Eliminating Deficit Views of Mathematics Learning

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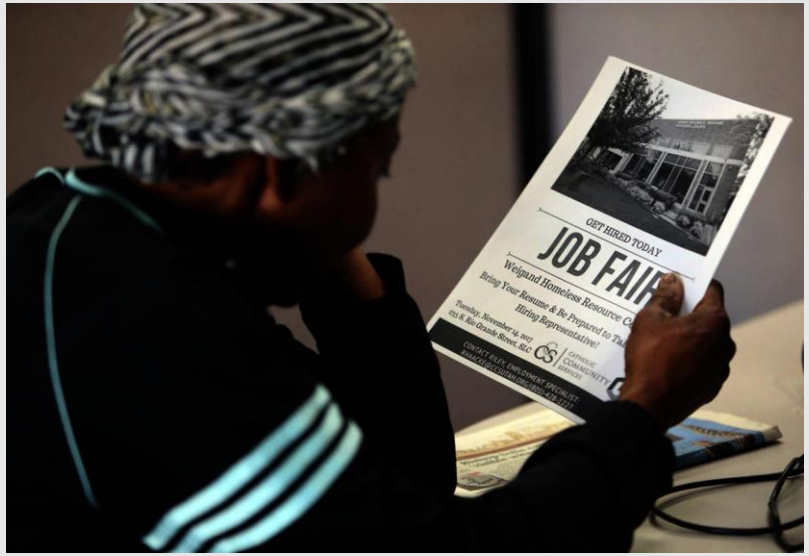
Is that true?

Not true if you don't have access to a high quality math education!

Mathematics is not just an academic subject; it's a key mechanism in the ***distribution of opportunity*** in and out of school. Research finds that mathematical competence is linked to ***career success, income, and psychological well-being***



The Mathematics of Opportunity: Rethinking the Role of Math in Educational Equity, The Opportunity Institute

About This Session

- Define deficit view in mathematics
- Reflect the deficit view playing out in our current mathematics education
- Strategize ways to eliminate deficit view in mathematics.

What are ***deficit views*** of Mathematics?

Deficit Views and Labels

Consider the implications of the following:

My low kids can't think. I have to show them step by step how to do it .

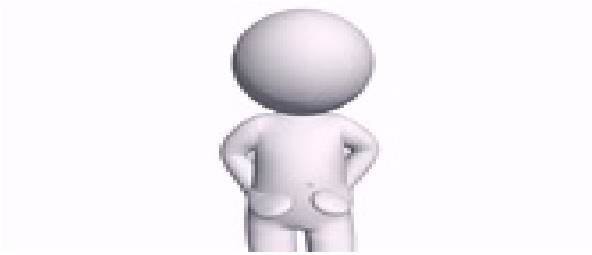
95% of our students are Title I. What do you expect?

We need to focus on our "bubble kids".

Deficit Views and Labels

You are an Asian. You must be good at math.

If they are still learning to speak English, how can they possibly engage in math discourse?



Girls are naturally better at humanities.

