

(HOW) CAN MATHEMATICS TEACHING DISRUPT RACISM AND OPPRESSION?

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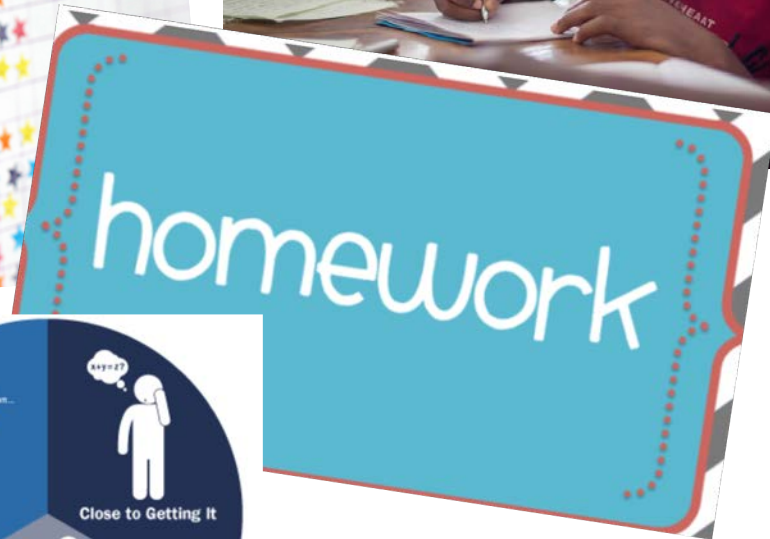
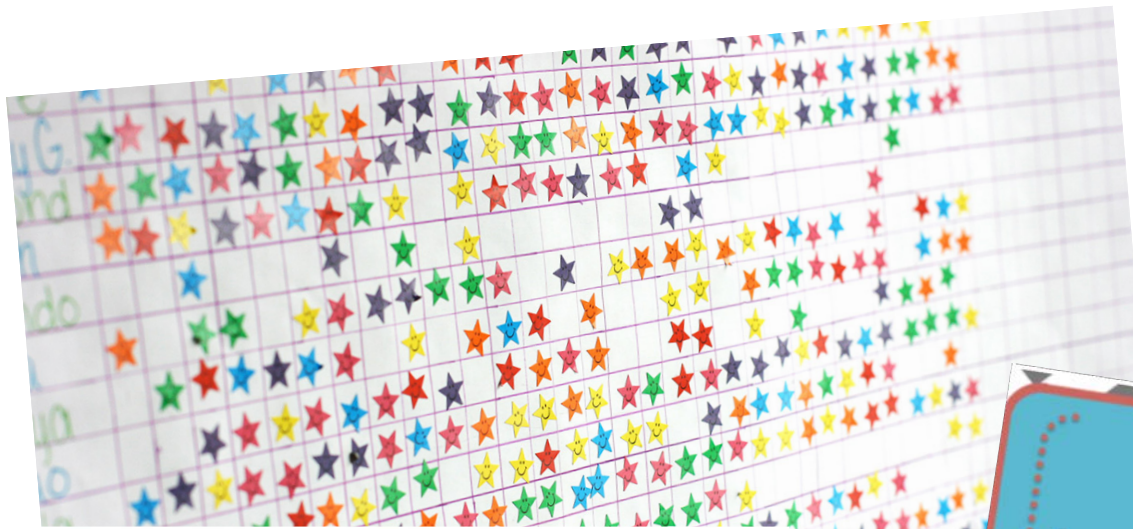


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Many taken-for-granted practices in mathematics classrooms reflect and reproduce patterns of marginalization and oppression.

What are some of these common practices?



My Behavior Today...

Name: _____ Date: _____

Today I made some bad choices. I broke some of our classroom rules / procedures.

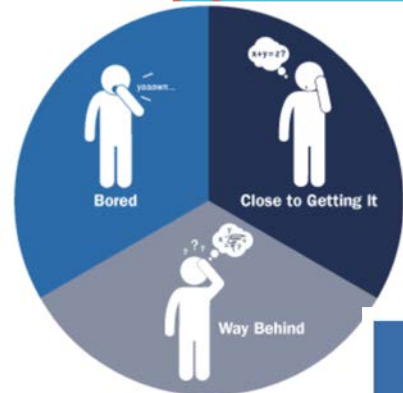
- Not Following directions
- Being disrespectful to the teacher
- Being disrespectful to my classmates
- Misbehaving in specials
- Getting out of my seat
- Not paying attention
- Too much talking
- Distracting others
- Incomplete class work
- Incomplete homework
- OFF task behavior

Comments: _____

Teacher Signature: _____

Student Signature: _____

Parent Signature: _____



"A third of my class was bored and ready to move on, a third was close to understanding but not quite there, and another third was so far behind that continuing to try might have seemed like a fool's errand."



