



BALANCING THE EDUCATION EQUATION

Advancing the Argument for Equity

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2:20-4:00



WARM UP ACTIVITY



The changing public school context



How are we changing?

- Increasing poverty
- Increasing racial diversity
- More linguistically diverse

The Nation's 21st Century Goals

- Increase economic global competitiveness
- Ensure environmental stability
- Maintain our national defense and security

Our Nation's Workforce Challenge

- an underrepresentation of women, Blacks, and Hispanics in STEM jobs at rates lower than their U.S. population representation;
- an aging STEM workforce;
- a STEM workforce that is disproportionately foreign-born particularly at the highest levels
- an increasing demand for science and engineering workers higher than for all occupations (18.7 percent vs. 14.3 percent).

Change the Equation, 2015



The Potential Consequences of Failure

- Workforce shortages may increase the risk of critical defense lapses;
- Individuals, their communities, and the nation may lose significant revenues; and
- The nation's ability to address growing instability due to climate change and environmental extremes may be weakened.

Goals

- **Goal 1:** Expand the *number of women and minorities* who ultimately pursue advanced certificates, degrees, and careers in STEM fields to ensure full participation of all U.S. students in those fields.
- **Goal 2:** Focus on the interests and needs of females and other underrepresented students to increase STEM literacy for all U.S. students.

HOW DO WE DO THIS WORK?

Solving the Education Equation

HIGH-QUALITY EDUCATION =

- TEACHER CONTENT KNOWLEDGE
- TEACHER PEDAGOGICAL SKILLS
- ACCESSIBLE RESOURCES
- MEANINGFUL STUDENT ASSESSMENTS
- ***EQUITABLE LEARNING ENVIRONMENTS***



Equitable learning environments...

Educators and policy makers are responsive to:

- the ways that diverse students may be marginalized by our traditional education system;
- the multiple perspectives, values, experiences, and beliefs of diverse students and their families;
- student-centered learning and assessment; and
- soft skill development including free inquiry, relevant and collaborative learning, and continuous reanalysis

Missing Variable = Growing Gaps

- Academic achievement gaps (also referred to as equity gaps) between White/Asian students and students of color evident in STEM/CTE courses and programs.
- A lack of “interest” in STEM courses and careers because of entrenched cultural attitudes and beliefs about innate abilities.

Sources of Achievement/Interest/Equity Gaps

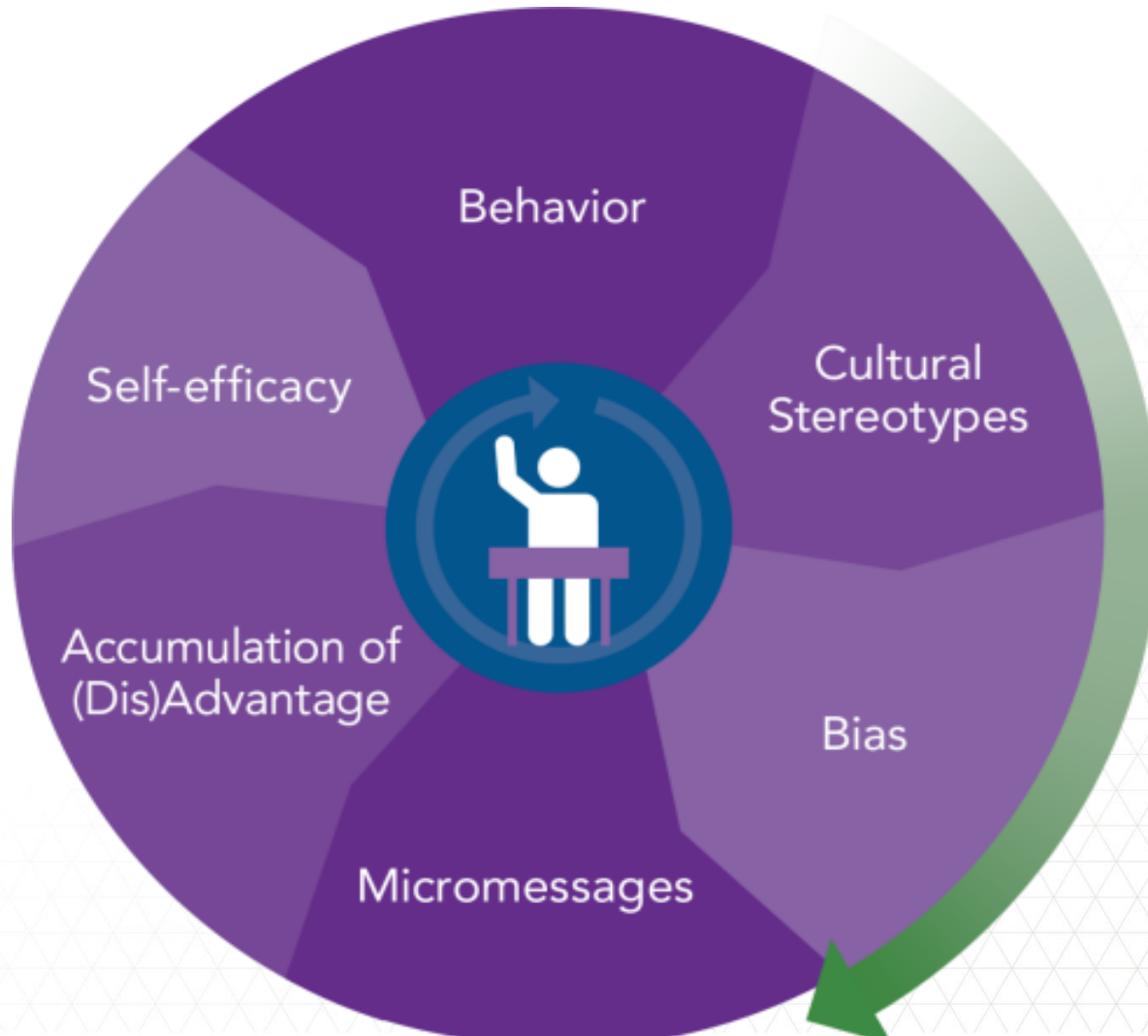
- poverty;
- family experience with education;
- cultural norms;
- racism, prejudice, and segregation;
- inequities in student resources;
- school and teacher attitudes;
- student motivation; and
- school environment