Deficit Thinking and Language

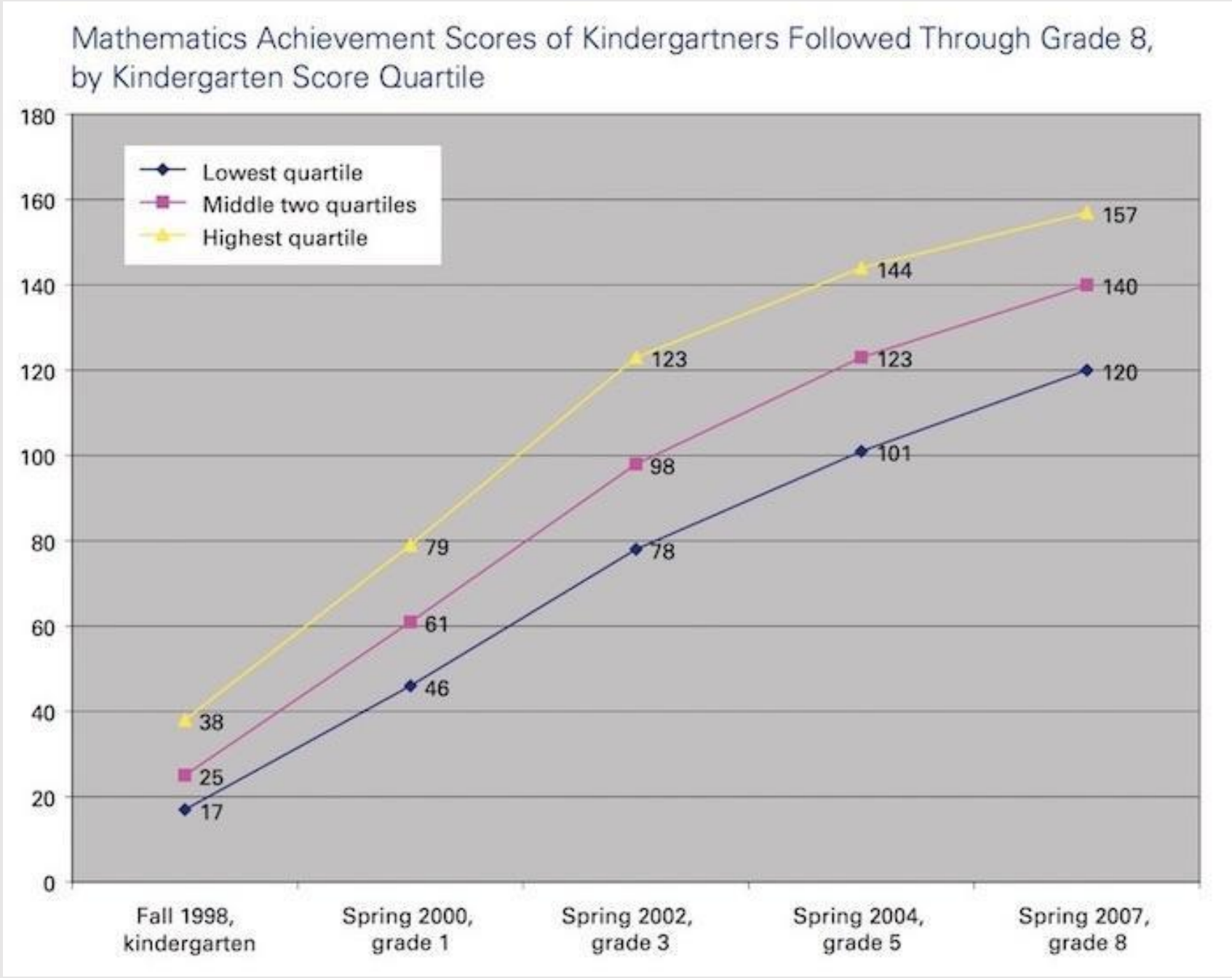
Deficit thinking implies that students "***lack***" knowledge and experiences expected by the dominant group.
It ignores, dismisses, or casts as barriers mathematical knowledge and experiences children engage with outside of school every day.

Deficit Thinking and Language

Labeling of children's **readiness** to learn via standardized tests and other institutional tools that **position and sanction specific forms of mathematics** knowledge.

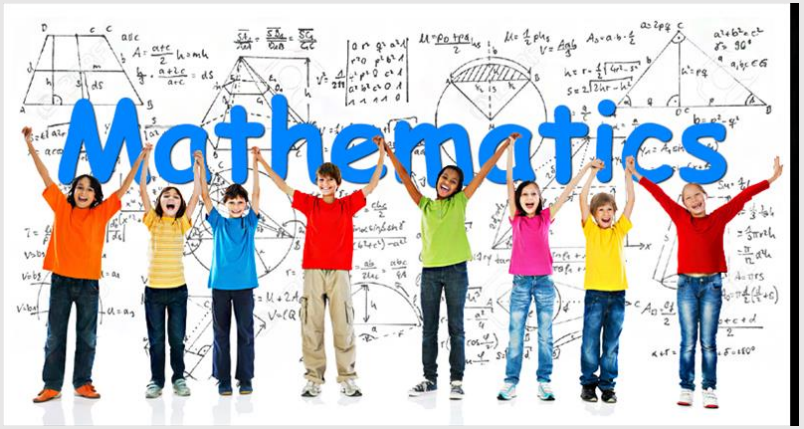
- These labels bestow privilege and marginalization leading to a differentiated and unjust mathematics or science education.
- These labels exclude students from opportunities to take high level mathematics.

Achievement Gap or Opportunity Gap



[Early Childhood Longitudinal Study by National Center for Education Statistics]

Equity in Math



When it's not possible to predict mathematics achievement and participation based solely on student characteristics such as ***race***, ***class***, ***ethnicity***, ***sex***, ***beliefs***, and ***proficiency*** in the dominant language.

