RUSMP Pledges: Anchors for Staying True to What We Know Best Serves Children and Teachers

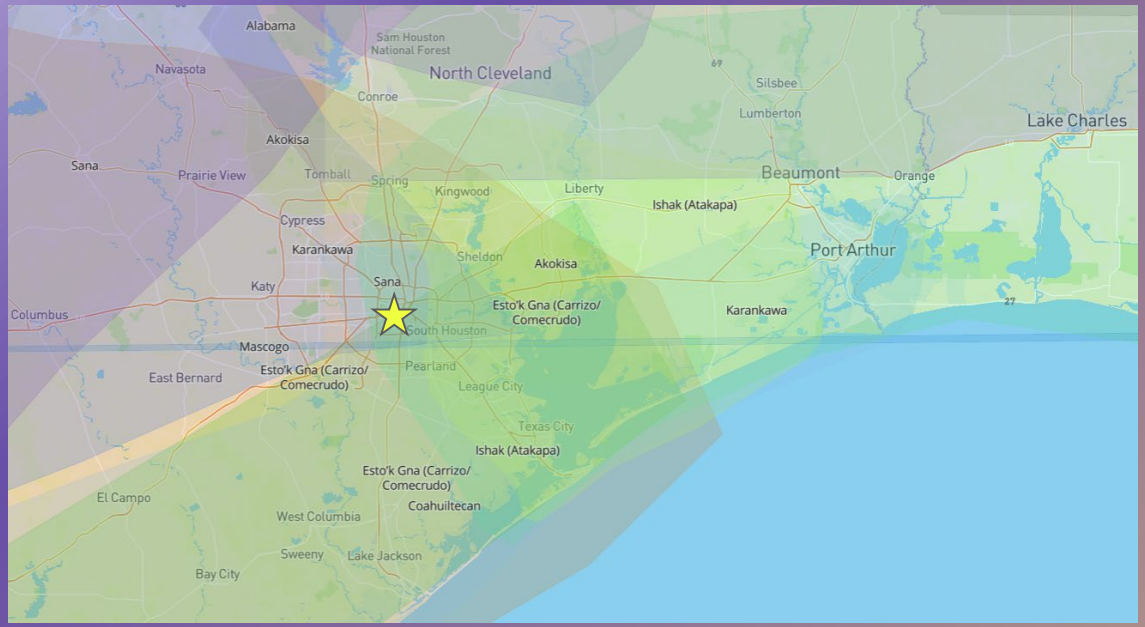
Dr. Paul Gray, NCSM President

RUSMP Fall Networking Conference

Houston, Texas

October 14, 2023

NCSM
LEADERSHIP IN MATHEMATICS EDUCATION



Ancestral lands of the following Indigenous Nations

- Karankawa
- Atakapa (Akokisa band)

Source: https://native-land.ca/

WHAT IS NCSM?

NCSM is the premiere mathematics education leadership organization!

Professional learning network

Annual conference full of sessions for people who lead math teachers

2,700 members strong

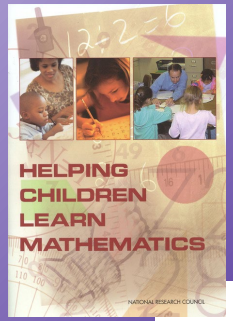
Focused on equity for all teachers and students to experience high-quality math teaching and learning

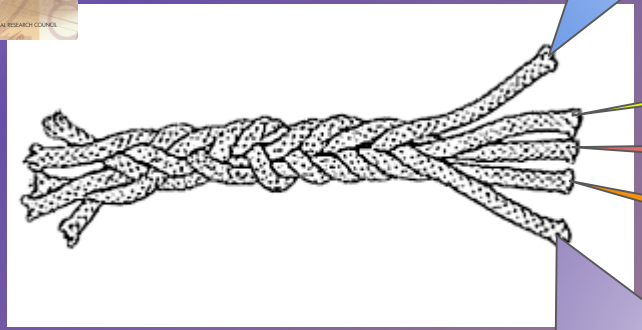
Source for resources so I can do my job as a math leader better.

www.mathedleadership.org

NCSM
LEADERSHIP IN MATHEMATICS EDUCATION

What do we know about how children learn mathematics?





