DISRUPTING PATTERNS OF INJUSTICE IN MATHEMATICS DISCUSSIONS

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Classrooms that are rich in mathematical discourse and discussion are high-risk for reproducing patterns of racism and marginalization.

Let’s look.
CHILDREN’S MATHEMATICAL TASK

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 PRESENTS HER SOLUTION

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.
REFLECT ON PROFESSIONAL PRACTICE

What is likely to happen next?
ANALYZE

What does each of these moves do—

▪ for and to Miah?
▪ for and to the class?

Let’s watch what happens next in this case.
VIDEO: MIAH, DEEDRAH, MICHIO, ARIANNA

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 HAPPENS IN THIS CASE?

Identify what happened and analyze the consequences—

1. For Miah
2. For other students
3. For the class
WHAT DOES IT MEAN TO SAY—

. . .that classrooms that are rich in mathematical discourse and discussion are high-risk for reproducing racism and other patterns of marginalization?
Many taken-for-granted teaching practices insidiously reproduce patterns of racism, sexism, and ableism.

- Some of these we have deliberately learned as part of “math reform” or professional development.
- Some 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.
OUR WORK TOGETHER TODAY

1. Explore a few of these practices in classroom discourse and discussion and unpack how they can reproduce patterns of marginalization and exclusion.

2. Consider some alternative or replacement practices for discussions that can disrupt those dominant societal patterns.
First, let’s examine some “patterns.”
PATTERNS IN “DISCIPLINE”
BLACK STUDENTS MAKE UP—

- **16%** of school **ENROLLMENT**
- **42%** of those **SUSPENDED** more than once
BLACK GIRLS’ RATES OF SUSPENSION

Epstein, Blake, & González (2017)
WHAT ELSE CAN WE SEE IN THE DATA?

- Black preschoolers 3.6 times more likely to be suspended than white children
- 19% of preschool population; 47% of suspensions

- Latinx, Black, and Native/Indigenous students are punished more often and more harshly than other groups.
- Black girls are disproportionally subjected to exclusionary discipline practices.
- Students with disabilities are punished more often and more harshly than other groups.
- Discipline disparities for Black students, boys, and students with disabilities are observed as early as pre-K.

Gilliam, Maupin, et al. (2016). Do Early Educators’ Implicit Biases Regarding Sex and Race Relate to Behavior Expectations and Recommendations of Preschool Expulsions and Suspensions? Yale University Child Study Center, New Haven, CT.

Gregory, Skiba, & Noguera (2010)
Skiba, Horner, Chung, Rausch, May, & Tobin (2011)
Blake, Butler, Lewis, & Daresnbourg (2011)
Morris (2015)
Noltemeyer & McLoughlin (2010)
PATTERNS WITH “ABILITY”
WHAT ARE WORDS USED TO DESCRIBE CHILDREN THAT YOU HEAR ALL THE TIME?

- Slow, fast/quick
- Behind, ahead
- Struggling, advanced
- Weak, strong
- “Special needs”/ “gifted”
- Low/high
- ELL
WHAT ARE THE EFFECTS OF “LABELING” ON CHILDREN?

- Low self-esteem
- Construction of an identity as being “not smart”
- Peer relationships (bullying, being made fun of, being excluded, have trouble making friends)
- Lowered teacher expectations (“Pygmalion” effect)

This is deeply rooted in racism . . .
THE COLOR OF MIND

- Unpacks the historical interplay between ideas about race and American schooling deeply rooted in our history and cultural images
- Introduces concept of "dignitary justice"
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
“DISPROPORTIONALITY” IN SPECIAL EDUCATION ASSIGNMENT

- Minority students being placed into special education who do not need to be there, and often being kept in isolated classrooms, without access to challenging content and labeled

- **Racial Disparities in Special Ed.: How Widespread Is the Problem?** Christina A. Samuels and Alex Harwin
“ABILITY”: A UBIQUITOUS TERM IN SCHOOLS AND IN TEACHING

ASSUMPTIONS

- Ability is a static trait of a person (“ability status”)
- Ability is a generic trait (e.g. math, ELA—also art, piano, running!)
- Ability is a trait
- Ability resides in individuals
- Ability can be assessed and measured