-Rochelle Gutierrez, math education scholar

How does deficit views and labels ***play out*** in mathematics education?

Immersion

In this video, Moises, a ten-year-old student, struggles to communicate in his new school with limited access to his native language.

Focus Questions

- How does deficit thinking play itself out in Moise's school life?
- What are the belief systems and structures that are in place that impacted Moise's ability to engage in mathematics?

Video - Immersion

Focus Questions

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Mathematics Through the Lens of Social Justice

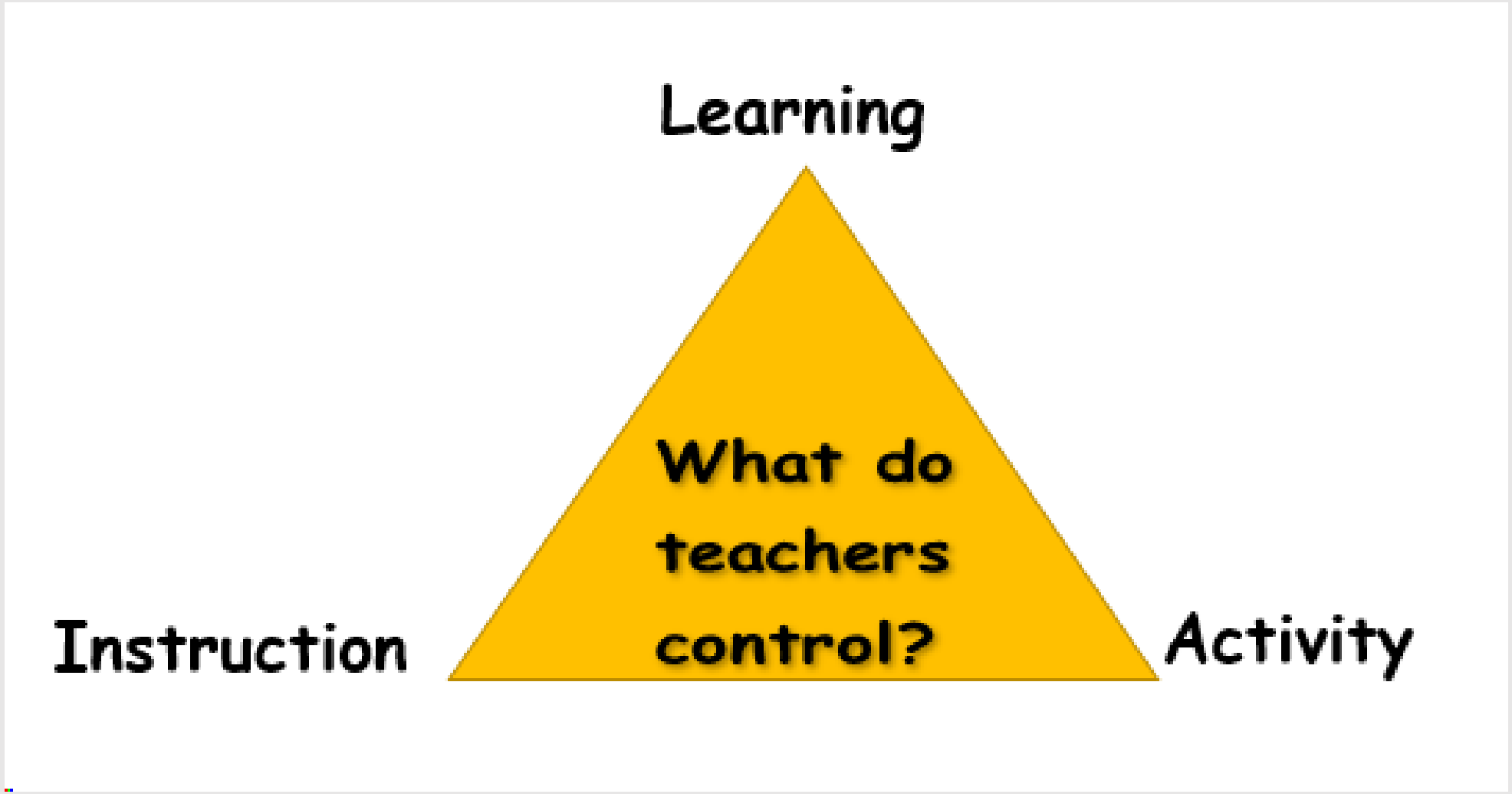
A social justice priority in math education is to ***openly challenge the practices*** that perpetuate static views about children and their mathematics competencies.

