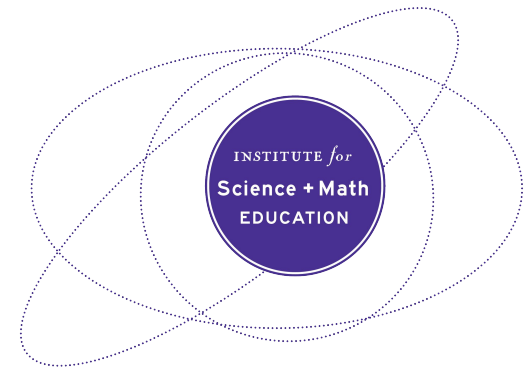


Preparing the Next Generation of Earth Scientists



*International Ocean Science Discovery Program
Preparing the Next Generation Workshop
August 2-4, 2021, Virtual*

Dr. Deb L. Morrison

Institute for Science + Math Education, University of Washington

How can scientific ocean drilling's professional development be enhanced to develop critical scientific and transdisciplinary skills for educators?

tinyurl.com/20210804iodp-dm

Professional Development - “Outside” View

The Issue

Why Engage in DEI?

Engage with Humility

Learn about Equity and Justice

Learn about Learning

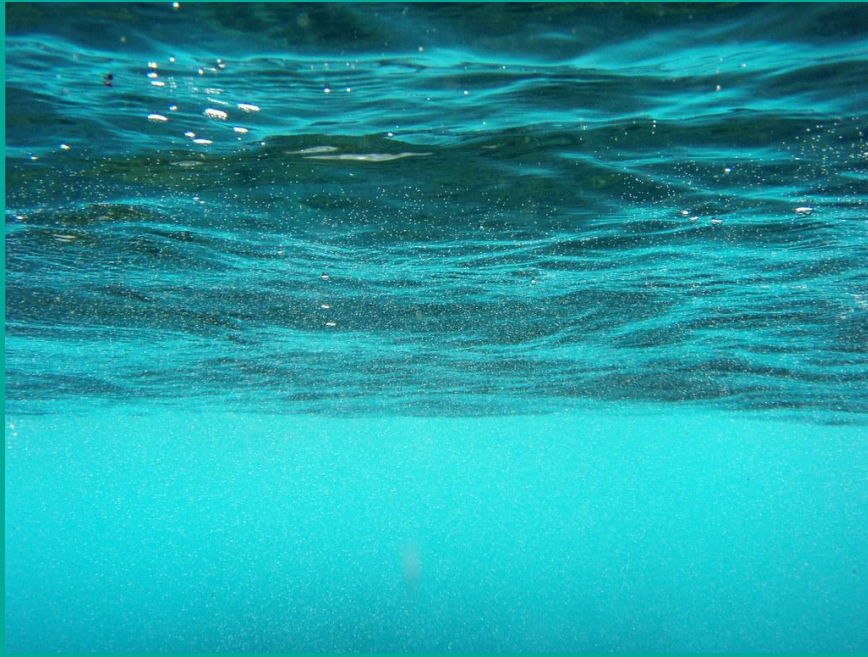
Sustained Learning in Partnerships

The Issue



- Geosciences have limited diversity
- Geosciences can be unappealing to racially, gender, and other forms of diversity
- All of us are cultural individuals and as such, we have biases, normative practices, and propagate these in our activities - even in our science activities and organizations.

Why Engage in DEI work?



- Ethical obligations - everyone deserves opportunities to participate in the things that interest them.
- Diversity begets innovation through varied thought, practices, values, lived experiences
- The oceans span the globe - so too should the research community
- Diverse scientists may provide better connections to diverse communities with whom collaborations occur

Learn: How Diversity Makes Us Smarter

Being around people who are different from us makes us more creative, more diligent, and harder-working. It promotes innovation.

Katherine W. Phillips, Scientific American, October 2014

STEM-related endeavors are better when they include culturally diverse perspectives and approaches.