CRITICAL COUNTEREVIDENCE

- Individuals’ capabilities are:
  - Malleable (they change and grow)
  - Highly context-dependent
  - Complex and not unitary
  - Enacted in social interactions and contexts
- The origins of the measurement of ability go back to measuring brain size and are highly intertwined with “scientific racism” where groups are “determined scientifically” to be inferior
OTHER DOMINANT ASSUMPTIONS ABOUT “ABILITY”

- Math ability is born to some people and not to others
- Prevalent narrow views about what comprises mathematical “competence”
- Dominant white middle class culture values some abilities and devalues others
HOW DO COMMON PRACTICES IN CLASSROOM DISCUSSION REPRODUCE OR HAVE THE POTENTIAL TO DISRUPT THESE PATTERNS?
MY CHOICE OF VIDEO SEGMENTS FOR THIS SESSION

- Non-professional video ("home video quality")
- My own teaching, but why?
- Diverse classrooms: race, ethnicity, language, SES
- Complex mathematical work, elementary level
- Useful for the specific goals of this session: to examine the patterns that permeate classroom discussions and explore alternative practices
A LITTLE BIT ABOUT THE SETTING…

- EML: a two-week summer program for 30 fifth-grade students
- Demographic: predominantly Black, a few LatinX; many multi-dialectical or multi-lingual; mostly low-income families; from a school district in a traditionally working class urban community
- Program focuses on fractions, mathematical explanation and reasoning, proving of different kinds, and developing students’ mathematical and academic identities
- Observers: teachers, interns, researchers, and others who are learning about students, teaching practice, and developing their own skills; professional development workshops in the afternoons

2019 dates: July 22–26, 2019
Who might be at risk in this clip?
What pattern is this risk related to?
VIDEO: LANGSTON, MADISON, LAUREN, MICHIO, LARAYNE, JERONE
What are some of the risks across these five minutes? For whom or what?

What are some common practices that might intensify or create more risk?
SO WHAT DOES IT TAKE TO DISRUPT PATTERNS RELATED TO PUNISHMENT?

AWARENESS OF PATTERNS

- Knowing these data and patterns of disproportionate punishment of Black and Brown children
- Understanding that they are the result of cultural, historical, and societal patterns
- Understanding how these patterns shape white children’s leaning about race

DISRUPTING PATTERNS

- Consciously NOT following or reproducing the patterns

Examples:

- Interrogating how you think about “control”
- Not calling a student out for minor behavior that is not distracting anyone but bothers you
- Engaging students deliberately in high-status specific roles (e.g., share solutions, call on other students)
- Publicly acknowledging mathematical (or other) competence
WHAT ABOUT DISRUPTING PATTERNS RELATED TO “ABILITY”?

AWARENESS OF PATTERNS

- Becoming critically conscious of common and normalized patterns of “positioning” and “trait” ability language
- Understanding that this is connected to race, class, and gender
- Knowing these patterns on assignment to special education and gifted/talented programs
- Understanding that they are the result of cultural and societal patterns

DISRUPTING PATTERNS

- Consciously NOT following or reproducing the patterns by not using this language and instead being concrete:

Examples:

- Describing what a child is doing or their work on a specific task (e.g., “doesn’t seem to know how to subtract two-digit numbers when regrouping is involved,” not who or what they are (e.g., “struggling”)
- Deliberately attending what students can do and do know, not just what they can’t do or don’t know
- Choosing and using tasks that open up content (e.g., low bar/high ceiling; multiple solution paths or answers)
PATTERNS RELATED TO ABILITY GROUPING AND DIFFERENTIATION

Common practices taken for granted as good, but are they?

- Dividing children into groups based on “ability” (different from a temporary lesson for students who missed something or who need extra work on an idea or a process)
- Giving different work to different students (e.g., “challenge sheets,” “extra help,” or “review”)
- Positioning some students with high status as “smart,” “advanced,” “helping others”
- Others?
AND DISRUPTING PATTERNS RELATED TO MATHEMATICS?