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But even our efforts to make change
are still high-risk for reproducing
patterns of racism and marginalization.

What are some of these popular efforts that could still reproduce racism and oppression?

ADVOCATED “REFORM” PRACTICES

- Small group work
- Situating word problems in contexts
- Revoicing students’ ideas
- Group discussions
- Going to the board to show one’s ideas
- Constructing mathematical arguments
- Discourse norms

POTENTIAL RISKS


- Can foreground status and power dynamics (Langer-Osuna)
- Can reinforce racial and gendered narratives (Nasir, Shah)
- Can reduce or remove students’ own voices
- Can reinforce narrow views of what it means to be good at math
- Can reinforce competitive individual orientations
- Can reinforce competitive individual orientations
- Can reinforce White dominant values and norms

Let's look at one one of these:
Going to the board to show
one's ideas.

GOING TO THE BOARD TO SHOW ONE'S IDEAS


COMMON PURPOSES

- To show that there are different ways to solve math problems and sometimes also different solutions
- To provide opportunities for children to practice talking and explaining their ideas



Why do we
do this?

GOING TO THE BOARD TO SHOW ONE'S IDEAS

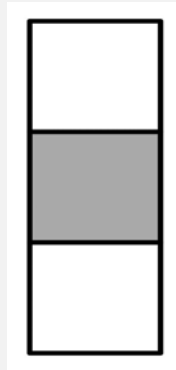


Why do we
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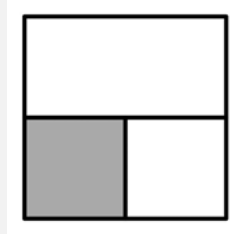
Let's take a look.

What might be reproductive of oppression within the practice of going to the board?

What part of the rectangle below is shaded gray?



What part of the rectangle below is shaded gray?



VIDEO: ANTAR

What fraction of the rectangle below is shaded gray?

What fraction of the rectangle below is shaded gray?

Antar: I think it's not a fraction because all the parts are not equally the same.

WHAT IS LIKELY TO HAPPEN NEXT?

LIKELY NEXT MOVES

- “Who can help Antar out?”
- “Good, Antar, the parts are not equal. So what do we need to do?”
- “Thumbs up if you agree with Antar; thumbs down if you disagree.”

RESULT

- Antar, a Black boy, is positioned as not knowing and needing help.
- Antar’s contribution is taken over by the teacher.
- Antar, a Black boy, might face many people disagreeing with him that it is not a fraction.
- Any of these might reinforce narrow and exclusionary views of mathematics.

GOING TO THE BOARD TO SHOW ONE'S IDEAS

COMMON PURPOSES

- To show that there are different ways to solve math problems and sometimes also different solutions
- To provide opportunities for children to practice talking and explaining their ideas

CRITICAL PURPOSES

- To represent mathematics as collective work by building mathematical ideas and solutions together
- To disrupt patterns of who and what is seen as competent



Why do we do this?

VIDEO: ANTAR AND GABRIELLA



VIDEO: GABI

What fraction of the rectangle below is shaded gray?

What fraction of the rectangle below is shaded gray?

$\frac{1}{3}$ ~~$\frac{1}{2}$~~

Gabi: I divided it down the middle because, since it's not equal, you have to make it equal.



Antar's right.
It's not equal.

GOING TO THE BOARD TO SHOW ONE'S IDEAS: WHAT ARE THE RISKS OF REPRODUCING OPPRESSION?

RISKS

- Gabi, a Black girl, is seen as having the “right” answer and Antar, a Black boy, is seen as “wrong”
- These narratives affect Antar and Gabi, but also their classmates
- Math is seen as about getting the right answer

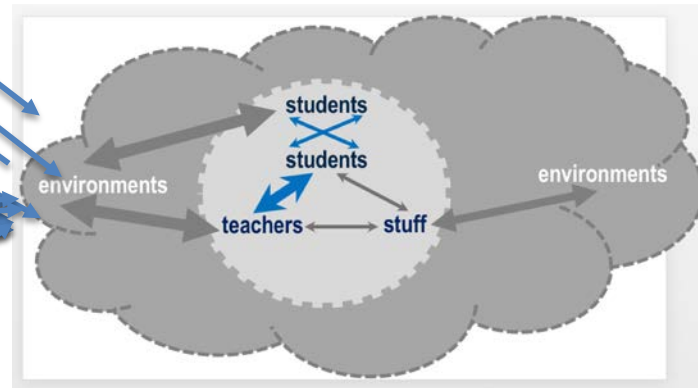
PRINCIPLES FOR AVERTING THESE RISKS

- Position each student's contributions at the board as part of a trajectory to construct collective knowledge, language, and ways of justifying, not as competing one-by-one for the “right” answer
- Represent mathematics as collective construction of sense-making and knowledge