Mathemeatics Education through the Lens of Social Justice, *TODOS Social Justice position statement*

Strategize ways to eliminate deficit view in mathematics.

Openly Challenge the Injustice in Mathematics Education

- Instructional policies and practices
- Labels and language
- Institutional Injustices and inequalities
- Beliefs in Self


Learning
What do teachers control?
Instruction
Activity

Access to Four Key Resources

- grade-appropriate assignments
- strong instruction
- deep engagement
- **teachers' high expectations**

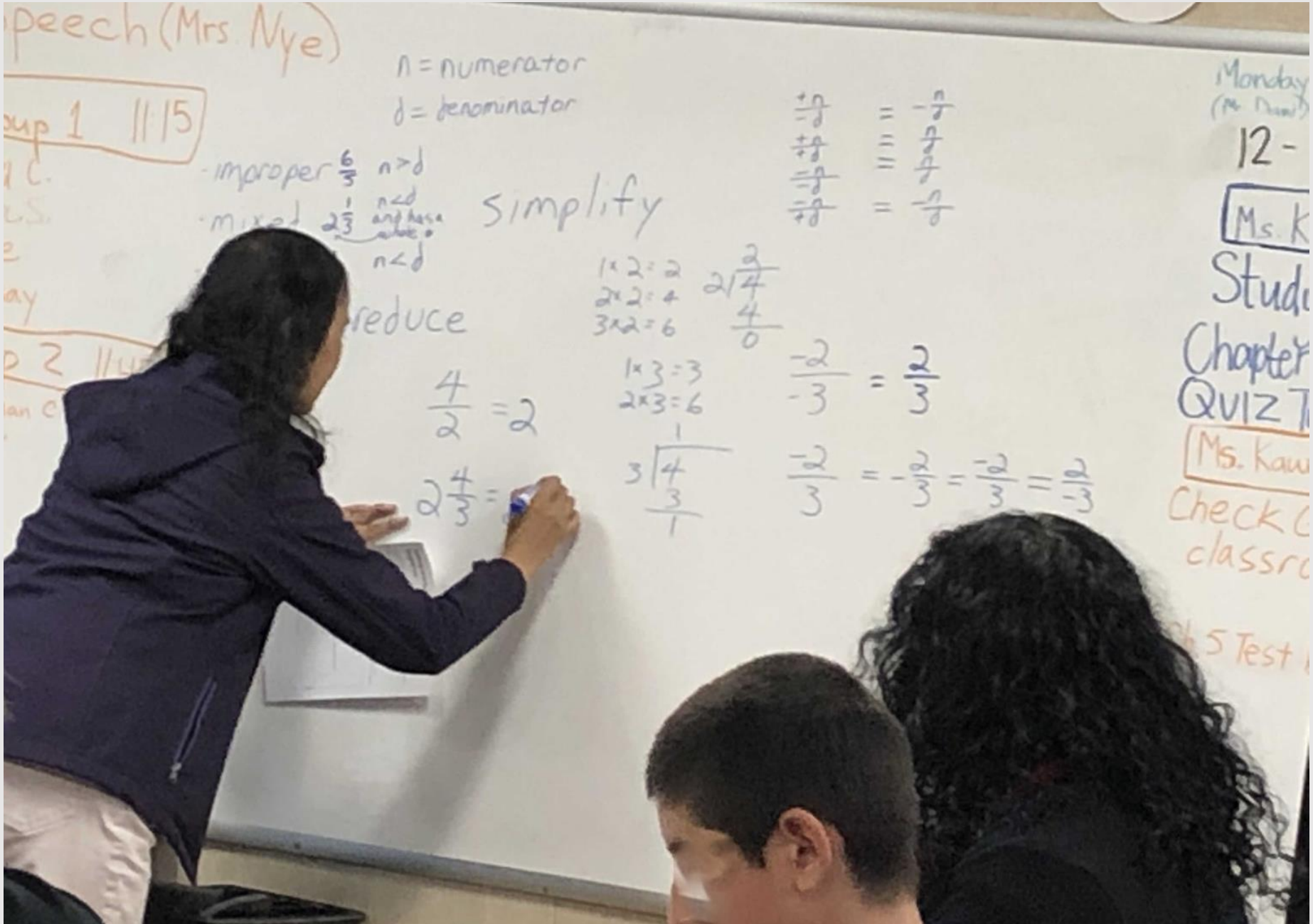
https://opportunitymyth.tntp.org/ The Opportunity Myth

Instructional Approaches and Practices

- I do
- We do
- You do

- I do
- I think
- You think like me

Why is this an example of deficit thinking?


peech (Mrs. Nye)
n = numerator
d = denominator
improper
simplify
reduce
Monday
Ms. K
Stud
Chapter
QUIZ
Ms. Kaw
Check
classr
5 Test


What would YOU DO?

