2021 Issue of *Wildlife Professional* is entirely focused on diversity in the field. It includes articles on how to create a more inclusive workplace and the relationship between human diversity and Aldo Leopold's conservation ethic. Learn more here: https://wildlife.org/tag/the-wildlife-professional/

Forestry

- Olen Cole, Jr., The African-American Experience in the Civilian Conservation Corps (University Press of Florida, 1999.)
- Dianne D. Clave and Mark Stoll, African Americans and Environmental History, University of Pittsburgh Press, 2006

- Holland Cotter, Art Review: Gauguin's Paradise: Only Part Tahitian and All a Fantasy, New York Times Archive, March, 5, 2004, http://query.nytimes.com/gst/fullpage.html?res=9A06E3D6133FF936A35750C0A9629C8B63
- John Hope Franklin and Alfred A. Moss, Jr., From Slavery to Freedom: A History of African Americans, 8th ed. (Knopf, 2000).
- Jianbang Gan, Stephen Kolison, Nii O. Tackie, African American Forest Land Owners in Alabama's Black Belt., Journal of Forestry, April/May 2003r
- William P. Jones, The Tribe of Black Ulysses: African American Lumber Workers in the Jim Crow South (University of Illinois Press, 2005).
- Cassandra Y. Johnson, J. M. Bowker, D.B.K. English and Dreamal Worthen, Theoretical Perspectives of Ethnicity and Outdoor Recreation, A review and Synthesis of African-American and European–American Participation, General Technical Report SRS-11, USDA Forest Service.
- Earl C. Leatherberry, "An Overview of African Americans' Historical, Religious, and Spiritual Ties to Forests," Proceedings of the Society of American Foresters 1999 National Convention (Bethesda, MD: Society of American Foresters): 452-457.
- James G. Lewis, The Forest Service and the Greatest Good: A Centennial History (Forest History Society, 2005).
- James G. Lewis, A Brief History of African Americans and Forests (March 2006)
- B. D. Mayberry, "Historically Black Land-Grant Institutions—the First 100 Years," in Americans in Agriculture: Portraits of Diversity: The Yearbook of Agriculture, 1990 (USDA, 1990).
- Robert B. Outland, III. Tapping the Pines: The Naval Stores Industry in the American South. Baton Rouge: Louisiana State University Press, 2004.
- Audrey Peterman, Continental Divide National Parks Conservation Association Magazine, Fall 2005 http://www.npca.org/magazine/2005/fall/reflections.asp
- John Schelhas, Robert Zabawa, Minority and Limited Resource landowners and Forest in the South: Developing a Research Agenda, poster session at Sustaining Southern Forests: The Science of Forest Assessment, a conference sponsored by the Southern Forest Resource Assessment http://www.srs.fs.usda.gov/sustain/conf/abs/schelhas.htm
- Quintard Taylor, In Search of the Racial Frontier: African Americans in the American West, 1528-1990 (W. W. Norton and Company, 1998).

GeoScience Careers

- https://www.grow-geocareers.com/home.html

Wildlife Careers

- The Rocky Mountain Sustainability and Science Network
- Black Mammalogists Week
- Women of Wildlife
- Out in the Field
- Diversity Joint Venture for Conservation Careers
- Minorities in Natural Resources and Conservation
- Native American Research Assistantship Program

Extracts from the NSOE Undergraduate Diversity Pathways Strategic Planning Report

Prepared by Nicolette L. Cagle, Lauren Hadley, and Nadia Thompson, September 2019

Importance of Culturally Relevant Education.
To attract and retain a diverse student population, DEI experts consider paramount the cultural relevance and responsiveness of its educators, curriculum, and classes. This emphasis arises from a recognition that racism, colorism, discrimination, and immigration in the American education system has resulted in a continued loss of agency for many students. When institutions and teachers appropriate the agency of students from non-dominant cultural backgrounds, education becomes exclusionary. Exclusionary practices lead to lower academic performance and limited participation from people of various cultural backgrounds (Martin, Pirbhai-Illich, and Pete 2017). To promote inclusion and diversity, and to "decolonize" our education systems, educators created a framework of Culturally Relevant Education (CRE).

CRE recognizes students' cultural backgrounds, experiences, and interests as partners in teaching and learning. In a CRE framework, teachers use relevant cultural references to empower students intellectually, socially, emotionally, and politically (Knight-Manuel and Marciano 2018). This empowers students from various cultural backgrounds, makes the learning experience more meaningful, and gives students pace and support to challenge hegemonic forces. CRE is based on two frameworks: culturally responsive teaching and culturally relevant pedagogy (Aronson and Laughter 2016).

Culturally Responsive Teaching.
Gay (2010) defines culturally responsive teaching "as using the cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning encounters more relevant to and effective for them". Aronson and Laughter (2016) further outline the six dimensions of Gay's (2010) framework, emphasizing that culturally responsive educators are:

- Socially and academically empowering by setting high expectations for students with a commitment to every students' success;
- Multidimensional because they engage cultural knowledge, experiences, contributions, and perspectives;
- Bridging gaps between school and home through diversified instructional strategies and multicultural curricula;
- Socially, emotionally and politically comprehensive as they seek to educate the whole child;
- Transformative in schools and societies by using students' existing strengths to drive instruction, assessment, and curriculum design;

- Emancipatory and liberating from oppressive educational practices and ideologies as they lift the "veil of presumed absolute authority from conceptions of scholarly truth typically taught in schools" (Gay 2010; Aronson and Laughter 2016).

Becoming a Culturally Responsive Educator.
Due to the complex nature of implementation of culturally responsive teaching, Gay (2013) recommends five core practices:

- Eradicate deficit perspectives of students and communities;
- Understand sources of resistance to culturally responsive teaching;
- Analyze textbooks with an eye to culture, considering how different knowledge forms affect teaching and learning;
- Understand that culture and difference are essential human qualities; and
- Make pedagogical connections within the context in which one teaches (Gay 2013).

