

# (HOW) CAN MATHEMATICS TEACHING AND TEACHER EDUCATION CONTRIBUTE TO DISRUPTING RACISM AND OPPRESSION?

Deborah Loewenberg Ball

Michigan Association of Mathematics Teacher Educators  
Conversations among Colleagues 2020 Virtual Conference

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# SHARING WORDS FROM NA'ILAH NASIR AND MEGAN BANG AT THE SPENCER FOUNDATION

Our hearts are breaking as we witness the fall-out from the effects of the pandemic on our communities. We are holding so much in our hearts and minds.

- We are holding the worry of those who are sick and the sorrow of those who have already lost a loved one to this virus both here and abroad.
- We are holding undergraduate students who have had to move abruptly from their living spaces, and who may be housing or food insecure.
- We are holding graduate students whose dissertation studies may be irreparably altered, and who are anxious about what this means for their job-seeking process and their futures.
- We are holding faculty members and staff at universities across the country who are learning to teach and serve students online, while caring for young children and/or elderly parents and needing to attend to their own health and well-being.

From Na'ilah Nasir and Megan Bang, Spencer Foundation

- We are holding parents and caregivers at home with their kids, managing the tension between supporting their children's learning and just wanting to make sure they feel safe and loved in an unprecedented time.
- We are holding all of the teachers and school administrators and education leaders who are trying to figure out how to support children and families, and how to do so equitably.
- We are holding the junior faculty whose work and careers have been disrupted, in ways that may have reverberating effects for years to come.
- We are holding the scholars and students with disabilities who have been told for years that virtual participation was too cumbersome or not possible, and who are watching the world participate in work and school virtually over a very short span of time.

From Na'ilah Nasir and Megan Bang, Spencer Foundation

# AND—

- We are holding the gravity of the reality that in this moment of collective trauma and crisis, the negative effects are experienced much more drastically by those who are already vulnerable in our society—those in poverty, immigrants, the undocumented, people of color, those with disabilities, those in foster care or without safe and loving family structures. This crisis is exposing the extreme fissures in our society and the deep and abiding obligation we have to put things right.

From Na'ilah Nasir and Megan Bang, Spencer Foundation

# BUT ALSO—

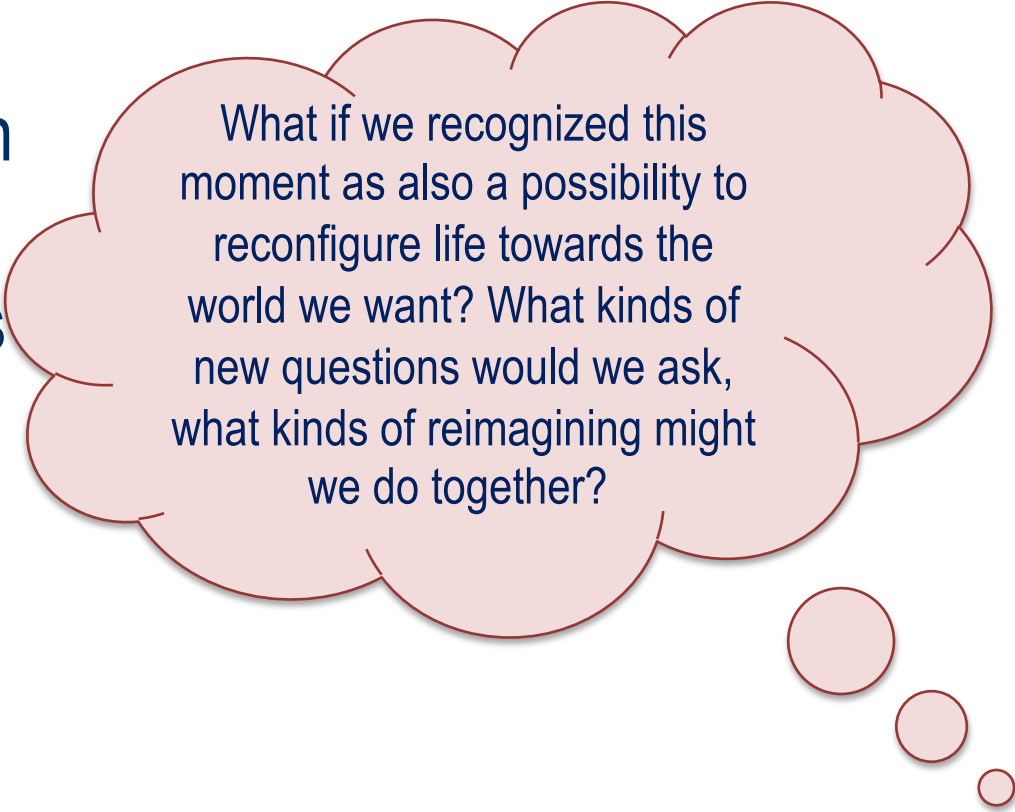
More drastic change to education systems has occurred in the last week than it has in arguably the last 50 years. What possibilities does this open up for the future of learning, for the reorganization of our institutions, for the centrality of families and family life?

From Na'ilah Nasir and Megan Bang, Spencer Foundation



# BUT ALSO—

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What if we recognized this moment as also a possibility to reconfigure life towards the world we want? What kinds of new questions would we ask, what kinds of reimagining might we do together?

From Na'ilah Nasir and Megan Bang, Spencer Foundation

# WHAT IS OUR OPPORTUNITY IN MATHEMATICS TEACHING AND TEACHER EDUCATION?



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# LOOKING BACK TO 2000: WHAT PROGRESS HAVE WE MADE?

