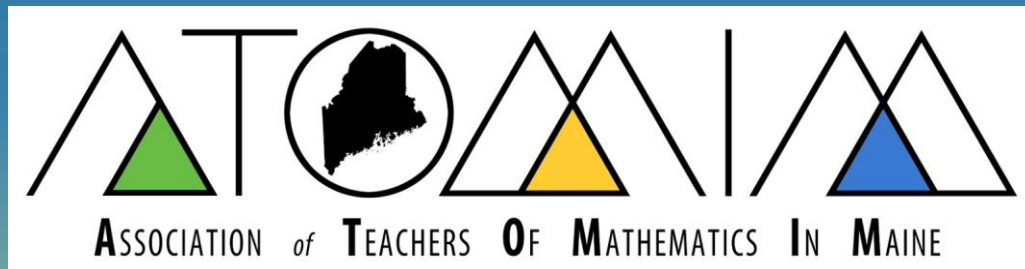



Mathematics Teachers Leading the Way for ALL Students




Dr. John W. Staley, jstaley@mathedleadership.org  @jstaley06
Director Mathematics PreK-12, Baltimore County Public Schools
President, National Council of Supervisors of Mathematics



MATH & BOWLING

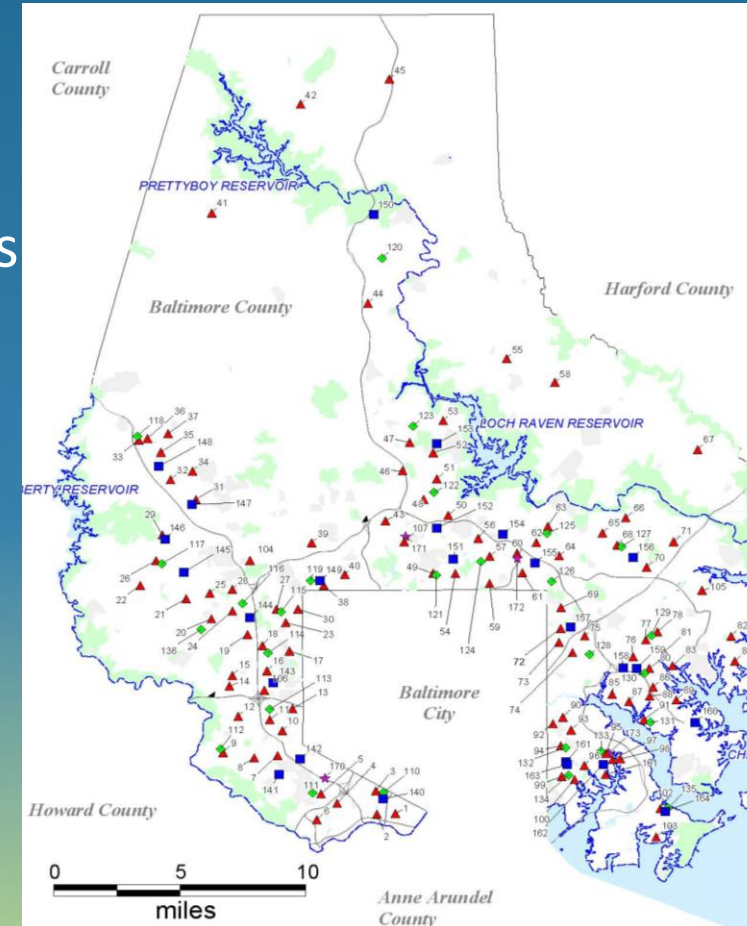


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Baltimore County Public Schools

Baltimore County (2015-2016)

- Wraps around but does not include Baltimore City
- Approximately 805,000 residents
- Suburban, rural, and urban
- 25th largest in the U.S.
- 3rd largest in Maryland
- 173 schools, programs, and centers
- 111,127 students





Motivate, Educate and Recharge:
Annual Conference
Leadership Academy
Fall Seminars
Webinars and more ...

[LEARN MORE](#)

NCSM

Events
Leadership Academy
July 13-15, 2015

CCSS
Explore the latest news
in Common Core

COACHING CORNER
Coaches Love NCSM and
NCSM Loves Coaches!

Publications
Newsletters
Journals
Position Papers
PRIME



Congratulations to the
recipient of the
**2015 Ross Taylor/
Glenn Gilbert Award!**

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NCSM Leadership Academy

*Mathematics Leadership
in a Time of Change:
Building Leaders at all Levels*

July 13-15, 2015
Billings, Montana

Register Today...

