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

RUSMP Fall Networking Conference
Houston, Texas
October 14, 2023

Dr. Paul Gray, NCSM President
Ancestral lands of the following Indigenous Nations
- Karankawa
- Atakapa (Akokisa band)

Source: https://native-land.ca/
NCSM is the premiere mathematics education leadership organization!

Annual conference full of sessions for people who lead math teachers

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

Professional learning network

2,700 members strong

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

Making math education more relevant and engaging will make it more likely that my child succeeds in math:

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Somewhat agree</th>
<th>Disagree</th>
<th>Total Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>60</td>
<td>36</td>
<td>3</td>
<td>96</td>
</tr>
<tr>
<td>White Parents</td>
<td>61</td>
<td>35</td>
<td>4</td>
<td>96</td>
</tr>
<tr>
<td>Black Parents</td>
<td>54</td>
<td>44</td>
<td>3</td>
<td>98</td>
</tr>
<tr>
<td>Latino Parents</td>
<td>63</td>
<td>36</td>
<td>3</td>
<td>99</td>
</tr>
<tr>
<td>AAPI Parents</td>
<td>63</td>
<td>36</td>
<td>3</td>
<td>99</td>
</tr>
</tbody>
</table>

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.

Making math more relevant and relatable for students of all backgrounds will make them more interested in what they are learning and therefore more likely to do well in math. If students are able to connect to and see themselves in what they are learning in math class, they are more likely to succeed.

There is a place for instruction that incorporates diverse backgrounds and experiences in other school classes, but at its core, math is about numbers. Efforts to bring culture into math classrooms will distract from teaching the fundamentals and making sure students can pass exams.

Net Relevant Instruction

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>White</th>
<th>Black</th>
<th>Latino</th>
<th>AAPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Adults</td>
<td>71</td>
<td>29</td>
<td>+42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>69</td>
<td>31</td>
<td>+38</td>
<td>+38</td>
<td>+10</td>
</tr>
<tr>
<td>Teachers</td>
<td>76</td>
<td>24</td>
<td>+52</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Global Strategy Group, May 2023
“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.”

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
Critical Consciousness
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”

<table>
<thead>
<tr>
<th>1894</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>12 years of education</strong></td>
</tr>
<tr>
<td>8 years of elementary then 4 years of high school</td>
</tr>
<tr>
<td>High School math: 2 years of algebra and 1 year of geometry</td>
</tr>
</tbody>
</table>

127 years later…

<table>
<thead>
<tr>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dallas (TX) Independent School District graduation requirements:</td>
</tr>
<tr>
<td>4 years of math, including 2 years of algebra and 1 year of geometry</td>
</tr>
</tbody>
</table>
Life in 1894
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

Less experienced teachers

More experienced teachers

Students with greatest learning needs

Students with higher achievement levels
What does a detracked system look like?

K-8 students in heterogeneous, on-grade-level classes

9th Algebra 1

10th Geometry

Data Science

CTE

Statistics

STEM/Calculus
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)
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.
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)
pgray@mathedleadership.org
www.mathedleadership.org
@Dr_PaulGray
@MathEdLeaders