

Making Mathematics Teaching Work: Raising the Power of Discretionary Spaces to Disrupt Injustice

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Understanding the power of the work of teaching and its role in the struggle for justice

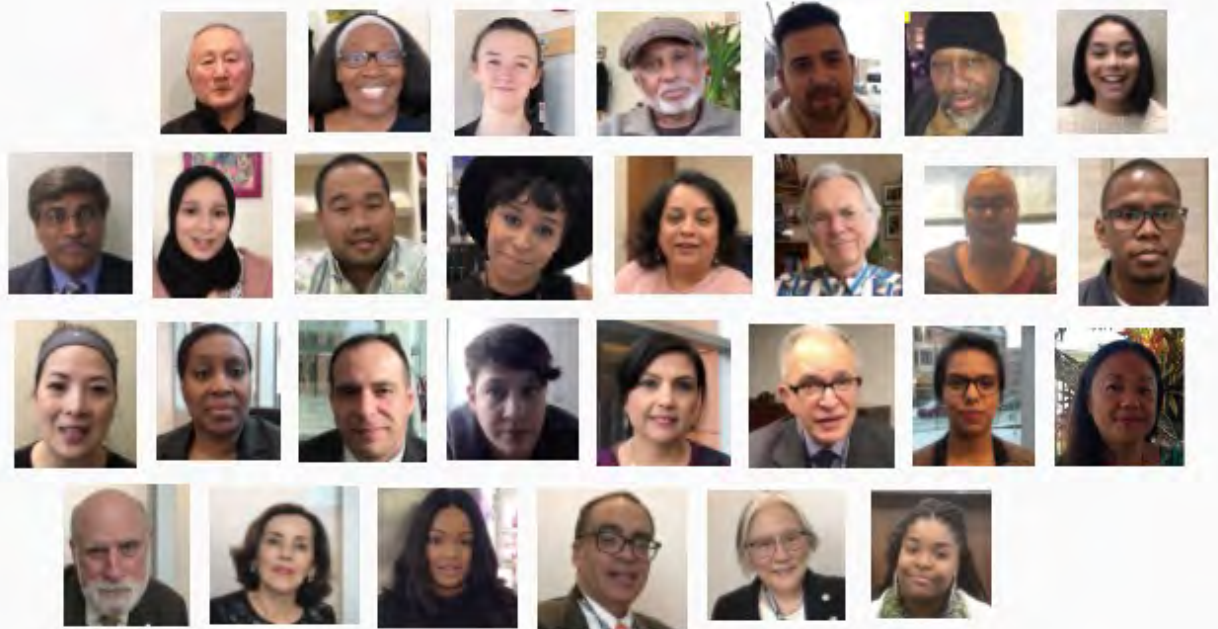
How is teaching powerful?

Why does it matter when we don't pay attention to the actual work of teaching?

How can we leverage the power of teaching?



1. How is teaching powerful?



Video: Is there a teacher who had a significant impact on you?