Targeting Language-When Words Become Labels

Examine the language and labels that are associated with social justice

Focus on taking action:

- Take an asset-based approach vs. a deficit-based approach
- Alter our language and responding to comments of others

Challenge: Use a Strength-Based Discourse

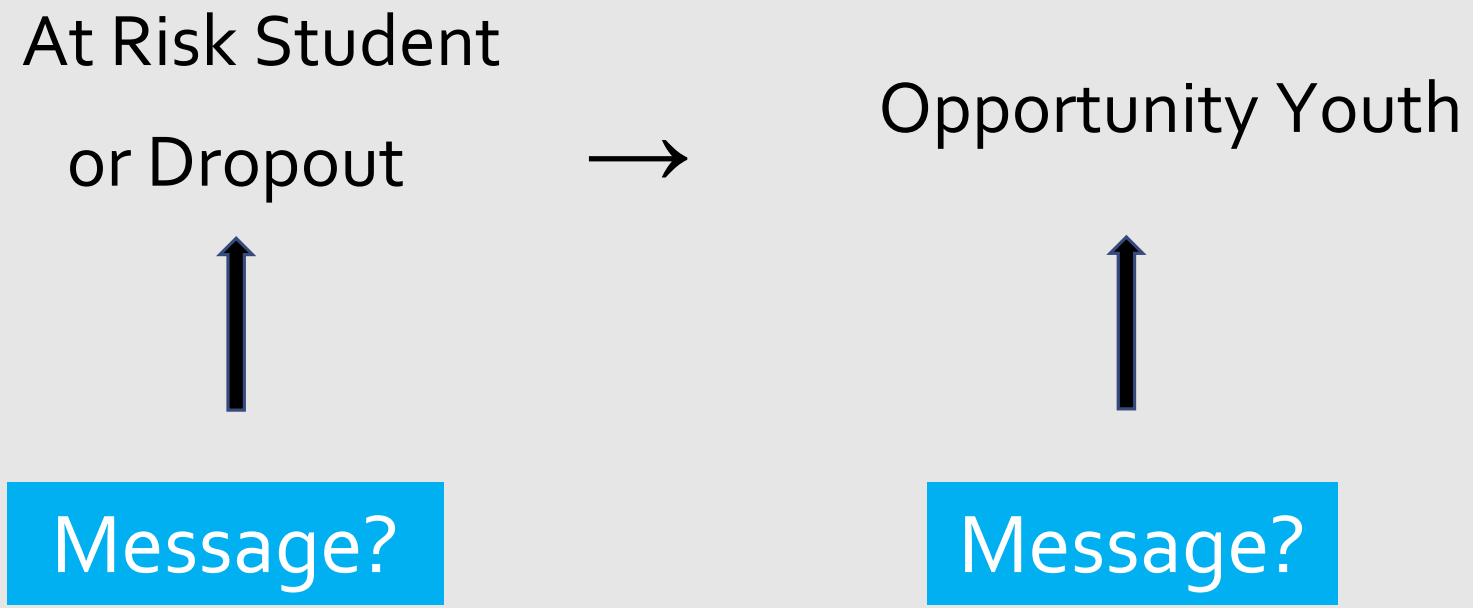
English Language Learner → Emergent Bilingual

Message?

Message?