Conceptual Understanding
Comprehension of mathematical concepts, operations, and relations

Procedural Fluency
Skill in carrying out procedures flexibly, accurately, efficiently, and appropriately

Strategic Competence
Ability to formulate, represent, and solve mathematical problems

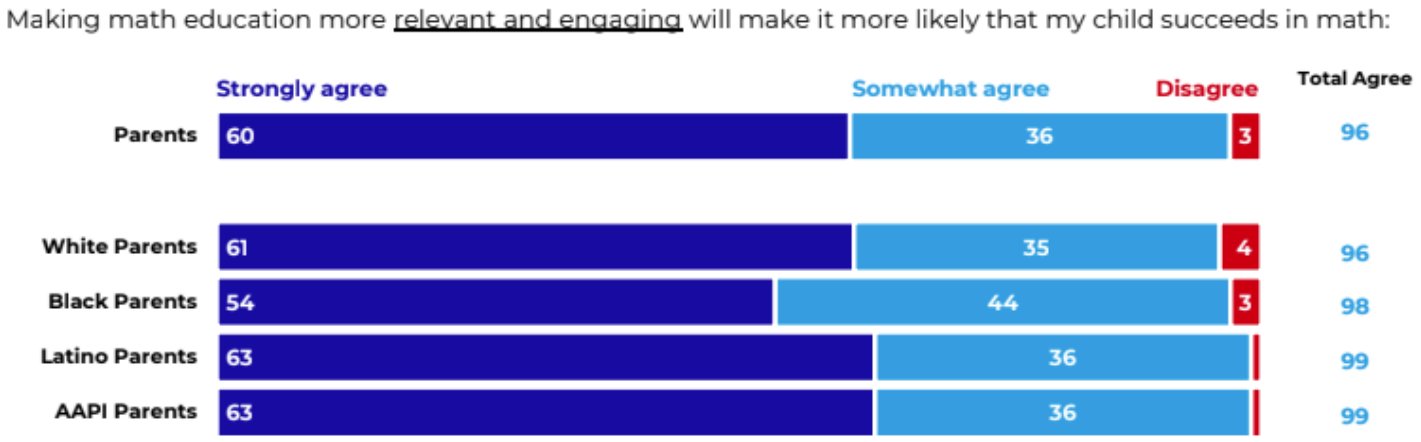
Adaptive Reasoning
Capacity for logical thought, reflection, explanation, and justification

Productive Disposition
The habit of seeing mathematics as sensible, useful, and worthwhile with a belief in diligence and one's own efficacy

Adapted from National Research Council, *Adding It Up* (2001)


Culturally relevant
instruction

Parents across groups feel that their own child would be more likely to excel in math class if it felt more relevant and engaging



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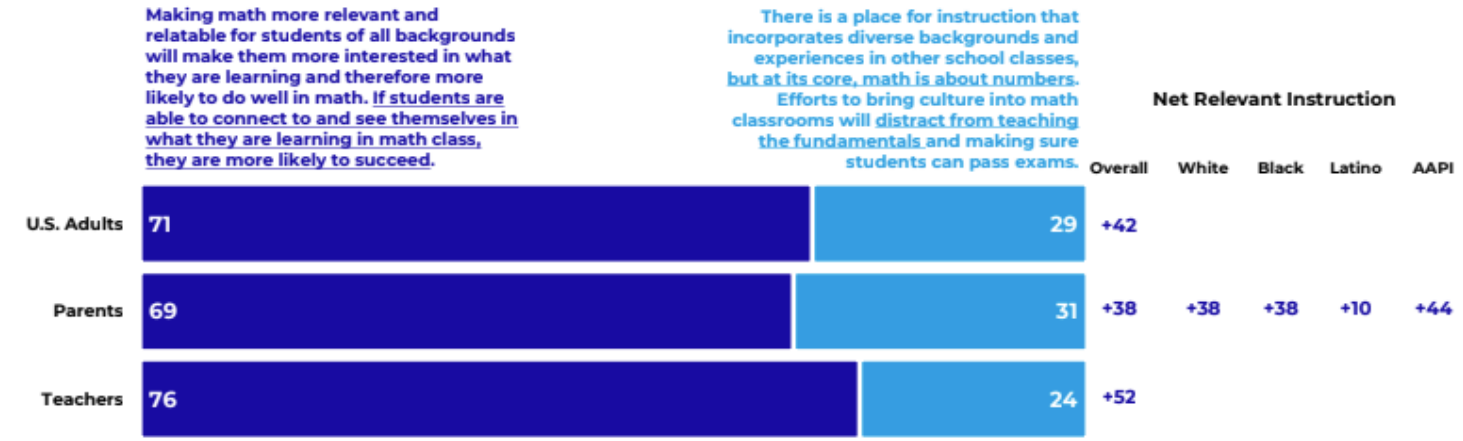
GSG