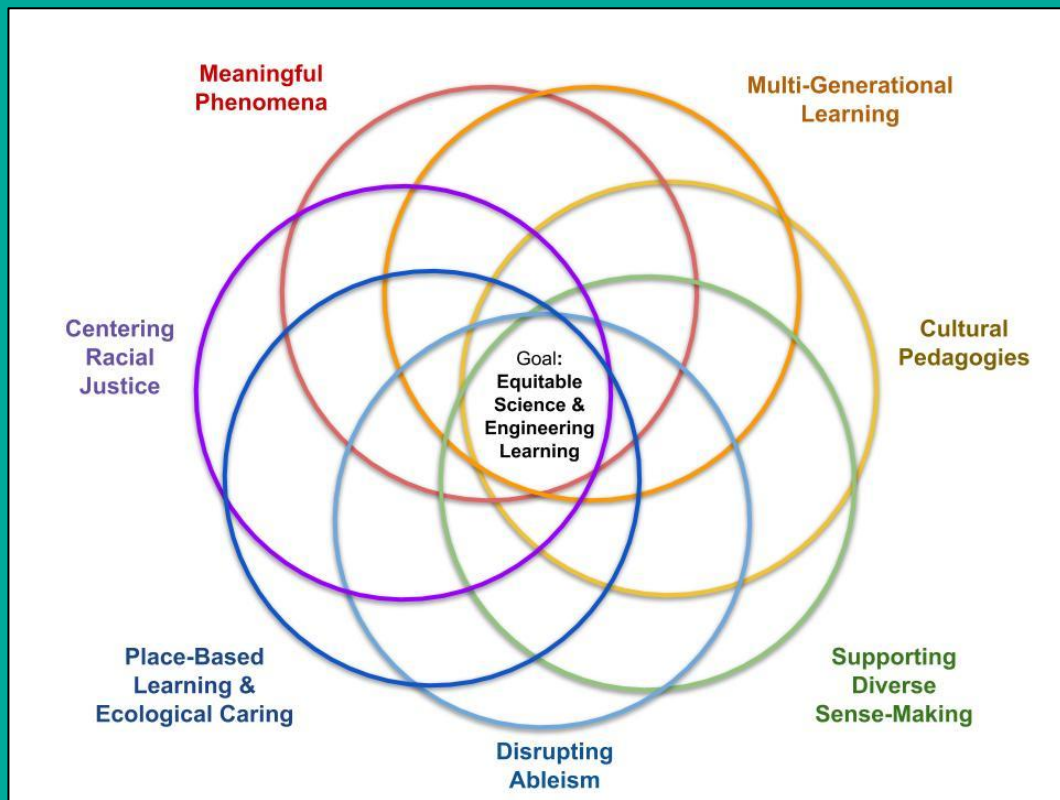
Medin, Lee, & Bang, Scientific American, October 2014

Engage with Humility



- For whom are you engaging in research and scientific work?
- What are the boundaries of your experience?
- With whom should you work to expand your knowledge, values, and awareness?
- How does the expertise of others compliment your own expertise?
- How do you acknowledge and appreciate the gifts of knowledge and wisdom shared with you?

Intersectionality & Equity Projects



How can you advance equity and justice through science teaching?

What Is The Issue?

Inequities are built into the systems of science education such that “students of color, students who speak first languages other than English, and students from low-income communities... have had limited access to high-quality, meaningful opportunities to learn science.” Intersecting equity projects can guide the teaching and learning of science towards social justice. Science educators who engage in these projects help advance Indigenous

WHY IT MATTERS TO YOU

- Teachers, District Staff, PD Providers, and Educational Leaders should work from their positionality to engage in self-reflection and critical consciousness raising as they organize with others through community-based conversations leading to taking action toward intersectional justice.
- Education Leaders should also collaborate with a broad range of marginalized community members to guide improvement and help coordinate