Challenge: Use a Strength-Based Discourse

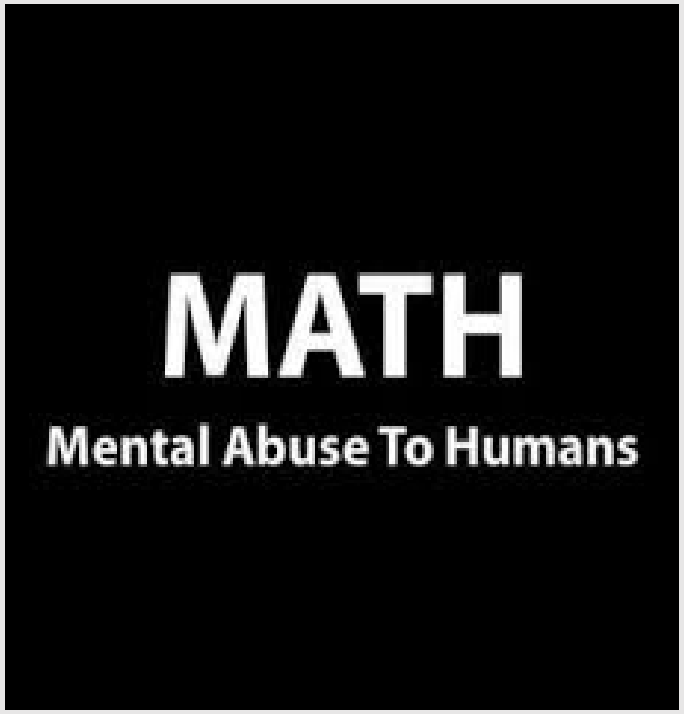
Challenge: Use a Strength-Based Discourse

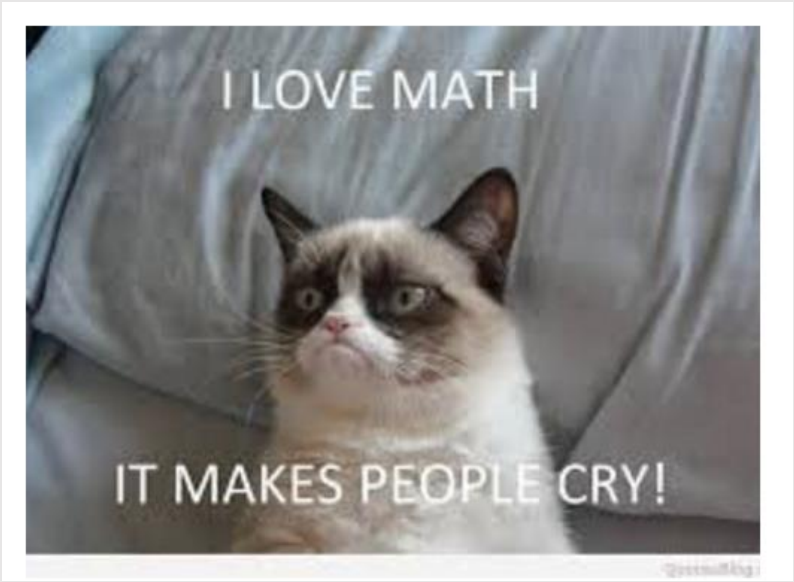


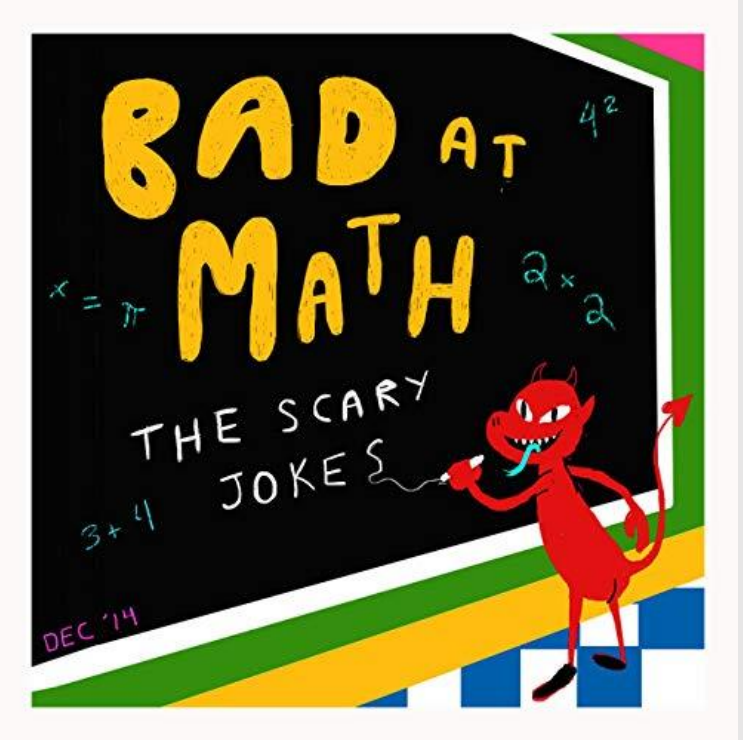
Alter the Language to Asset-Based

- Slow learner
- Special Ed Student
- Can’t do math
- Fails all tests
- Title 1 school
- Hyperactive

