Roundtable on Systemic Change in Undergraduate STEM Education

The National Academies of

SCIENCES • ENGINEERING • MEDICINE

The National Academies

- A non-governmental organization (NGO)
- Founded in 1863
- Bring together committees of experts in all areas of scientific and technological endeavor
- Address critical national issues and give advice to the federal government and the nation

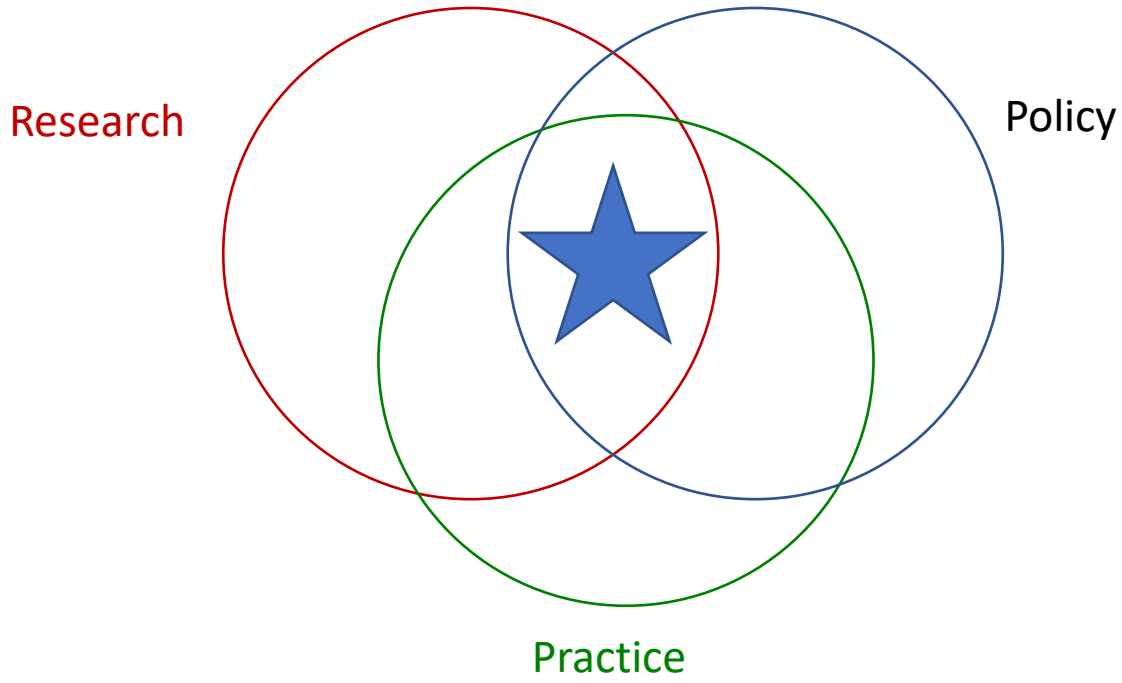
NATIONAL ACADEMY OF SCIENCES

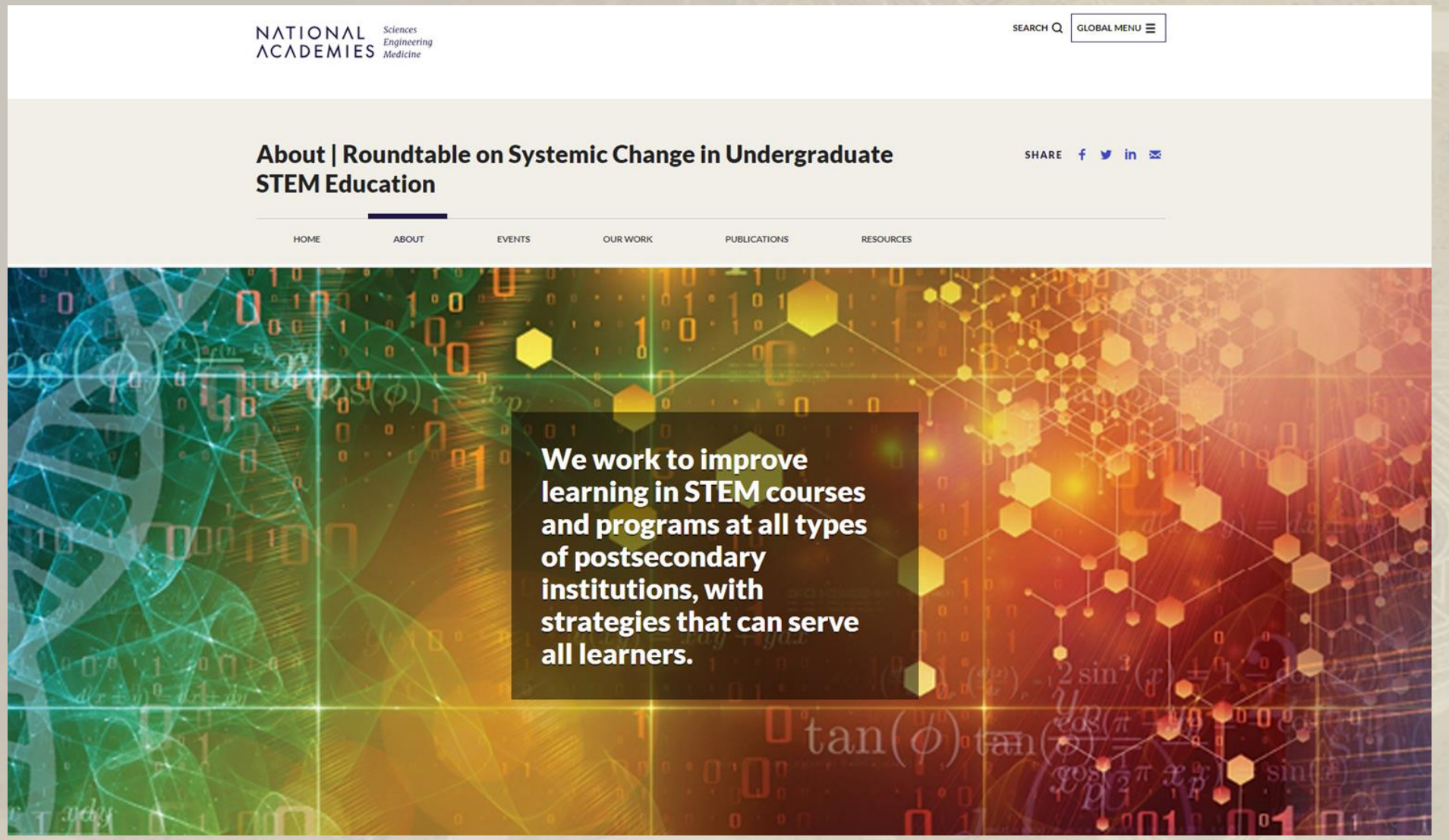
NATIONAL ACADEMY OF ENGINEERING

NATIONAL ACADEMY OF MEDICINE

Board on Science Education

- Provide evidence-based guidance for practice and policy
- Identify future directions for research
- Serve as a connection point between research, policy and practice