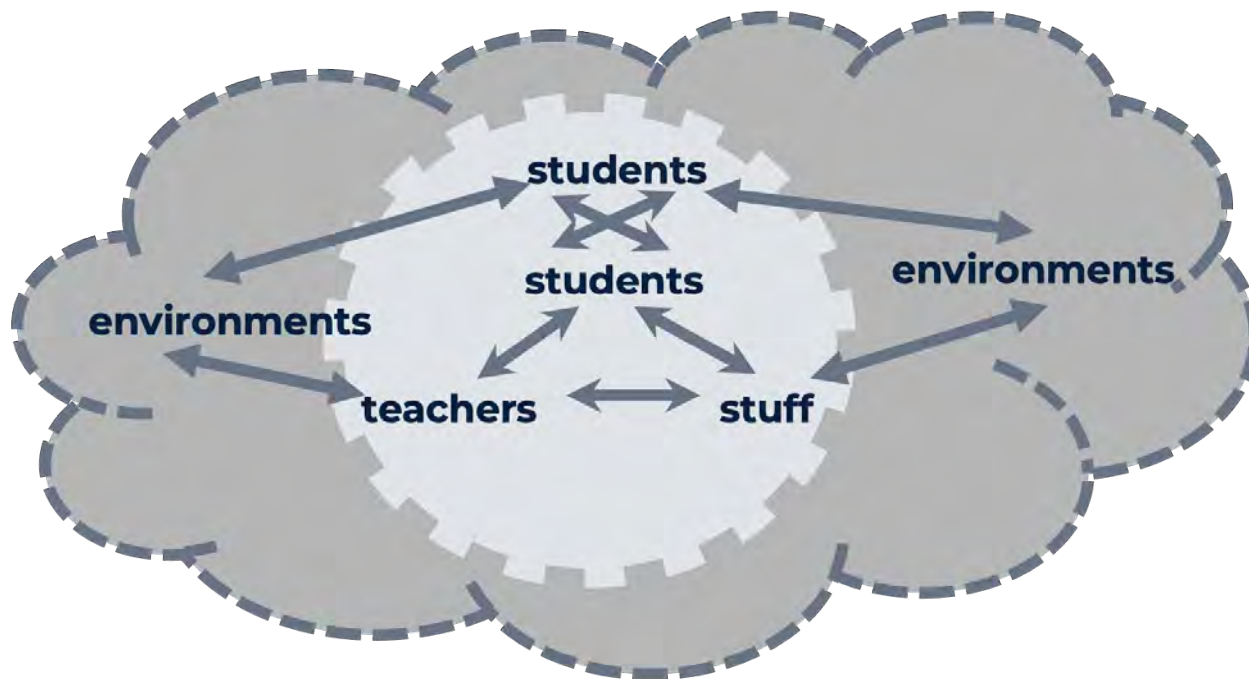


2. Why does it matter when we don't pay attention to the actual work of teaching?

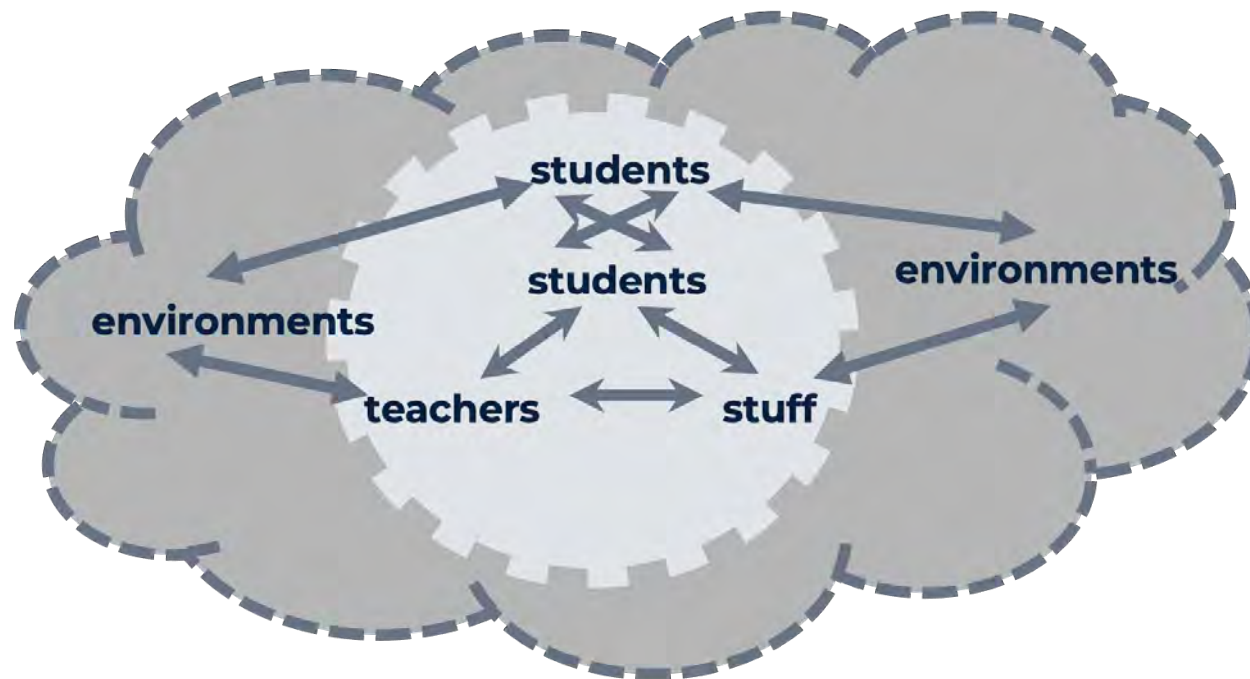


We fail to connect the dots.

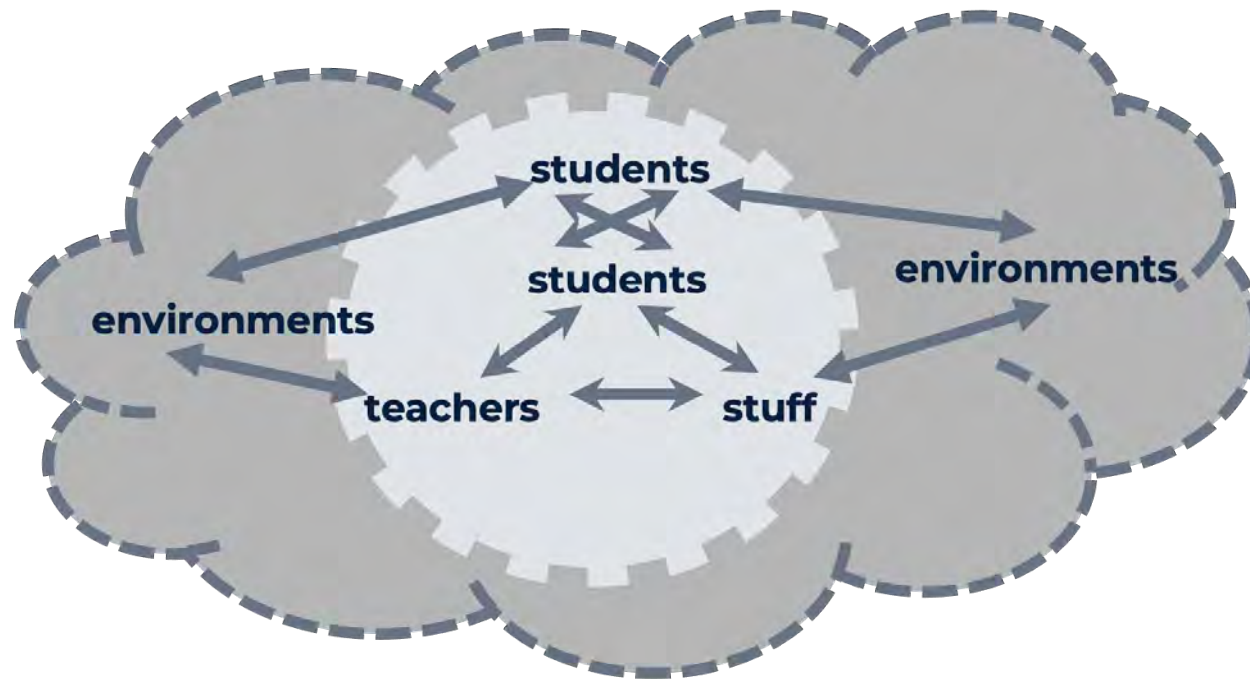
**And that means that our actions are
complicit in continuing pervasive
patterns of injustice and inequity.**