Source: Global Strategy Group, May 2023

Large majorities are inclined to believe that making math education more personally relevant and relatable for students of different backgrounds will make it more likely that they succeed in math class

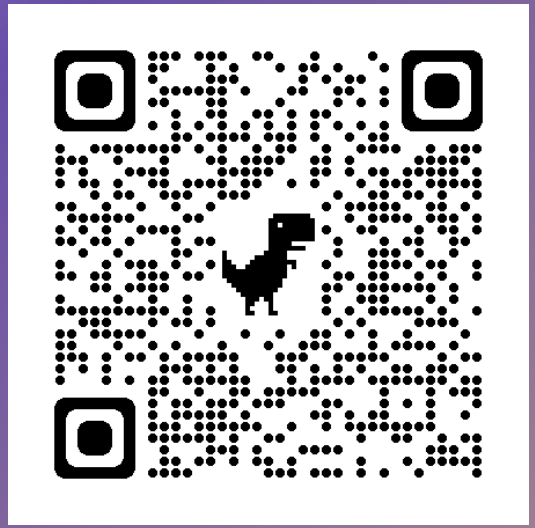


GSG

Source: Global Strategy Group, May 2023

NCSM
LEADERSHIP IN MATHEMATICS EDUCATION

Culturally Relevant Instruction

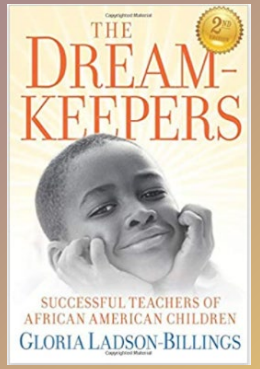


“I think we’ve been asking some of the same old questions, and they haven’t been yielding very much.

We’ve been asking what’s wrong with these kids, what’s wrong with their parents, what’s wrong with their culture…I think those are not the right questions. I think we have to begin to ask questions about how might school be very different?”

–Dr. Gloria Ladson-Billings

What is culturally relevant teaching?



"..a pedagogy that empowers students intellectually, socially, emotionally, and politically by using cultural referents to impart knowledge, skills, and attitudes. These cultural referents are not merely vehicles for bridging or explaining the dominant culture; they are aspects of the curriculum in their own right."

Gloria Ladson-Billings, *The Dreamkeepers*, (1994, pp. 17-18)

Pillars of Culturally Relevant Pedagogy

Academic Excellence

Attention must be paid to academic content development as to avoid a "feel good" curriculum that leaves students without the necessary content knowledge.

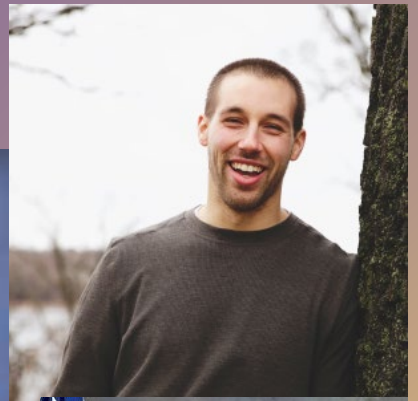
Pillars of Culturally Relevant Pedagogy

Cultural Competence

Students must learn how to appreciate and affirm their own culture while developing fluency in at least one other culture.