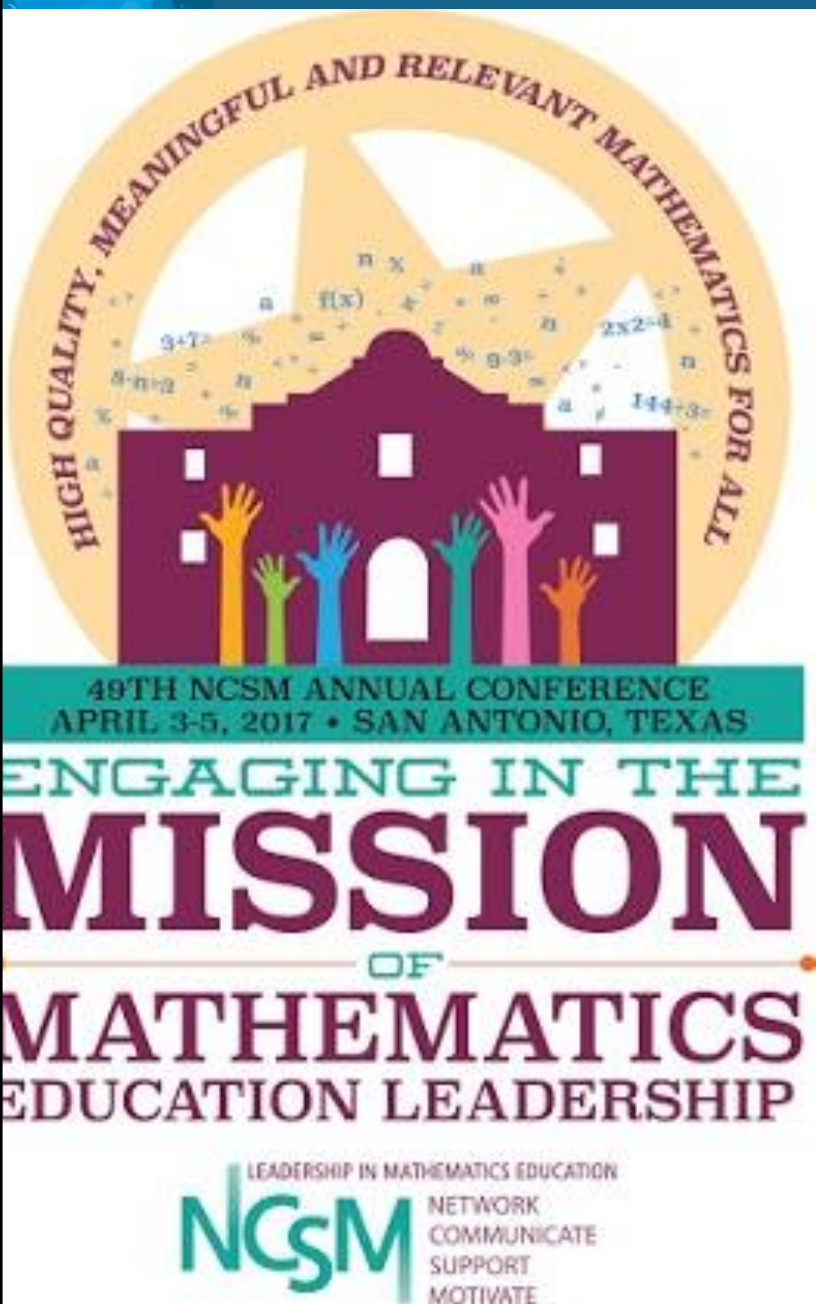


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- Motivational Mathematics Teaching and Learning
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- Exemplary Assessment Leadership

