



# THE FUTURE NEEDS A PUSH

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WINTER 2024-2025

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## FEATURED

UNDERSTANDING AND  
RESISTING METARACISM  
DISCUSSION

STEM, RACE & SYSTEMIC  
INEQUITIES

IMPROVEMENT SCIENCE  
& EQUITY

[www.stempushnetwork.org](http://www.stempushnetwork.org)

## Centering Equity in Improvement Science & Research

Shortly after the presidential election, Tricia Rose, Chancellor's Professor of Africana Studies at Brown University and the director of the Systemic Racism Project at the Center for the Study of Race and Ethnicity in America, shared insights from her book *Metaracism: How Systemic Racism Devastates Black Lives and How We Can Break Free*.

This newsletter covers the Network's discussion with Rose that was part of our book study, an important tool for STEM PUSH's equity and justice-centered work. Because Network members come from different backgrounds and training, STEM PUSH convenes leaders around books that challenge our understanding of STEM experiences for racially minoritized youth and help push thinking and practice.

STEM PUSH book studies are guided by protocols that participating pre-college STEM programs can use to run their own book studies as professional learning for staff. STEM PUSH's goal is to fill professional development gaps around equity that programs face.

This winter issue will cover the discussion in depth, as well as provide some background on STEM PUSH's work and the challenges we are working to address.



# Understanding and Resisting Metaracism: Systems Thinking for Real Change with Tricia Rose

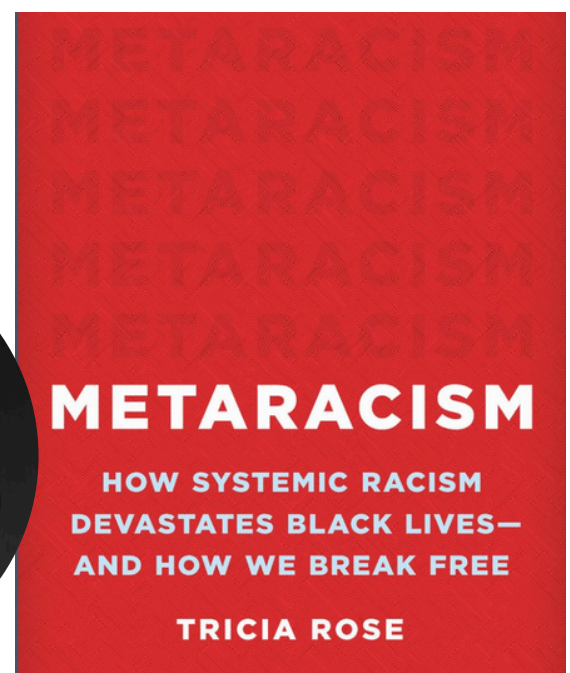
In her book [Metaracism: How Systemic Racism Devastates Black Lives and How We Can Break Free](#), Tricia Rose, Chancellor's Professor of Africana Studies at Brown University and director of the Systemic Racism Project, challenges us to rethink the contemporary forces that drive racial inequality. Rose recently spoke with the STEM PUSH Network, reminding partners that the long-term compounding effects of racial discrimination are not caused primarily by individual acts of intentional hate but rather by our consistent support of a network of policies and practices that appear colorblind but work in a dynamic, compounding, and interconnected way to reinforce and expand racial disadvantages for black and other people of color despite our public expression in support of racial equality. Systems thinking, Rose explains, is a very helpful tool for exposing, understanding, and dismantling the hidden interconnections of systemic racism. It also shows us how our over-emphasis on individual racism contributes to the problem.

Rose's book—and her talk—were the focus of the most recent [STEM PUSH book study](#). The STEM PUSH Network uses book study as one way for partners to grapple with big ideas as a collective—a common text allows network members to explore the challenges and complexities of the equity and justice-centered aspects of the work.

As overt racism dominates headlines and social media, Rose cautions allies not to be distracted by story-frames that identify racism as the result of isolated “bad apples.” The more extreme examples of individual acts of anti-black violence provide cover for quiet, normalized oppressions. Instead of focussing our attention on these outliers, Rose encourages us to rely on systems tools to bring to the fore the invisible design holding racial injustice in place. Systems tools reveal discrimination, but they also empower change by redesigning the impact of interconnection from opposing forces that create inequality to positive interconnections that reinforce racial equity.