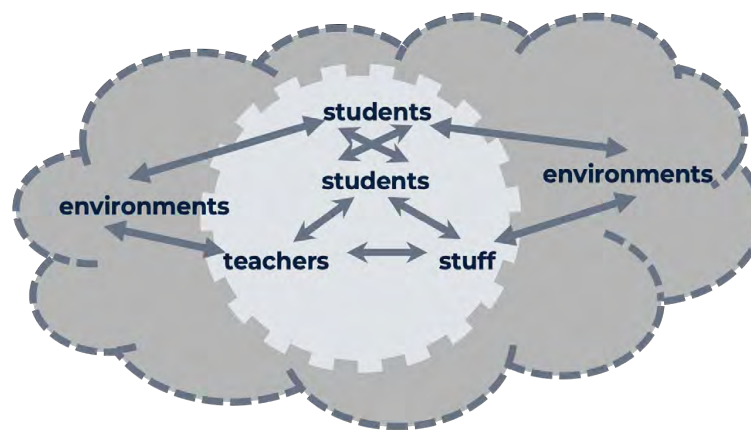
1. Teaching and learning are constructed interactively and are interpretive.



1. Teaching and learning are constructed interactively and are interpretive.
2. They take place within broad historical and socio-political environments.

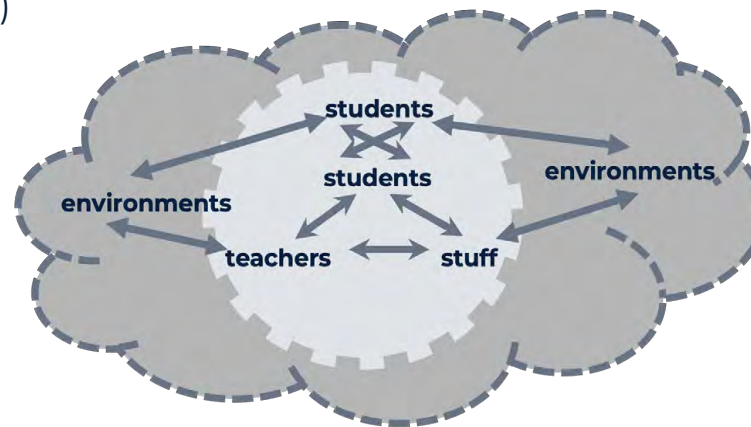


How do macro level factors interact with everyday practices?



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The relationships between—
Macro-level structures (in environments)
(e.g., institutional racism, history of intelligence as the property of white people, anti-Black “scientific” racism, legacies of violence against Black and Indigenous people)



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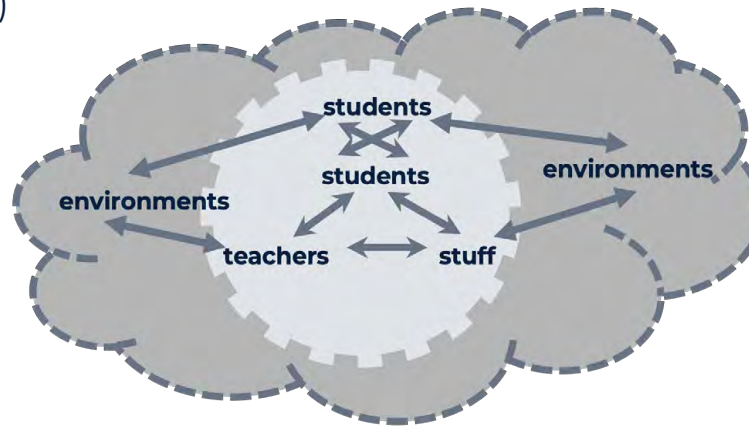
The relationships between—

Macro-level structures (in environments)
(e.g., institutional racism, history of intelligence as the property of white people, anti-Black “scientific” racism, legacies of violence against Black and Indigenous people)

and

Micro-level interpersonal interactions

(in everyday life and in classrooms)
(e.g., teachers’ judgments of students, who is seen as “smart,” disproportional punishment and assignment to special ed and gifted programs)