April 3 – 5, 2017
San Antonio, TX



Summer Math Leadership Academy

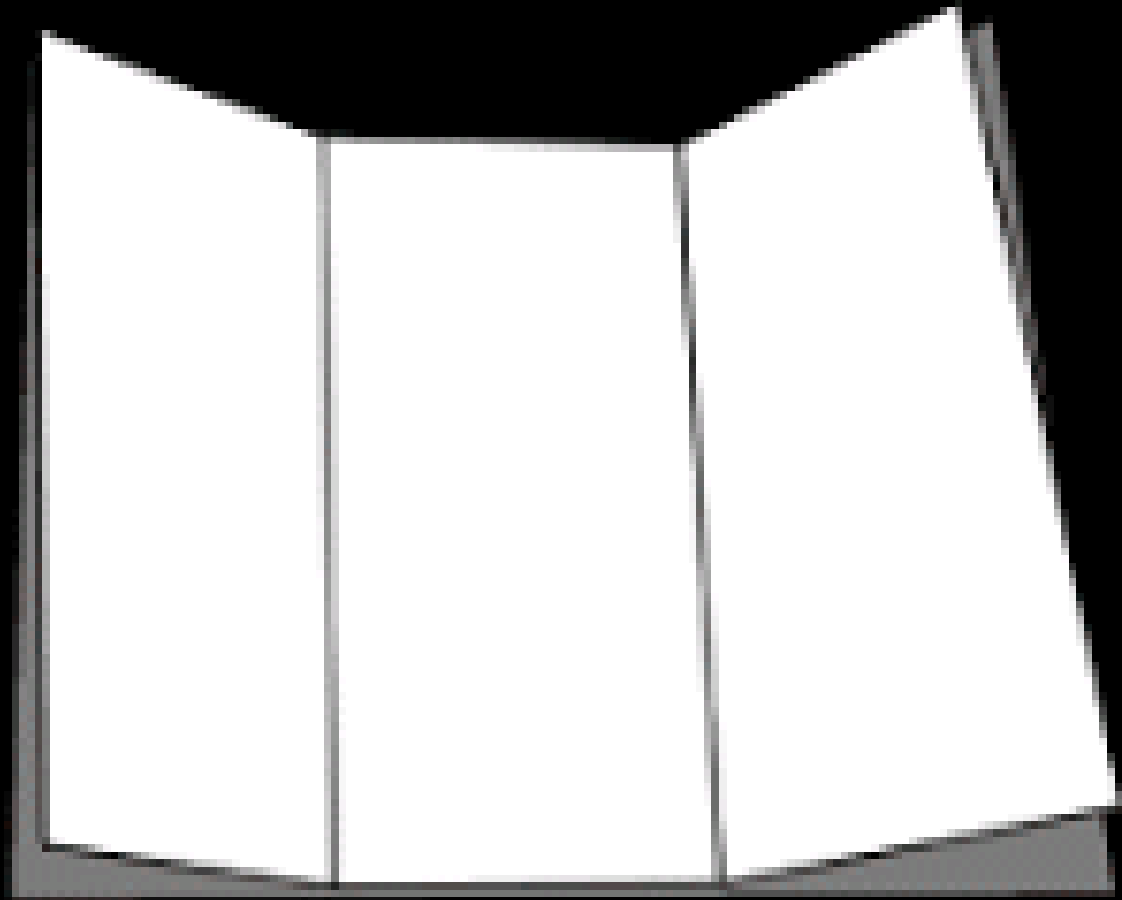
Mathematics Leadership in a Time of Change: Building Leaders at all Levels

- July 24 – 26, 2017
- Bangor, ME

Who?



Teaching by Leading



Teaching by Leading



1. Leadership of Self
“Know and model”

2. Leadership of Others
“Collaborate and implement”



3. Leadership of Others
“Advocate and systematize”

Essential Question

How might we provide rich learning opportunities so that all students have access to meaningful and relevant mathematics?

How might we change the teaching and learning of mathematics so that our students no longer grow up to tell about their negative experiences in mathematics class?

How might we...?

- The **how** part assumes there are solutions out there – it provides creative confidence.
- **Might** says we can put ideas out there that might work or might not- either way, it's okay.
- The **we** part says we're going to do it together and build on each other's ideas.

How might we...

... ensure that all students...

1. have access to high quality mathematics learning experiences?
2. achieve at high levels and grow academically?
3. graduate college and career ready?



Our Future...

A white tablet is centered within a red, textured rectangular frame. The tablet's screen displays the word "Why?" in a bold, black, sans-serif font. The background of the entire slide is a blue-to-green gradient with faint, abstract patterns and numbers on the left side.

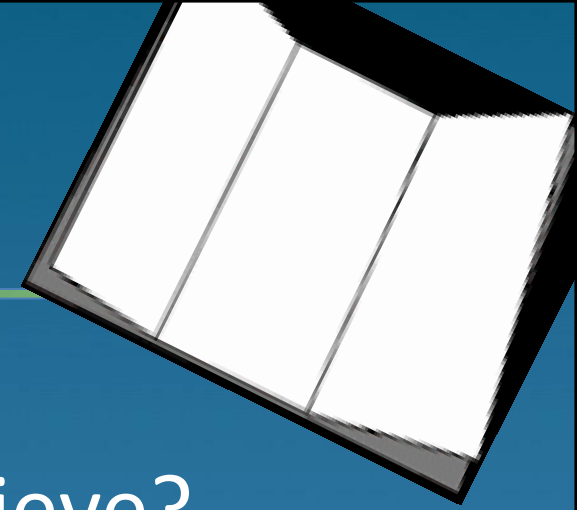
Why?