Culturally Relevant Pedagogy.
Another important framework to CRE is culturally relevant pedagogy. Ladson-Billings (1995) defines culturally relevant pedagogy as one "that empowers students intellectually, socially, emotionally, and politically using cultural referents to impart knowledge, skills, and attitudes". Culturally relevant pedagogy and culturally responsive teaching may seem similar, but Aronson and Laughter (2016) point out that "teaching affects competence and practice whereas pedagogy affects attitude and disposition". Therefore, it is important to incorporate both into any understanding of culturally relevant education. Aronson and Laughter (2016) further outline several important aspects of culturally relevant pedagogy. Culturally relevant pedagogues:

- Consider long-term academic achievement;
- Focus on cultural competence, *i.e.,* "helping students to recognize and honor their own cultural beliefs and practices while acquiring access to the wider culture, where they are likely to have a chance of improving their socioeconomic status and making informed decisions about the lives they wish to lead" (Ladson-Billings 2006);
- Understand that students must navigate between home and school cultures and that teachers must equip students with tools to succeed in oppressive school systems (Delpit 2006; G Ladson-Billings 2006; Urrieta 2005); and
- Seek to develop sociopolitical consciousness, especially recognizing sociopolitical issues of race, class, and gender in themselves (Aronson and Laughter 2016).

To fully embrace a culturally relevant pedagogy, teachers must understand that it is ever evolving (Ladson-Billings 1995). Furthermore, teachers might shift focus from implementing pedagogies based solely on racial or ethnic groups to emphasizing global identities (Ladson-Billings 1995).

Review of Culturally Relevant Education.
Culturally relevant pedagogy and culturally responsive education create a comprehensive cultural framework: CRE. Aronson and Laughter (2016) define the tenets of CRE, explaining that culturally relevant educators:

- Connect students' cultural references to academic skills and concepts, using the knowledge and culture students bring into the classroom as assets;
- Engage students in critical reflection about their own lives and societies;
- Facilitate students' cultural competence, allowing students to learn about their own and others' cultures;
- Discuss power and oppression (Aronson and Laughter 2016).

Success of Culturally Relevant Education.
Culturally relevant education positively affects the academic achievement of culturally diverse students (Wallitt 2005; Savage et al. 2011; Milner 2011; Ford 2017; Ortega 2003). Furthermore, improving the cultural competence of STEM teaching is associated with increases in students' STEM achievement (Gutstein 2006; Hubert 2003; Austin 2017). While much of this research is based in K-12 education, experts suggest using the same frameworks for post-secondary education.

Culturally Relevant Education in the College Classroom.
Tanner and Allen (2007) note that current post-secondary science courses are largely *decontextualized*, meaning that students rarely see people who look like or come from similar backgrounds as themselves. Johnson (2007) argues that science is not neutral to race, ethnicity, or gender. Instead, it creates "narrow cultural bounds because of the historical lack of involvement of significant numbers of women and persons of color"(Johnson 2007). Tanner and Allen (2007) suggest ways to re-contextualize the college classroom, *i.e.*, teachers can:

- Monitor and change language in the classroom;
- Become aware of patterns of interaction with students;
- Integrate diverse role models and examples of how course materials apply directly to students in the classroom;
- Confront and revise differing expectations and stereotypes of students (*i.e.,* beware of the Pygmalion effect and hold high expectations for all students) (Tanner and Allen 2007).

Local Ecological Knowledge.
One way to enhance the cultural relevance of environmental courses is to incorporate *local ecological knowledge*, defined as "a blend of scientific knowledge and one's general knowledge of nature, specific local knowledge and information from personal beliefs and experiences in their habits" (Avery 2013). This approach emphasizes hands-on, real-world learning experiences, based on a specific place to enhance student's appreciation for the natural world and connect students with the local community and ecology. Using local ecological knowledge in the classroom often engages rural and native students; moreover, it can increase students' citizenship and commitment to serve (Avery 2013; Avery and Kassam 2011; D'Antonio et al. 2012).

Environmental Justice Coursework.
Underrepresented minority students in STEM fields value social change in their career goals more than their non-URM STEM peers (Garibay 2015). Thus, fully including URM students in the environmental sciences necessitates an authentic representation of their cultural histories within the curriculum (Fawcett, Bell & Russell 2002). Environmental Justice (EJ) courses provide a way for URM students to

apply their knowledge of environmental science to environmental injustices that often happen in their communities.

Research shows a **positive correlation between URM enrollment and EJ emphasis** in environmental programs, although the direction of this relationship is unclear (Garibay et al. 2015). Also, including EJ and EJ topics in university-level environmental programs further benefits students, resulting in increased cognitive development (Bowman 2010), increased civic behavior (Bowman 2010), and decreased "prejudice toward other racial/ethnic groups" (Denson 2009; Engberg 2004). To implement EJ into a university curriculum, Garibay et al. (2015) recommend:

- Emphasizing EJ's relevance to the social component of sustainability and sustainability coursework;
- Developing "courses, public lectures, workshops, reports, and newspaper articles" to publicize and normalize the new EJ curriculum; and
- Continuing to teach EJ issues even when few or no students of color are enrolled.

There is significant work to be done to enhance the inclusion of underrepresented minorities in the environmental sciences—environmental justice coursework provides one means of inclusion. To be most effective, environmental justice coursework should be taught by professors trained in cultural competency who are committed to reducing barriers and marginality, as well as professors who showcase a dedication to community outreach to fully immerse URM students. This, paired with a critical examination and renovation of coursework, can help URM students feel represented and increase URM student engagement.

Annotated Bibliography

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- "Focusing on our student's agency does not mean that our courses should or even could be equal collaborations." p3
- Ellen Langer contends that early schooling makes us mindless in that school emphasizes goals rather than process p4
- Contemplative practice is experiential and Dewey 1986, Piaget 1973, and Friere 1970 all reframed education that placed experiential learning at the center p5
- Objectives of contemplative exercises in class (p11):
    - Focus and attention building
    - Contemplation and introspection regarding course content
    - Compassion, connection and sense of moral aspect of education
    - Inquiry into nature of mind, personal meaning, creativity, insight
- "Contemplative exercises are particularly effective in the areas of emotional regulation and intra- and interpersonal connection" p14
- Emotion is central in decision making (Goldman 2006, Damasio 2000, Frank 1988) p15
- Research supported benefits of meditation p23