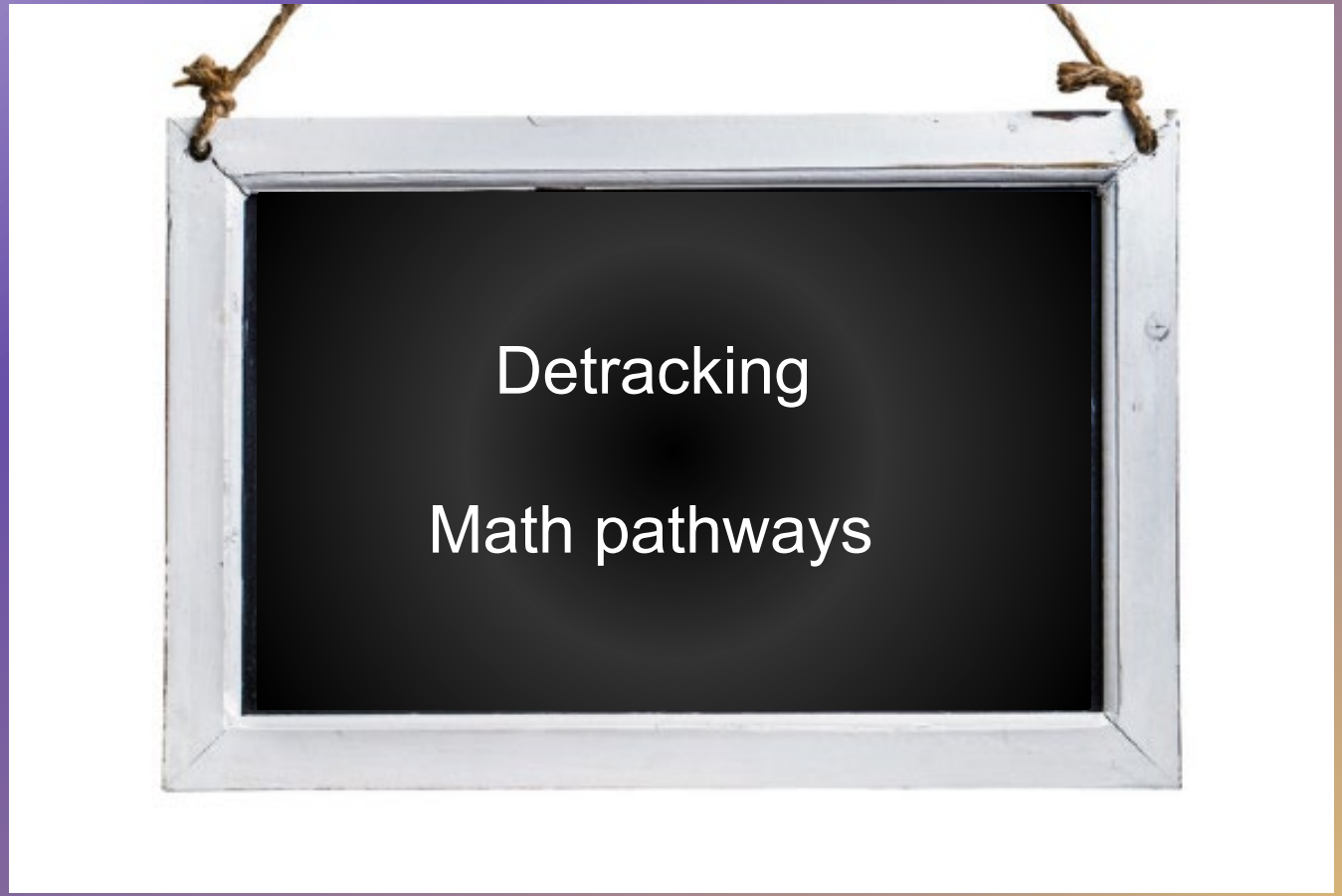
Cultural Competence and Identity

Cultural Competence and Identity



Pillars of Culturally Relevant Pedagogy

<u>Critical Consciousness</u>
Students must develop an ability to identify, analyze, and solve real-world problems, particularly problems resulting from societal inequities.