What is your vision?

Imagine a classroom, a school, or a school district where all students...



What...



1. What do you want to achieve?
2. What are the associated behavior(s)?
3. What strategies will you use?

Leadership of Self



Leadership of Others



*Leadership in the
Extended Community*



1. How might we...

...ensure that all students have access to high quality mathematics learning experiences?

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
6. Attend to precision

2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others

4. Model with mathematics
5. Use appropriate tools strategically

7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning



Overarching habits of mind of a productive mathematical thinker



Reasoning and Explaining



Modeling and Using Tools



Seeing Structure and Generalizing

Mathematics Teaching Practices

1. *Establish Mathematical Goals to Focus Learning*
2. Implement tasks that Promote Reasoning and Problem Solving
3. Use and Connect Mathematics Representations
4. Facilitate Meaningful Mathematics Discourse
5. Pose Purposeful Questions
6. Build Procedural Fluency from Conceptual Understanding
7. Support Productive Struggle in Mathematics
8. Elicit and Use Evidence of Student Thinking

Principals to Action : Ensuring Mathematical Success For All, NCTM, 2014

NCSM Resources

Jump Start Formative Assessment

JUMP START Formative Assessment

COMMON CORE STATE STANDARDS

PRINT PAGE

Illustrating the Standards for Mathematical Practice

Module Index

Introduction to the CCSS Standards for Mathematical Practice

Professional Powerful PD

Click a button below

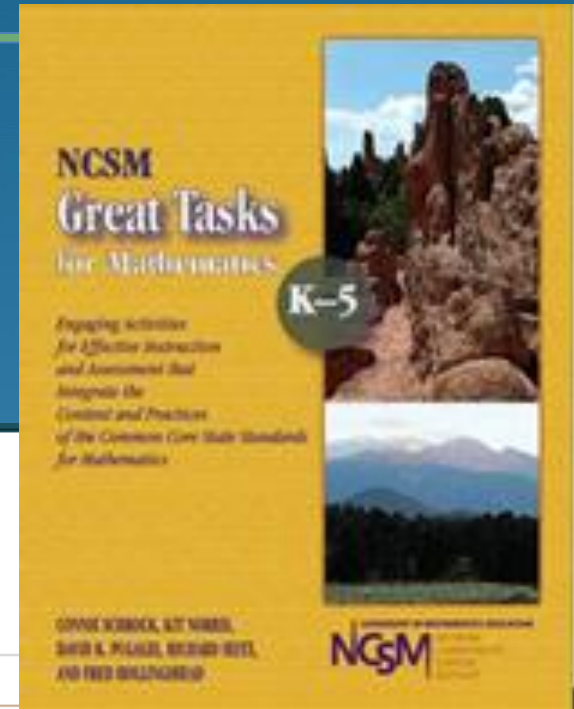
	K - 2	3 - 5
Problem Solving & Precision		Problem of the Month
Reasoning & Explaining	Properties of Operations	
Modeling & Using Tools	Penny Jar	Representing Numbers
Seeing Structure & Generalizing	Patterns with Walls	

Note: The placement of each module is intended as a quick reference to be used to support teacher exploration of multiple practices during hours of professional development.

LEADERSHIP RESOURCES | THREE ACTS

Great Modeling Tasks in Three Acts

	K	1	2	3	4	5	6	7	8	HS
Bucky the Badger										
In-N-Out Burger										
File Cabinet (Free Preview)										
Penny Circle										
Stacking Cups										
Super Bear										
Thirsty Values (Free Preview)										
Yellow Starbursts										
You Pour, I Choose										