    - Increased concentration and attention
    - Increased mental health and psychological well being
    - Increased connection, generosity, and loving kindness
    - Deepened understanding of course content
    - Increased creativity and insight
- "John Heiliwell has shown that increases in general social capital, givi g, and social connection significantly create and sustain individuals' well-being" p29
- Overgaard and Sorensen (2004 show that introspection is a different state via neuroimaging, one that allows us to "recognize and think about the state as being conscious" p34
- Contemplative activities can be used as ice breaker activities p47
- Econ case study, study of economics is now inclusive of broader social well-being markers, e.g., EconLit key word search for "happiness" between 1946 and 1990 yielded 19 results and between 1991 and 2013 yielded 1704 results p51 (Note: tie-in to Kate Raworth and donut economics + *Limits to Growth*)
    - "In an economy where average income is rising, individuals do not perceive rising income as an overall gain" because we cannot see *relative gains* p55
- Harold Roth (2008) ""The understanding that contemplative experiences are not confined exclusively to religion" is central to any contemplative pedagogy" p79
- Necessary to have a firm pedagogical purpose for contemplative activities and a clear explanation of the activities themselves p90
- Principles of contemplative practice that guide pedagogy: "seeing things as they are, being open to new ideas, appreciating the contribution of silence to learning, valuing each human voice, honoring the constantly changing nature of ideas." p 91
- "It is crucial to remember the simple value and beauty of life as it is, not as it is used". p93
- "[Mindfulness] develops the capacity to retain and make sense of information learned while mindfully paying attention, abilities closely associated with working memory." p96
- Natural science (e.g., dendrology) activity idea: look at an object (e.g., leaf) and then see if you can call to mind the exact shape/image. If not, return to looking at it mindfully p103
- Lectio divina instructions - sit quietly, read to sentences, 1 minute silence, read more, etc. p115
- Law example showing importance of each ruling by reading Letter from the Birmingham Jail mindfully p119
- "Marilyn Nelson wrote that she hoped that her student cadets will 'live the all-but lost values of a nation conceived in the absurd concept of liberty and dedicated to the ridiculous proposition that we are all created equal. I hope,' she said, 'they will be soldier who live the humanist values kept alive by the poets, aborigines, and fools who refuse to close the door on our inner wilderness, with its echoing silence.'" p132-3
- In a spoken message, 55% of the meaning is translated nonverbally, 38% by tone of voice, and only 7% by the words used (Mehrabian 1981) p138
- Mysore yoga - silent, self-directed as an evaluation p170
- "As Victor Weisskopf at MIT said, 'Knowledge without compassion is inhuman,; compassion without knowledge is ineffective.'" p174
- "You cannot give to another what you do not have" p 176
- Compassion Practice instructions - Just Like Me p180

Brookfield, Stephen D.. Becoming a Critically Reflective Teacher, John Wiley & Sons, Incorporated, 2017. ProQuest Ebook
Central, http://ebookcentral.proquest.com/lib/duke/detail.action?docID=4790372.

- "Critical reflection" particularly means reflection informed by the critical theory tradition, which emphasizes understand power and hegemony (i.e., dominant policial/social context that tends to benefit a minoirty but seen a preordained by the majority) p9, 16
- Dominant ideologies in the U.S. context include "capitalism, positivism, democracy, militarism, white supremacy, and patriarchy" p12

Chavez, Alicia Fedelina, and Longerbeam, Susan Diana. 2016. Teaching Across Cultural Strengths. Stylus Publishing LLC: Sterling VA. 241 pp.

- Students need a way to file new information p87
- Reflection integrates the information into existing structures, and for many, reflection best occurs in solitude p88
- Writing is a good way to self-author knowledge and is necessary for information to stick in the brain p89
- "When we teach using a melding of both the integrated and the individuated (e.g., selecting some of both approaches…), we maximize student learning." P94
- "Learning is ideal when conditions contain cognitive challenge and positive emotion – a balance of challenge and support (Sanford 1966). Our brains are highly attuned to threat. We want learners (and their brains) to approach new material, not resist it. To create approach states for people's brains, we need a positive amount of emotional engagement, in a welcoming environment." P95
- Top 10 things faculty can do to teach across cultures (p167):
    - Self-reflect culturally – ("master teachers chip away at their blind spots" p171)
    - Modify one cultural continuum at a time
    - Talk with three students (outside your own culture)
    - Explore one negative attribution (i.e., one way you judge students negatively)
    - Share with students the value of balancing cultural frameworks
    - Connect subject matter to student lives
        - e.g., have students list five key points from the weeks readings on the board
        - e.g., have students lead some class sessions
        - e.g., have students locate cases, situations, examples, or issues to which they can apply class theories or skills
    - Make a personal connection
    - Assess creatively (e.g., multiple types of assessment – discussion rubrics, tests, papers, projects, observations, individual check-ins; group/individual assignments;
    - Consider the rewards

TABLE 1.1

Cultural Frameworks in Teaching and Learning Model

Individuated		Integrated
In a culturally individuated framework, a private compartmentalized, linear, contextually independent conception of the world is common, assumed, and valued.	↔	***In a culturally integrated framework, an interconnected, mutual, reflective cyclical, contextually dependent conception of the world is common, assumed, and valued***
Knowledge, individual competence, to move forward toward goals and the betterment of humanity	**Purpose of Learning**	Wisdom, betterment of the lives of those with whom we are connected—family, tribe, and community
Mind as primary, best, or only funnel of knowledge	**Ways of Taking in and Processing Knowledge**	Mind, body, spirit/intuition, reflection, emotions, relationships as important aspects and conduits of knowledge
Compartmentalized and separate; belief that understanding how the parts work separately, abstractly, and in isolation will lead to the greatest understanding	**Interconnectedness of What is Being Learned**	Contextualized and connected, belief that understanding how things affect each other within the whole and within family and community will facilitate understanding
Learning is a private, individual activity; responsible for one's own learning so that family and others are not burdened	**Responsibility for Learning**	Learning is a collective, shared activity, responsible for one's own as well as others' learning
Linear, task oriented, can be measured and used, to be on time shows respect	**Time**	Circular, seasonal, process oriented, dependent on relationships; to allow for enough time shows respect
Provider and evaluator of knowledge—best perspectives and ways of learning, predetermined or bounded learning; communication primarily between teacher and students	**Role of the Teacher**	Facilitator of learning experiences—multiple perspectives and ways of learning, emergent constructivist; wide variety of interactions among students and between teacher and students
Others' perspectives are optional for learning. Primarily rely on verbal messages; individuals are paramount, predominantly verbal in both written and oral communications	**Student Interactions**	Others' perspectives and interpretations are important, even essential to learning. High use of nonverbals, collective as paramount, and multiple streams of communication
Learning by mastering abstract theory first, followed by testing; unlikely to include application, experience, or doing in real life	**Sequencing**	Learning by doing, listening to others' experiences, imagining or experiencing first, then drawing out abstract theory

Note. ***Chávez & Longerbeam***. The earliest version of this model was presented in a paper at the 2009 ASHE Conference and developed from a later version of the model in Ke & Chávez (2013).