Teacher:	Here's a marker. Can you explain your thinking?
Antar:	I think it's not a fraction because all of the parts are not the same shape.
Teacher:	Can you say that one more time to the class?
Antar:	I think it it's not a fraction because all of the parts are not equally the same.
Teacher:	Can someone repeat what Antar said? Very nice, Antar. What did he say? Gabriella?
Gabriella:	Oh. He said that he doesn't think it's a fraction because not all the parts are equal.
Teacher:	Is that what you said?
Antar nods.	
Teacher:	Okay, would someone like to comment on that? Agree or disagree with him?
	<i>Pause.</i>
Teacher:	Okay, let's see, how about Gabi?
Gabi:	I disagree.
Teacher:	What do you think?
Gabi:	I think the fraction is one-fourth.
Teacher:	One-fourth?
Gabi nods.	
Teacher:	Do you want to come up and say why you think it is one-fourth?
	<i>Gabi stands up and walks toward the board.</i>
Teacher:	Antar, do you want to stay there or do you want to sit down?
Antar:	Sit down.
Teacher:	Thank you very much. You did a good job of explaining your thinking. So let's hear what Gabi's thinking.
Gabi:	I think it's one-fourth because, like he said, all the fractions aren't the same, but you can make them the same by dividing them down the middle.
Teacher:	Can you go ahead – want to show us – Here. Here's something you can use for that. Wait one second.
	Instead of drawing it, why don't you just use this. That way, if someone wants to take it off again, they can.
	<i>Gabi puts removable black line down the middle of the figure.</i>
Teacher:	Okay, so now explain what you have done. Talk to the class, okay?
Gabi:	I divided it down the middle because, since it's not equal, you have to make it equal.
Teacher:	And so then you decided?
Gabi:	It's one-fourth.
Teacher:	Okay, so can someone repeat what Gabi said? What she did and what she said? This actually goes very nicely with what you said, Antar, because Antar noticed that the parts weren't equal and what Gabi is doing has to do with equal parts.

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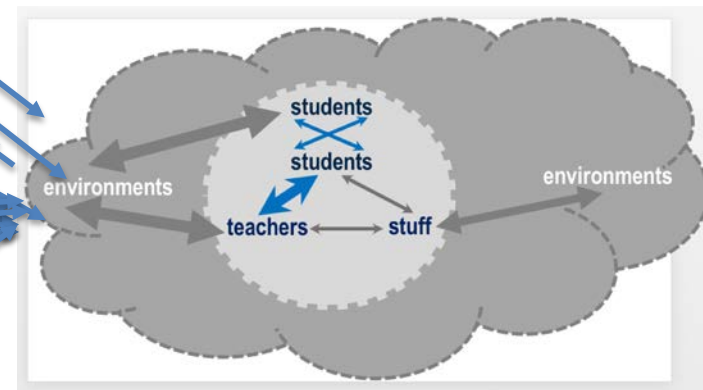
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59 in 2:21

TEACHING IS DENSE WITH DISCRETIONARY SPACES

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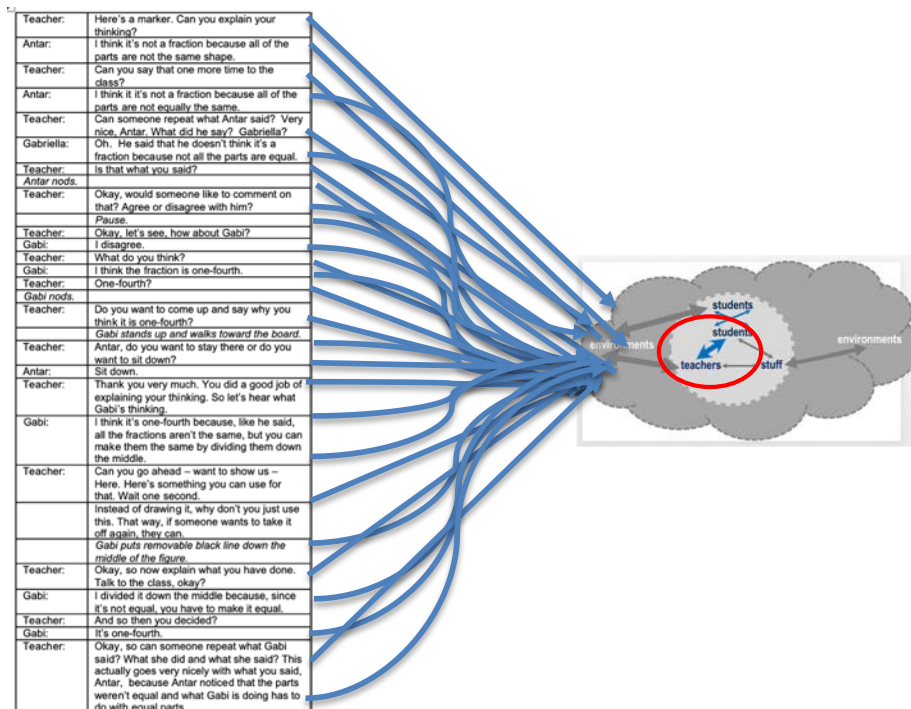
LOOKING AT THE MICRO THROUGH THE MACRO: SYSTEMIC PATTERNS OF “ABILITY” AND “INTELLIGENCE”