Resources



<http://www.mathedleadership.org>



NATIONAL COUNCIL OF
TEACHERS OF MATHEMATICS

<http://www.nctm.org/>



<https://www.teachingchannel.org>

inside + × = ÷
mathematics

<http://insidemathematics.org>



<http://www.illustrativemathematics.org>

ACHIEVE THE CORE

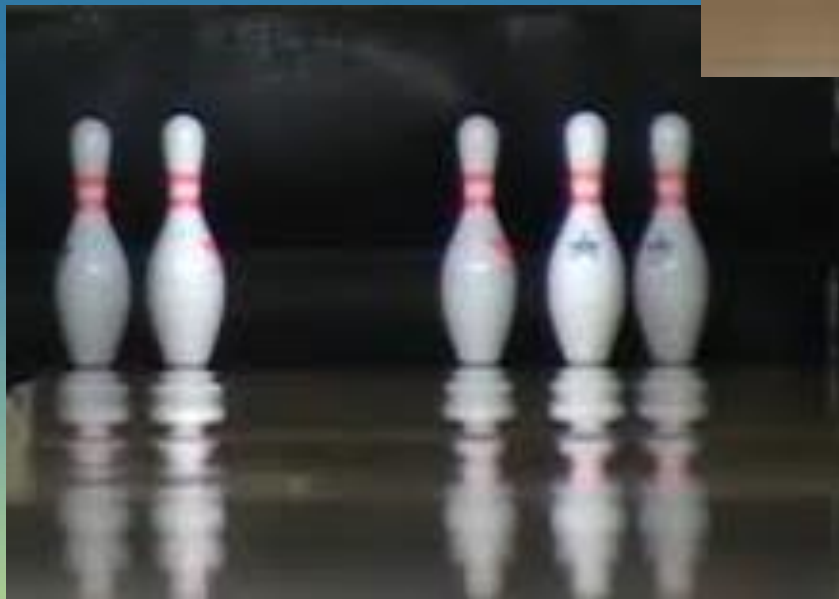
<http://achievethecore.org>

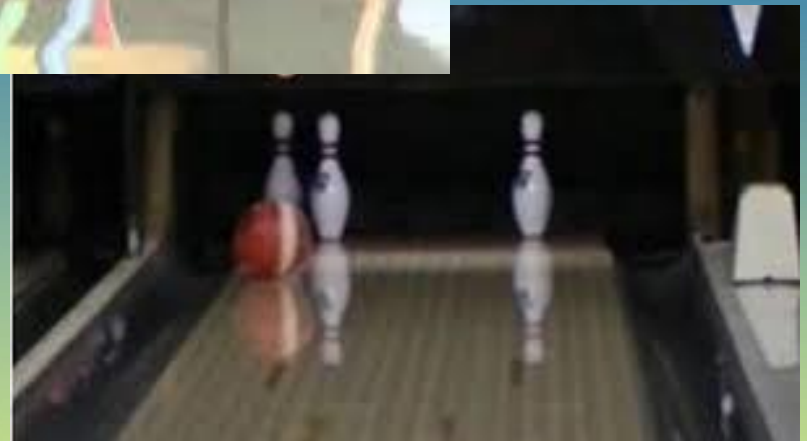
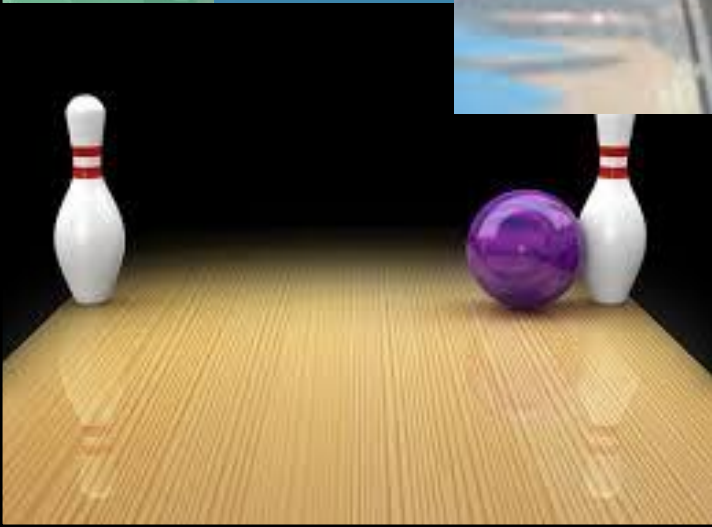
Mathematics Assessment Project
ASSESSING 21ST CENTURY MATH

<http://map.mathshell.org/materials/index.php>

2. How might we...

...ensure that all students achieve at high levels and grow academically?