Detracking
Math pathways

Back in the day…

- National Education Association convened the 1892 Committee of Ten.
  - Goal - provide coherence to what students were studying in “school”

1894

12 years of education
8 years of elementary then 4 years of high school

High School math: 2 years of algebra and 1 year of geometry

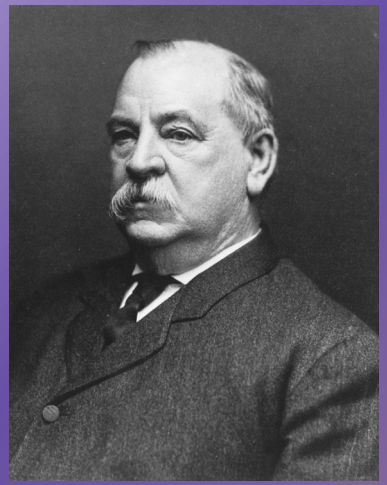
127 years later…

2023

Dallas (TX) Independent School District graduation requirements:

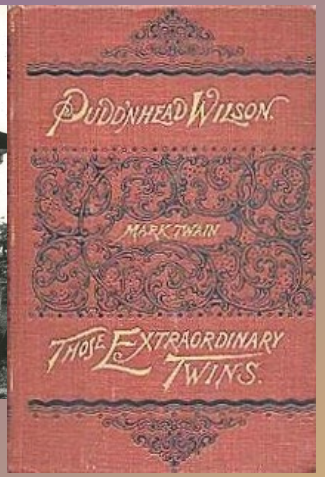
4 years of math, including 2 years of algebra and 1 year of geometry

Life in 1894




NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY
BELL SYSTEM
LOCAL AND LONG DISTANCE TELEPHONE
UBLIC TELEPHONES


DISASTER AREA
CITY FAILED US
TAXATION WITHOUT REPRESENTATION
FED. GOVT. HELP


PUDD'NHEAD WILSON
MARK TWAIN
THOSE EXTRAORDINARY TWINS


Happy
LABOR DAY

Selected High School Math Change Efforts

1980s
States like New York tinker with integrated mathematics approach

2000
NCTM publishes *Principles and Standards for School Mathematics*

2006
NCTM publishes *Curriculum Focal Points*

2009
NCTM publishes *Focus in HS Mathematics: Reasoning and Sense Making*

2010
NGA and CCSSO publish *Common Core State Standards*

2018
NCTM publishes *Catalyzing Change in HS Mathematics*

Closing the Opportunity Gap: A Call for Detracking Mathematics

A position statement from NCSM: Leadership in Mathematics Education

Our Position

NCSM, Leadership in Mathematics Education, believes that all students should have access to high-quality instruction and post-secondary educational opportunities. While we acknowledge that many factors hinder such student access, in this position statement we call for the cessation of one clear, addressable factor: the practice of tracking. As a practice, tracking too often leads to segregation, dead-end pathways, and low quality experiences, and disproportionately has a negative impact on minority and low-socioeconomic students. Additionally, placement into tracks too often lacks transparency and accountability. Overall, tracking does not improve achievement but it does increase educational inequality. In light of this, NCSM calls instead for detracked, heterogeneous mathematics instruction through early high school, after which students may be well-served by separate curricular pathways that all lead to viable, post-secondary options.

What is tracking?

Tracking is the practice of placing students in particular tracks of mathematics classes based on perceived ability.

- Tracks may include advanced/honors/PreAP, regular, and basic/remedial.
- Tracks are rigid and students may not flexibly move between them.
- Tracks may be disguised as “open enrollment” where students may sign up for different courses but are not provided with supports to make them successful.