- Black students: 16.7% of student population; 9.8% of those selected to gifted programs
- Latinx students: 22.3% of student population; 15.4% of those selected to gifted programs
- 6.2% of all students are assigned to gifted programs: 10% of Asian students; 7.5% of White; 3.6% of Latinx; 3% of Black
- Black students are 2x as likely to be classified as having learning or emotional problems (special ed)
- Exclusion from class reduces opportunity to learn.
- Exclusion from rigorous content; long-term effects of labeling.
- Lack of access to accelerated and enrichment programs.

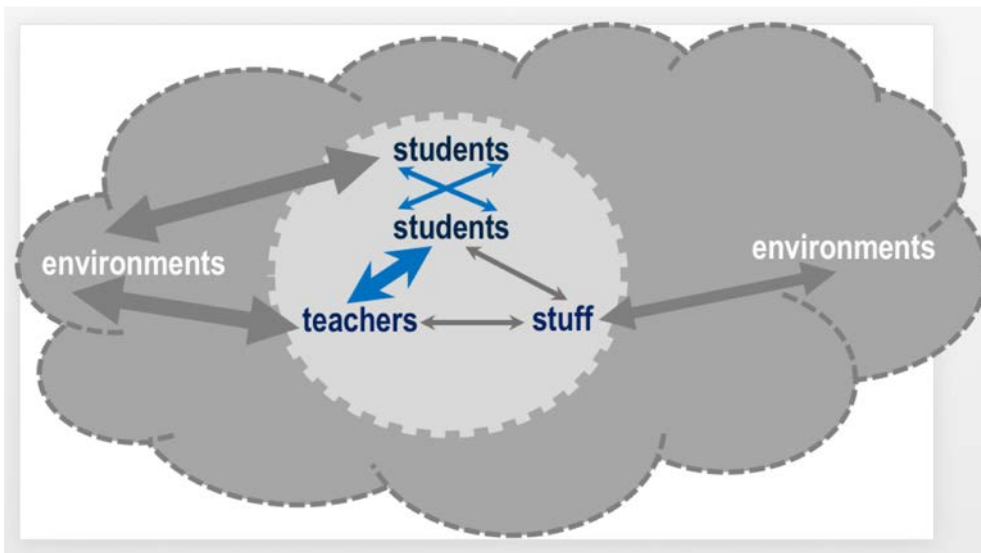
1. [Teacher's race affects gifted program selections](#), Joan Brasher, Research News @ Vanderbilt , January 18, 2016
2. Grissom, J. & Redding, C. (2016). Discretion and disproportionality: Explaining the underrepresentation of high-achieving students of color in gifted programs. *AERA Open*, 2(1), 1–25.

DISCRETIONARY SPACES AND THE POWER OF TEACHING

- A discretionary space is where the next move or comment or question is necessarily determined by the teacher—and not by a policy, a curriculum, or a principal.
- In these discretionary spaces teachers have the power to reinforce or disrupt patterns of racism, sexism, and marginalization.
- Often we act without even realizing we have discretion to do something different. Countering these patterns requires habits of consciousness and alternative moves to make.



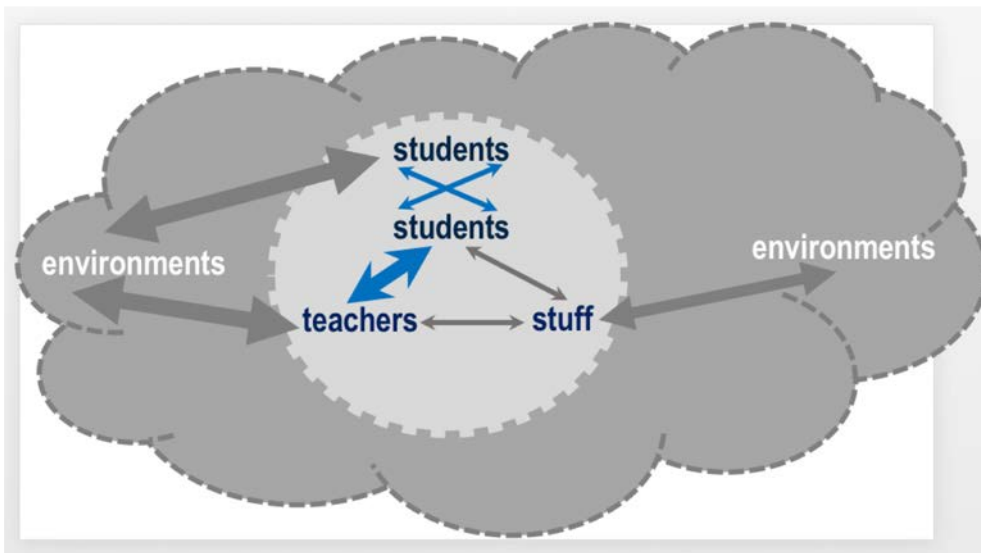
WHAT REGULARLY FILLS THE DISCRETIONARY SPACES IN TEACHING?