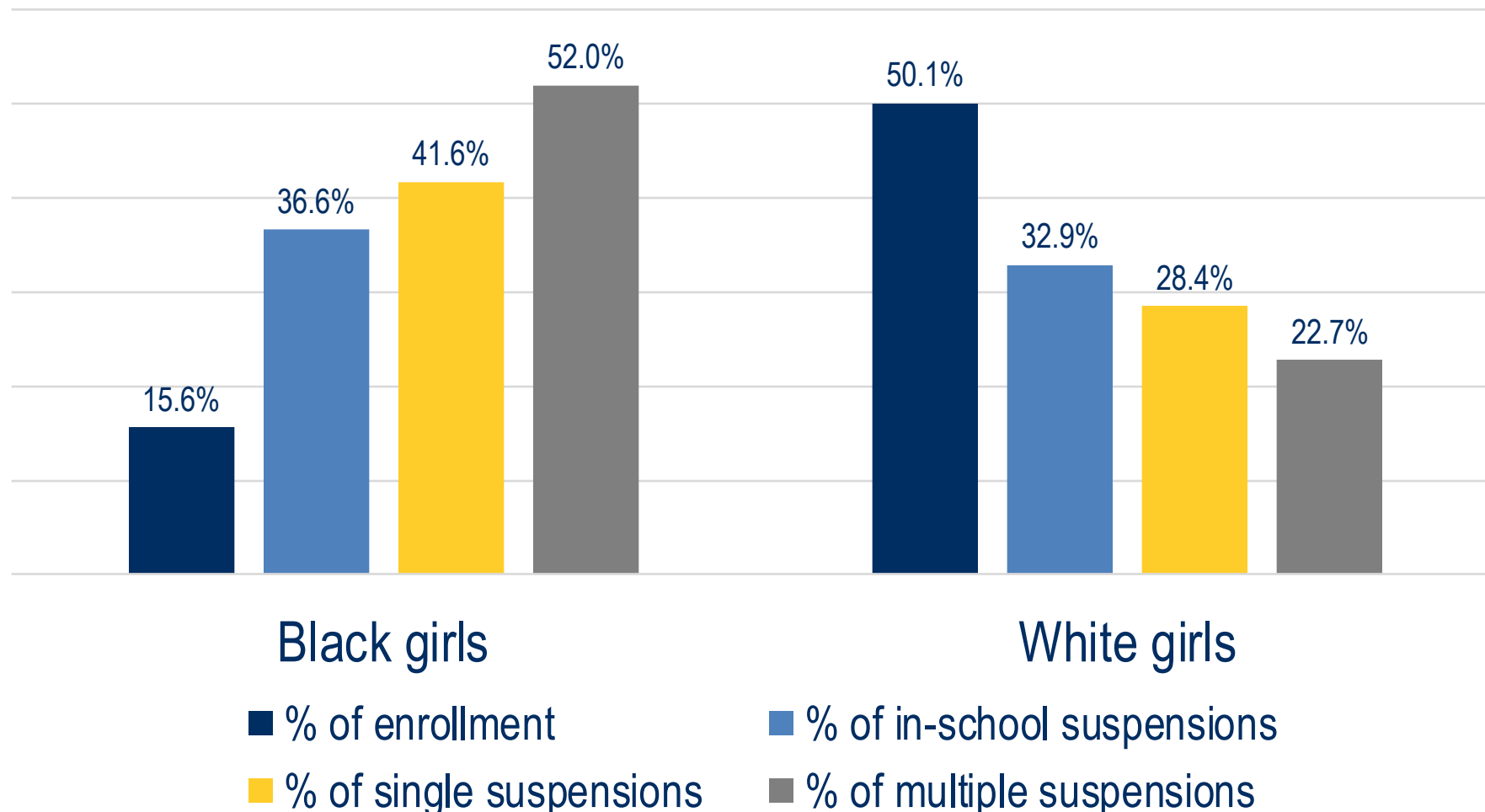
- Articulated mathematical practices as fundamentally intertwined with mathematical content
- Organized as a community to catalyze change (John Staley’s inspiring talk this morning)
- Developed many structures and practices to support mathematics teachers (many sessions across the day)
- Common progress on understanding the “mathematical knowing” demands of mathematics teaching

## What are some other big areas of progress?

# LOOKING AHEAD TO 2030: WHERE DO WE NEED TO MAKE PROGRESS?

We need to confront the perpetuation of marginalization and oppression in mathematics classrooms.

# EXAMPLE #1: BLACK GIRLS' RATES OF SUSPENSION



Epstein, Blake, & González (2017)

11 March 21, 2020



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# EXAMPLE #2: DISPROPORTIONALITY IN ASSIGNMENT TO “ABILITY STATUS”

- 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.

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.

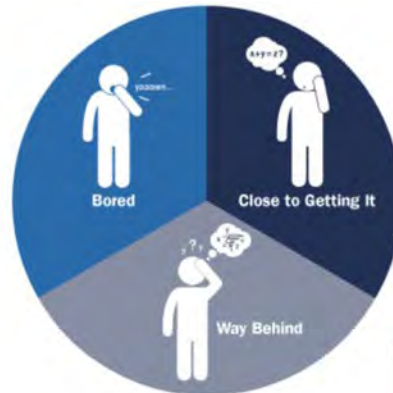
- Not Following directions
- Being disrespectful to the teacher
- Being disrespectful to my classmates
- Misbehaving in specials
- Getting out of my seat
- Not paying attention
- Too much talking
- Distracting others
- Incomplete class work
- Incomplete homework
- OFF task behavior

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."



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




Why do we  
do this?

# GOING TO THE BOARD TO SHOW ONE'S IDEAS

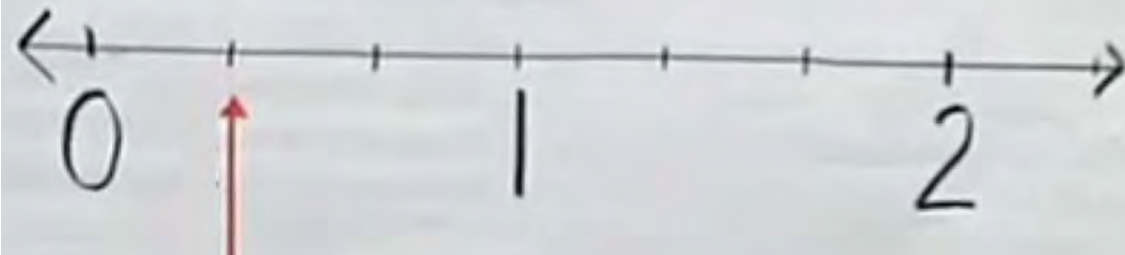
## COMMON PURPOSES

- 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?

What number does the orange arrow point to?  
Explain how you figured it out.