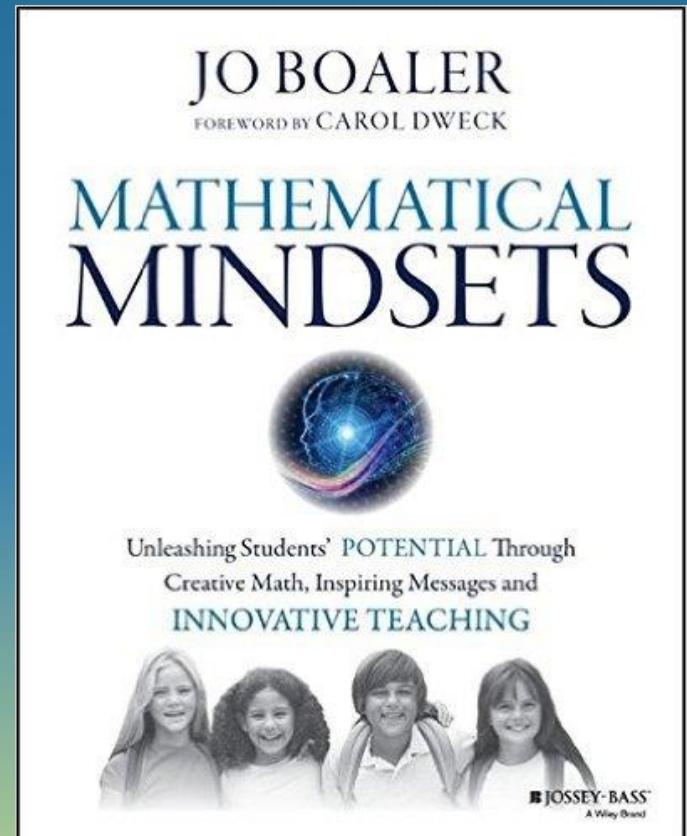
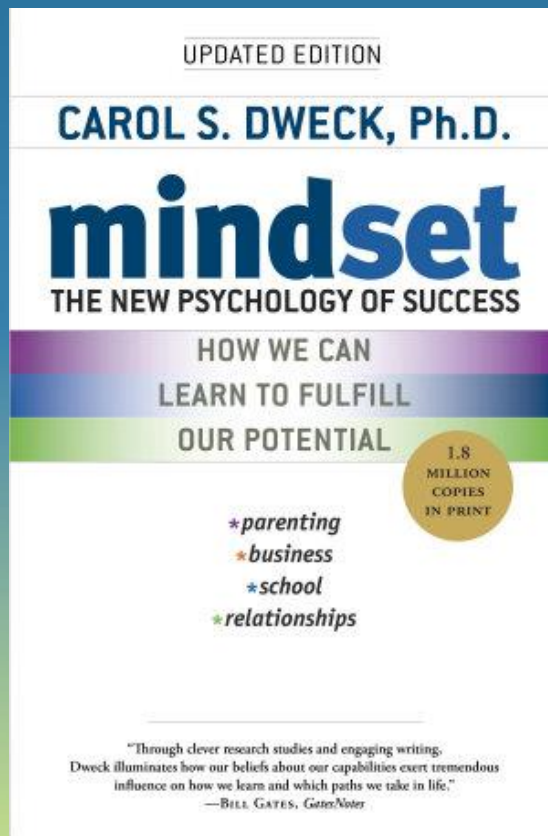
4 Critical Questions

1. What do we want all students to know and be able to do?
2. How will we know if they know it?
3. What will be our team response if they don't know it?
4. What will be our response if they do know it?

Growth Mindset



<https://www.mindsetworks.com>



Growth Mindset

Recommendations for Task/Lesson Design

Open the task to encourage multiple methods, pathways and representations.

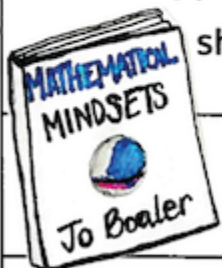
Pose a problem before teaching the method.

Design a task that allows all learners to contribute to the learning and have room for extension.

Make opportunities for students to authentically share their thinking with peers.

Add a visual component.

Add the requirement to convince and reason, be skeptical.



Powerful Questions to develop a deep level of understanding

How do you see that idea?

Why does that answer make sense?

Why does that method work?

How is that method connected to others?

How can that idea be represented in different ways?

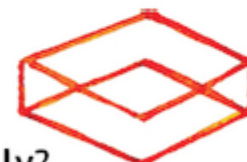
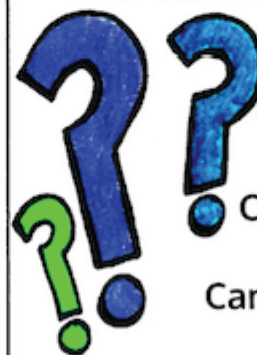
Can you prove it?