AWARENESS OF PATTERNS

- Mathematics as seen as intellectually demanding and “smart”
- What often counts as “being good at math” (e.g., speed) and consequences for who is seen as “smart”
- Images of who mathematicians are
- Boys, white and Asian, and stereotypes

DISRUPTING PATTERNS

- Consciously NOT reproducing the patterns by:
  - Constructing mathematical work that disrupts societal ideas about what math is
  - Deliberately intervening on who is positioned as “smart”
  - Foregrounding examples of children doing mathematically valued things
  - Creating norms of discourse that are respectful and inclusive while also supporting disagreement and argument
DISRUPTING PATTERNS WITH RESPECT TO ABILITY GROUPING AND DIFFERENTIATED WHOLE GROUP WORK

AWARENESS OF PATTERNS

- Becoming critically conscious of common and normalized patterns that differentiate among students
- Knowing these patterns that position children as higher and lower status, and learning or skill as a position rather than a specific understanding at a given point in time
- Understanding that they are the result of cultural and societal patterns, and also of normalized school patterns

DISRUPTING PATTERNS

- Consciously NOT following or reproducing the patterns by not automatically taking these practices for granted and using them unquestioningly:
- Examples:
  - Using tasks with more “space” so that you are not presuming who can do what
  - Circulating during discussions to see what children are doing and working with them in individualized ways
  - Observing while circulating what children are doing and planning whom to involve in the class discussion
Let’s look more deeply.

We are trying to build connections between:

a) larger societal patterns of racism and marginalization

b) specific actions and practices that reproduce or disrupt these patterns.
HOW CAN OUR PRACTICE IN FACILITATING CLASSROOM DISCUSSION DISRUPT PATTERNS OF INJUSTICE?
# Decomposition of Leading a Group Discussion

<table>
<thead>
<tr>
<th>Discussion Enabling</th>
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<tbody>
<tr>
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[teachingworks.org](http://teachingworks.org)
HOW CAN DISCUSSIONS DISRUPT PATTERNS THAT REPRODUCE INJUSTICE?

PROMOTING JUSTICE

- Choosing tasks and problems that engage all students in high-level mathematical thinking
- Ensuring that every student has opportunities to contribute their ideas
- Orienting students to recognize, listen to, and take up one another’s ideas respectfully
- Reframing “error”
- Assigning competence

PREVENTING INJUSTICE

- Disrupting persistent patterns that marginalize particular groups of students
  - Discipline and punishment
  - Deficit orientations
- Challenging notions of smartness in mathematics
  - Focusing on reasoning and meaning
  - Collective knowledge-making
  - Welcoming non-standard methods and solutions
POWERFUL AREAS OF WORK AND PRACTICE TO COUNTERACT PERSISTENT PATTERNS OF INJUSTICE

- “Discipline”: Practices of control and behavior “management”
- The physical space: Seating arrangements and voice/agency
- How “error” is positioned and used
- Orienting students to one another
- Assigning competence
DECOMPOSITION OF LEADING A GROUP DISCUSSION

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- Seeing and disrupting patterns that reproduce inequity
- Recording and representing ideas
- Maintaining a focus on the mathematical point

See teachingworks.org for more details.
REFRAMING CONFUSION AND “APPARENT” ERROR* IN MATH CLASS

What does this have to do with reproducing patterns of marginalization?

- What are the threats that can reproduce patterns of marginalization?
- What are alternative possible moves to disrupt those patterns?

Let’s look at three cases.

*Rougeé (2017)
WHAT FRACTION OF THE RECTANGLE IS SHADED GRAY?
VIDEO: ANTAR, GABY, KASSIE

Antar: I think it's not a fraction because all the parts are not equally the same.
What to do next and why?
VIDEO: WHICH IS GREATER: 1/4 OR 5/6?
What to do next and why?
WHAT NEXT?

INSTINCTIVE OR HABITUAL MOVE

REPRODUCING OR DISRUPTING?

OTHER POSSIBLE MOVES
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- Making contributions

- Seeing and disrupting patterns that reproduce inequity
- Recording and representing mathematics

- Maintaining a focus on the mathematical point

[teachingworks.org](http://teachingworks.org)
ORIENTING STUDENTS TO ONE ANOTHER: WHY?