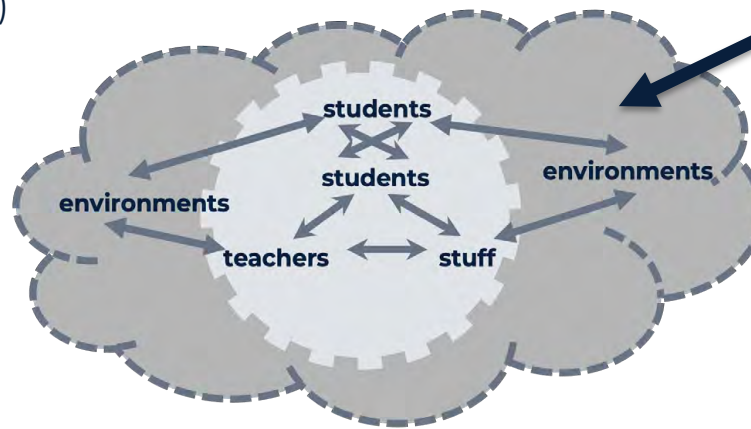


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Micro-level interpersonal interactions
(in everyday life and in classrooms)
(e.g., teachers’ judgments of students, who is seen as “smart,” disproportional punishment and assignment to special ed and gifted programs)



Notice that the arrows run both ways.

The environments in which we are all steeped shape what we take for granted and do, but learning these as normal further reinforces their persistence in society.







1. **Teaching is powerful.** When it is done with care and judgment, students can thrive—learn content, develop positive identities, learn to value others and work collectively.
2. Teaching also involves **enormous discretion.**
3. How that discretion is exercised can either reinforce racialized and oppressive patterns of social, personal, and epistemic injustice and harm, or it can **disrupt these patterns.**

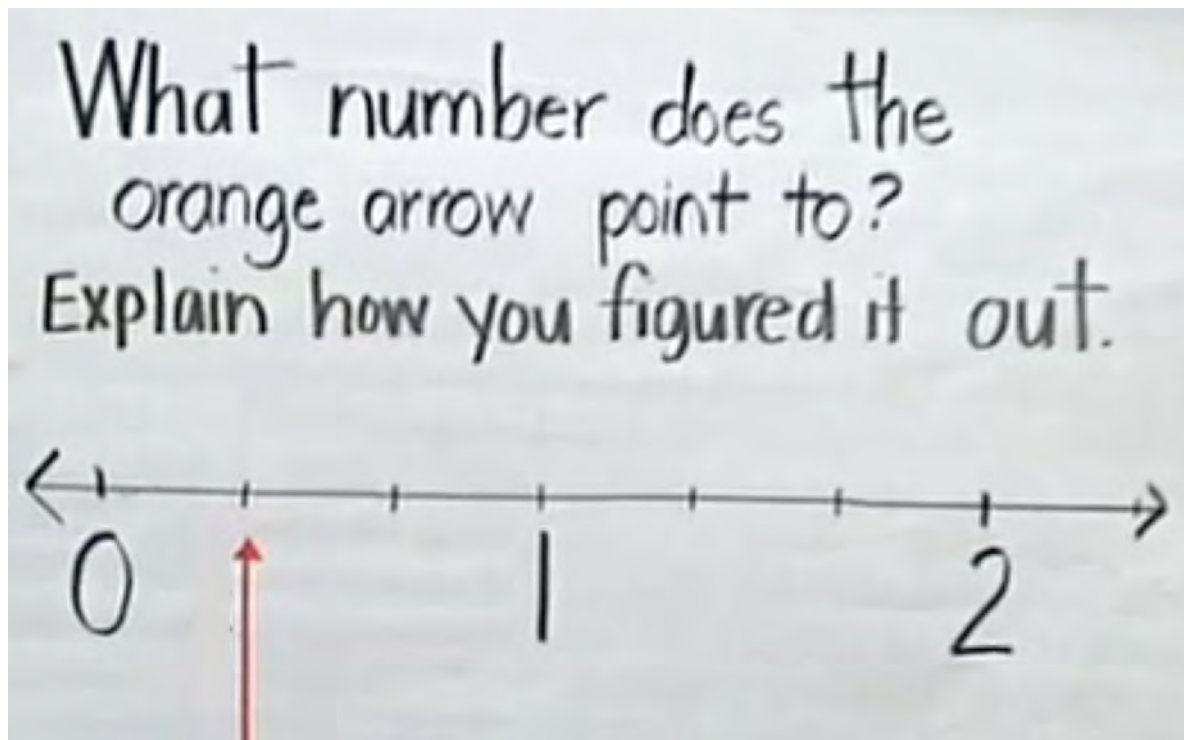
3. How can we leverage the power of teaching?



Fractions as numbers: The instructional goal for student understanding

3.NF.2.a

Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.





