

Equity in Action Math Leadership Practices to Ensure All Means All

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NCSM Mission Statement

NCSM is a mathematics education leadership organization that equips and empowers a diverse education community to engage in leadership that supports, sustains, and inspires high quality mathematics teaching and learning every day for each and every learner.



NCSM Vision Statement

NCSM is the premiere mathematics education leadership organization. Our bold leadership in the mathematics education community develops vision, ensures support, and guarantees that all students engage in equitable, high-quality mathematical experiences that lead to powerful, flexible uses of mathematical understanding to affect their lives and to improve the world.





What specific teaching and leadership actions are needed to promote mathematical learning for all?

How do we can infuse equity into every teacher and leadership action?

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Current Reality

- 2007: **374,037** students enrolled in AP Calculus AB, BC and Statistics
- 2017, **664,453** students enrolled in AP Calculus AB, BC and Statistics

Source: AP College Board

<https://research.collegeboard.org/programs/ap/data/nation>

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ACT Trend Data

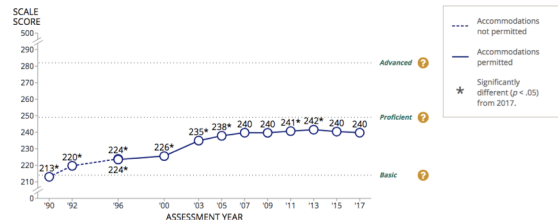
Year	# of Students tested	% proficient on Mathematics
2008	1,421,941	43
2010	1,568,835	43
2012	1,666,017	46
2014	1,845,787	43
2016	2,090,342	41
2018	1,914,817	40

Source: ACT

<http://www.act.org/content/act/en/products-and-services/the-act/scores/national-ranks.html>

4th grade NAEP scores

Trend in fourth-grade NAEP mathematics average scores



Source: NAEP

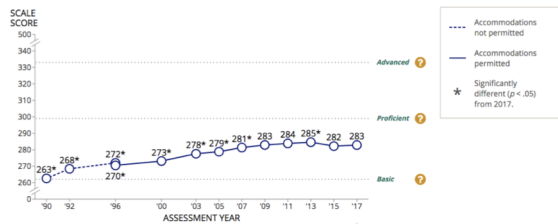
https://www.nationsreportcard.gov/math_2017

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8th grade NAEP Scores

Trend in eighth-grade NAEP mathematics average scores



Source: NAEP

https://www.nationsreportcard.gov/math_2017

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8th grade NAEP Achievement Gap

Trend in eighth-grade NAEP mathematics average scores and score gaps, by race/ethnicity



Source: NAEP

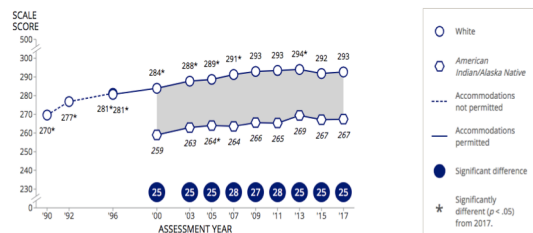
https://www.nationsreportcard.gov/math_2017

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8th grade NAEP Achievement Gap

Trend in eighth-grade NAEP mathematics average scores and score gaps, by race/ethnicity



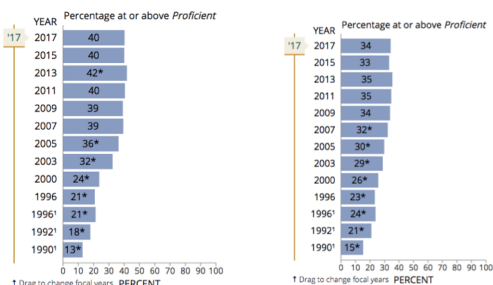
Source: NAEP

https://www.nationsreportcard.gov/math_2017

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Trends in NAEP mathematics achievement-level results



4th Grade

8th Grade

Trends in NAEP mathematics achievement-level results

Year 4 th Grade	White	Black	Hispanic	American Indian/ Alaska Native
1990	16	1	5	*
2015	51	19	26	23
2017	51	19	26	24

Source: NAEP

https://www.nationsreportcard.gov/math_2017

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Trends in NAEP mathematics achievement-level results

Year 8th Grade	White	Black	Hispanic	American Indian/ Alaska Native
1990	18	5	7	*
2015	43	13	19	20
2017	44	13	20	18

Source: NAEP
https://www.nationsreportcard.gov/math_2017

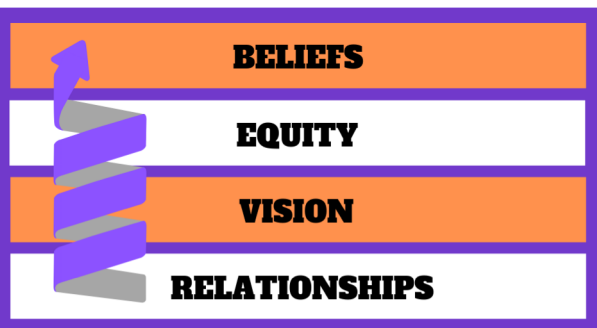


Essential Actions

- **Equity Action #1:** Create a culture of learning for all.
- **Equity Action #2:** Create a shared collaborative culture for students and teachers.
- **Equity Action #3:** Build a culture of transparency.