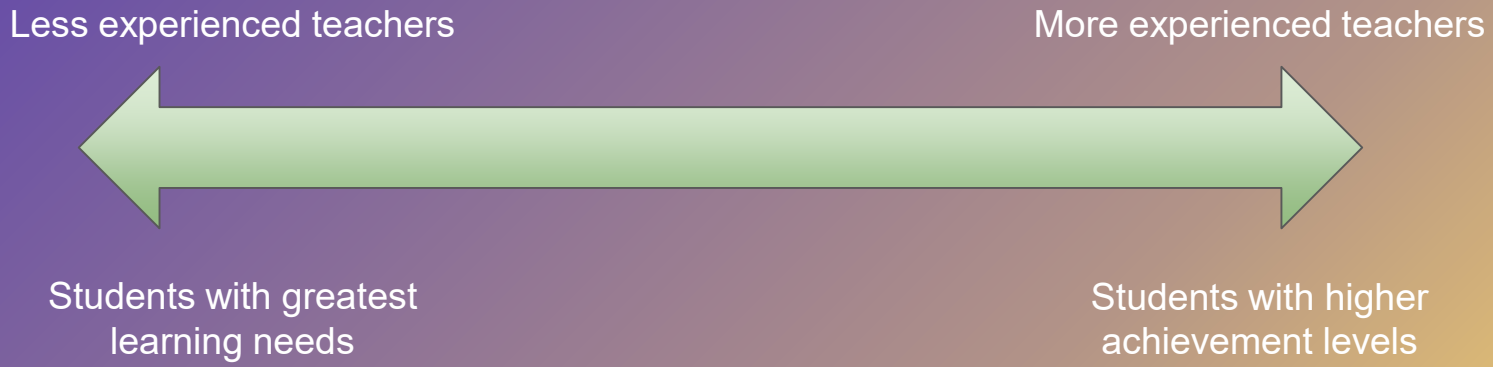
Typically, students in lower-performance tracks receive instruction focused on skill development and practice.

Typically, students in higher-performance tracks receive instruction focused on application and problem-solving.

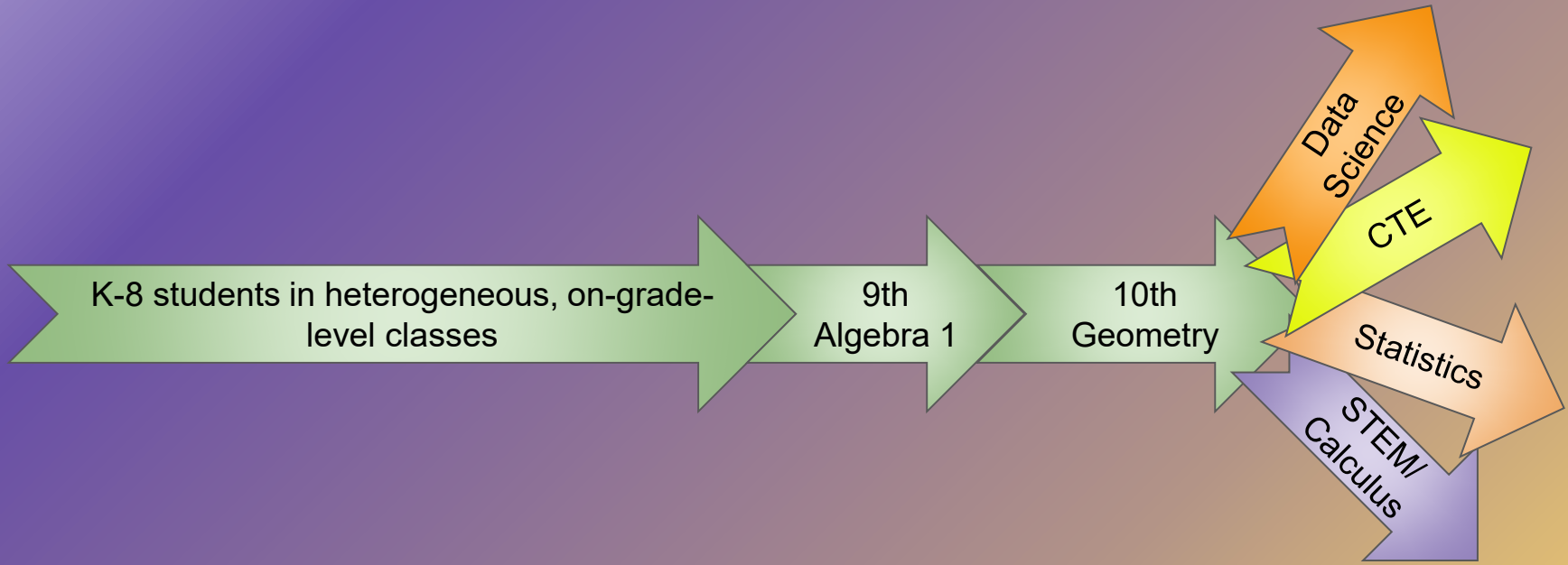
Typically, students experiencing poverty and students of color are more likely to be placed in lower-performance tracks.