“The story of the hateful racist helps us imagine the problem of racism to be ‘out there’ with anti-black extremists. This encourages us to co-sign the myth that society generally gives everyone an equal chance to succeed. The uncomfortable reality is that the problem is right here with all of us,” she explained. Focusing on individuals hides the deeper systems that sustain inequality, making the work of fundamental transformation harder.

For example, Rose debunks the myth that education functions as an equalizer by exposing how educational policies and practices create conditions of racial advantage for white students and racial disadvantages for black students. For example, in regard to school funding, various policies and practices (e.g., funding that uses property-taxes, the support of district boundaries that maintain segregation and consolidate advantages) create massive funding gaps that not only ensure deeply unequal learning experiences but produce racially-distinct learning outcomes. These educational conditions are both the result of the racial wealth gap (largely reinforced by red-lining and racist lending practices that prevent black families from affordable home ownership) and a generator of current and future racial wealth gaps. If education is going to become an equalizer of opportunity, we have to confront how the wealth gap produced by systemic racism in lending, school funding, and district boundary policies work together to create profound disadvantages for black student learners. Without addressing these interconnections, reforms are fragmentary and ineffective. “That doesn't mean you have to become a lending policy expert, but it does mean you have to define the problem of educational disadvantage with these and other interconnections at the core. Otherwise, we end up maintaining the system as it is.”



This same thinking applies to higher education, where access alone does not equal equity. Students of color entering predominantly white institutions face stereotyping, unwelcoming environments, mentorship, and teaching methods rooted in bias. As these systemic conditions are largely unacknowledged or denied, they also bear the burden of realizing and exposing their experiences with systemic racism in an environment that is based on the myth of educational meritocracy. Rose likens this to “sending children into winter without a snowsuit.”

In addition to the equity-centered reform in higher education admissions that STEM PUSH is working to accomplish, partners and allies must ensure dedicated mentors and resources help students navigate these inequitable systems. Rose explains that support doesn’t end with admissions; thoughtful support networks based on the reality of systemic racism and its impact on education can build trust and carry students through higher education.

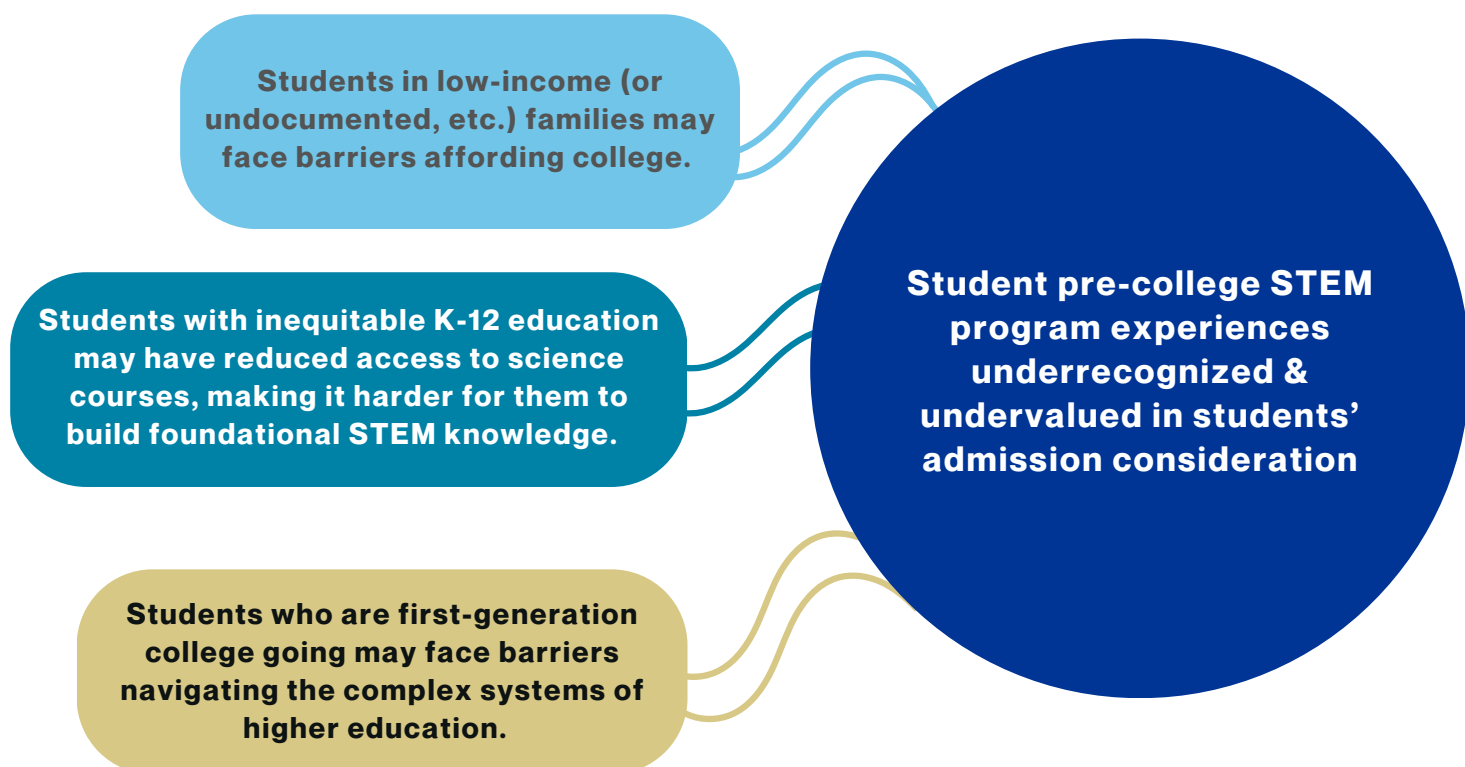
Rose’s work is both a critique and a call to action. Systems thinking reveals that racial injustice exists today across society; is it not a waning holdover from the past expressed by a few marginal people. When we identify those critical interconnections that drive systemic racism, we are also identifying interconnection points where intervention can significantly disrupt harmful patterns. Systemic thinking tools are not just diagnostic—they also unlock the potential for transformative change.