1. Teachers' experiences in a society filled with racism and oppression.
2. Normalized practices in schools that institutionalize dominant values and habits.

Lortie (1975), Banks, Grant and Koskela, Moll
Anyon (1981), Heath, Martin, Tuck
Ball (2018)

WHAT REGULARLY FILLS THE DISCRETIONARY SPACES IN TEACHING?



Professional education does not effectively intervene on these.

1. Teachers' experiences in a society filled with racism and oppression.
2. Normalized practices in schools that institutionalize dominant values and habits.

Professional education and teaching experience often teach these.

Lortie (1975), Banks, Grant and Koskela, Moll
Anyon (1981), Heath, Martin, Tuck
Ball (2018)

WHAT DOES IT MEAN TO SAY—

. . .that our efforts to make change might still be
high-risk
for reproducing patterns of racism and
marginalization?

Many taken-for-granted teaching practices insidiously reproduce patterns of racism, sexism, and ableism.

- Many of these we have inherited or absorbed from our deep immersion in schools as children and as educators.
- We often have not had opportunities to stand back and consider their effects.
- Some of these we have deliberately learned as part of “mathematics reform” or professional development.

Let's look at a second example.

What might be reproductive of oppression within the practice of going to the board?

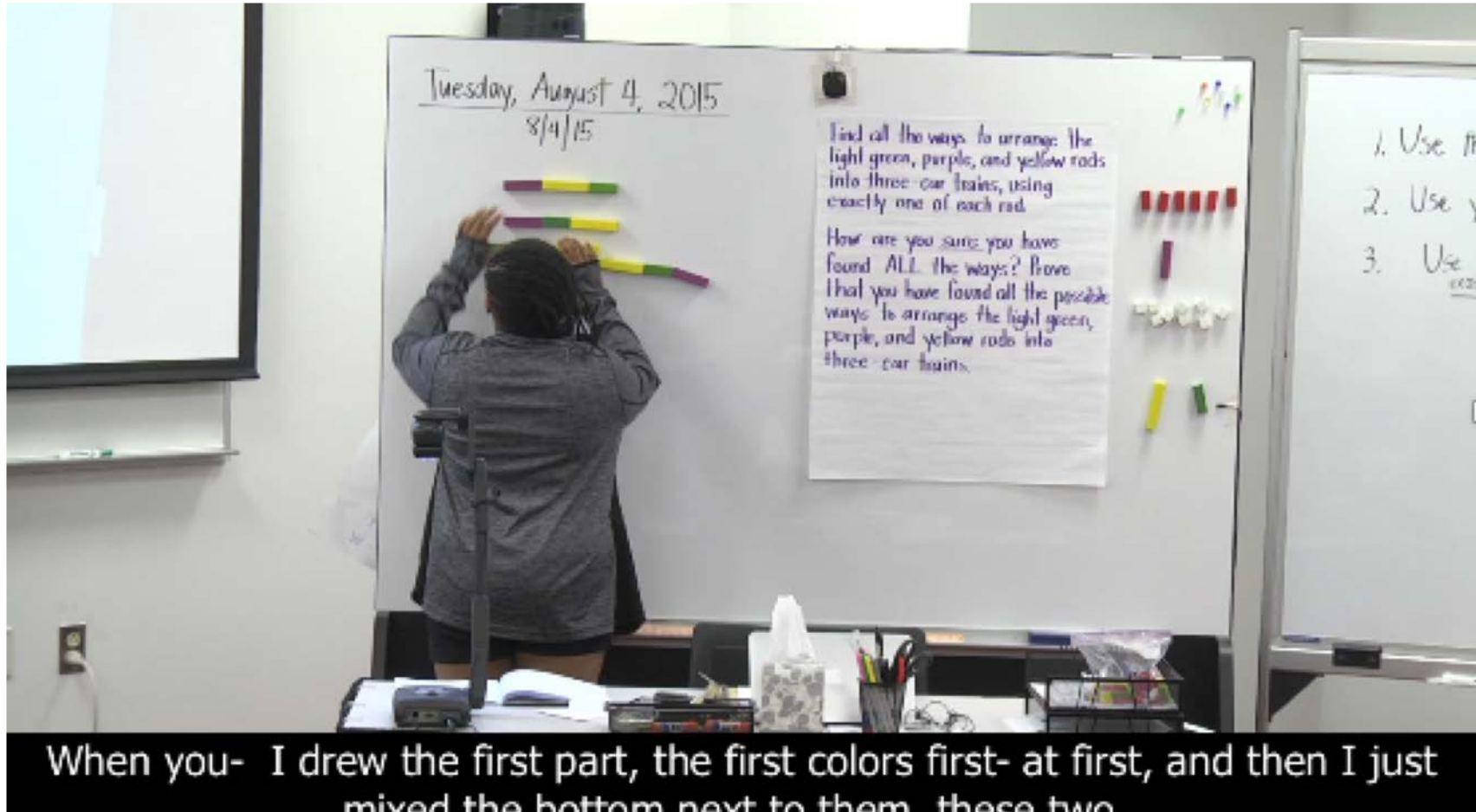
Find all the ways to arrange the light green, purple, and yellow rods into three-car trains, using exactly one of each rod.