Equity Action #1: Create a culture of learning for all.



To what degree does your team or the teachers you serve agree or disagree with these statements?

- Mathematics ability is a function of opportunity, experience, and effort—not of innate intelligence. Mathematics teaching and learning cultivate mathematics abilities. All students are capable of participating and achieving in mathematics, and all deserve support to achieve at the highest levels.
- Effective mathematics instruction leverages students' culture, conditions, and language to support and enhance mathematics learning.
- The practice of isolating low-achieving students in low-level or slower-paced mathematics groups should be eliminated.
- All students are capable of making sense of and persevering in solving challenging mathematics problems and should be expected to do so. Many more students, regardless of gender, ethnicity, and socioeconomic status, need to be given the support, confidence, and opportunities to reach much higher levels of mathematical success and interest.

Source: NCTM (2014, pp. 63–64).

Equity Action #1: Create a culture of learning for all.

Instead of thinking or stating:	Discussion can be centered around...
Those students can't...	
They do not want to learn.	
They are not motivated, or they do not even try.	
They don't do anything.	
These students are low.	

Students Mathematical Identity

“Cultivate and sustain a positive mathematics identity and affect in students as doers of mathematics.”

Aguirre, Mayfield Ingram, & Martin, (2013)




Figure 2.3. Productive Beliefs About Access and Equity in Mathematics Tool

To what degree do you agree or disagree with these statements in the context of your school?

Agree					Disagree
1	2	3	4	5	
1.					Mathematics ability is a function of opportunity, experience, and effort—not of innate intelligence. Mathematics teaching and learning cultivate mathematics abilities. All students are capable of participating and achieving in mathematics, and all deserve support to achieve at the highest levels.
2.					Equity is attained when students receive the differentiated supports (for example, time, instruction, curricular materials, programs) necessary to ensure that all students are mathematically successful.
3.					Equity—ensuring that all students have access to high-quality curriculum, instruction, and the supports that they need to be successful—applies to all settings.
4.					Students who are not fluent in English can learn the language of mathematics at grade level or beyond at the same time that they are learning English when appropriate instructional strategies are used.
5.					Effective mathematics instruction leverages students' culture, conditions, and language to support and enhance mathematics learning.
6.					Effective teaching practices (for example, engaging students with challenging tasks, discourse, and open-ended problem solving) have the potential to open up greater opportunities for higher-order thinking and for raising the mathematics achievement of all students, including poor and low-income students.
7.					The practice of isolating low-achieving students in low-level or slower-paced mathematics groups should be eliminated.
8.					All students are capable of making sense of and persevering in solving challenging mathematics problems and should be expected to do so. Many more students, regardless of gender, ethnicity, and socioeconomic status, need to be given the support, confidence, and opportunities to reach much higher levels of mathematical success and interest.

Source: NCTM (2014, pp. 63–64).

 Visit <https://www.mathedleadership.org/resources/summary.html> to download a free reproducible version of this figure.

How do you
build a
positive
mathematics
identify?



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**Equity Action #2: Create a shared
collaborative culture**



Meaningful Teacher Team Engagement

Leaders must develop high levels of
collaboration that:

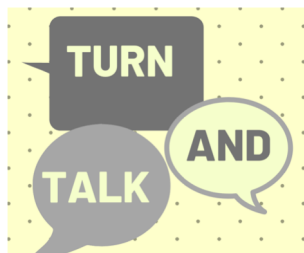
- Create a shared productive culture
- Focus professional learning to match student learning needs
- And ultimately **IMPACT** student learning

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Student-to-Student Collaboration

What is your vision of students mathematical discussions?



Equity Action #3: Build a Culture of Transparency.



Strategies to Build a Culture of Transparency

Assessment

- Assessment plans and calibrate scoring
- Define proficiency
- Data dialogue
- Analyzing student thinking

Instruction

- Lesson studies
- Instructional rounds
- Pineapple chart
- #observeme

Develop a shared understanding of the mathematics teaching and learning.



Engage in Action Research

Protocols provide a framework for team discussions.

1. Identify the question.
2. Collect the evidence.
3. Analyze the evidence.
4. Plan next steps.