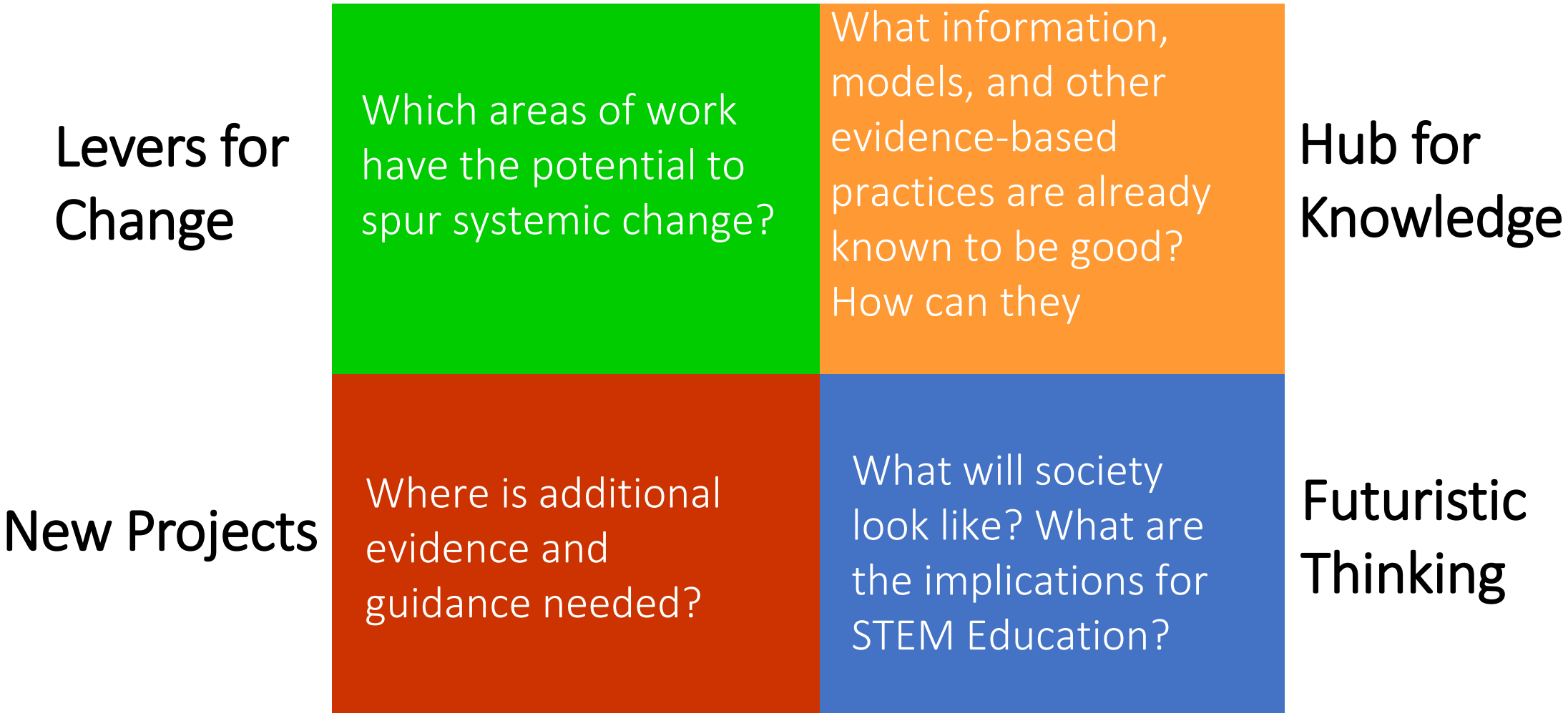
Check out the Roundtable's new website!

Roundtable Mission

*With an **intentional focus on diversity, equity, and inclusion**, the Roundtable on Systemic Change in Undergraduate STEM Education works to advance efforts to **improve learning experiences for undergraduate students in STEM courses and programs**.*

*The Roundtable helps the field anticipate how best to **serve learners** considering the rapidly changing social and economic environment, including dramatic shifts in student demographics, modes of learning, technology, STEM knowledge, commitments to equity and inclusion, and how we think about work.*