# ANIYAH AND TONI

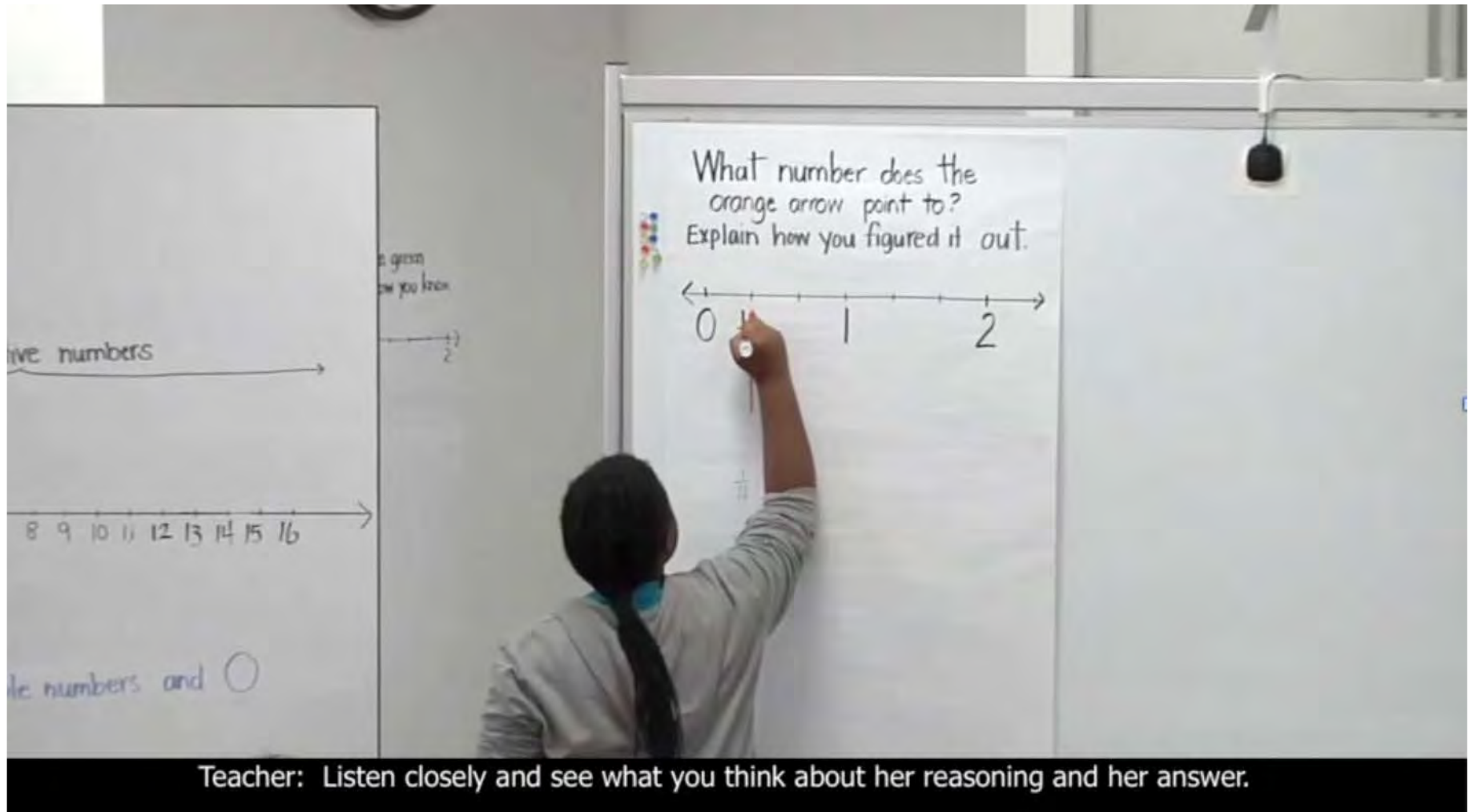


**ANIYAH**



**TONI**

# VIDEO: ANIYAH AND TONI



# WHAT ARE LIKELY COMMON RESPONSES TO ANIYAH?

- “Nice job, Aniyah. Can someone help Aniyah out and show what the whole is on the number line?”
- “Thumbs up if you agree with Aniyah; thumbs down if you disagree.”

# WHAT ARE LIKELY COMMON RESPONSES TO ANIYAH?

- “Nice job, Aniyah. Can someone help Aniyah out and show what the whole is on the number line?”
- “Thumbs up if you agree with Aniyah; thumbs down if you disagree.”

## WHAT IS THE IMPACT?

- Aniyah is positioned as not smart.
- Aniyah’s mathematical points are sidelined.
- The mathematical work of the class is not supported.
- The class sees a Black girl positioned as a “struggling” learner.

# WHAT ARE LIKELY COMMON RESPONSES TO TONI?

- “Toni, when you’re ready to participate appropriately by not playing with your hair and laughing, and have a question to ask, I will come back to you.”
- “You need to be a better listener, Toni. Aniyah already explained why she picked one-seventh. Who else has a real question for Aniyah?”
- “We show others respect in this classroom, Toni.”

# WHAT ARE LIKELY COMMON RESPONSES TO TONI?

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- “You need to be a better listener, Toni. Aniyah already explained why she picked one-seventh. Who else has a real question for Aniyah?”
- “We show others respect in this classroom, Toni.”

## WHAT IS THE IMPACT?

- Toni is positioned as not paying attention and off-task.
- Toni’s mathematical contributions are excluded.
- The mathematical work of the class is slowed.
- The class sees a Black girl positioned as a “troublemaker” and not contributing.



# WHAT DOES IT MEAN TO SAY—

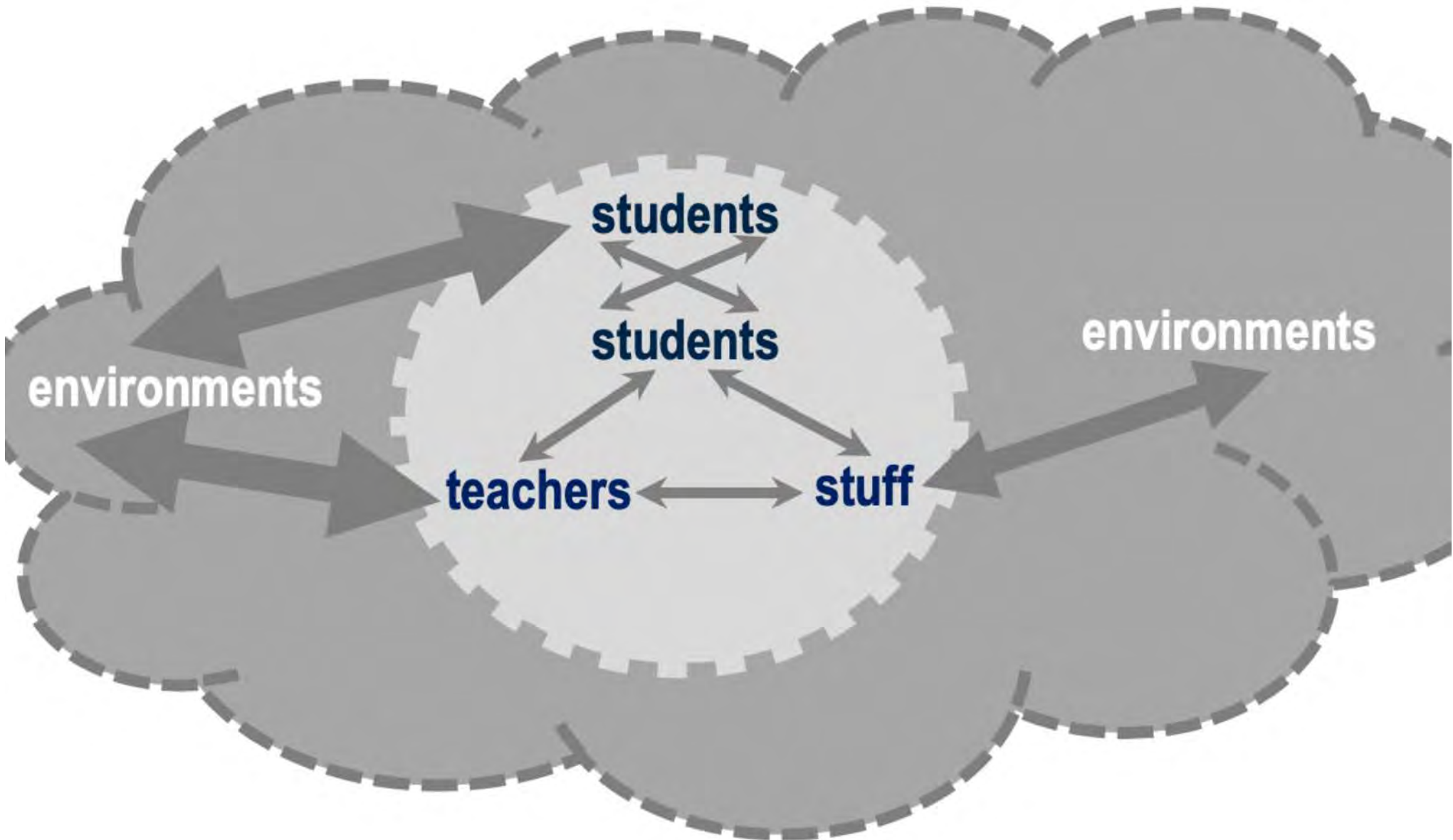
. . .that our efforts to make change might still be  
**high-risk**  
for reproducing patterns of racism and  
marginalization?