Aniyah



Toni

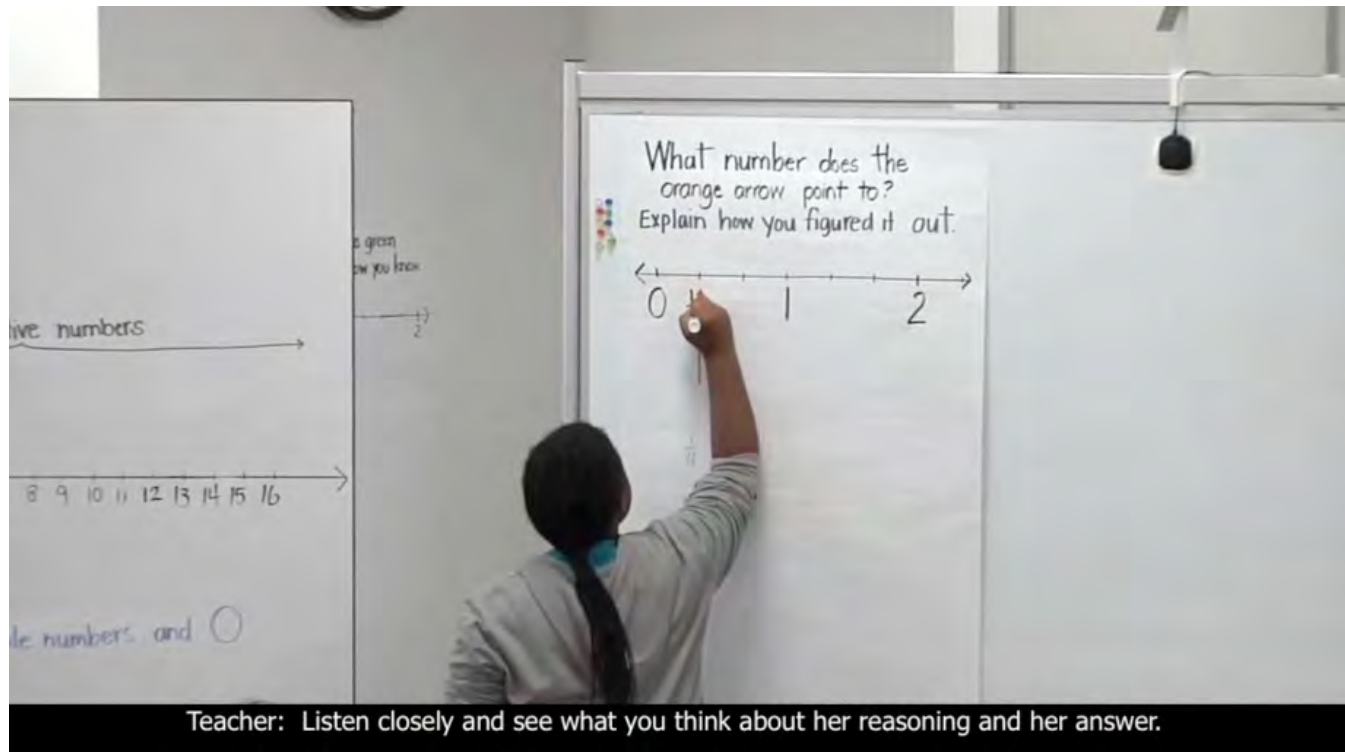


Viewing focus

What do you see about each girl's mathematical knowledge and skill?



Video: Aniyah and Toni



This video and additional supporting materials are available online [here](#).

Discuss

What do you see about each girl's mathematical knowledge and skill?



What would
happen
next?

What are the
possible
results?



In the next moment, what is likely to happen?

NORMALIZED NEXT MOVES

RESULTS



In the next moment, what is likely to happen?

NORMALIZED NEXT MOVES

- “Can someone help Aniyah out and show what we call the whole on the number line?”

RESULTS

- Aniyah is excluded and her mathematical contributions are sidelined.



In the next moment, what is likely to happen?

NORMALIZED NEXT MOVES

- “Can someone help Aniyah out and show what we call the whole on the number line?”
- “Great, Aniyah, almost! But remember that the whole is from 0 to 1.”

RESULTS

- Aniyah is excluded and her mathematical contributions are sidelined.
- Aniyah’s answer is signaled to be incorrect and she is positioned as not having contributed to the work.



In the next moment, what is likely to happen?

NORMALIZED NEXT MOVES

- “Can someone help Aniyah out and show what we call the whole on the number line?”
- “Great, Aniyah, almost! But remember that the whole is from 0 to 1.”
- “Thumbs up if you agree with Aniyah; thumbs down if you disagree.”

RESULTS

- Aniyah is excluded and her mathematical contributions are sidelined.
- Aniyah’s answer is signaled to be incorrect and she is positioned as not having contributed to the work.
- Aniyah’s solution is “voted” on by her classmates.



What else is likely?

NORMALIZED NEXT MOVES

RESULTS



What else is likely?

NORMALIZED NEXT MOVES

- “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.”

RESULTS

- Toni is publicly excluded from the discussion.



What else is likely?

NORMALIZED NEXT MOVES

- “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?”

RESULTS

- Toni is publicly excluded from the discussion.
- Toni is judged to not be listening, her question is judged as not good, and she is excluded from the discussion.



What else is likely?

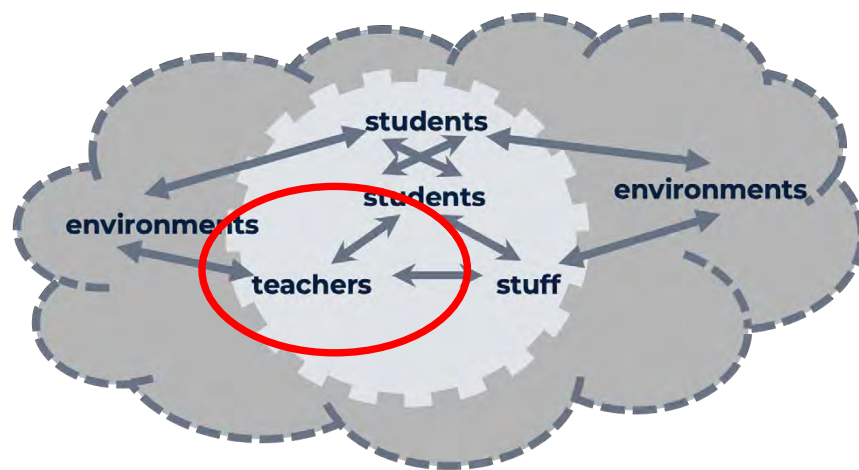
NORMALIZED NEXT MOVES

- “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?”
- “In this classroom, we are respectful of one another. When you are ready to be respectful, you can rejoin the discussion, Toni.”