Addressing content and pedagogical knowledge, assessments, and even providing additional funding and resources alone will not address these gaps

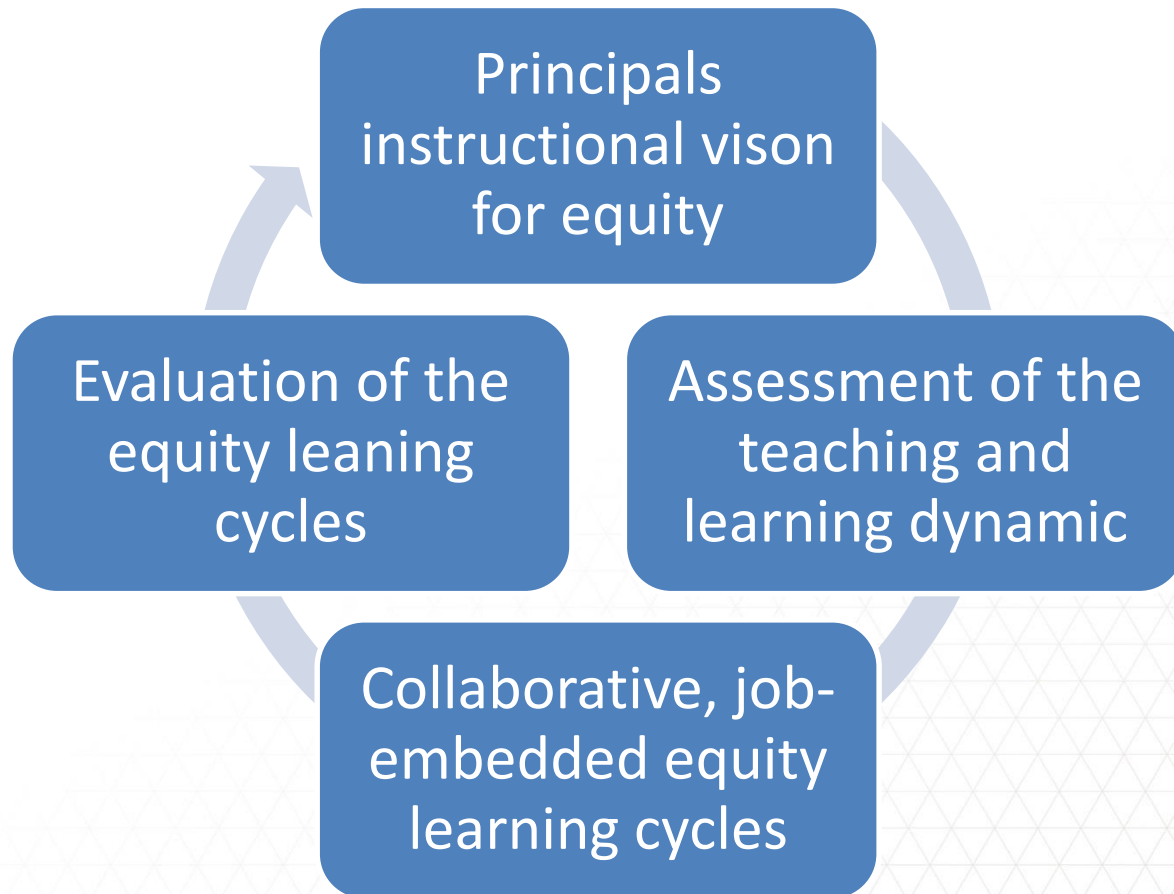
Addressing the Missing Variable

Address the culturally based explicit and implicit biases that exist in education (particularly in STEM courses and programs) to create inclusive, culturally responsive, equitable learning environments for every student.