How are you sure you have found ALL the ways?

Prove that you have all the possible ways to arrange the light green, purple, and yellow rods into three-car trains.

VIDEO: MIAH



When you- I drew the first part, the first colors first- at first, and then I just mixed the bottom next to them, these two

WHAT IS LIKELY TO HAPPEN NEXT?

LIKELY NEXT MOVES

- “Great job, Miah. Miah showed us that we can arrange the rods six ways. Does everyone see that?”
- “Very nice, Miah. Miah showed us that we can put the purple rod first two times and switch the green and the yellow rods, then put the green rod first, and switch the purple and yellow two times, and then the same, putting the yellow first and switching the other two.
- “What Miah did was something that mathematicians figure out with a factorial—3 times 2 times 1.”

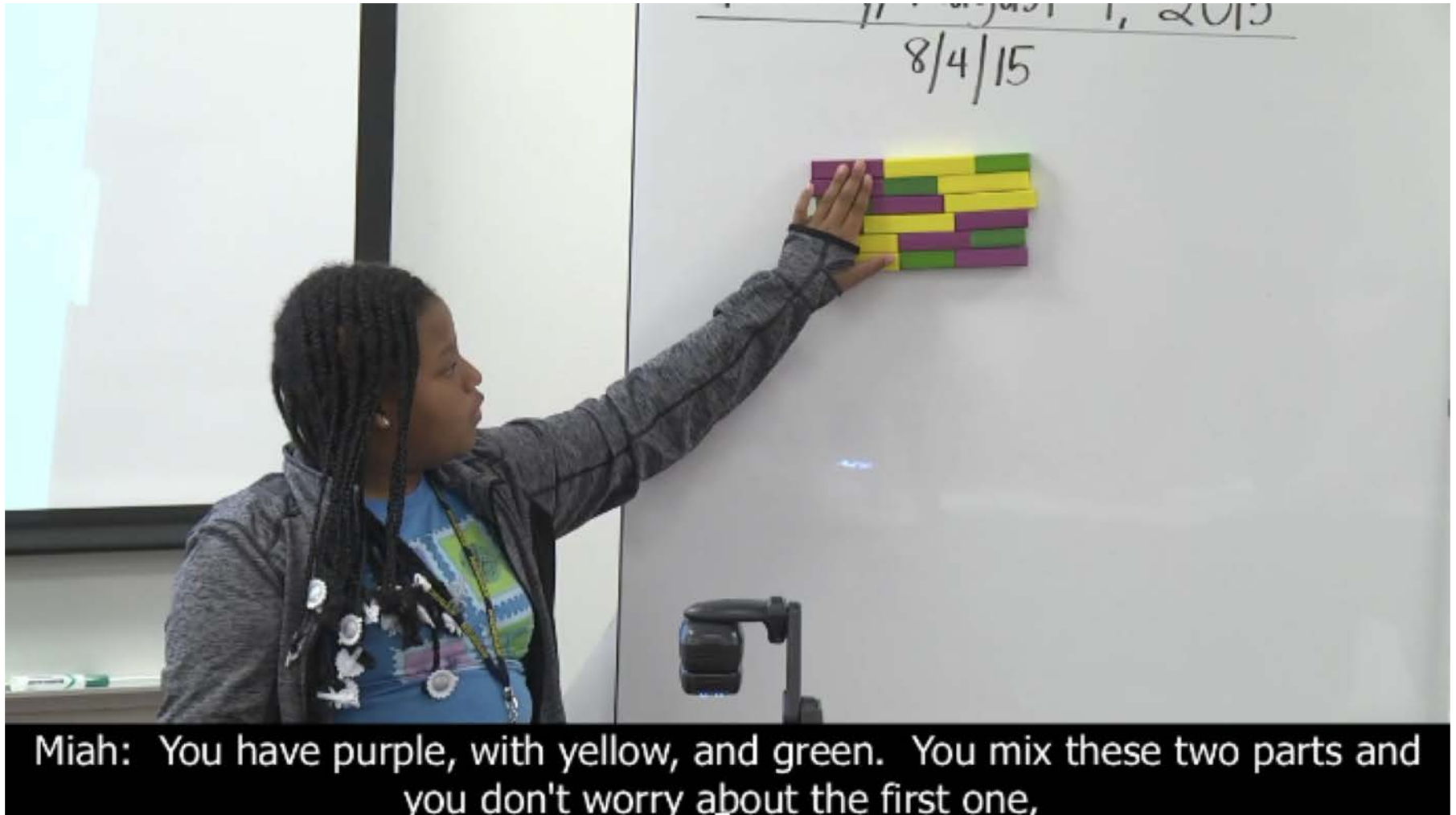
RESULT

- Miah, a Black girl, is praised for having the right answer. But she is not positioned to take up comments from her peers.
- Miah’s answer is taken over and revoiced and extended by the teacher. Her agency is removed.
- The class is not engaged in restating and commenting on Miah’s solution, so neither she nor her classmates are positioned to do collective work.
- Any of these might reinforce narrow and exclusionary views of mathematics.

An insidious pattern is not trusting students and not foregrounding their talk and their collective work.

How might patterns that reinforce oppression and marginalization be disrupted?

VIDEO: MIAH



How might this small move disrupt patterns of marginalization?

- Miah is positioned as the author of the explanation and the class as her peers to consider her solution.
- Miah is supported to hold the floor.
- Miah and her classmates are trusted to engage in the work.

WHAT ARE OTHER POSSIBILITIES FOR AVERTING THE REPRODUCTION OF MARGINALIZATION?

- Acknowledge Miah's competence.

Acknowledging competence:

A set of practices that deliberately deploy the power of teaching to:

1. Broaden and label what being competent in a given area means
2. Intervene to position who (and what) is seen as competent in class
3. Support individual children to develop their academic identities and competence

Sources: E. Cohen and R. Lotan, complex instruction; J. Boaler's work; *Smarter Together: Collaboration and Equity in the Elementary Mathematics Classroom* (Featherstone, Crespo, et al., 2011)