Can you prove it visually?

Can you justify your thinking?

Can you predict what would happen if....?

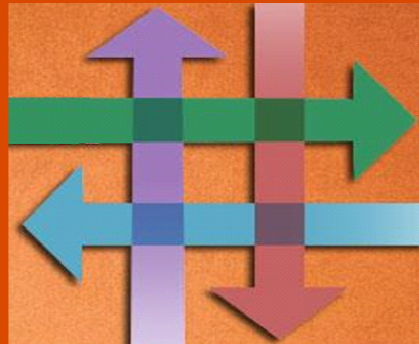
Did you make any interesting mistakes?





NCSM Strategic Initiative: Connecting Leaders

IT WORKED!



Teaching for Understanding Using Story Problem Routines in K-2

Natalie Crist

Elementary Mathematics Specialist
Baltimore County Public Schools

Brought to you by the NCSM Coaching Committee (December 2015)

LEADERSHIP IN MATHEMATICS EDUCATION NETWORK

A screenshot of a Facebook group page. The page title is 'NCSM:Coaching Corner' and it is a 'Closed Group'. The cover image features the text 'COACHING CORNER' in large white letters on a green background, with the same four-directional arrow graphic seen in the top section. The page shows a search bar, a user profile for Donna Karsten, a navigation menu with options like News Feed, Messages, Events, Photos, and NCSM:Coaching C..., and a bottom navigation bar with tabs for Discussion, Members, Events, Photos, and Files. There is also a search box for the group.

3. How might we...

...ensure that all students are on the path to be college and career ready?

All students become globally competitive,
mathematically literate citizens.



Mathematics Education Through the Lens of Social Justice: Acknowledgment, Actions, and Accountability

1. What must we acknowledge?
2. What actions must we take?
3. How will we hold ourselves accountable?

Mathematics Education Through the Lens of Social Justice: Acknowledgment, Actions, and Accountability

*A joint position statement from the
National Council of Supervisors of Mathematics and
TODOS: Mathematics for ALL*

Our Position

The National Council of Supervisors of Mathematics (NCSM) and TODOS: Mathematics for ALL (TODOS) ratify social justice as a key priority in the access to, engagement with, and advancement in mathematics education for our country's youth. A social justice stance requires a systemic approach that includes fair and equitable teaching practices, high expectations for all students, access to rich, rigorous, and relevant mathematics, and strong family/community relationships to promote positive mathematics learning and achievement. Equally important, a social justice stance interrogates and challenges the roles power, privilege, and oppression play in the current unjust system of mathematics education—and in society as a whole.

NCSM and TODOS understand that moving forward with social justice demands change in institutional structures, teaching and learning environments, community engagement practices, and individual actions. Incremental approaches to address urgent calls for action have made little difference in how many children experience mathematics in our nation's schools. This is repeatedly documented by the disparities in learning opportunities and outcomes in mathematics education based on race, class, culture, language, and gender. Immediate and transformative change is necessary. These changes must occur in multiple settings and at multiple levels including classrooms, district offices, school boards, universities, legislators, and communities.

Three components are needed for a just, equitable, and sustainable system of mathematics education for all children. There must be acknowledgment of the unjust system of mathematics education, its legacy in segregation and other forms of institutional systems of oppression, and the hard work needed to change it. The actions taken must be driven by commitments to re-frame, re-conceptualize, intervene, and transform mathematics education policies and practices that do not serve to promote fair and equitable mathematics teaching and learning. And there must be professional accountability to ensure these changes are made and sustained. This is the challenge and work of social justice in mathematics education to do right by our children and move forward together.

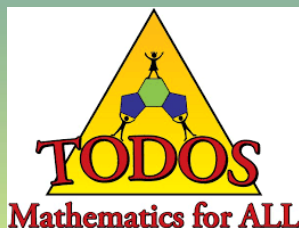
What Is Social Justice in Mathematics Education?