Systemic justice, Rose argues, creates a positive feedback loop and “becomes the foundation for everybody’s opportunity. Leverage points that generate just outcomes create more just outcomes.” When systems connect to support individuals, Rose reminds, people “feel encouraged. People feel like they can learn things that are hard to confront because they have a practical way to support change.”

## What We Learned

The Metaracism book study served as a springboard for the STEM PUSH network to frame tangible steps to identify and counter systemic inequities in STEM admissions and education. Network facilitators mapped some of the metaracist realities that affect equity in STEM for Black, Latinae, and Indigenous students and how those intersect around our leverage point aimed at increasing the visibility and value of students’ pre-college STEM program experiences:

### **Racist systems that may lead to metaracist outcomes for the Black, Latinae, and Indigenous students in our pre-college STEM programs through their STEM education journeys.**



## **Network partners reflected deeply and critically on the connections, identifying how thinking through the systems lens of Metaracism enables us to see that:**

- “We often talk about lack of opportunities, access, etc but [I also think about how] the reverse happens to exponentially increase opportunities for beneficiaries of the system.”
- “Thinking in interconnected ways helps you keep sight of the big goals. Strengthening individual aspects of the programs strengthens the programs as a whole.”
- “...mentors [should] use their mentorship, allyship, and leadership skills to support students - exposure to college experiences aren’t enough if students don’t continue to feel a sense of belonging.”

## **Programs are navigating the interconnected systems impacting their students in various ways:**

- “We hire a lot of program alumni to work with the students and share their program and college experiences (including how their program experience is helping them in college).”
- “We have students who are dealing with housing system injustices at the same time as lack of STEM opportunities, food insecurity, etc.” and programs are helping students to navigate and address some of these as intersections arise.
- “Our program is becoming more intentional in providing opportunities for minoritized students to have flexible enrollment times.”

## **Partners then moved to assess how they felt the systems approach deployed by the network is fostering change, including:**

- Sharing and generating resources to support pathways (providing rigorous STEM opportunities to our students, connecting them with tools to apply to college/for financial aid, helping them see that they belong in STEM)-broadening the system’s perception of what it means to be a “good STEM student.”
- Collectively we are “communicating how students’ experiences in our programs provides them with tools to persist in STEM”
- “The visibility of the network [is] being brought back to our students so that they see they are not alone in what they are doing”

## **Taking the Work Forward**

The book study inspired deep reflection, collaborative dialogue, and commitment to action, as STEM PUSH Network partners embraced Rose’s systems-thinking framework to identify challenges and also leverage points for meaningful change.

Through research, collaboration, and a dedication to continuous improvement, the network is creating pathways to better support marginalized students, ensuring their experiences are valued and their potential fully realized.