WHAT ARE OTHER POSSIBILITIES FOR AVERTING THE REPRODUCTION OF MARGINALIZATION?

- Acknowledge Miah's competence. (What, specifically, might you say?)
- Ask other students to explain Miah's proof and ask her to determine whether they are restating what she showed.
- Ask students to turn and talk and then comment on Miah's proof.
- Ask the class whether someone has a different idea about how to show all the trains.
- Offer another mathematically similar problem (*e.g., arranging 4, 5, and 6 into three-digit numbers*) and ask the class whether Miah's idea would help.

BROADENING OUR REPERTOIRES OF PRACTICE FOR STUDENTS TO SHOW THEIR IDEAS AT THE BOARD

- Considering whom to ask to show their work and the sequencing of who goes to the board
 - Positioning students
 - The trajectory of the math
- Developing a broad array of moves to distribute turns (*e.g., purposeful selection, pairs*)
- Broadening the array of contributions that can be shown at the board (*e.g., an approach that didn't work, a method that a student is trying*)
- Extending the questions we ask to prompt students to come to the board (*e.g., Who has an idea that they are still developing? Who has something that didn't work? What would not be a solution to this problem?*)
- Developing individual and affirming relationships with each student
- Building a classroom culture that values and supports collective work and that welcomes each person's contributions

GOING TO THE BOARD TO SHARE ONE'S IDEAS

Is a crucial practice for—

- Supporting the development of positive identities
- Developing students' ownership of ideas
- Engaging in collective mathematical work in school

But must be enacted with care:

- To anticipate, avert, and disrupt normalized patterns that reproduce racism and oppression

GOING TO THE BOARD TO SHARE ONE'S IDEAS

Is a crucial practice for—

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But must be enacted with care:

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... But no matter what we do, these risks are always there and we must constantly be aware of the discretion we have to attend to them.

OUR ASK OF YOU: TO DO SIMILAR WORK TO UNCOVER AND DISRUPT RISKS IN OTHER TAKEN-FOR-GRANTED PRACTICES

- Small group work
- Situating word problems in contexts
- Revoicing students' ideas
- Group discussions
- Going to the board to show one's ideas
- Constructing mathematical arguments
- Discourse norms

and many more...