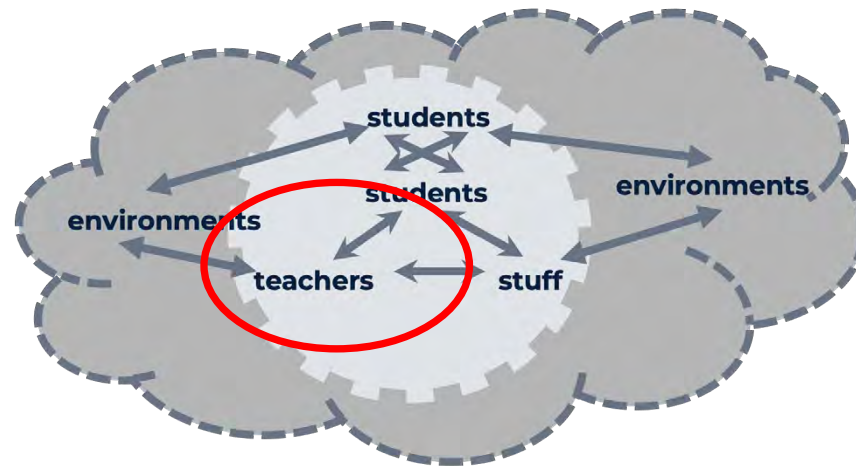
RESULTS

- Toni is publicly excluded from the discussion.
- Toni is judged to not be listening, her question is judged as not good, and she is excluded from the discussion.
- Toni is publicly named and shamed as “disrespectful,” rebuked, and her role in advancing the mathematics is sidelined.