TABLE 1.4

Teaching Techniques Within Cultural Frameworks: *Purpose of Learning*

Individuated Techniques	*Integrated Techniques*
Connect subject matter to future profession or career realities, practices, expectations, mores	Connect subject matter to needs, realities, challenges, or opportunities in local or student's community, tribe, family
Design individual exams, assignments, class activities	Design paired or group exams, assignments, class activities
Assign optional reading and problem sets	Promote community engagement through action research (e.g., oral history or design to benefit community projects)
Create assignments designed to explore theory without application to a specific situation	Create assignments or activities designed to explore theory in relation to specific situations, especially ones that students can relate to in their own lives
Learning in the course discussed in relation to the subject matter itself	Learning in the course overtly discussed in relation to the context of a major, becoming a better person, professional aspects, or current realities
Facilitate critique of course content on its general quality without relation to its wider impact—for example, scientific discovery for the sake of discovery alone	Facilitate critique of course content in relation to influences on community needs, health, future generations—for example, scientific discovery problematized for its helpful and detrimental qualities
Assigning all students the same situation to process	Assigning students the task of identifying and processing real situations about which they are concerned or interested

Note. Special thanks to the faculty in our Culture and Teaching Faculty Development Project for brainstorming techniques across cultural frameworks for each of the continua of teaching and learning as well as for allowing us the privilege of gathering ideas from observing their teaching.

TABLE 1.6

Teaching Techniques Within Cultural Frameworks: Ways of Taking in and Processing Knowledge

Individuated Techniques	*Integrated Techniques*
Encourage students to deeply engage their minds in their discovery and understanding of knowledge	Encourage students to listen to and engage their intuition, body, mind, emotions, and spirit as part of their discovery and understanding of knowledge
Encourage focus on thought and abstract processing in assignments and class activities	Include reflective, philosophical, emotional, interrelational, and physical components in assignments and class activities.
Facilitate student objectivity in relation to the subject matter in a course	Facilitate student emotions related to subject matter in a course
Include lectures, memorization, problem sets, derivations, and papers to enhance knowledge	Include multiple means of sharing knowledge such as video, audio, stories, examples, application to specific scenarios, and conversing with those affected or served

TABLE 1.8
Teaching Techniques Within Cultural Frameworks: Interconnectedness of What Is Learned

Individuated Techniques	*Integrated Techniques*
Facilitate class activities and assignments in which students process components and the whole in objective and discrete ways	Facilitate class activities and assignments that promote understanding of component parts, connections among the parts, their relationship and function within the whole, and the relationship to the contextual environment
Ask students to consider a phenomenon	Ask students to consider more than one perspective of the same phenomenon
Discuss course concepts incrementally and discretely	Regularly discuss and ask students to idenify connections between concepts across a course, between courses, and across the curriculum
Expect that students will keep notes and refer to past materials on their own	Provide past lectures, notes, online discussions (if applicable), and other materials for students to return to for study. Encourage students to use these materials for their own learning
Offer multiple ways of building on knowledge components and using definitions, classifications, quantitative assessments, and proofs	Offer multiple ways of connecting knowledge, using case study, service-learning, study abroad, group work, and community-based research

TABLE 1.10
Teaching Techniques Within Cultural Frameworks: Responsibility for Learning

Individuated Techniques	*Integrated Techniques*
Incorporate opportunity-based discussions among pairs, trios, and small groups in class sessions	Incorporate turn-taking discussions among pairs, trios, and small groups in class sessions
Facilitate consideration of what each individual brings to a particular individual assignment or activity	Facilitate consideration of what strengths each student brings to a particular group activity or assignment and discuss how each might benefit the task at hand
Design competitive activities, exams, and assignments	Design collaborative activities, exams, and assignments
Employ opportunity-based questions from the professor to the whole class	Employ turn-taking and invitation-based questions from the professor to each individual in the class
Ask for volunteers to write insights gleaned from the readings or an activity on the board for processing by the student or professor	Have all students write insights they gleaned from the readings or an activity on the board for processing by the whole class
Offer clear objectives and goals for each learner to succeed in class; give regular updates on course progress and class grades	Use peer review, incorporating detailed, positive feedback; assign shifting roles to students—facilitator, participant, leader

TABLE 1.14
Teaching Techniques Within Cultural Frameworks: Role of the Teacher/Control

Individuated Techniques	*Integrated Techniques*
Connect subject matter to future profession or career realities, practices, expectations	Connect subject matter to needs, realities, challenges, or opportunities in local or student's community, tribe, family
Offer learning outcomes, course objectives, assignments as assessment of learning outcomes, and grading rubric in syllabus	Road-map for students regularly to share where learning is going and how we will get there
Request student evaluations at the end of the course and sometimes also at midpoint; incorporate into future courses	Request student suggestions, ideas, feedback regularly; incorporate into current course
Require students to process specific theories or concepts chosen by the professor	Ask students to choose what theories and insights to process and apply in assignments and exams
Teacher as expert keeper and disseminator of knowledge	Teacher as colearner, transparently sharing shifting and evolving thinking with students
Teacher constructs learning objectives	Students coconstruct learning objectives

