# THE FUTURE NEEDS A PUSH

## FEATURED

EQUITY'S ROLE IN OUR RESEARCH DESIGN

DEFINING CULTURE

EQUITY'S ROLE IN OUR LEARNING ENGINE

WHAT WE ARE LEARNING

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# Equity: A Primary Motivator of Our Work

Racial equity in STEM is the primary motivator behind the STEM PUSH Network and is at the center of all we do.

As we seek to support Black, Latinx, and Indigenous students in gaining admission to STEM in higher education, our overarching goal has equity at its core.

To do our work, we had to first consider how to conceptualize "equity" in STEM. The STEM PUSH Network focuses on **naming** and **framing** equity through the lens of race:

- We draw from education scholars Ladson- Billings, Banks, and Kinloch in framing equity as an active approach to ensure that young people, families, and communities have access to humanizing spaces and high-quality educational opportunities.

- We deliberately name resources for learning—including access to high quality, culturally sustaining pre-college STEM programs (PCSPs)—as one way to address/redress historical and contemporary lack of access.
- We point to the lack of access and power within and around STEM resources and spaces that Black, Latinx, and Indigenous youth and their communities often experience as a critical factor in inequity in STEM higher education.

STEM PUSH NETWORK

# EQUITY'S ROLE IN RESEARCH DESIGN AND TOOLS

A focus on equity has been key to the work of STEM PUSH since its inception as a Design & Development Launch Pilot (DDLP). Equity plays a pivotal role in our hub design, our Networked Improvement Community (NIC) design, tools, and practices, and our ongoing Network growth and development.

## Equity and Culturally Sustaining Pedagogy Trainings

We developed a community engagement framework during the DDLP that distills our understanding of why and how to engage racially minoritized communities and families in the work of pre-college STEM programs (PCSPs). [1]

We engage in ongoing training around equity and culturally sustaining pedagogies and practices with the PCSPs. We introduced PCSPs and Ecosystem leads to the Community Engagement Framework. They participated in a series of workshops on Culturally Sustaining Pedagogy, and PCSPs, NIC members and other leaders presented this work at the Fall 2020 National Ecosystems (SLECoP) convening: *Forwarding equity and justice in STEM through culturally sustaining program practices.*

## What do we mean by culture?

We draw from Dr. Na'ilah Suad Nasir and co-authors' definition of culture-- particularly as connected to young people's experiences of STEM to mean "the constellations of practices communities have historically developed and dynamically shaped in order to accomplish the purposes they value, including the tools they use, social networks with which they are connected, ways they organize joint activity, and their ways of conceptualizing and engaging with the world."

Dr. Gloria-Ladson Billings, Former Kellner Family Professor of Urban Education, Department of Curriculum & Instruction at the University of Wisconsin-Madison [3]

When we say "culturally sustaining" we are drawing from work that began with Dr. Gloria-Ladson Billings' conception of "culturally relevant" pedagogy and practice, which is an asset-focused understanding of the connection between children/families/communities and formal educational experiences with the goals of: students achieving academically; students demonstrating cultural competence--that is maintaining their own heritage and community practices while gaining access to dominant practices; and students understanding and critiquing the existing social order.

Dr. Na'ilah Suad Nasir, President, Spencer Foundation, University of California, Berkeley [2]

1. *Delale-O'Connor, L., Allen, A., Ball, M., Boone, D., Gonda, R., Iriti, J. Slinskey, & Legg, A. (2021) Broadening equity through recruitment: Pre-college STEM program recruitment in literature and practice. Connected Science Learning.*
2. Photo credit: Dr. Nasir's Twitter Profile - @ProfNai
3. Photo credit: Marcus Miles; taken from University of Wisconsin-Madison news

# Ongoing Study

As a community we engage in ongoing study of texts.

In 2021 we read - *Black, Brown, and Bruised: How Racialized STEM Education Stifles Innovation* by Ebony Omotola McGee

In *Black, Brown, and Bruised,* Dr. McGee addresses the ways structural racism negatively impacts the experiences that Black, Latinx, and Indigenous people have in STEM–from high school to career–and the ways that these experiences not only harm people of color, but also scientific progress and innovation.

McGee discusses the racial stereotyping, conscious and unconscious bias, and microaggressions that racially minoritized students experience and offers solutions in the form of policies, practices, and changed structures to change scientific spaces to be more just.

We read this book and engaged in discussion as a network to foster conversation and greater understanding of the structuralized racism that is a feature of STEM fields, the negative experiences that our Black, Latinx and Indigeous students have, and ways our Network members can improve their approaches.
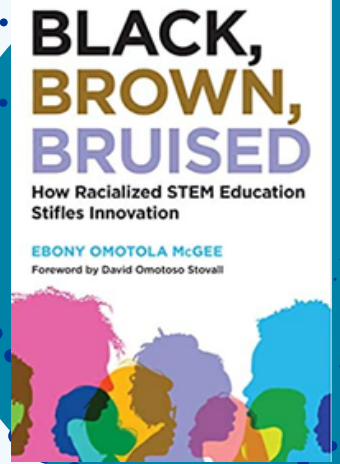
This year, we will be reading two books:

*Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants* by Robin Wall Kimmerer

Dr. Wall Kimmerer engages the importance of Indigenous knowledge and recognizes the stories and lessons that we can gain from our natural environment.