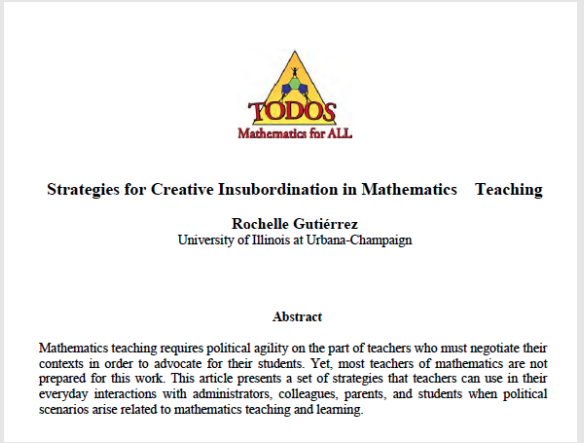
Views of Mathematics







Creative Insubordination


TODOS
Mathematics for ALL

Strategies for Creative Insubordination in Mathematics Teaching

Rochelle Gutiérrez
University of Illinois at Urbana-Champaign

Abstract

Mathematics teaching requires political agility on the part of teachers who must negotiate their contexts in order to advocate for their students. Yet, most teachers of mathematics are not prepared for this work. This article presents a set of strategies that teachers can use in their everyday interactions with administrators, colleagues, parents, and students when political scenarios arise related to mathematics teaching and learning.

- Press for explanation *"Say more…"*
- Counter with evidence What evidence do I have that suggests a counter narrative or opposing perspective?
- Use the master's tools
  Can my work be seen as related to my "School Intervention Plan," or "Response to Intervention?"
- Seek allies Find people who know how to navigate our working context well.
- Turn a rational issue into a moral issue "Is this what we want to stand for?" "Do the right thing."

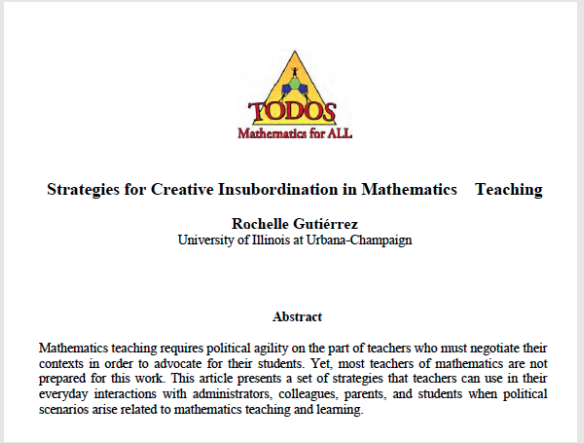
Rochelle Gutierrez (2016) TODOS Teaching for Excellence and Equity in Mathematics Vol. 7, Summer 2016

Institutional Practice: Access and Opportunity to Learn

"Do we notice that the students in our honors classes do not represent the demographics of our school?"

***Use this, or a personal scenario at your table to discuss and role play**

Creative Insubordination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Challenge: Look Elsewhere for Causal Factors

More than half of my students failed the test. They just don't care.

What did I not do or what do I need to do better so that they all learn?

The students aren't interested.

How can I plan lessons that students are interested in?

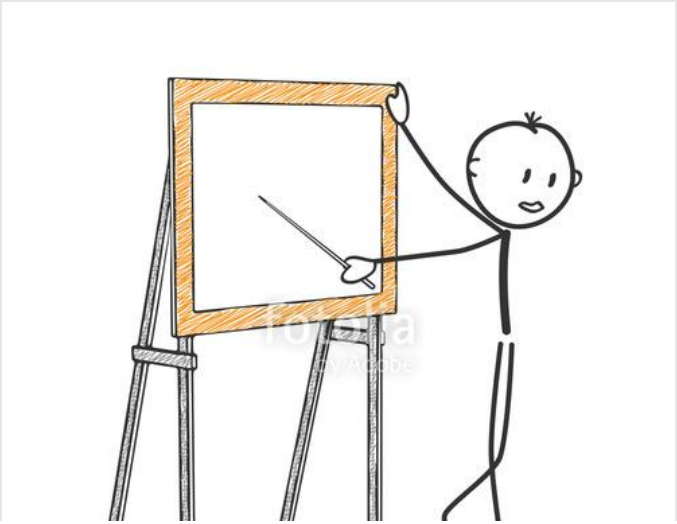
Humanizing the Learning of Mathematics

Research Project by Malika Scott UC Berkeley

Selina, a teacher in the group, “He’s always like, completely disengaged across subjects”…”it is hard for me to know, what does he know really well, like, I can build on?”