TABLE 1.16
Teaching Techniques Within Cultural Frameworks: Student Interactions

Individuated Techniques	*Integrated Techniques*
Assign individual assignments, exams, and quizzes	Assign collaborative assignments, quizzes, and exams
Use techniques that are taken in and processed by individual students, such as lectures, individual lab work	Use teaching techniques that require students to interact in classes, such as discussions, case studies, shared lab work
Teacher does not expect students to support one another; may encourage competition to increase student motivation	Teacher encourages peer/cohort groups to gather outside of class; overtly expresses expectation of active support among students
Students not expected to interact in or outside of class	What students learn from one another is regularly incorporated into class discussion
Students assessed on individual work	Students assessed on quality of their work as well as support and feedback to one another

TABLE 1.18
Teaching Techniques Within Cultural Frameworks: Sequencing

Individuated Techniques	*Integrated Techniques*
Start with explaining theory to students; may or may not be followed by application or processing by students	Start with an example, story, autobiography, case study, or lab work and then follow up with having either the students or the teacher draw out theory
Have students write about or answer test questions about theory	Have students process a case study in assignments or tests, including processing of theory
Ask students to describe and explain the components of a theory	Facilitate students in developing their own case study, example, project, or story to illustrate a theory
Present theory using stages (e.g., 1–5), derivations, chronologies, and graphic organizers	Present theory using stories about the context of the era in which theory was derived, including autobiography of theory authors
Start with writing of theory authors/experts, then extend to application in current era	Start with student experiences, concerns, and questions, and then pull back to broader context/theory

Eddy, S. L. and K. A. Hogan. 2014. Getting under the hood: How and for whom does increasing course structure work. Life Science Education 13: 453-468.

- Eddy and Hogan (2014) found that added moderate-structure to courses can increase course performance among all students, especially for first-generation and black students. This structure include adding:
    - Graded and non-graded pre-work, e.g., pre-class reading questions
    - In-class participation, various mechanisms including clicker questions
    - Graded review assignments

Friere, P. 2018. *Pedagogy of the Oppressed, 50th Anniversary Edition*. Bloomsbury Academic: New York, New York. 219pp

- Friere addresses oppression (esp. in the context of class-based oppressions as conceptualized by Marx and Lenin) and proposes a framework for research, projects, and teaching that counters the tools used by oppressors to oppress. The book deals heavily with tools of oppression and may offend some readers with the glorification of Castro, as the book was originally published in 1970.
- The key teaching techniques outlined by Friere to combat oppressive forces include: 1) co-intentional education where students and teachers work together to understand and re-create knowledge, 2) student-centered approaches where teachers are also students and students are also teachers, 3) use of problem-posing inquiry rather than memorization or “banking” pedagogy, and 4) use of dialogue in the classroom, done with love and humility (here dialogue is defined almost the same way as “praxis”, i.e., requiring both a balance of reflection and action).
- N.B. This book isn’t a teaching technique book, but is considered foundational literature in understanding the roles of colonization and oppression in education.

Hammond, Zaretta. 2015. Culturally Responsive Teaching and the Brain. Corwin: Thousand Oaks, CA. 173pp

Defining Culturally Responsive Teaching

- Culturally responsive teaching includes (p15)
    - Recognizing students' cultural displays of learning
    - Responding positively and constructively
    - Scaffolding to connect what the students knows to new concepts
    - Being in a relationship and having a social-emotional connection with students
- Culturally responsive teaching builds intellective capacity, AKA fluid intelligence (Ritchhart, 2020) or intellective competence (Gordon 2011) p16
- Pedagogy as conceptual and then more practical "instructional moves" (e.g., strategy and tactic, Note: thought) p16
- Culturally responsive teaching attends to deep culture not shallow culture p24

How to be a Culturally Responsive Educator

- 6 characteristics of culturally responsive educators by Villegas and Lucas, the most important being "understanding the sociopolitical context" p28
- Validate students' experiences in the larger sociopolitical context; don't trivialize racism, language discrimination, socioeconomic injustice p114
- Must reflect to develop the right mindset, check implicit biases, practice social-emotional awareness, hold "an inquiry stance regarding the impact of our interactions on students" p53
    - Prompts for reflecting on surface, shallow, and deep culture p57-8

The Brain and Learning

- The amygdala (AKA, watchdog) helps us avoid threats to safety at all costs and seeks well-being p38-9
    - Oxytocin positive relationships help the amygdala stay calm to the neocortex can focus on higher order thinking p48
    - The brain feels safest when we are connected to others who we trust to treat us well p73
    - Trust deactivates the amygdala and blocks cortisol; cortisol can stop all learning for 20 minutes and stay in the body for up to 3 hrs. p76
    - Five elements of social interaction can activate strong trigger threats or rewards in the brain: standing in the community, certainty (i.e., predictability of a social situation), control of your life, connection to others, and a sense of fair, just, and non-biased exchanges among people p65-6
    - Keep the amygdala calm with SODA (stop, observe, detach, and awaken) – 10 seconds can preempt amygdala hijack p67 (Note: like Thomas Jefferson's counting to 10 when peeved)
- The reticular activation system (RAS, the watcher) scans for threats and rewards and tells amygdala; it perceives social status threats, and perceives emotions – it also helps us pay attention to course material – responds well to novelty and relevance p38-9

    - We're wired to pay more attention to negative experiences p113, but that shuts down the amygdala.
    - To learn we must pay attention, which means activating the RAS with novelty, relevance and emotion, which are culturally mediated p48 (Note: supports active learning + centering marginalized voices)
    - Can be positively activated with images/quotes/poetry that engaged visual brain or emotions – also inspirational TED talks p117 (see *Reading, Writing, and Rising Up*)
- The hippocampus (Wikipedia pages) stores background knowledge, is the site of working memory, but gets hijacked when the amygdala is triggered (Note: thus a bridge between to neocortex) p39
- The neocortex is home to executive function, oversees working memory, abstract thinking, organization, imagination; the amygdala & RAS serve as gatekeepers to the neocortex p40-1
    - Increasing intellective capacity = growing dendrites, creating neural pathways, and initiating myelination p43
    - All learners have to connect new content to what they already know, and what we know is mediated by our cultural experiences, values, and concepts p49 (Note: supports centering marginalized voices)
    - Brain growth happens when we figure out something new, engage in a complex task, or complete a puzzle p49 (Note: supports active learning)