# STEM, RACE & SYSTEMIC INEQUITIES

As an NSF INCLUDES Alliance, everything STEM PUSH does is grounded in research and data, including the understanding of the issue we are working to address. Here are some background data points that illustrate what STEM, representation, and historical systems look like in the United States.

## **Fastest growing career sector.**

The [U.S. Bureau of Labor Statistics](#) projects a 10.5% increase in STEM occupations between 2020 to 2023; the equivalent to more than one million jobs.

## **Lack of preparation.**

According to a [2018 report by ACT](#), only 20% of high school graduates ready for college-level STEM coursework.

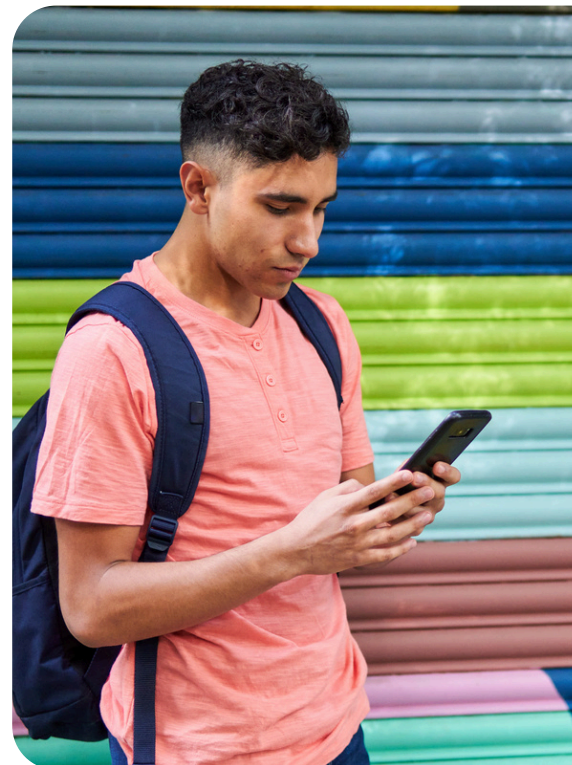
## **Lack of access.**

Computer science majors, for example, can [earn 40% more](#) than the average college graduate, however fewer than 50% of U.S. high schools offer CS classes.

**Underrepresented in workforce.** According to the National Center for Science and Engineering Statistics only 15% Latine, 9% Black, and less than 1% Indigenous populations make up the STEM workforce.

## **Underrepresented in advanced degrees.**

In 2018, [Pew](#) reported Black students earned just 7% of STEM bachelor's degrees. Latine students are less likely than their peers to receive a college degree and college enrollment numbers have declined since the pandemic.



# PUSH-ing toward equity with pre-college programs

Many pre-college programs are successful in preparing students for STEM in higher education. However, these programs have not been systematically leveraged to increase the number of minoritized students admitted to undergraduate STEM programs.

STEM PUSH is the first national network of pre-college programs using improvement science to bolster pre-college STEM programs' capacity in serving Black, Latine, and Indigenous students, as well as raising the awareness of PCSPs' ability to prepare students for rigorous STEM coursework in college and beyond.



## HERE'S HOW STEM PUSH WORKS

The STEM PUSH Network works in the following areas to broaden participation of Black, Latine, and Indigenous students in STEM, and create systemic change in higher education admissions.

### Pre-College STEM Programs

Pre-college STEM programs, from across the nation, come together in STEM PUSH's Networked Improvement Community (NIC) to test new ideas to strengthen their programs.

### Networked Improvement Community: Our Learning Engine

The NIC convenes PCSPs to strengthen programming from evidence-based improvement science.

### Research

STEM PUSH is conducting a longitudinal study on the impact of PCSPs on matriculation and persistence in STEM.

### STEM Learning Ecosystems

STEM PUSH leverages community based partnerships to build and foster cross-sector partnerships that support students from cradle to career.

### Accreditation

PCSPs will be accredited for meeting evidence-based quality standards for broadening participation in STEM.

In a major achievement for greater equity in post-secondary STEM, six STEM PUSH pre-college STEM programs (PCSPs), earned a first-of its kind accreditation from Middle States Association Commissions on Elementary and Secondary Schools (MSA-CES) in April 2024. A second cohort of programs are currently undergoing the accreditation process.

[Learn more about this milestone achievement here.](#)



# Adapting traditional improvement science methods to center racial equity

In a recent *Frontiers* publication, “*Adapting improvement science tools and routines to build racial equity in out-of-school time STEM spaces*,” STEM PUSH demonstrates that improvement science frameworks can be effectively adapted to advance racial equity goals.