STEM Teaching Tool #71

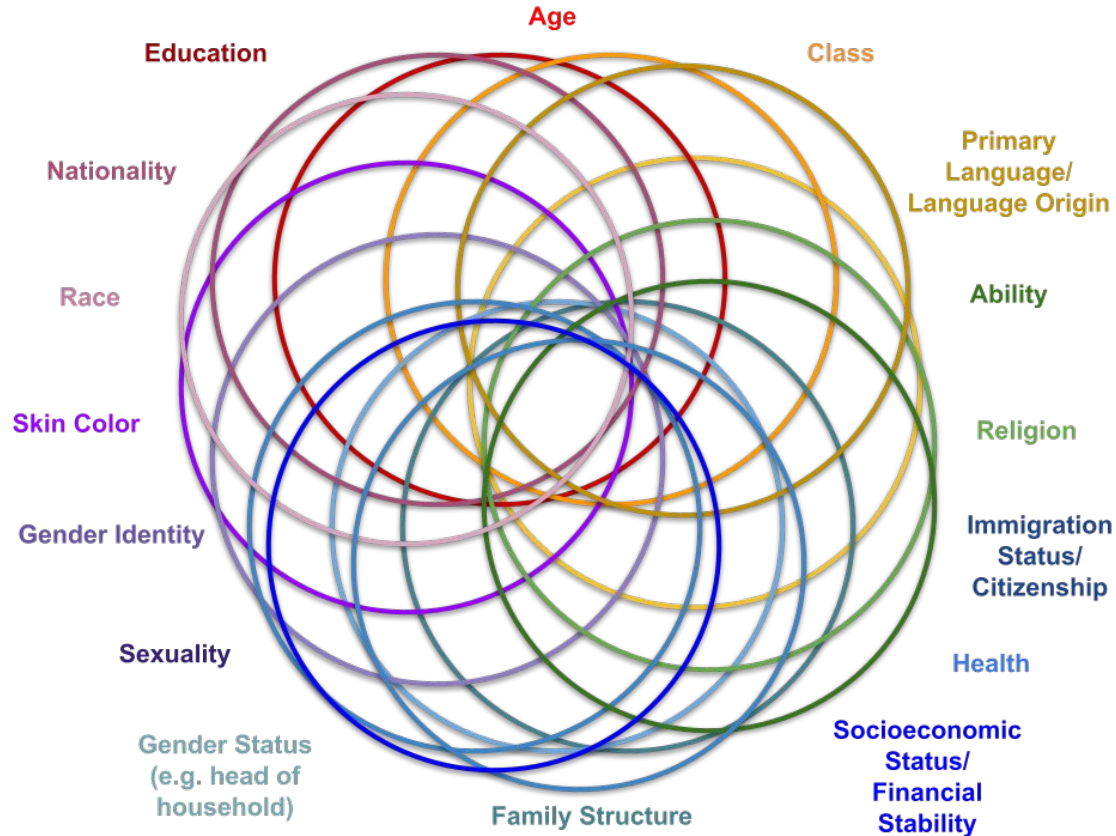
Intersectionality

- *Intersectionality is a **lens** through which you can see where **power** comes and collides, where it locks and intersects. It is the acknowledgement that everyone has their own experiences of **discrimination** and **privilege**.*

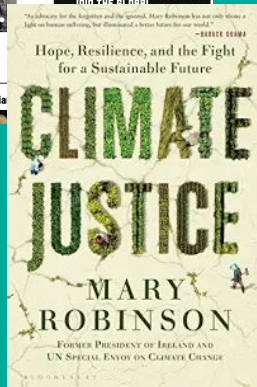
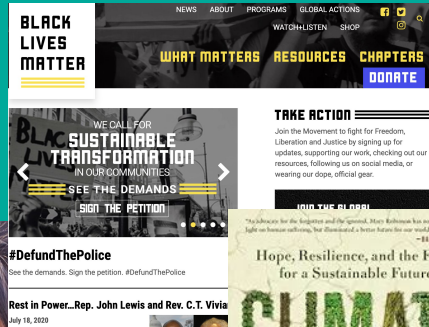
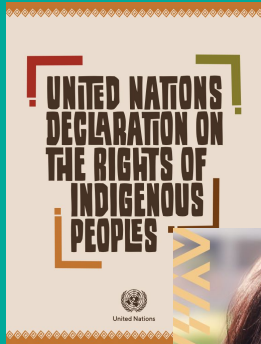
- Kimberlé Crenshaw