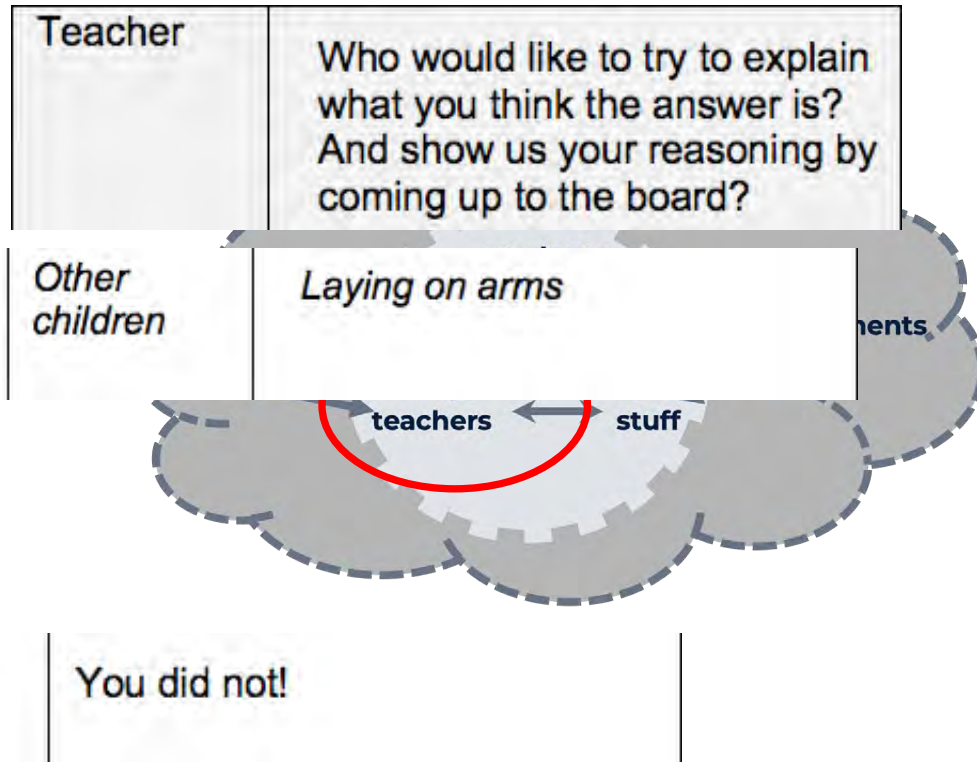




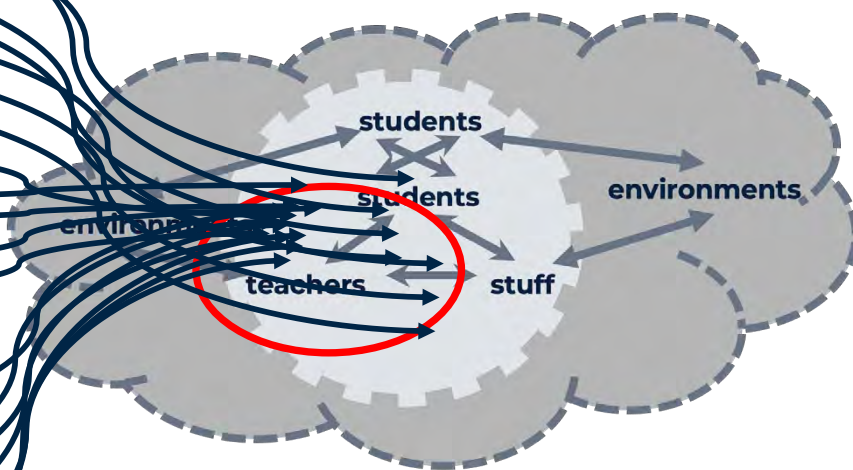
Speaker	Talk	Discretionary space
Teacher	Who would like to try to explain what you think the answer is? And show us your reasoning by coming up to the board? Who'd like to come up to the board and try to tell- And you know, it might not be right. That's okay because we're learning something new. I'd 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 Anyiah?	5. Selecting a student to present
Toni	Playing with hair	6. Deciding whether to comment
Other children	Laying on arms	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
Anyiah	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. (Anyiah writes $\frac{1}{7}$ by the orange line).	12. Setting task for the other students
Anyiah	I put one-seventh because there's-	
Toni	Did she say one-seventh?	13. Responding to student
Anyiah	(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. All you can do right now is ask Anyiah 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?	
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Teacher	Let's listen to her answer now. That was a very good question.	19. Setting task for class
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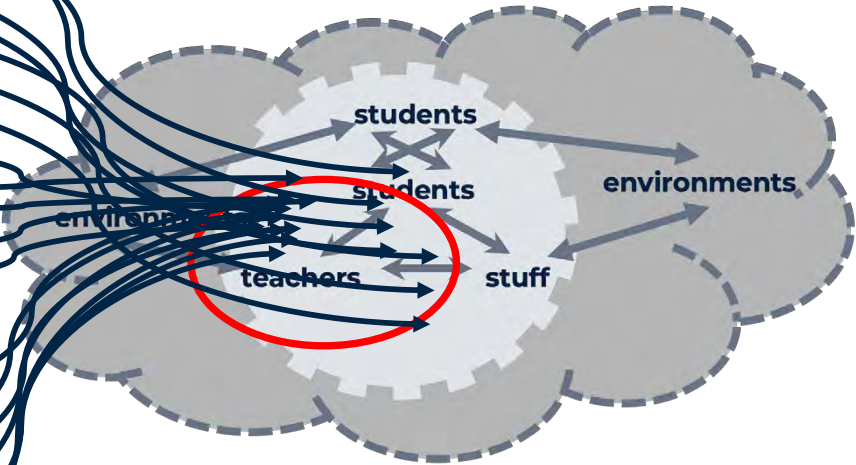
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20 in 1:28

Teaching is dense with “discretionary spaces”

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20 in 1:28

Video: Aniyah and Toni



This video and additional supporting materials are available online [here](#).

Using discretionary spaces with care



- Interpreting Toni as asking a real question that she means.
- Hearing Toni's question as central to advancing the mathematical content.
- Reinforcing her mathematical identity, not choosing to read her as disruptive.

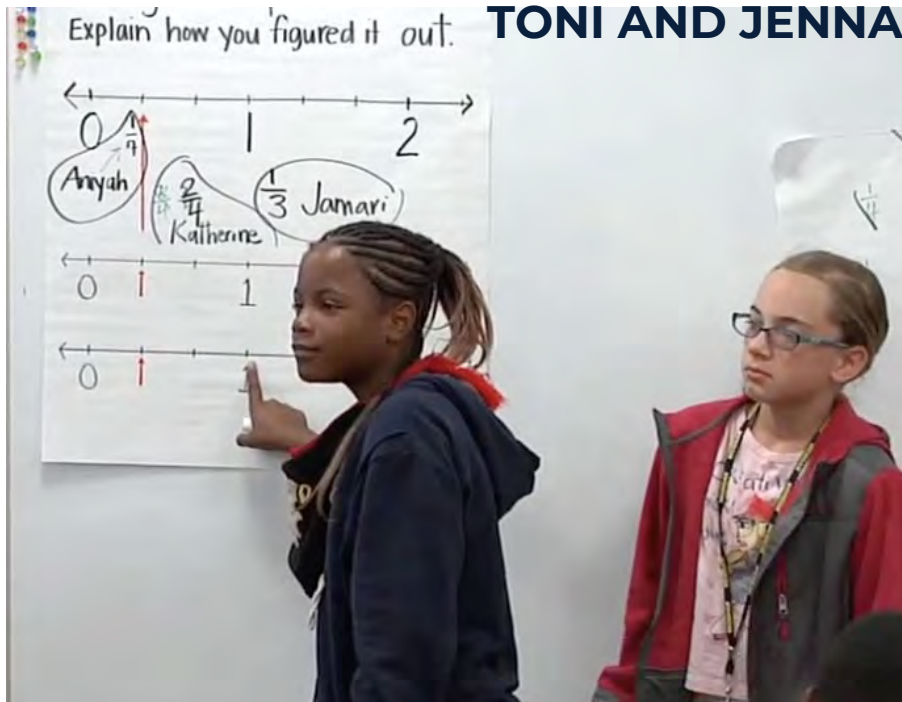


- Other children hear Aniyah as getting the discussion going, and Toni as asking an important mathematical question.
- Aniyah and Toni are both positioned as contributing to the discussion.
- Children see a teacher attending to Black girls as mathematical thinkers and contributors to collective work.