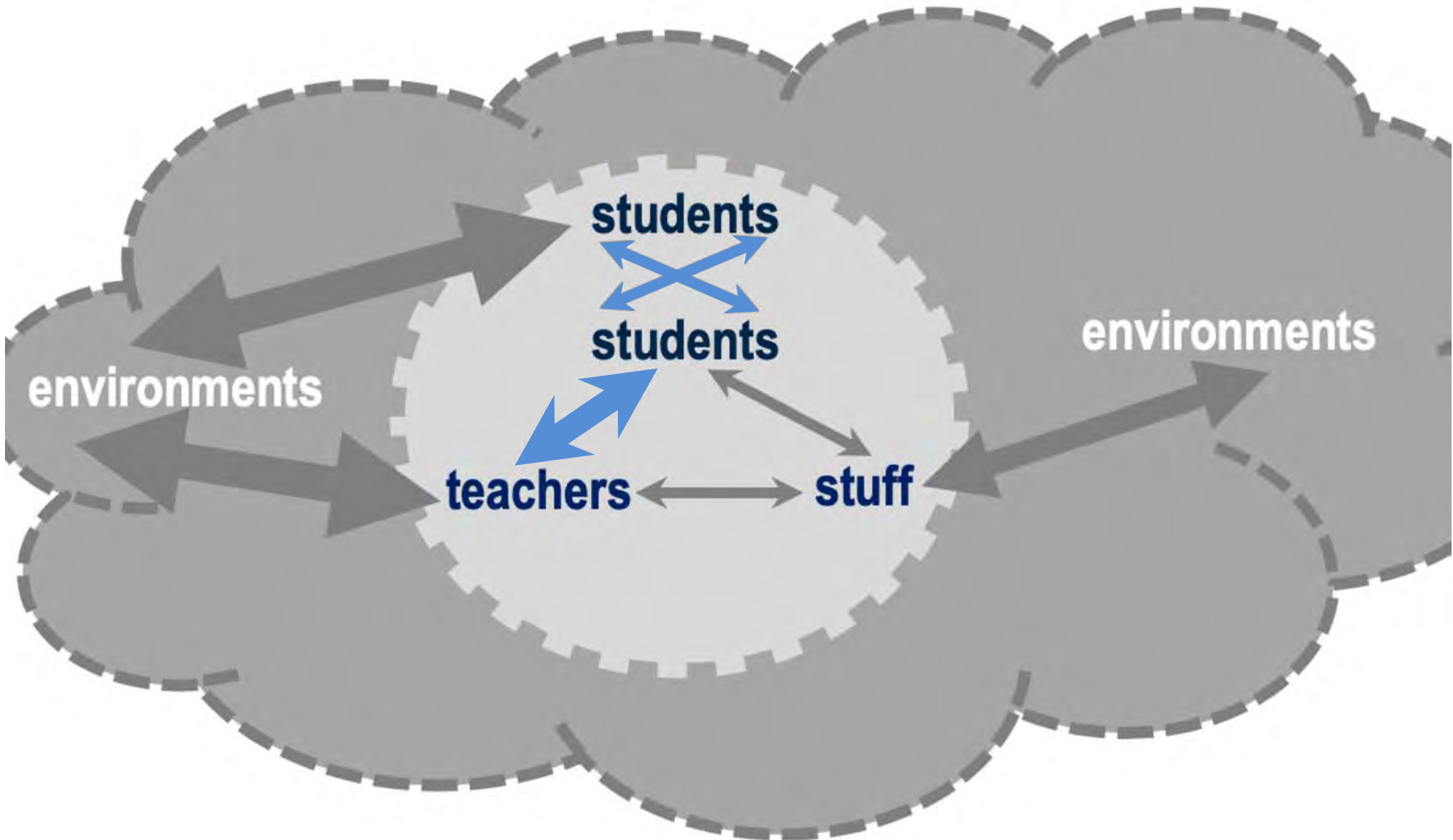
# Many taken-for-granted teaching practices insidiously reproduce patterns of racism, sexism, and ableism.

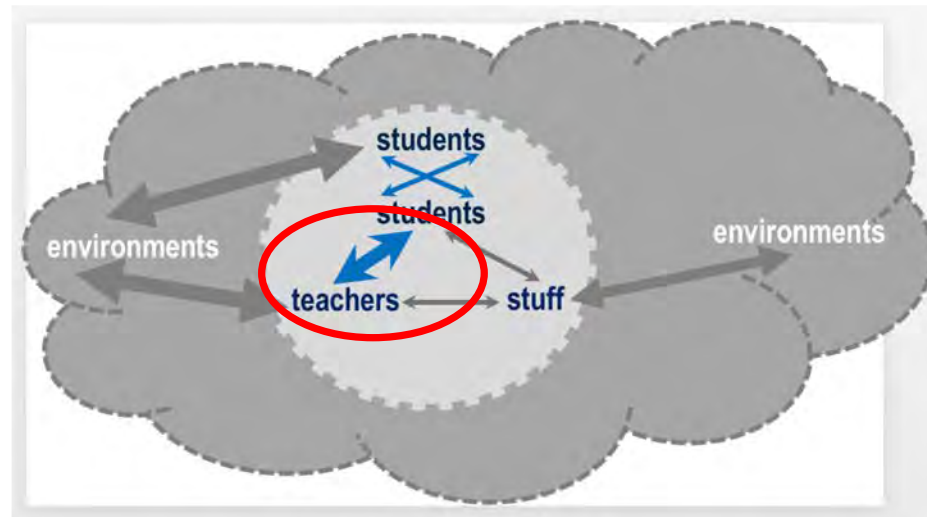
- Many of these we have inherited or absorbed from our deep immersion in schools as children and as educators.
- We often have not had opportunities to stand back and consider their effects.
- Some of these we have deliberately learned as part of “mathematics reform” or professional development.