- Individuals with multiple marginalized identities can experience multiple and unique forms of discrimination that cannot be conceptualized separately
- Our liberation is tied up in the liberation of others

Sociocultural Markers & Positionality

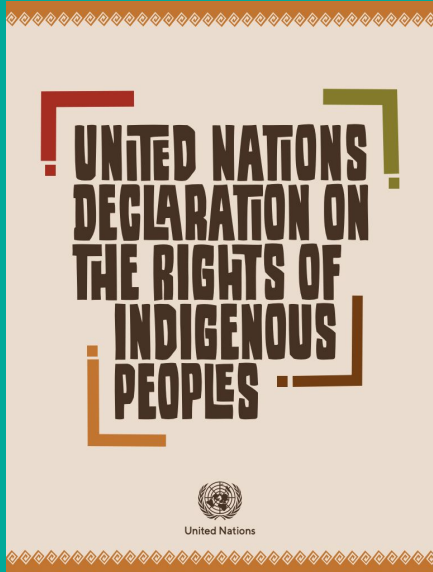


Learn About Equity & Justice



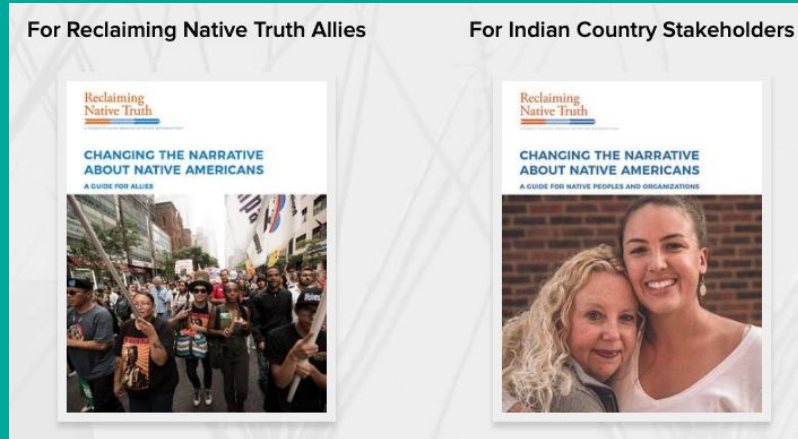
- Colonization, racism, sexism, and other forms of intersectional oppression are with us today as a result of history and current actions.
- Science has been complicit in injustices; Science can be a justice project.
- Each and every one of us is an agent of either oppression or liberation. Choose.
- We live in the world; it should live in our work.
- Learning about issues of equity and justice is our responsibility.

Learn: Indigenous Histories and Collaboration



UN Declaration on
Rights of
Indigenous Peoples

Reclaiming Native Truth



Illuminatives

Learn: Acknowledgement of Racial Oppression

Black

Lives

Matter

The screenshot shows the Black Lives Matter website homepage. At the top left is the logo "BLACK LIVES MATTER" with three yellow horizontal lines below it. The top navigation bar includes "NEWS", "ABOUT", "PROGRAMS", "GLOBAL ACTIONS", "WATCH+LISTEN", and "SHOP". Social media icons for Facebook, Twitter, and Instagram are on the right. Below the navigation are three main menu items: "WHAT MATTERS", "RESOURCES", and "CHAPTERS", with a blue "DONATE" button to the right. The main content area features a large banner with the text "WE CALL FOR SUSTAINABLE TRANSFORMATION IN OUR COMMUNITIES" and "SEE THE DEMANDS" with a "SIGN THE PETITION" button. Below the banner is a section for "#DefundThePolice" with a sub-headline "Rest in Power...Rep. John Lewis and Rev. C.T. Vivian" and the date "July 18, 2020". On the right side, there is a "TAKE ACTION" section with the text "Join the Movement to fight for Freedom, Liberation and Justice by signing up for updates..." and a "JOIN THE GLOBAL MOVEMENT" section with a sign-up form for "FIRST NAME" and "LAST NAME".