- Interpreting Aniyah as competent to answer questions about her ideas.
- Hearing Aniyah's explanation as central to advancing the mathematical content.
- Reinforcing her mathematical identity, not choosing to read her as struggling.

14 minutes after where we stopped



ANIYAH

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.

AND: On an “exit ticket,” 28 of the children were able to correctly identify a different fraction ($\frac{2}{5}$) on the number line.

What would it take to learn to use the discretionary spaces in teaching in ways that disrupt white supremacy, instead of reinforcing and perpetuating it?



First is learning to see the myriad discretionary spaces across our day —

and to see also how normalized practice that often fills those discretionary spaces consists of habits and actions that we see as “normal.”



What is “normalized practice?”



Learning is an individual activity.

Being smart is about working efficiently and getting right answers.



Some people are good at math and others are not.

During school, sit still and pay attention quietly.



Second is to develop resources for overcoming taken for granted “normal” practices.

- Knowing mathematics in ways that broaden our ideas about math.
- Developing our ability to see and hear students’ assets.
- Revising our ideas about “control” in teaching.
- Cultivating new practices that advance students’ development of mathematical competence and identity.



Third is to unlearn some habits and learn new practices to use in the discretionary spaces.

Habits to be unlearned

- Participating is paying attention and engaging in the activities and work
- Math is a domain with one right answer and it is important to address misconceptions
- Correcting students and praising non-specifically
- Keeping students and the classroom under control

Three new practices to learn:

- Broadening what it means to “participate”
- Reframing error
- Acknowledging competence



We have power in our collective efforts to leverage the power of teaching to advance justice in our everyday practice.
There is learning to do to fulfill the opportunities of the discretion we can use.
We have power that no other occupation in America has.

This is our work.



Upcoming programs at TeachingWorks

Registration available now

Learn more at teachingworks.org



View our upcoming programs calendar

teachingworks.org/events-calendar



1

January 8–9, 2024

Coaching Institute

This event enables teacher educators to unpack and practice the work of coaching and supporting beginning teachers to build their instructional skill in a supportive and dynamic environment.

Register by December 15, 2023



2

January 10–11, 2024

Introduction to Practice-Based Teacher Education Workshop

This workshop enables teacher educators to develop approaches to making teaching practices explicit to beginning teachers and engaging them in supported practice during pre-service training.

Register by December 15, 2023



3

May 20–24, 2024

Content Methods Laboratory Classes

Join teacher educators from around the country in person or virtually as we investigate the best ways to use the semester-long methods course.

Register by May 1, 2024



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THANK YOU!



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Credits



Image on slides 14–16:

Photo from “Why You Need an Experienced Real Estate Agent” by Elizabeth Weintraub, the balance.

Retrieved from <https://www.thebalance.com/experienced-real-estate-agents-1798883>



Image on slides 14–176:

Photo from “Black doctors earn less than white peers, study reveals” by Stacy M. Brown, The Philadelphia Tribune.

Retrieved from https://www.phillytrib.com/lifestyle/health/black-doctors-earn-less-than-white-peers-study-reveals/article_2d359910-85c8-524b-b6d2-15d1705ad762.html



Image on slides 14–16:

“Police.” by Flickr user G20 Voice

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Credits



Image on slides 14–16:
Photo from “Want to be a poll worker? Philly says it’s responding to ‘unprecedented’ number of applicants” by Ximena Conde, WHYY
Retrieved from <https://whyy.org/articles/want-to-be-a-poll-worker-philly-says-its-responding-to-unprecedented-number-of-applicants/>



Image on slides 14–16:
Photo from “Trump Rioters Storm U.S. Capitol (photos),” Variety
Retrieved from <https://variety.com/gallery/trump-rioters-storm-us-capitol-photos/congress-electoral-college-8/>



Image on slides 15–16:
Photo from “20 Classroom Interventions for Children with Anxiety Disorders” by Jerry Kennard, Ph.D., HealthCentral.
Retrieved from <https://www.healthcentral.com/article/20-classroom-interventions-for-children-with-anxiety-disorders>

Credits



Image on slide 16:

Photo from “10 Ways Well-Meaning White Teachers Bring Racism Into Our Schools” by Jamie Utt, *everyday feminism*.

Retrieved from <https://everydayfeminism.com/2015/08/10-ways-well-meaning-white-teachers-bring-racism-into-our-schools/>



Image on slide 44:

“Group of Kids Taking Test in School”

Retrieved from <https://www.istockphoto.com/photo/group-of-kids-taking-test-in-school-gm1215734203-354211797>



Image on slide 44:

“Woman stands at blackboard in classroom with children sit at desks cartoon style”

Retrieved from <https://stock.adobe.com/images/woman-stands-at-blackboard-in-classroom-with-children-sit-at-desks-cartoon-style/276707990>

Credits



Image on slide 44:
“Child time out corner”

Retrieved from <https://www.alamy.com/stock-photo-child-time-out-corner-sitting-carpet-rug-multi-ethnic-racial-diversity-24437536.html>



Image on slide 44:
Photo from “What Is Math Anxiety?,” Oxford Learning

Retrieved from <https://www.oxfordlearning.com/what-is-math-anxiety/>