# Why does this happen?

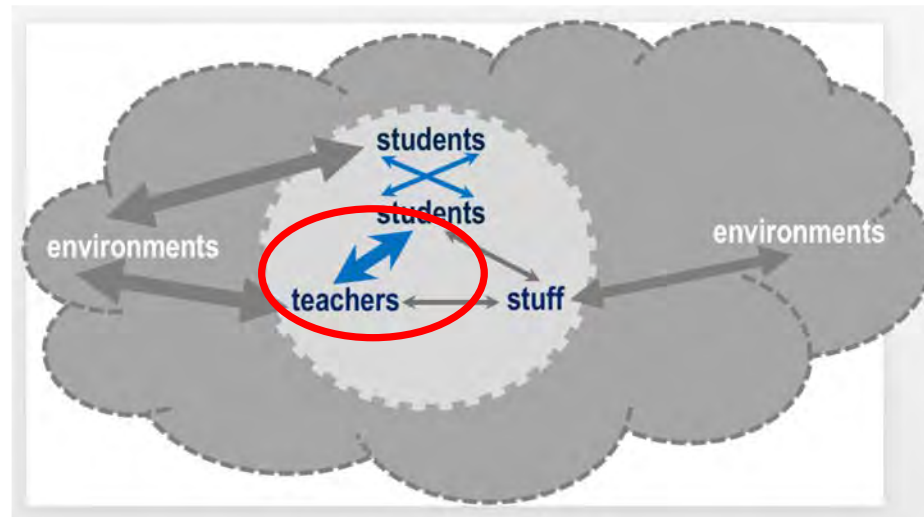








Speaker	Talk	Discretionary space
Teacher	Who would like to try to explain what you think the answer is? And show us your reasoning by coming up to the board?  Who'd like to come up to the board and try to talk? And you know, it might not be right. That's okay because we're learning something new.  I'd like someone to come up and sort of be the teacher and explain how you are thinking about it. Who'd like to try that this morning?	1. Deciding when to open whole-group discussion 2. Deciding what to do to launch discussion  3. Framing the expectation for presenting 4. Framing of what it "coming to the board" entails.
Teacher	Okay, Anyah?	5. Selecting a student to present
Toni Other children	Playing with hair Laying on arms	6. Deciding whether to comment 7. Deciding whether to comment
Teacher	When someone's presenting at the board, what should you be doing?	8. Setting norms for what to do when a student is presenting
Students in chorus	Looking at them.	
Teacher	Looking at that person.	9. Responding to students
Teacher	Uh-huh?	10. Taking up an individual student question
Anyah	You want me to write it?	
Teacher	You're trying to mark what you think this number is and explain how you figured it out.	11. Clarifying task
Teacher	Listen closely and see what you think about her reasoning and her answer. (Anyah writes $\frac{1}{7}$ by the orange line).	12. Setting task for the other students
Anyah	I put one-seventh because there's-	
Toni	Did she say one-seventh?	13. Responding to student
Anyah	(Turns to Toni) Yeah. (continues to class) Because there's seven equal parts, like one, two, three, four, five, six, and then seven. (Uses her fingers to count the parts on the number line).	
Teacher	Before you agree or disagree, I want you to ask questions if there's something you don't understand about what she did. No agreeing and disagreeing. Just- If you can do right now is ask Anyah questions. Who has a question for her?	14. Setting task for responding to student explanation
Teacher	Okay, Toni, what's your question for her?	15. Selecting student to speak
Dante	You did not!	16. Responding to student speaking across room
Toni	Why did- (laughs at another student who says something to her from across the room)	17. Responding to student laughing
Teacher	Go ahead, it's your turn.	17. Responding to student laughing
Toni	Why did you pick one-seventh?	
Dante	You did not!	18. Responding to student speaking across room
Teacher	Let's listen to her answer now. That was a very good question.	18. Setting task for class 20. Responding to student





Speaker	Talk	
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Teacher	Okay, Anyah?	5.
Toni	Playing with hair	6.
Other children	Laying on arms	7. Deciding whether to comment
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**Teacher**

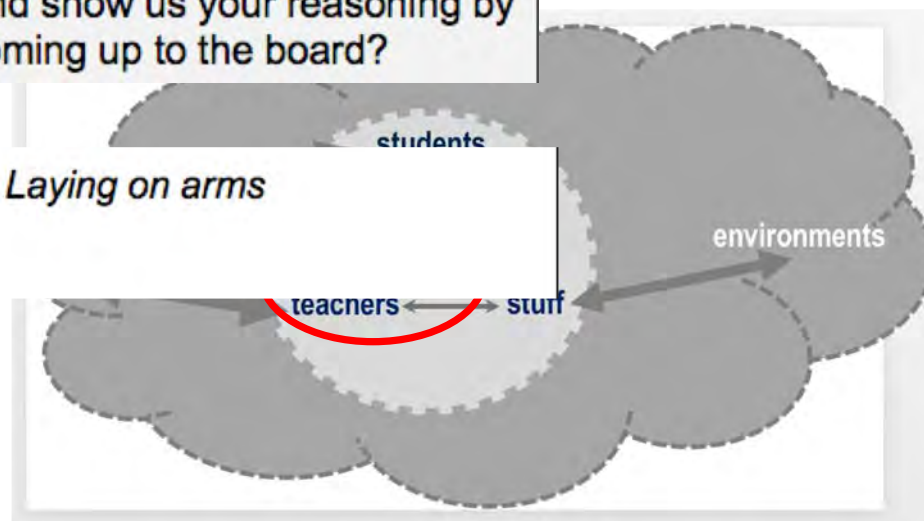
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**Other children**

Laying on arms

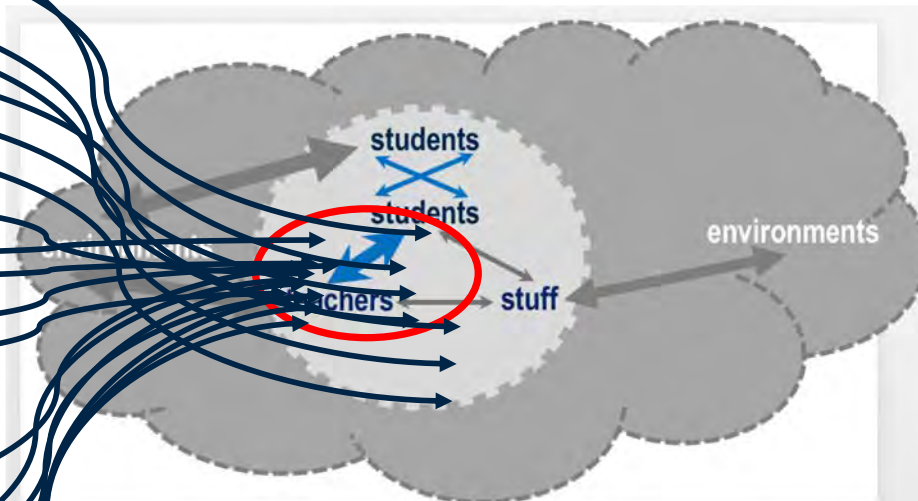
**Dante**

You did not!