BLACK LIVES MATTER

NEWS ABOUT PROGRAMS GLOBAL ACTIONS

WATCH+LISTEN SHOP

WHAT MATTERS RESOURCES CHAPTERS

DONATE

WE CALL FOR
SUSTAINABLE TRANSFORMATION
IN OUR COMMUNITIES

SEE THE DEMANDS

SIGN THE PETITION

#DefundThePolice

See the demands. Sign the petition. #DefundThePolice

Rest in Power...Rep. John Lewis and Rev. C.T. Vivian

July 18, 2020

TAKE ACTION

Join the Movement to fight for Freedom, Liberation and Justice by signing up for updates, supporting our work, checking out our resources, following us on social media, or wearing our dope, official gear.

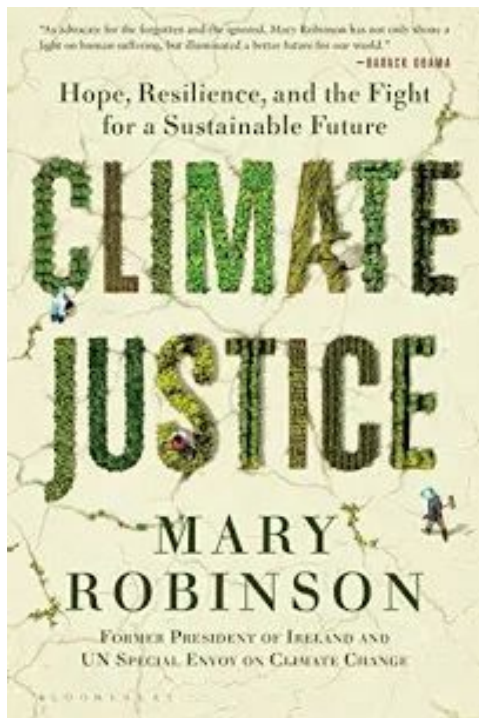
JOIN THE GLOBAL MOVEMENT

Sign up here for updates on special launches, network actions, programs, partnerships, and more!

FIRST NAME

LAST NAME

Justice



Home > Blog > 2020 >

Black Lives Matter: the link between climate change and racial justice

Date

22 June 2020

Written by

Adelle Thomas, Rueanna Haynes



In any crisis it is the poorest and most vulnerable that suffer the greatest impacts. What does Black Lives Matter have to do with climate change? Everything – Adelle Thomas and Rueanna Haynes outline the linkages between environmental justice and racial justice.



Learn About Learning



NARST
A global organization for improving
science education through research



Office for
Climate
Education



- There is a thriving community of researchers in STEM education, learning sciences, and professional learning; dig into journals of some of the primary associations.
- Educational organizations exist across a broad range of learning contexts; learn from them, attend conferences, engage.
- Globally, UNITAR and UNESCO are deeply engaged in education, training, and research.