Model 1: Micromessaging for Teachers



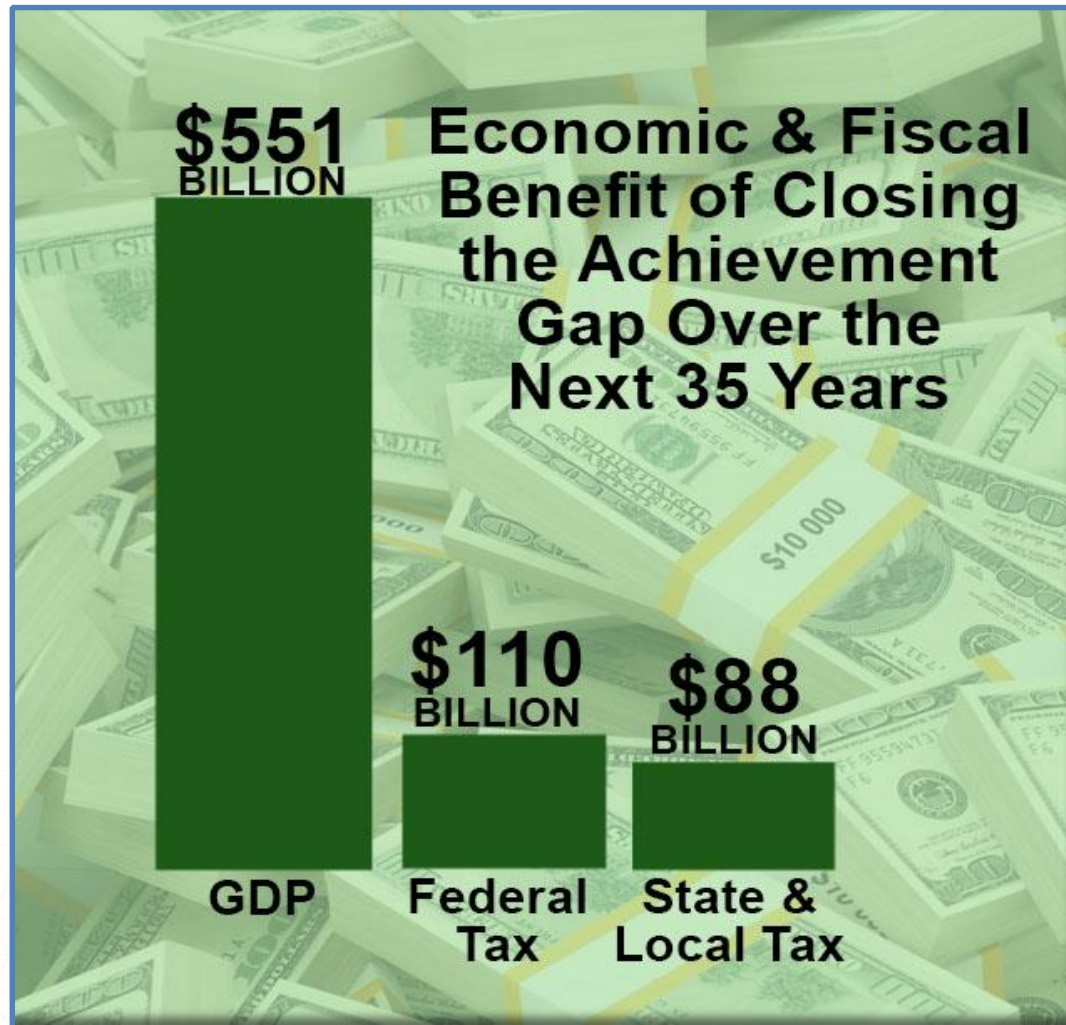
Model 2: PACE



Results of Equitable Environments

- Increased group work and collaboration
- Continuous redesign and improvement
- Respect and value for nontraditional, socially, and culturally different beliefs and behaviors
- Complexity/multidisciplinary learning, struggle for solutions, risk-taking, creativity
- Adjustable timelines and course corrections.

Solving the Education Equation Makes Cents



Recommendations for Policy and Practice Reform



Recommendation #1

Create regulatory procedures, with funding mechanisms, for tracking and evaluating efforts to ensure that all educators are competent to provide an accessible, inclusive, and equitable learning environment for every student in STEM.

Recommendation #2

Work through accredited schools of education and state and local educational agencies to provide professional development that expands the standard for highly qualified educators to include the ability to provide an equitable learning environment for every student in STEM.



Recommendation #3

Require the use of accountability indicators and disaggregated sociodemographic data to measure progress toward closing achievement and interest gaps in STEM through policy and practice reform at the local, state, and national levels.

Recommendation #4

Provide federal funding for pilot research studies that can deepen our understanding of the potential for equity in education to rapidly narrow achievement and interest gaps, as well as of the results of the strategies employed.



Recommendation #5

Every 5 years, conduct an evaluation and prepare a report to Congress that describes the nation's progress toward closing achievement and interest gaps in STEM for every student by 2050.

Recommendation #6

- **Work collaboratively with nonprofits and historically minority-serving institutions that purposefully serve low-income and first-generation college students to build and connect databases that host quality research and practice to broaden our understanding of equitable learning environments to ensure that every student is STEM literate.**

Overall Thoughts and Next Steps



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“All great achievements require time.” —Maya Angelou