WHAT WOULD IT TAKE TO DISRUPT THESE PATTERNS THAT REPRODUCE RACISM AND OPPRESSION?



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TEACHING IS POWERFUL

Teaching either reinforces/reproduces *or* it can avert and disrupt patterns.

1. AWARENESS OF PATTERNS

- Becoming critically conscious of common patterns of thinking about “ability”
- Understanding one’s own identity and how that shapes one’s assumptions and interpretations
- Understanding that these patterns are historical and embedded in our institutions and systems

2. AVERTING /DISRUPTING PATTERNS

- Consciously NOT following or reproducing the patterns
- Developing specific new habits and practices that counter the patterns
- Strengthening your own mathematical knowledge for teaching

“Teaching is a revolutionary act.”

Dr. Marcelle Haddix

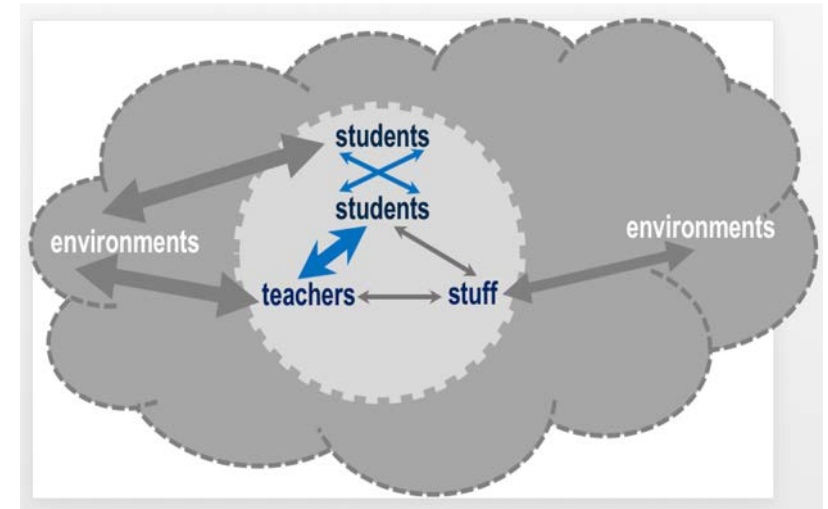


TEACHING HAS INCREDIBLE POWER FOR GOOD—OR HARM . . .

. . . through the infinitely many
discretionary spaces in our practice.

LEARNING TO SEE AND USE THE DISCRETIONARY SPACES IN OUR PRACTICE

- Become aware of the density of taken-for-granted and normalized practices that reflect Whiteness and oppression
- Notice and understand how much of our practice is based on these, and that these are *habits*
- Work on *breaking habits* that are rooted in racism and oppression (Noel, 2018)
- Develop new repertoires of practice and new habits and learn to scrutinize these critically



“We are going to have to take upon ourselves a disciplined and continuing effort, with no real hope that, in our lifetime, we are going to be able to take a vacation from the struggle for justice.”

Rev. James Reeb



Reaching for the possibilities and the power is our collective work.

THANK YOU!

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Slides will be available on Deborah's website

<https://deborahloewenbergball.com/>

("Google" Deborah Ball)



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CREDITS



Image on slide 3:

Image from “New function - homework assignments with automatic checking,” by push to learn

Retrieved from <http://pushtolearn.com/post/homework-assignments>



Image on slide 3:

Photo from “Using reward charts successfully”

Retrieved from <https://raisingchildren.net.au/toddlers/behaviour/encouraging-good-behaviour/reward-charts>



Image on slide 3:

Photo from “8 Common Core Math Standards, Explained [+ Examples],” by Maria Kampen

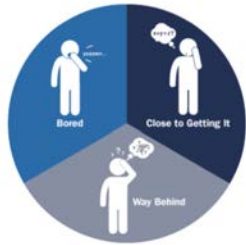
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CREDITS



Image on slide 3:

Image from "Classroom Behavior Management Student Notice – Editable"
Retrieved <https://www.teacherspayteachers.com/Product/Classroom-Behavior-Management-Student-Notice-Editable-2678793>



Images on slide 3:

Images from "Making It Work for Everyone: Seven ways to create a classroom that meets the needs of all your students," by Zachary Herrmann

Retrieved from <https://www.gse.harvard.edu/uk/blog/making-it-work-everyone>

"A third of my class was bored and ready to move on, a third was close to understanding but not quite there, and another third was so far behind that continuing to try might have seemed like a fool's errand."

CREDITS



Image on slide 41:
Photo of Marcelle Haddix.
Retrieved from <http://soe.syr.edu/about/member.aspx?fac=4>



Image on slide 44:
Photo of James Reeb.
Retrieved from https://en.wikipedia.org/wiki/James_Reeb