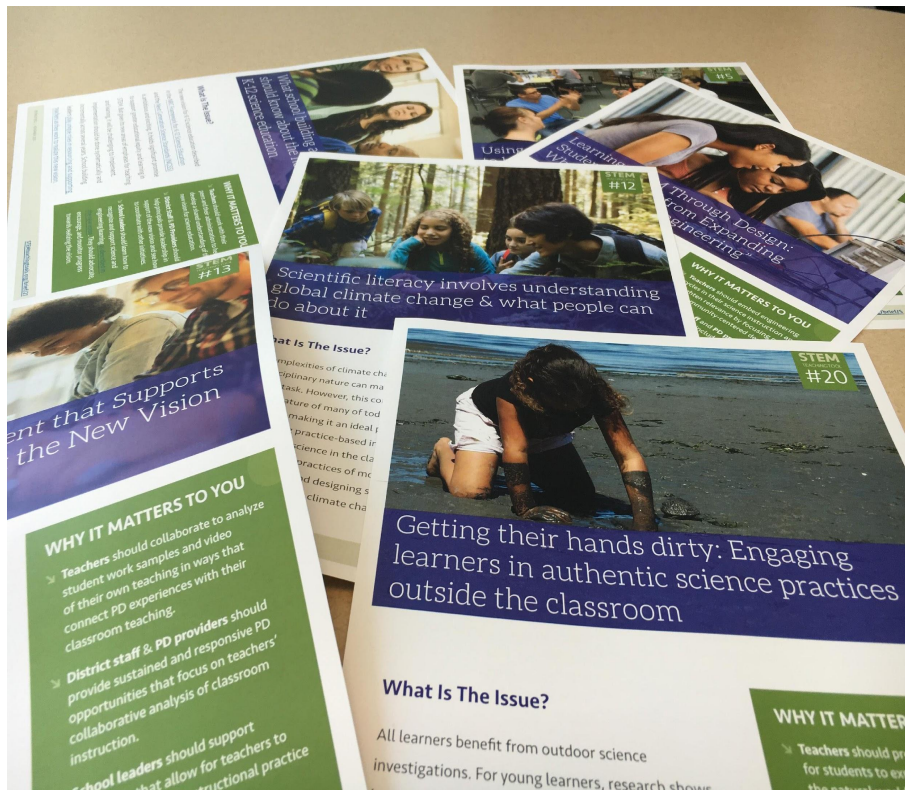
Learning as Participation

“...learning is a process of *transformation of participation* itself...how people develop is a function of their transforming roles and understanding in the activities in which they participate.”

Rogoff, 1994, Mind, Culture, and Activity, 1(4), p.209.

STEM Teaching Tools

Resources to explore and learn about equitable STEM education strategies and issues.



Equity in NRC Framework - p.28

Equity in science education requires that all students are provided with equitable opportunities to learn science and become engaged in science and engineering practices; with access to quality space, equipment, and teachers to support and motivate that learning and engagement; and adequate time spent on science. In addition, the issue of connecting to students' interests and experiences is particularly important for broadening participation in science.

Learning Research

- Knowledge of science is not enough
- Need personal connection to the problem/consequences



Focusing Science and Engineering Learning on Justice-Centered Phenomena across PK-12

What Is The Issue?

In the *Framework* vision for science education, students engage in active investigations to make sense of natural phenomena and analyze and build solutions to problems. Basing these investigations on justice-centered phenomena can be a powerful and rightful way to support science and engineering learning. *Justice-centered investigations* can open up important opportunities for students to engage in projects that support equity for communities and to see how the application of science and engineering are fundamentally entwined with political and ethical questions, dimensions, and decisions.

WHY IT MATTERS TO YOU

- Teachers should help students engage in projects that address intersecting systems of oppression (e.g., racism, sexism, classism, poverty, ableism, heterosexism, ableism, Islamophobia, etc.)
- District Staff & PD Providers should help educators develop phenomena-based justice units and learn to facilitate complex interdisciplinary conversations.
- School Leaders can help teachers connect with justice-centered organizations (e.g., to organize class visits, fieldwork, student presentations)—in addition to supporting justice within the school walls.

Learn: Controversy and Indoctrination



Addressing controversial science topics in the K-12 classroom

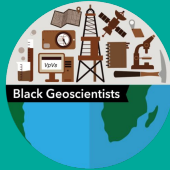
Climate change is a social controversy not a scientific one.

Engaging learners in inquiry based activity avoids indoctrination.

Sustained Learning in Partnership



BLACK
in GEOSCIENCE



- 500 Women Scientists
- SACNAS
- Black in Geosciences
- AAAS SeaChange
- Aspen Global Change Institute
- Climate Literacy and Energy Awareness Network (CLEAN)