Eliminating deficit views of mathematics learning: Deficit views of historically marginalized children, their families, and communities because of race, class, language, and culture persist in educational conversations and research (Valencia, 2010). In mathematics education this deficit

thinking happens in at least two ways. First, is the continuous labeling of children's readiness to learn mathematics via standardized tests and other institutional tools that position and sanction specific forms of mathematics knowledge. As early as pre-school and kindergarten, research and policy documents use deficit-oriented labels such as "maladaptive" and "immature" strategies to describe black, Latino/a, and poor children's mathematical learning and position them as

NCSM • TODOS

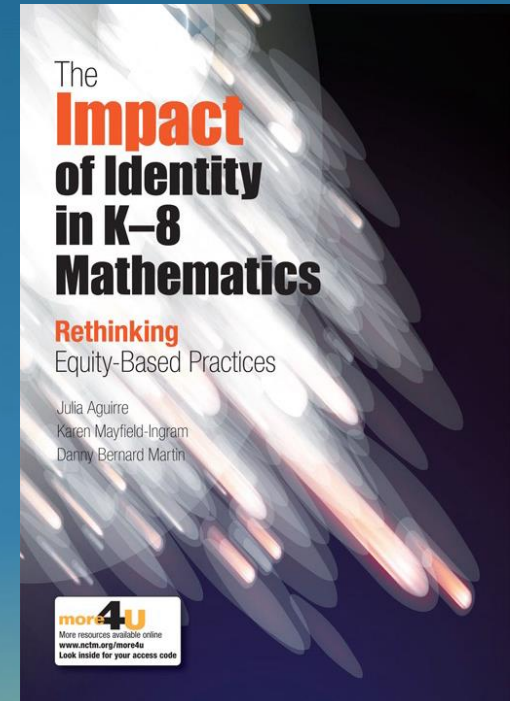
mathleadership.org • todos-math.org



NCSM

Equity-Based Practices

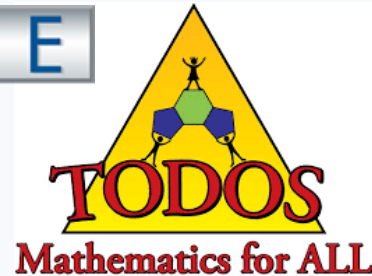
- Going deep with mathematics
- Leveraging multiple mathematical competencies
- Affirming mathematics learners' identities
- Challenging spaces of marginality
- Drawing on multiple resources of knowledge (math, culture, language, family, community)



Another Resource - <http://www.nctm.org/Research-and-Advocacy/Research-Brief-and-Clips/Classroom-Practices-That-Support-Equity-Based-Mathematics-Teaching>

A Call for a Collective Action to Develop Awareness:

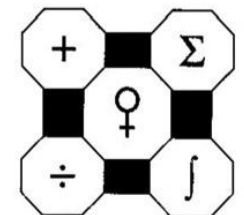
Equity & Social Justice in Mathematics Education



NATIONAL COUNCIL OF
TEACHERS OF MATHEMATICS



NASGEm North American Study
Group on Ethnomathematics



Additional information: www.tinyurl.com/EQSJMATH

A Call for a Collective Action to Develop Awareness: Equity & Social Justice in Mathematics Education

Purpose: A year dedicated to building our collective knowledge and understanding of topics and issues related to Equity and Social Justice in Mathematics Education

- Monthly Readings
- Quarterly Webinars
- Face-to-Face Informal conversations

How might we...

... ensure that all students...

1. have access to high quality mathematics learning experiences?
2. achieve at high levels and grow academically?
3. graduate college and career ready?

Two Questions...

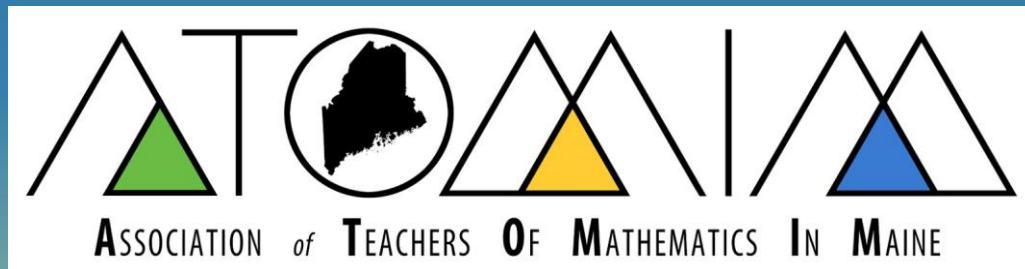
...you must be able to answer...


- Is it worth it?
- Can I do it?





Mathematics Teachers Leading the Way for ALL Students



Dr. John W. Staley, jstaley@mathedleadership.org  @jstaley06
Director Mathematics PreK-12, Baltimore County Public Schools
President, National Council of Supervisors of Mathematics

March 4, 2017