We also track teachers!

Formal and informal policies allow experienced teachers to select the students they teach



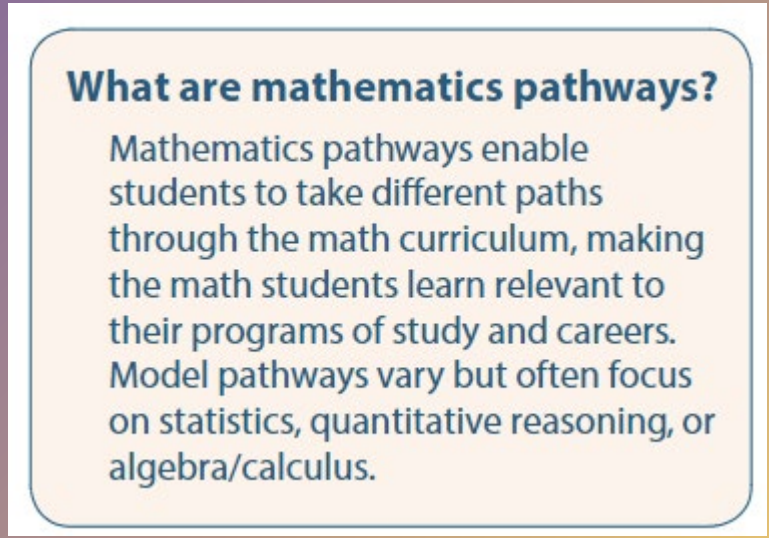
What does a detracked system look like?



Math Pathways - Dana Center Launch Years Project

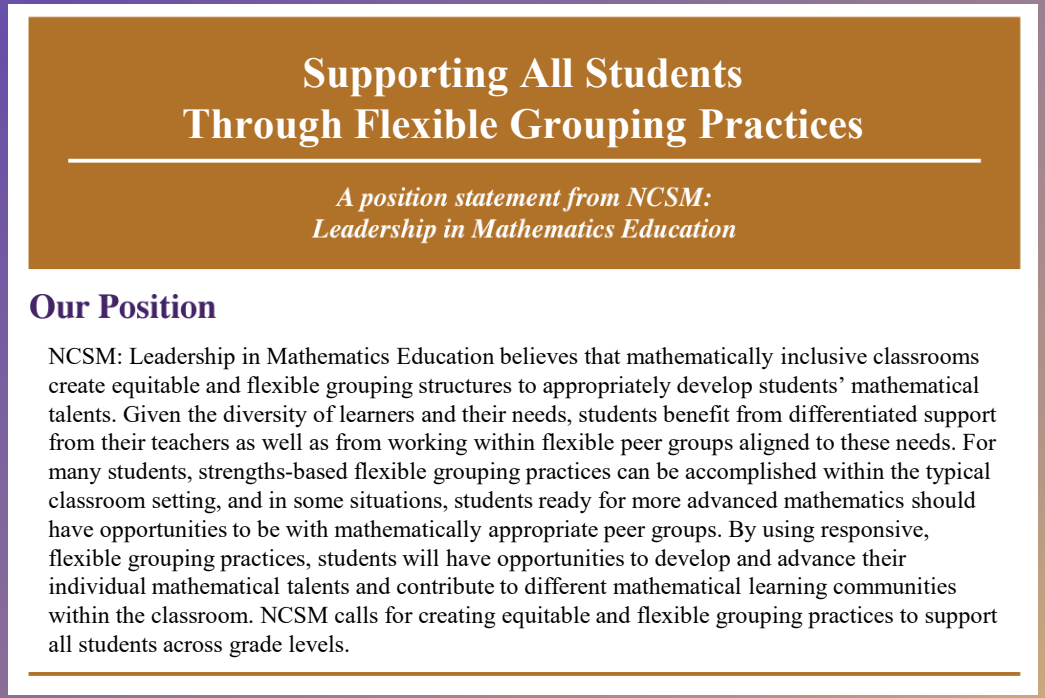
This brief presents the case that high-quality mathematics pathways can significantly increase student success by addressing three structural barriers of the problem: 1) the inaccurate placement of students, mostly into math courses below their ability to perform, 2) the misalignment of content to student needs, and 3) long, multi-semester course sequences. The Dana Center advocates for mathematics pathways that align to a student's academic and career goals and that accelerate student completion of a gateway college-level math course.