20 in 1:28

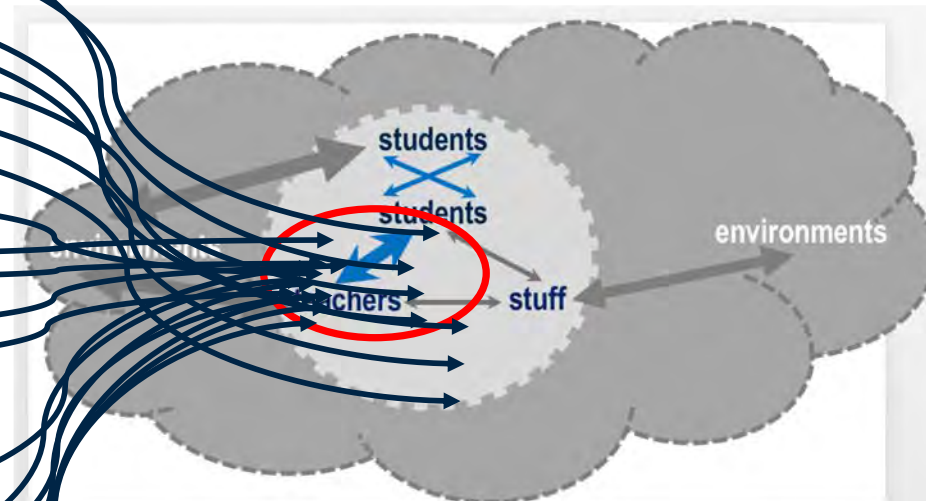
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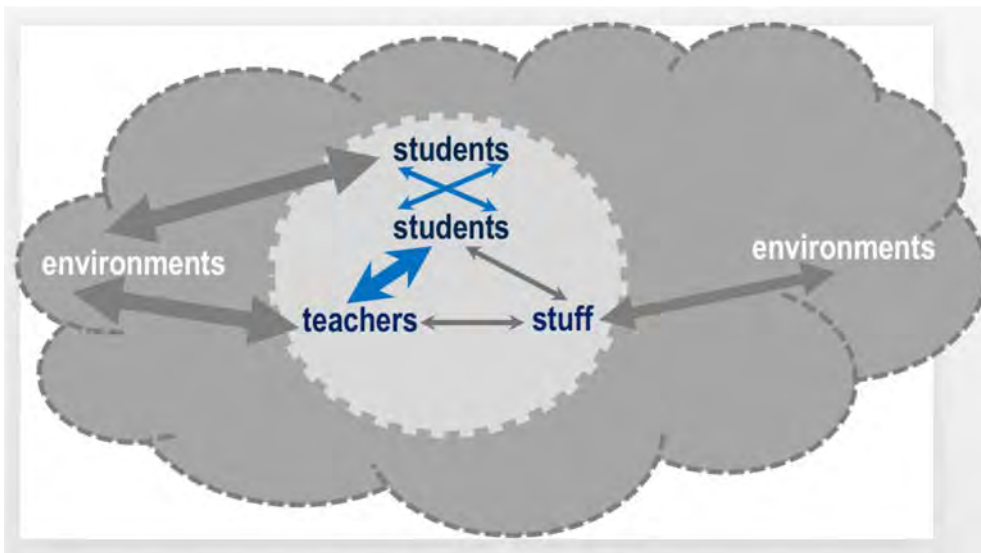
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# TEACHING IS DENSE WITH “DISCRETIONARY SPACES”

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# WHAT REGULARLY FILLS THE DISCRETIONARY SPACES IN TEACHING?

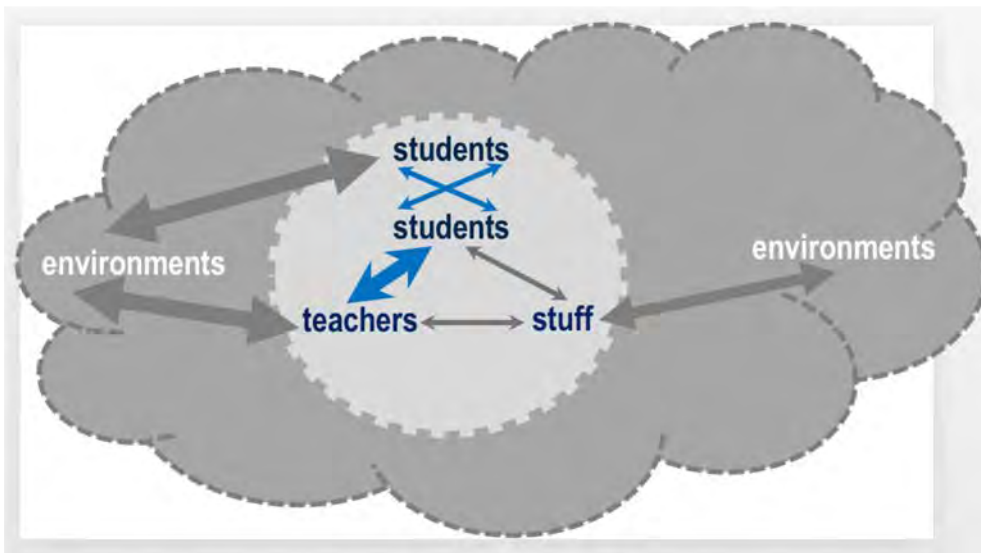


1. Teachers' experiences in a society filled with racism and oppression.
2. Normalized practices in schools that institutionalize dominant values and habits.

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



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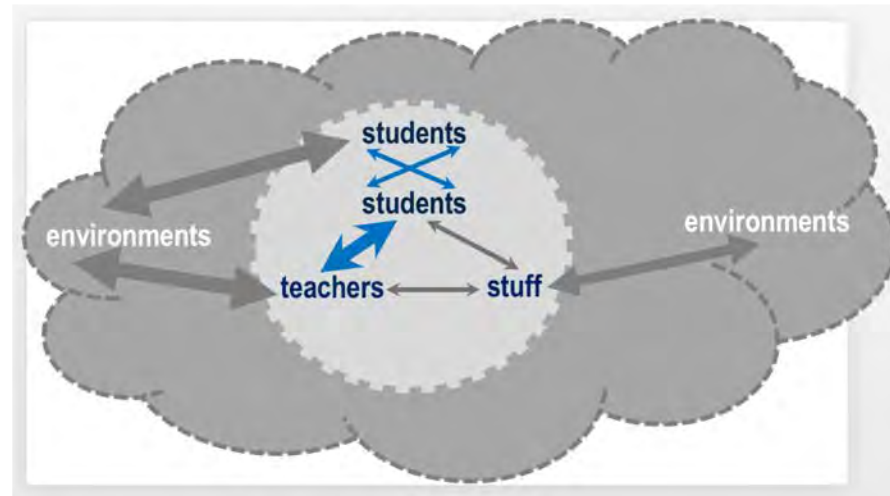
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Professional education does not effectively intervene on these.

Professional education and teaching experience often teach these.

Lortie (1975), Banks, Grant and Koskela, Moll  
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# WHAT WOULD IT TAKE TO DISRUPT THE PATTERNS THROUGH WHICH BLACK GIRLS ARE MARGINALIZED?