Overarching Questions for the Roundtable



The Roundtable is a Three-Legged Stool

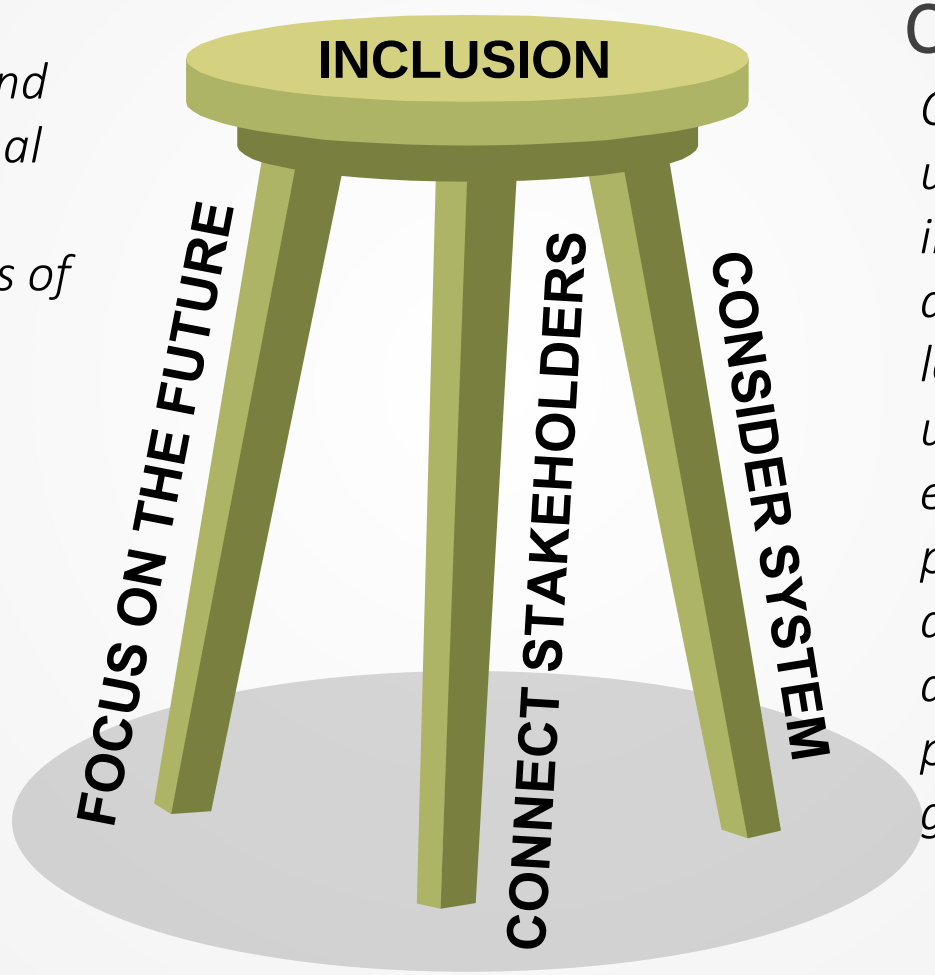
Focus on the Future

Focuses on the future of undergraduate STEM teaching and learning and helps drive a national effort on how best to educate learners to be informed members of society and/or participate in the future STEM workforce.

Connect Stakeholders

Connects and draws upon existing efforts in order to help the community as a whole

1) *identify gaps and*
2) *build momentum for action by stakeholders.*



Consider the Whole System

Considers the system involved in undergraduate STEM education including students, faculty, department chairs, campus leaders, campus administrators, university systems administrators, education researchers, funders, professional societies in the STEM disciplines, associations of colleges and universities, STEM employers, policy makers, influencers, and the general public.

Desired Outcomes

SHORT-TERM OUTCOMES

- Surface potential roadblocks, opportunities, and key levers for change
- Identify gaps where more knowledge is needed or where action is needed
- Establish priorities for action
- Increase coordination among groups engaged in efforts to improve undergraduate STEM education
- Synthesize and share current knowledge

LONG-TERM OUTCOMES

- Increased use of Equitable and Effective Evidence-based teaching practices
- Increased diversity, equity & inclusion in STEM higher education
- Graduates better prepared to function in our complex society
- Graduates better prepared to meet workforce needs
- Retraining & upskilling individuals in the workforce
- More flexible institutions that can respond to changing dynamics and take advantage of new technology
- Better understanding of the dynamics of system change in higher education

Roundtable Priority Topic Areas

Building a STEM Ecosystem for our Communities

Creating Caring Institutions and “Student-Ready” Colleges

Leadership for Cultural Change

Advancing Student Achievement in STEM through a Systems Approach to Change

Engaging the IUSE Community to develop a playbook

1:30-3:30 today in the Chairman's Room

Moderated by:

Beth Cady - NASEM

Howard Gobstein - APLU

Emily Miller - AAU

Travis York - AAAS

Representing the Working Group on Building STEM Ecosystems Roundtable on Systemic Change in Undergraduate STEM Education

Supporting Indigenous Students

Moderator:

Anita Marshall
University of Florida
(Roundtable Member)

Panelists:

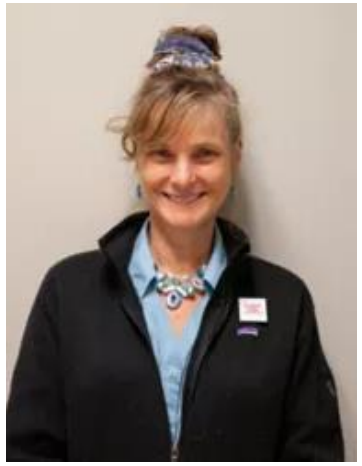
Tyler Hallmark
Sloan Foundation

Twyla Baker
Nueta Hidatsa Sahnish College

Natalie Youngbull
University of Oklahoma

Supporting Indigenous Students:
Exemplars of Student Programs

Moderator:



Leanne Avery
SUNY Oneonta
(Roundtable Member)

Panelists:

Alvin Altamirano
Northern Arizona University

Tia Gramzinski
Northern Arizona University

Steven Davis
Montana State University

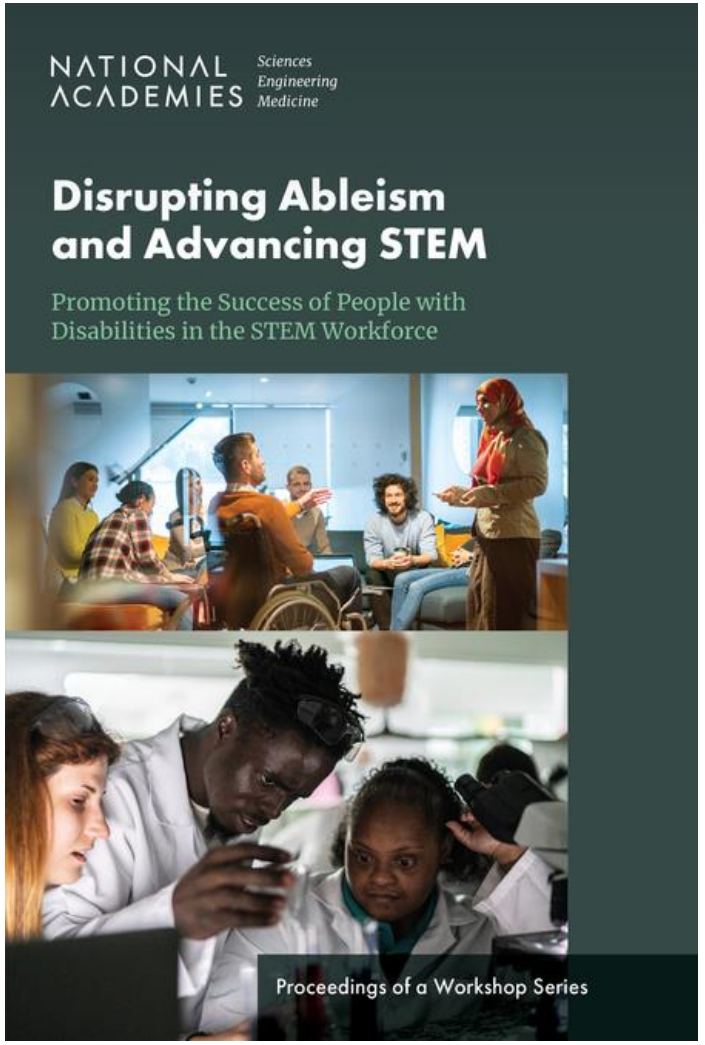
Tiffany Smith
American Indian Science and Engineering Society

Students with Disabilities

Disrupting Ableism and Advancing STEM:

June 3,, 2023	A National Leadership Summit
June 7 , 2023	Creating Disability-Inclusive Workforces and Workplaces
June 13. 2023	Fostering Effective Mentorship in the STEM Ecosystem
June 15, 2023	Cultivating Accessible Educational Pathways and Spaces
June 16, 2023	Rooting out Bias and Barriers
June 10, 2024	A Year of Reflections and Actions

tinyurl.com/BeyondComplianceProject



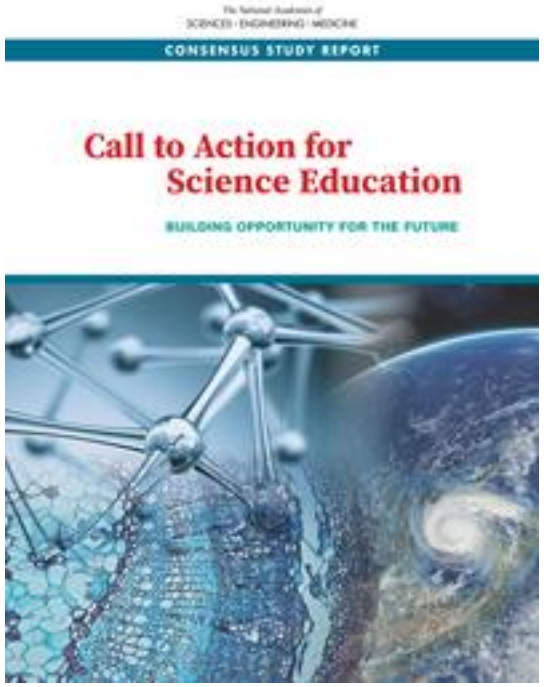
Connections with Community and Employers

Call to Action for Science Education: Building Opportunity for the Future

Spotlight on Higher Education: A New Vision for Higher Education

RECOMMENDATION 6: The federal government, philanthropic organizations, and business and industry should provide funding to support the work of local and regional Alliances for STEM Opportunity as they work to improve science education. Funding should be targeted first to communities where a significant number of students live in poverty. Funds should support coordination and management of the alliances, programmatic efforts, and research and evaluation.

www.nap.edu/ctascienceeducation



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www.bose.edu