Building Positive Social-Emotional Relationships in the Classroom

- Building positive social relationships signals physical, psychological, and social safety so that learning is possible p45
- The brain will not seek to connect with others if it perceives a social or psychological threat from those folks p47
- "It is not enough to have a classroom free of psychological and social threats. The brain needs to be part of a caring social community to maximize its sense of well-being. Marginalized students need to feel affirmed and included as valued members of a learning community" p47
- Five elements of social interaction can activate strong trigger threats or rewards in the brain: standing in the community, certainty (i.e., predictability of a social situation), control of your life, connection to others, and a sense of fair, just, and non-biased exchanges among people p65-6
- Rapport + alliance = cognitive insight p75
- Mistrust builds when someone doesn't feel acknowledged, affirmed or cared for p76
- Trust beings with listening, e.g., Reggio Emilio practitioners and the pedagogy of listening p77
- Teachers, leaders and authority figures "who disclose part of their authentic selves to students or employees build" trust and generate greater cooperation (Offermann & Rosh 2012) p80
- Trust generators include: selective vulnerability, familiarity, similarity and interest, concern, and competence
- Finding time to have fun in class builds rapport p85
- Teacher's stance should be "warm demander" – not cold and demanding (technocrat), not super nice but not demanding (sentimentalist), and not cold with low expectations (elitist) p99
    - Pushes students to take academic risks and gain confidence (Ware, 2006) p95
    - AKA Kleinfeld (1972) personal warmth with active demandingness
    - AKA Gay (2010) care with firmness

- Develop personalized learning goals with students p96 (example of procedure included)

Centering Marginalized Voices

To learn we must pay attention, which means activating the RAS with novelty, relevance and emotion, which are culturally mediated p48 (Note: supports active learning + centering marginalized voices)

All learners have to connect new content to what they already know, and what we know is mediated by our cultural experiences, values, and concepts p49 (Note: supports centering marginalized voices)

In Support of Active Learning

- To learn we must pay attention, which means activating the RAS with novelty, relevance and emotion, which are culturally mediated p48 (Note: supports active learning + centering marginalized voices)
- Brain growth happens when we figure out something new, engage in a complex task, or complete a puzzle p49 (Note: supports active learning)
- Brain growth requires feedback p101
    - "progress principle" (Teresa Amabile 2012) or "I can do it" mentality increases when we can confirm that we're making progress toward a goal p102
    - Very act of reviewing and applying feedback stimulates neuron and dendritic growth p102
- What does feedback look like? P103-4
    - Instructive rather than evaluative
    - Only one or two points
    - Timely
    - Delivered in low stress, supportive environment
    - Specific and actionable p105
    - Explicitly acknowledges that you have high standards (as a teacher) p105
    - Provides assurance that the student is capable p105
- Three stages of information processing: input, elaboration, application p125
- The brain has 5-20 minutes to begin processing input; during this stage it must be organized – this is when we should introduce culturally responsive processing tools like movement, repetition, story, metaphor, music p126
- Elaboration includes story, song, movement, repetitious, chants, rituals, dialogic talk p127
    - Elaboration should also include metacognition, key questions (p132)
        - § How is this new material connected to what I already know?
        - § What are the natural relationships and patterns in the material?
        - § How does it fit together? What larger system is it part of?
        - § Whose point of view does it represent?
    - This also means helping students parse out similarities/differences, whole-to-part, relationships, and perspectives p132-3 (Note: very similar to Ellen Langer's Mindful Learning)
- The application phase means the students need to apply their new knowledge, e.g., place-based learning, project-based learning, problem based learning p127
- 24-48 hours to revisit, review and apply what we've learned to move it into long-term memory and make it part of our skill set, background p127

- To build intellective capacity we should Ignite, Chunk, Chew, & Review (i.e., get students attention, make info digestible (small chunks), help them process the information, and review p128
    - 15-20 minutes instruction p131
    - 5-7 minutes of chew time (help students process, e.g., what was muddiest point, three on a pencil, etc.) p131

Developmental Stages/Growth Mindset

- For some students, gaps in knowledge and skill by 5th grade was too great for students to be independent learners without intense support p2
- Students should be "well on their way to becoming independent learners by third grade" p13
- Academic mindset cycles involve having a sense of competence, agency, confidence, and telling ourselves a positive, progress principle-type story p111
- Growth mindset (i.e., belief that intelligence can be developed) = embrace challenges, persist in the face of setbacks, see effort as the path to mastery, learns from criticism (feedback), finds lessons in the success of others = greater sense of free will and reaching ever-higher levels of achievement (p116) (Based on Dweck's work)
- To build intellective capacity we should Ignite, Chunk, Chew, & Review (i.e., get students attention, make info digestible (small chunks), help them process the information, and review p128

Understanding Culture

- Culture = the way that every brain makes sense of the world p22
    - Surface culture e.g., food, dress, holidays
    - Shallow culture e.g., unspoken rules of interaction, courtesy, attitudes towards elders, friendship, concepts of time, personal space, eye contact, touching
    - Deep culture e.g., "tacit knowledge and unconscious assumptions that govern our worldview", includes cosmology (good/bad), ethics, spirituality, theories of group harmony (cooperation vs competition)
- Culturally responsive teaching attends to deep culture not shallow culture p24
- United States is ranked highest on Hofstede's in individualism on the individualism-collectivism continuum p27
- Oral and written traditions are a part of deep culture p28
- We can widen our understanding of different cultures with Gudykunst and Kim (2003)'s internal protocol of description, interpretation and evaluation, i.e., describe what you see, brainstorm multiple interpretation, assign positive or negative significance p59-60

Pedagogy of Poverty

- Pedagogy of poverty often emphasizes lecture and rote memorization p14
- mistakes of the pedagogy of poverty include 1) mistaking coping skills for cultural norms and beliefs and 2) mistaking the negative lifestyle aspects sometimes displayed by people living in poverty as a glorification of poverty, rather than recognizing it as PTSD and coping mechanism
- related to "learned helplessness" where learners are dependent on others and thus believes that have no capacity to develop new skills or work through challenging academic material p91

Additional Facts

- Great Migration = two million African Americans moved from rural South to urban NE, Midwest, and W between 1919-1940 p1
- "implementation dip" – when trying to change things, we feel self-conscious and things feel chaotic, but it's part of the process (*Leading in a Culture of Change*)