(Gholson & Martin, 2014, Langer-Osuna, 2015, 2017; Leonard & Martin, 2013; Martin, 2012, 2015)





# WHAT WOULD IT TAKE TO DISRUPT THE PATTERNS THROUGH WHICH BLACK GIRLS ARE MARGINALIZED?



- Seeing Aniyah's explanation and Toni's question as key to the class's work



(Gholson & Martin, 2014, Langer-Osuna, 2015, 2017; Leonard & Martin, 2013; Martin, 2012, 2015)

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Knowing and using mathematics in teaching (MKT)



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- Taking as axiomatic the brilliance of Black children, and thus Toni and Aniyah



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Interpreting Toni as asking a mathematical question that she means



- . . . And having something different to *do*

(Gholson & Martin, 2014, Langer-Osuna, 2015, 2017; Leonard & Martin, 2013; Martin, 2012, 2015)

44 March 21, 2020

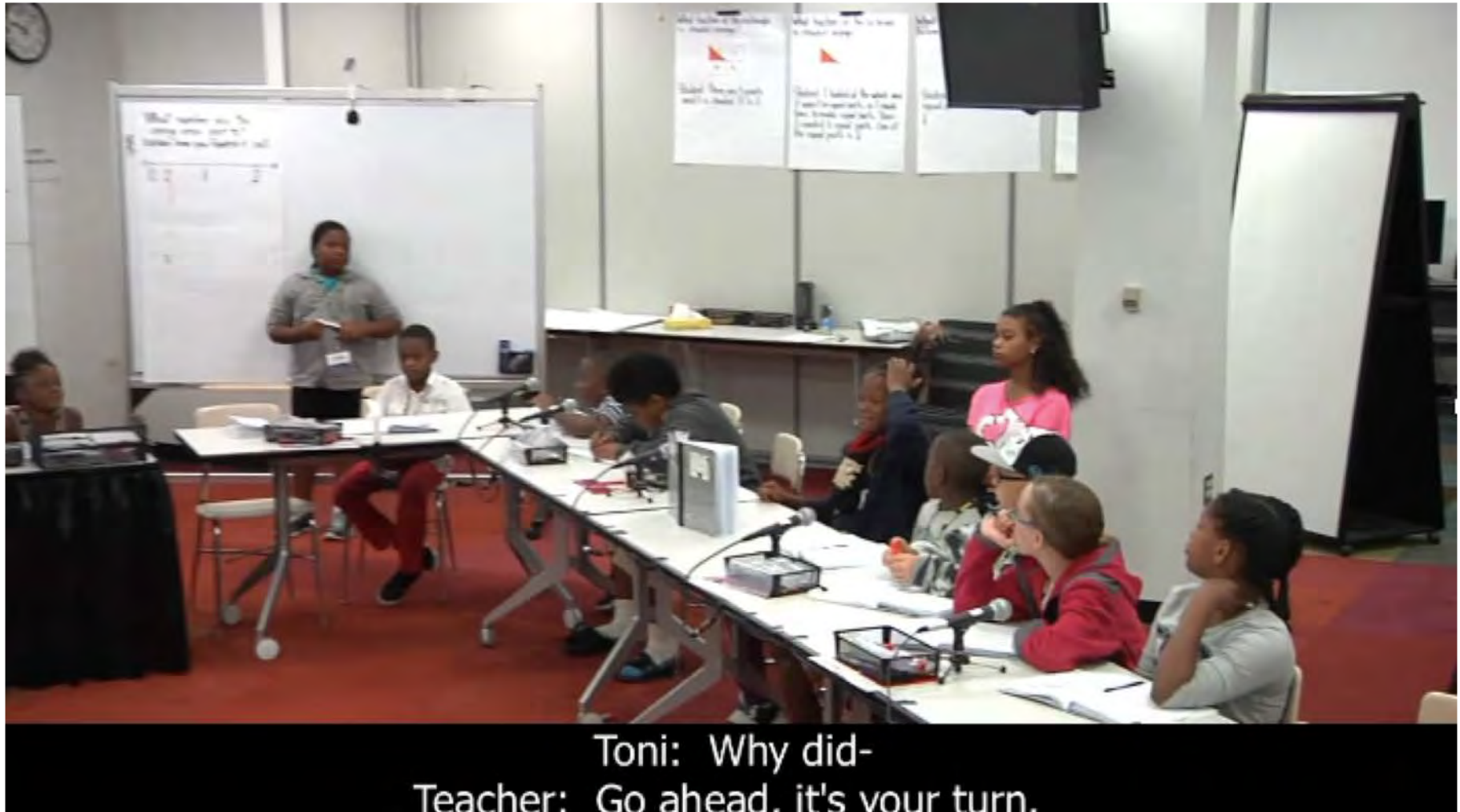


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# VIDEO: ANIYAH AND TONI

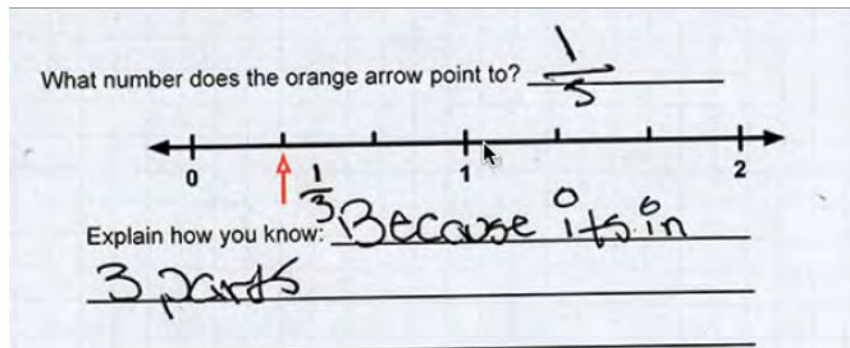




# USING DISCRETION TO DELIBERATELY DISRUPT THE PATTERNS THROUGH WHICH BLACK GIRLS ARE MARGINALIZED

## COUNTERING THE PATTERN

- Acknowledge publicly the importance of Toni's question.

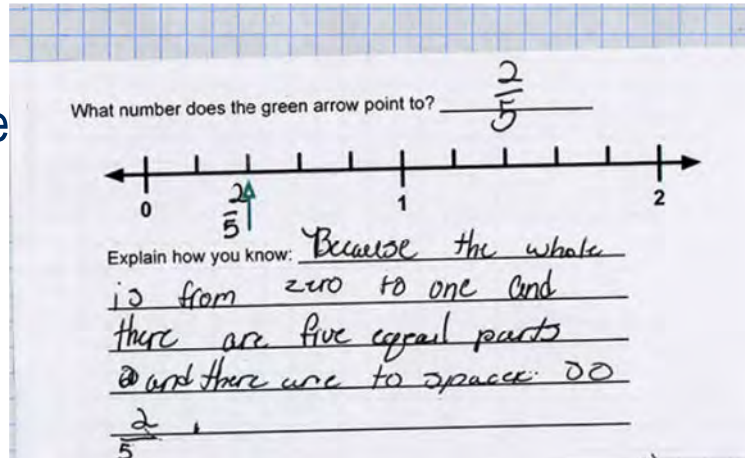


## WHAT IS THE IMPACT?

- Toni is trusted, seen, and recognized for her contribution to the mathematical work:
  - The mathematical precision of her question
  - Asking Aniyah a question instead of disagreeing.

## ANIYAH

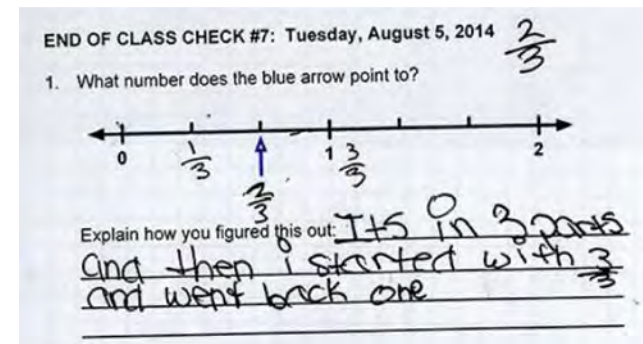
- Identified the “whole” as 0 to 1 on the number line



I did well on my goal today because my goal was to to share my ideas with the class and I did I went up to the board and share my idea with the class on Fractions.