For over 20 years, networked improvement communities (NICs) have been popular for their collaborative, evidence-based approaches to enduring educational challenges. Yet, improvement science has traditionally had inconsistent focus and efficacy in working on issues of racial equity.

Through intentional redesigns of tools, processes and cultural norms, STEM PUSH has centered racial equity within improvement science approaches, while highlighting the importance of ongoing reflection and adaptation of practices to truly embed equity throughout the work.

The study examines the integration of equity into improvement science through the case of the STEM PUSH Network, an NSF-funded alliance aimed at increasing racial and ethnic equity in STEM postsecondary enrollment and persistence. Looking at the 40 precollege STEM programs striving to increase participation of Black, Latine, and Indigenous students in STEM undergraduate pathways, the article shares STEM PUSH’s embedding of equity into improvement practices, focusing on professional development in anti-racism and culturally sustaining pedagogy, the adoption of “living” norms, and the restructuring of inquiry cycles to prioritize marginalized voices.

 **frontiers** | Frontiers in Education

TYPE Original Research  
PUBLISHED 20 September 2024  
DOI 10.3389/feduc.2024.1434813

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## OPEN ACCESS

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RECEIVED 18 May 2024  
ACCEPTED 20 August 2024  
PUBLISHED 20 September 2024

CITATION  
Iriti J, Delale-O'Connor L, Sherer JZ, Stol T,  
Davis D, Matthis C, Lowry D and Legg AS  
(2024) Adapting improvement science tools  
and routines to build racial equity in  
out-of-school time STEM spaces.  
*Front. Educ.* 9:1434813.  
doi: 10.3389/feduc.2024.1434813

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## Adapting improvement science tools and routines to build racial equity in out-of-school time STEM spaces

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Over the past two decades, networked improvement communities (NICs) have become popular for their collaborative, evidence-based approaches to enduring educational challenges. However, traditional improvement science has had inconsistent focus and efficacy in working on issues of racial equity. This study examines the integration of equity into improvement science through the case of the STEM PUSH Network, an NSF-funded alliance aimed at increasing racial and ethnic equity in STEM postsecondary enrollment and persistence. The STEM PUSH Network consists of 40 precollege STEM programs that strive to increase participation of Black, Latine, and Indigenous students in STEM undergraduate pathways. This paper tells the developmental story of how the network has embedded equity into its improvement practices, focusing on professional development in anti-racism and culturally sustaining pedagogy, the adoption of “living” norms, and the restructuring of inquiry cycles to prioritize marginalized voices. Initial results indicate that these efforts have significantly improved the network’s equity practice and culture. The network’s experiences reveal challenges such as variations in member capabilities while also demonstrating the potential for NICs to effectively incorporate equity into their practice. The STEM PUSH Network’s journey offers valuable insights for other improvement networks seeking to prioritize equity, showcasing the necessity and impact of deliberate adjustments in improvement science tools and routines.



Equity has been central to everything we do at STEM PUSH. Equity plays a pivotal role in our Hub design, our networked improvement community (NIC), tools, and practices, and ongoing Network growth.

From book studies that allow the Network to read and discuss a common text to learn new ideas and concepts, to publishing ready-to-implement, evidence-based improvement packages that summarize promising ideas, offer a collection of planning guides and resources, STEM PUSH is committed to broadening participation in STEM.

You can download evidence-based change packages to implement within your pre-college program at [www.stempushnetwork.org/resources/](http://www.stempushnetwork.org/resources/)

As a Network, we are only as good as our partners, and believe it is important to learn from the field and promote best practices, share ideas, and facilitate meaningful conversations around access and representation in STEM. Engage with STEM PUSH on LinkedIn and Facebook for our latest tools and stories from the field.

Share your story with us on social media channels or by contacting us on our website. Get others involved. Tell us what you want to learn and talk about.

STEM PUSH encourages partnerships within communities to create stronger pathways for students. Join us at [www.stempushnetwork.org](http://www.stempushnetwork.org)



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The STEM PUSH Network is funded by The National Science Foundation's (NSF) Eddie Bernice Johnson INCLUDES Initiative, a comprehensive national effort to enhance U.S. leadership in discoveries and innovations by focusing on diversity, inclusion and broadening participation in STEM at scale. STEM PUSH is also co-funded by the NSF Innovative Technology Experiences for Students and Teachers (ITEST) program and the Advancing Informal STEM Learning (AISL) program.



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