1. Breaking with the pattern in which:
   - Students talk and listen only to the teacher
   - Students do not know how to learn with and from other students
   - Some students are positioned as smart and others as (not) ____

2. These practices depend on being conscious about cultural, class-based, dominant norms of what it looks like to listen respectfully, language norms of questions being intended as directions but not interpreted that way, other...

3. These are also practices for citizenry (e.g., having voice, believing you have voice and using that voice even if your view is different, confidence, seeing value in others as well as in oneself).
ORIENTING STUDENTS TO ONE ANOTHER: KEY PRACTICES AND SPECIFIC POSSIBLE MOVES

1. Support students in communicating their ideas to their classmates
2. Expect and support students to attend to one another, listen to and understand the ideas of others
3. Attend to positioning of students and to student identities and status in the class
4. Intervene when needed regarding whose ideas are attended to and how students’ ideas are treated in relation to status and identities
5. Maintain students’ agency to confirm when others (including the teacher) restate or attribute their ideas
6. Record or support students to record ideas publicly
7. Involve more than one student in developing knowledge (e.g., an idea, a process, a definition, a method) together
8. Teach students ways to respond to—affirm, validate, and comment on—others’ ideas
9. Teach students ways to question, disagree with, or critique ideas
10. Legitimate, value, and model learning from and revising one’s ideas as part of learning
VIEWING FOCUS

1. What patterns might be being disrupted?

2. What patterns might be being reproduced?

What fraction of the rectangle is shaded blue?
VIDEO: NATHANIEL, LUIS, MALCOLM, LAYLA, CHELSEA
WHAT ARE DIFFERENT OPPORTUNITIES FOR PARTICIPATION?

- Present at the board, alone or with other(s)
- Comment on others’ solutions
- Ask questions
- Choral response
- Read aloud from public posters, signs, tasks, board, text materials
- Revoice others
- Read from own writing
ACKNOWLEDGING COMPETENCE

Assigning competence to students in ways that disrupt patterns of marginalization and signals about what being “smart” or “good” at math means (and who is)
All this talk about not focusing on children’s deficits—why does this matter so much? Isn’t our job to figure out what children don’t know and help them grow?
All this talk about not focusing on children’s deficits—why does this matter so much? Isn’t our job to figure out what children don’t know and help them grow?

1. Learning occurs through a process of building on prior knowledge and experience.
2. Strong academic and mathematical identities are a means to developing competence. They are also instructional goals.
3. For children of historically marginalized groups, stereotype threat and other biases interfere with and impede children’s performance.
All this talk about not focusing on children’s deficits—why does this matter so much? Isn’t our job to figure out what children don’t know and help them grow?

So—focusing on children’s strengths is crucial for effective and equitable teaching and for advancing social justice.

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So—focusing on children’s strengths is crucial for effective and equitable teaching and for advancing social justice.
DILEMMAS OF LEARNING TO SEE AND HEAR STUDENTS’ RESOURCES

1. Feeling committed to students as sensemakers who bring many strengths and feeling pressure to make sure students get it “right”

2. Using yourself yet also suspending assumptions based on what you would mean or feel

3. Knowing mathematics well enough to see “mathematics” in children’s talk, representations, etc. while also not letting your own mathematical knowledge overtake your capacity to see and hear what they are saying or showing
MAKING THE SHIFT FROM A PREOCCUPATION WITH DEFICITS TO A FOCUS ON STRENGTHS

- Pausing on “apparently incorrect” answers
  - Actually not incorrect
  - Answer to a different (and reasonable) question
  - More correct than incorrect

- Seeing past “distractions” or non-mathematical issues
  - Behavior that distracts the teacher, but not the child or the other children (Noel, 2014)
  - How children talk (as they are learning; and when they are speaking academic language, or in English when that is not their first language)
“ASSIGNING” 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 students 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 DOES “ASSIGNING COMPETENCE” REQUIRE IN TEACHING?