## TONI

- Modeled at the board a complete explanation of how to understand and identify a fraction on the line



## THE OTHER CHILDREN

- Developed a depth of understanding of fractions as numbers on the line and how to explain them
- Saw Black girls' brilliance

# TEACHING IS POWERFUL

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

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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

# WHAT IS THE IMPERATIVE AND THE CHALLENGE FOR MATHEMATICS TEACHER EDUCATION AND PROFESSIONAL DEVELOPMENT?



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# CONTINUITY AND DISCONTINUITY IN MAKING CHANGE

## BUILD ON PROGRESS

- Intertwine mathematical practices with mathematical content
- Organize as a community to catalyze change (John Staley)
- Use and develop new structures and practices to support mathematics teachers
- Continue to emphasize the necessity of knowing and using mathematics in teaching

## BUT CONFRONT AND DISRUPT THE PERSISTENCE OF RACISM AND OPPRESSION


- Become critically conscious of patterns even in “reform” practices
- Understand how own identities shape our assumptions and interpretations
- Understand that these patterns are historical and embedded in our institutions and systems



# CENTERING THE INTERCONNECTEDNESS OF PRACTICE

- Developing mathematics and practice
- Advancing justice through curriculum, explicit attention to relationships, identities, and place
- Noticing and using discretionary spaces
  - Learning to connect macro and micro, systems and individuals
  - Changing habits, learning moves that counter patterns, developing repertoires of alternatives (Noel, 2018)

# GOING TO THE BOARD TO SHOW ONE'S IDEAS



Why do we  
do this?

# 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  
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# 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?

# 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

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**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

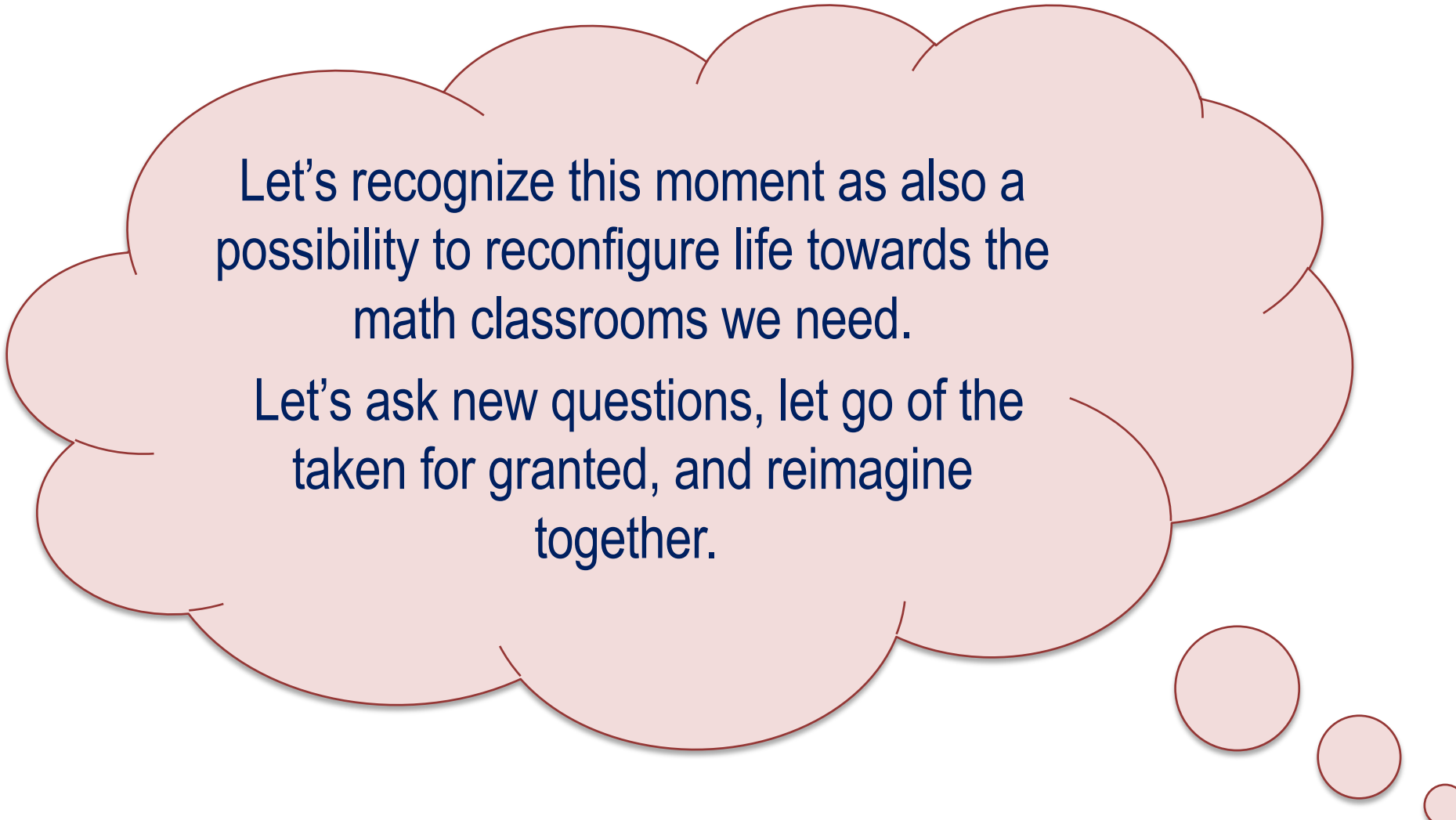
**Is a crucial practice for—**

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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.



Let's recognize this moment as also a possibility to reconfigure life towards the math classrooms we need.

Let's ask new questions, let go of the taken for granted, and reimagine together.

Thank you to Na'ilah Nasir and Megan Bang of the Spencer Foundation, for their inspiration to see our current situation in a new light.

“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!

dball@umich.edu

Slides will be available on my website

<https://deborahloewenbergball.com/>

(“Google” Deborah Ball)



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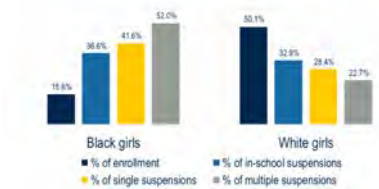
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# CREDITS



Data on slide 11:

Epstein, R., Blake, J., & González, T. (2017). *Girlhood interrupted: The erasure of Black girls' childhood*. Washington, DC: Georgetown Law Center on Poverty and Inequality.



Image on slide 14:

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

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



Image on slide 14:

Photo from “Using reward charts successfully”

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

# CREDITS



Image on slide 14:

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

Retrieved from <https://www.prodigygame.com/blog/common-core-math-standards/>



Image on slide 14:

Image from “Classroom Behavior Management Student Notice – Editable”

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



Images on slide 14:

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 61:  
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