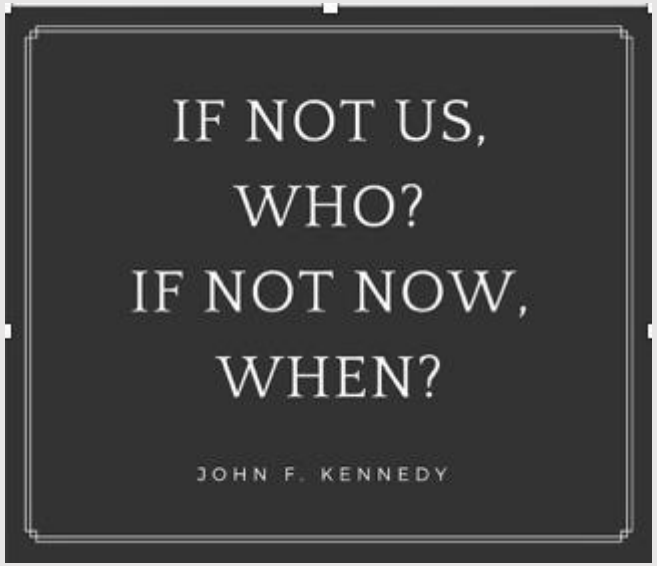
Discursive Practice

Discursive Practice	Examples
Pointing out the mathematics in student work	"I just feel like on his page he's doing so much. This is a lot of work! Whatever it is he's doing. This is a fat array!"
Unpacking the mathematical task	"It's really hard though. This math is really conceptual. Like 9 plus blank equals 16, that's not like super automatic for me"
Providing sensible reactions for student behavior	"If it seems to him like random marks on a board, it's hard to pay attention to that."



“I don’t know what’s harder, teaching first grade or being in first grade.” …
”We ask so much of these tiny humans.”

Why me?



Educators Must

- Recognize,

- Speak Up and

- Respond to Deficit Views, Bias, and Stereotypes

Thank you

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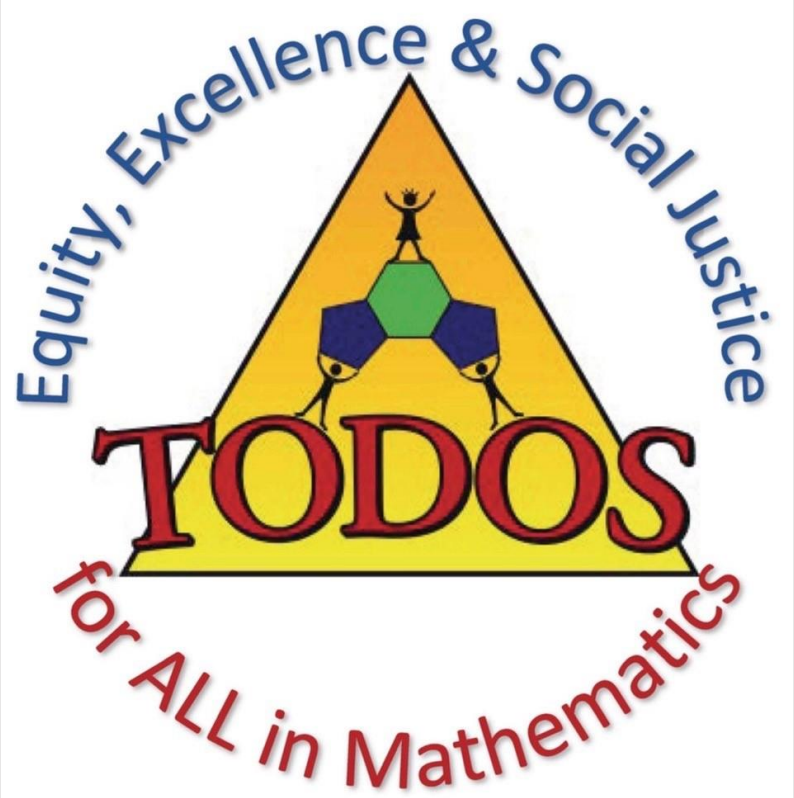
The mission of TODOS: Mathematics for ALL is to advocate for equity and high quality mathematics education for all students— in particular, Latinx students.



Visit our booth in the exhibit hall, 1224

https://www.todos-math.org/

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#TODOS2020 Conference

June 25 - 27, 2020

TODOS Mathematics for ALL

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