She centers the idea of ecological consciousness –that is, as humans, we are just part of a broader natural world with which we need to consider the importance of care and reciprocity.

Our goal in reading this book together is to not only de-center white, Eurocentric ways of knowing and scientific knowledge, but to further consider the ways approaching the natural world with care and reciprocity might change our understandings of engaging in scientific study.

*Science in the City: Culturally Relevant STEM Education by Bryan A. Brown*

Dr. Brown explores STEM teaching in urban school systems and the importance of engaging science in culturally sustaining ways. He focuses on the inequities experienced by Black and other students of color due to the dominant (white, Eurocentric) approaches to science and science teaching.

Our goal with collective study of this book is to learn from Dr. Brown's pedagogical practices around engaging science in culturally sustaining ways.
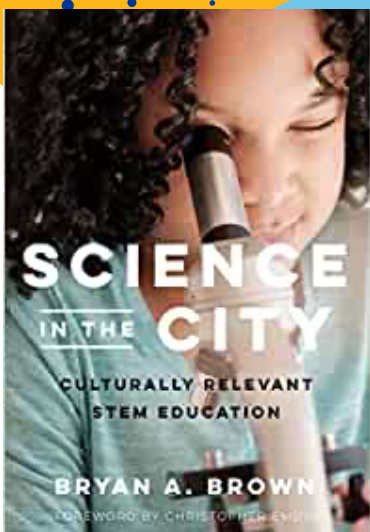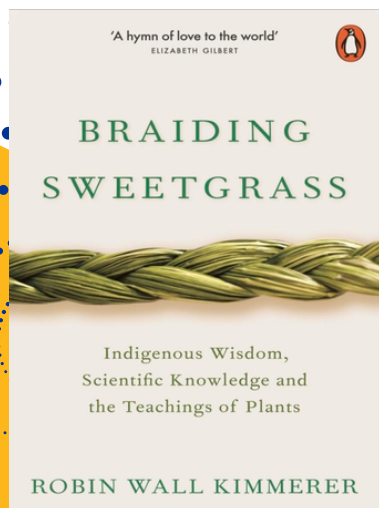
> **STEM PUSH is helping me take my own experiences as a person of color and pose them in such a way that I can connect with students. I take the language STEM PUSH is teaching me and I am able to understand more about my own biases, so I don't make assumptions that might actually be hurtful. Keeping that open mind is very important. It is teaching me how to hone in my experiences and turn them into something useful.**
>
> **This work is important because it never ends. Leveling the playing field is one thing but making things equitable is something that is never ending. I have found through what I've been learning that we have a lot more subtle barriers that we need to overcome.**

-Karen Segura, Science Career Continuum
at the Chicago Botanic Garden

Science Career Continuum at the Chicago Botanic Garden prepares a new generation of scientists with the education and training needed to address the environmental and conservation challenges of our time.



CHICAGO
BOTANIC
GARDEN

## LEADERSHIP DESIGN AND EQUITY

Equity has always been at the center of our STEM PUSH work, but during the grant we have had different configurations and iterations that allowed us to best solidify this central role. Because equity is a key part of everything-- from recruiting programs to our NIC to our accreditation process-- we restructured our working groups so that equity was not its own siloed strand, but rather a working group of the leads of all the other working groups. This allows us to centralize equity in all parts of the work, troubleshooting as needed and focusing on challenges and potential areas for growth.

# EQUITY AS A KEY COMPONENT OF THE NETWORKED IMPROVEMENT COMMUNITY

Our norms are rooted in the idea of being in community in equitable ways, and the associated changes/iterative process around these norms means they push us to live our goals more fully.

While the NIC forwards change packages with content focused on race and racism in STEM (read more about Racism in STEM learning cycle), we have also rooted the tools and processes around the NIC work in regularly focusing on and questioning how the work we are doing forwards racial equity. This has also been an iterative process. Equity has become a design feature of continuous improvement tools such as a Plan-Do-Study-Act template that scaffolds equity into the day-to-day enactment and into protocols for learning consolidation at the conclusion of improvement cycles.

## WHAT WE ARE LEARNING

We are learning the importance of being responsive—to our NIC participants, to new understandings, to each other— in fostering truly equitable spaces.

Responsivity is central to equity because –as we note in our guiding norms– nobody knows everything, but together we know a lot. We have to have the humility to recognize that in approaching a problem as large and embedded across systems as racism and underrepresentation of Black, LatinX, and Indigenous youth in STEM there is a lot for all of us to learn from each other, from the youth, the families, and the communities our Network programs serve, and from other researchers and practitioners engaged in this work.

Programs, and the individuals supporting those programs, are in different places in their understanding of, and engagement in, culturally sustaining pedagogy and practices. As a Network, we must support everyone's differential growth in order to push the work forward.

www.stempushnetwork.org