Additional Resources

- *Con Respeto: Bridging the Distances between Culturally Diverse Families and Schools* by Guadelupe Valdes p35
- *How the Brain Learns* by David Sousa
- *Soft-Wired: How the New Science of Brain Plasticity Can Change Your Life* by Dr. Michael Merzenich
- Paul Lawrence Dunbar's poem, *We Wear the Mask*
- On self-reflection for teachers: *Reading, Writing and Rising Up; Teaching for Joy and Justice; White Like Me; Teaching to Transgress; Because of the Kids: Facing Racial and Cultural Differences in Schools* p55
- *Click: The Forces Behind How We Fully Engage with People, Work, and Everything We Do* by Brafman and Brafman
- On motivation/learning: *How Children Succeed: Grit, Curiosity, and the Hidden Power of Character* (Tough, 2013)*; The Will to Learn: A Guide for Motivating Young People* (Covington, 1998)*; Drive: The Surprising Truth About What Motivates Us* (Pink, 2011)*, Whistling Vivaldi: How Stereotypes Affects Us and What We can Do* (Steele, 2011)
- On creating conversations to deepen learning (i.e., elaboration phase/metacognition): *Classroom Discourse: The Language of Teaching and Learning, Academic Conversations: Classroom Talk that Fosters Critical Thinking and Content Understanding; The Power of Protocols: An Educator's Guide to Better Practice*
- *Leading in a Culture of Change* by Fullan (2007)

Kumagai, A. K. and M. L. Lypson. 2009. Beyond cultural competence: Critical consciousness, social justice, and multicultural education. Academic Medicine 84(6): 782-7.

- Pedagogy must include "critical consciousness" (sensu Friere). This means that we should teach with stories, embrace ambiguity, and connect to the current sociopolitical context. The article also emphasizes Friere's "conscientization" that allows for both cognitive and affective work and engaged discourse and collaborative problem solving (vs. banking model of education).

Le, P. T., and C. E. Matias. 2019. Toward a truer multicultural science education: how whiteness impacts science education. Cultural Studies of Science Education 14:15-31.

- The article has several sections, including a discussion of race, science education, critical race theory and critical whiteness studies, providing examples of whiteness in science, and discussing implications of whiteness in science.
- Key Points
    - Whiteness is so pervasive in science that it's difficult to identify.

- Critical Race Theory (CRT) has 3 major tenets: 1) race is a major factor in inequity in the U.S., 2) U.S. society is based on property rights, and 3) the intersection of race and property provides a lens through which we can understand inequity
- To combat racism in education, the pain must be named, but there has been a lack of language around this, termed "rhetorical incoherence" by Bonilla-Silva (2006)
- Scientists often believe that science is objective and thus transcends culture and that objectivity prevents oppression because results are independent of identity.
- But science is controlled by the institutions and practices of European culture.
- Western science also presumes itself right and thus minimized other types of knowledge, especially indigenous knowledge.

Morreira, S. and K. Luckette. November 14, 2018. Questions academics can ask to decolonise their classrooms by Luckett and Morreira. The Conversation. Available at https://theconversation.com/questions-academics-can-ask-to-decolonise-their-classrooms-103251 [Last accessed December 4, 2020]

- This summary provides a list of key questions that we can ask ourselves as instructors to decolonize our syllabi. Those questions are below (taken verbatim).
  - "What principles, norms, values and worldviews inform your selection of knowledge for your curriculum? (think about absences as well as presences, centres as well as margins)
  - Do you articulate your own social and intellectual position, from which you speak when lecturing?
  - For whom do you design your curriculum? Who is your ideal, imagined student and what assumptions do you make about their backgrounds, culture, languages and schooling?
  - Does your curriculum reflect its location in Africa and the global South? To what extent does it draw on subjugated histories, voices, cultures and languages?
  - How does your teaching recognise and affirm the agency of black and first-generation students? How does your teaching legitimate and respect their experiences and cultures?
  - Can you speak indigenous or regional languages and relate to the cultures and lived experiences of all students? Do you draw on these valuable resources in your teaching?
  - How does your curriculum level the playing fields by requiring traditional/ white students to acquire the intellectual and cultural resources to function effectively in a plural society?
  - How do you build a learning community in your classroom where students learn actively from each other and draw on their own knowledge sources?
  - How do your assumptions about curriculum knowledge play out in the criteria that you use to assess students? What can you do to make your assessment practices more fair and valid for all students, without inducing high levels of anxiety? What assessment methods could show what all students are capable of, drawing on their strengths and promoting their agency and creativity?
  - How far do your teaching and assessment methods allow students to feel included without assuming assimilation?"

Soni, Aikya. 2021. A mixed methods evaluation of inclusive pedagogy practices in DPHS Master's Program. DPHS Methods Brownbag, Duke University, 26 May 2021.

- Impetus for work:
    - COVID-19 death disparities in US through August 18, 2020: 118.8 per 100,000 for black, 111.8 for indigenous people, 105.6 for pacific islanders. These were the top three.
    - In graduate health master's programs there is minority under-representation and attrition, but faculty from diverse backgrounds are more likely to promote cultural inclusivity and study health disparities
- Why? Structural barriers like standardized testing and GRE in student admittance and lack of connection to diverse communities. Major contributor: unwelcoming background and lack of cultural responsiveness
- Solution: culturally inclusive pedagogy practices
    - Places students at center, and centers their lived experience in pedagogical practices
    - Key elements include having culturally diverse knowledge base, caring communities, and communication among diverse learning groups
    - Benefits: improved attitudes, reduced achievement gaps, alleviation of stereotype threat
- Evaluated 1st year curriculum in DPHS along 3 domains
    - Culturally inclusive pedagogy practices
    - Health disparities coverage
    - Diverse representation in course content
- How? Used mixed methods approach e.g., interviewing students and looking at syllabi
    - Setting: Department of Population Health Sciences, program started in 2017 and masters program began in 2019; has 45 faculty and 64 staff; committed to creating a more inclusive environment (e.g., DEI committee, subcommittee of education, comprehensive evaluation of 1st year Master's curriculum)
    - Review of course syllabi: structured review tool informed by CIRTL INCLUDES framework; included frequencies of each inclusive strategy and descriptive data summarized with a focus on strong practices
        - Does the syllabus address D&I, if yes, how?
        - Does the syllabus contain a land attestation acknowledging colonization? If yes, does the attestation address: Name of specific indigenous groups? Offer ways to take action or support indigenous groups? Do the instructors address…
        - Descriptive data allowed research to pull out strong practices
    - Qualitative description: video interviews, semi-structured; guided by information power: narrow scope, high specificity, and strong dialogue
        - How did each course address health disparities, health inequities, or other related topics as they apply to the subject matter?
        - Now let's think about the course materials - how well did each course integrate diverse perspectives
        - How well did the courses cover content that was from a non-US…
- Results:
    - Syllabus review for inclusive pedagogy practices:

        - most classes had a statement fo diversity and inclusion, a strong practice was to include personal note by professor on the importance
        - Most classes did not have a land attestation, gender pronoouns, a flexible parenting policy
        - Thus, need a land attestation addressing colonization, include gender pronouns in syllabus, email signatures, include a flexible parenting policy in the syllabus that addresses breastfeeding/nursing, illness or disprutions in child care, diversity in parenting status, seating arrangements, addressing disability
        - Allow students to lead class instruction, contribute to course trajectory, and determine grading or evaluation (not very commonly done, but best practices)
        - Strong pratices included comprehensive review sessions before exams, thorough instructions and grading rubrics
    - Interview results for inclusive pedagogy practices:
        - Courses did a good job soliciting feedback, but can particular ask how to be more culturally inclusive (with notecards)
        - Students appreciate a conversational learning environment, a variety of participation options (group work, hands on, forum posting)
        - Need to recognize cultural and language barriers in terms of participation and the importance of variety in addressing this
        - Students desired more pre-evaluation prior to the start of class and more clarity around grading and expectations - thus need to provide students with those comprehensive rubrics and evaluation criteria in advance
        - Students want classes to incorporate culture of continuous feedback in program (e.g., anonymous notecards that students can turn in)
        - Students want professors to give those that participate, even if they got an answer wrong, some form of positive feedback.
    - Results regarding health disparities coverage:
        - Discussion-based courses covered disparities well
        - Primarily focused on race/ethnic disparities but want classes to expand to other social lines
        - More desired on how to address disparities
        - Generally wanted more coverage in stats classes and programming (e.g., by bringing in guest speakers, etc).
        - Need more diversity in types of materials read (beyond articles) and including podcasts, videos, etc.
        - Lack of faculty diversity
        -

Tanner, K. and D. Allen. 2007. Cultural competence in college biology classroom. CBE - Life Science Education. 6: 251-258

- In education, cultural competence is focused on how effective a teacher is with students that do not share the teachers personal or cultural characteristics. This often boils down to **culturally competent communication.**

- Culturally competent educations use 1) active learning, 2) develop student learning communities, 3) differentiate instruction 4) maintain high expectations of all students, 5) view culture as an asset to learning, and 6) are explicit about cultural competence (based on Klump and Nelson 2005)
- Students of color leave the sciences because teachers 1) don't contextualize science and 2) emphasize meritocracy. Instead, teachers need to explicitly generate contexts and cultural connections within their discipline.

Virguez, Edgar. 2020. Embracing the value of cultural wealth from underrepresented groups. *In Teaching Gradually: Practical Pedagogy for Graduate Students, by Graduate Students*. Editors: Armstrong, K., Genova, L., Greenlee, J., & Samuel, D. Cornell University Press.

- Virguez (2020) describes how underrepresented minority groups frequently attend classes in the natural sciences where "the value of their experiences, knowledge, networks, and perspectives" or cultural wealth, is unacknowledged. Virguez (2020) explores two techniques for increased inclusivity: (1) enabling engagement through authentic assessment and (2) introducing global learning.
- In this, authentic assessment evaluates student competency via scenarios that resemble real-world problems. This contextualizes student knowledge and learning. These scenarios can reflect student interests and career aspirations. This assessment also requires the use of clear and explicit grading rubrics.
- Global learning coursework – that is work that addresses global-scale challeneges - allows students to engage with different perspectives while building on their own cultural heritage. Examples of global learning topics include the COVID 19 pandemic and climate change.

Wheeler, L. March 9, 2017. Diversity and Inclusive Teaching Practices in STEM. University of Virginia Center for Teaching Excellence, re-posted January 5, 2020.

- Stereotype threat affects student performance on exams, decreases long term persistence in STEM disciplines, and impacts how much value students see in a discipline.
- Ideas for teachers to use to explicitly emphasize the importance of diversity in STEM and to support students in class.
    - Discuss how diversity enhances education and science with students
    - Include contributors to science of various backgrounds
    - Examine the lack of diversity in your discipline through discussion and projects
    - Assign readings on diversity in the discipline
    - Reflect on and educator yourself about implicit bias and stereotype threat
    - Emphasize "growth mindset" principles
    - Cultivate individual relationships with students
- Inclusive teaching strategies are offered, including:
    - Using a broad range of analogies (beyond, sports, military, construction, machines)
    - Using text and images in lectures and assignments
    - Creating collaborative assignments
    - Making sure groups are mixed by ethnicity and sex/gender
    - Requiring consensus to questions posed (rather than the teacher's single answer)

- Using grading rubrics and explaining them

Yussof, K. 2018. *A Billion Black Anthropocenes or None.* University of Minnesota Press: Minneapolis, MN. Chapter Summary: Geology, Race, and Matter

- Mineral resources have been the impetus for dispossessing indigenous peoples, enslaving others; i.e., resource extraction was the impetus for colonialization; also 2012 Bushveld Igneous COmplex and attack on striking miners
- "The racial categorization of Blackness shares its natality with mining the New World"
- Geology linked to human migrations (personal note: considering indigenous U.S. trade routes across U.S., which show trade in copper, obsidian, etc.)
- Geological information as power (i.e., "geology iis a relation of power and continues to constitute racialized relations of power")
- "Geology is more than a tool; it is a technology of matter, its formulation and the desire that shapes its incarnation."
- Note: The author uses the term geology in a way that blends the symbolic and real; it can be confusing for those of us that define geology in strictly scientific terms.
- (Note: Might it be important to differentiate between geology as a science and how geological information is used? How much of what we research as geologists is influenced by funding from for-profit enterprises?)

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