The Case for Mathematics Pathways (2019)



To be unveiled at NCSM's 55th Annual Conference!

New Position Paper!



Supporting All Students Through Flexible Grouping Practices

A position statement from NCSM: Leadership in Mathematics Education

Our Position

NCSM: Leadership in Mathematics Education believes that mathematically inclusive classrooms create equitable and flexible grouping structures to appropriately develop students' mathematical talents. Given the diversity of learners and their needs, students benefit from differentiated support from their teachers as well as from working within flexible peer groups aligned to these needs. For many students, strengths-based flexible grouping practices can be accomplished within the typical classroom setting, and in some situations, students ready for more advanced mathematics should have opportunities to be with mathematically appropriate peer groups. By using responsive, flexible grouping practices, students will have opportunities to develop and advance their individual mathematical talents and contribute to different mathematical learning communities within the classroom. NCSM calls for creating equitable and flexible grouping practices to support all students across grade levels.

Flexible Grouping Strategies - Key Ideas

- Ability grouping, which is creating entire classes or groups of students based on teachers' perceptions of students' capability in mathematics or past test scores, does not effectively support student learning.
- Purposefully using a strengths-based (Kobett & Karp, 2020) approach allows teachers to consider what students know and can currently do to make intentional decisions about grouping students.
- Flexible grouping should not be a permanent or long-term arrangement as these groups then become fixed groups that restrict access to quality mathematics instruction and learning experiences.

A TEACHER'S PLEDGE

In the spirit and legacy of Maryam Mirzakhani, Bob Moses, Jaime Escalante, and of all the other great thinkers and teachers who have come before me, I make this pledge to you, my students.

I pledge that I will teach you in such a way that you will know that:

- Your welfare is important to me. I will teach you with love, respect, and kindness.
- Your contributions to classroom discussions are important to me. They help me understand your thinking.
- Your questions are important to me. They show me that you are trying to learn and grow.
- Your thinking is important to me. Learning takes time, and your understanding is more important to me than a quick answer.
- Your willingness to say, "I don't understand yet." is important to me. It shows you are willing to struggle and persevere to understand and not just give up.
- Your becoming a lover of learning is important to me. I will demonstrate my love of learning by the way I nurture and teach you.

AN EDUCATIONAL LEADER'S PLEDGE

In the spirit and legacy of Iris Carl, Richard Tapia, Booker T. Washington, and of all the other great thinkers and educators who have come before me, I make this pledge to you, my educational community.

- I will be a servant leader and will always include the voices of our community in decisions to ensure that we elevate our educational community to its highest level.
- I will be a transparent decision-maker so that our community shares the vision, direction, and successes that we will achieve.
- I will respect, support, and honor every member of our community and will lead with compassion, reason, and humility.
- I will earn and maintain the trust of our community.
- I will keep abreast of current research on best practices so that this knowledge guides our decisions and that we do not fall wayside to dangerous fads that do harm to our community.
- I will ensure that all students receive the best education possible...that, which the best and wisest parents want for their own children, we want for all the children of our community.

Dr. Anne Papakonstantinou is the Director of the Rice University School Mathematics Project (RUSMP) in Houston, Texas.

Arthur Howard is a retired mathematics educator and leader from Houston Christian High School and Aldine Independent School District, both in Houston, Texas.

How do these pledges showcase what we know to be true about how students effectively learn mathematics and how leaders effectively lead?

Dr. Paul Gray

NCSM President (2021-2023)

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