IN GENERAL
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 students to develop their academic identities and competence

IN MATHEMATICS
1. Be able to see what is “mathematical” and what is “competent”
2. Have techniques for making these moves to intervene in ways that are sensitive to students
3. Strategically using these techniques with particular students in authentic and well-timed ways
USING TECHNIQUES AND STRATEGIES FOR ASSIGNING COMPETENCE

Identify the competence to be highlighted. Consider how to disrupt hierarchies of status in class by which student is chosen to be identified for something mathematically important that they have done or contributed.

- Publicly name an individual student’s competent move or contribution ("___ just shared a very important idea")
- Ask a student to explain another student’s contribution that the instructor highlights
- Ask the class to identify things that were part of an important contribution by a student
- Record something publicly that a student or students came up with or contributed that is important
- Accord expertise to students through assigning roles explicitly in a group
WHAT DOES “ASSIGNING COMPETENCE” REQUIRE IN TEACHING?

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

1. Be able to see what is “mathematical” and what is “competent”
2. Have techniques for making these moves to intervene
3. Strategically using these techniques with particular students in authentic and well-timed ways
STEP 1: WHAT IS MATHEMATICS AND MATHEMATICAL PRACTICE? WHAT IS “COMPETENCE” IN MATHEMATICS?

- What mathematics do you see in this segment?
- Who is doing mathematics, and what math are they doing?
- Identify specific examples and why you would label that “mathematics.”
VIDEO: WHAT IS “MATHEMATICS” AND WHAT DOES IT MEAN TO BE “COMPETENT”?
MAKING THE SHIFT FROM A PREOCCUPATION WITH DEFICITS TO A FOCUS ON STRENGTHS

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STEP 2: SEEING STUDENTS’ COMPETENCE

Select two of these five students:  Langston, Madison, Lauren, Michio, Larayne, Jerone

- What does each one know and know how to do?
- What is your evidence?
VIDEO: LANGSTON, MADISON, LAUREN, MICHIO, LARAYNE, JERONE
STEP 2: SEEING STUDENTS’ COMPETENCE

Langston, Madison, Lauren, Michio, Larayne, Jerone

- What does each one know and know how to do?
- What is your evidence?
STEP 3: USING TECHNIQUES AND STRATEGIES FOR ASSIGNING COMPETENCE

Identify the competence to be highlighted. Consider how to disrupt hierarchies of status in class by which child is to be “called out” as competent.

- Call out an individual’s child’s competent move or contribution publicly (“___ just shared a very important idea”)
- Ask a child to explain another child’s contribution that the teacher highlights
- Ask the class to identify things that were part of an important contribution by one of the children
- Writing something publicly that a child or children came up with or contributed that is important
- Accord expertise to children through assigning roles explicitly in a group
PRAISE AND AFFIRMATION: WHAT IS THE DIFFERENCE?

- Praise – verbal feedback with the only purpose of evaluating what a student says or does
- Affirmation – intentional verbal feedback with a purpose of highlighting/affirming what a student says or does
COMPARING PRAISE WITH AFFIRMING STATEMENTS

PRAISE
- “Good work!”
- “You are really good at math”
- “Yes, that’s correct”
- “Yes, that’s the right way”

AFFIRMATION
- “It was really helpful how you used your drawing to explain your thinking.”
- “You are writing such clear and specific mathematical explanations.”
- “You solved that in a really interesting way. Can you tell me more about your thinking?”
- “That’s the right answer. Why does that make sense?”
- “You said that this piece is $\frac{1}{4}$ because it is one of four equal parts in the whole. I agree, that makes sense.”
THE POWER OF TEACHING AS AN OPPORTUNITY FOR JUSTICE, AND AN IMPERATIVE

1. Classrooms that are rich in mathematical discourse and discussion are high-risk for reproducing patterns of racism and marginalization.

2. Teaching has a lot of power to avert and disrupt these.

3. But without conscious effort, we are all likely to reproduce these patterns.
THANK YOU!
dball@umich.edu
Slides will be available on my website
https://deborahloewenbergball.com/
(“Google” Deborah Ball)
Data on slide 14:

Data on slide 15:

Image on slide 17:
Image on slide 21:
Cover of *The Color of Mind*. Retrieved from
https://press.uchicago.edu/ucp/books/book/chicago/C/bo27527445.html

Image on slide 23: