UNDERSTANDING THE POWER OF TEACHING AND ITS ROLE (IN)JUSTICE

Deborah Loewenberg Ball
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14th International Congress on Mathematical Education
2017 Felix Klein Award Lecture
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ACKNOWLEDGING THE LAND I AM ON
ACKNOWLEDGING THE COLLECTIVE NATURE OF MY WORK

- My colleagues: Chandra Alston, Hyman Bass, Alyssa Brandon, Elena Crosley, Matthew Dahlgren, Nicole Garcia, Maisie Gholson, Imani Goffney, Mark Hoover, Anna Sfard, Meghan Shaughnessy, Kathryn Taylor, Amber Willis

- My students: Karen Ahn, Gabrielle Bernal, Karin Brown, Amber Davis, Rosalie DeFino, Joy Johnson, Lauren Hickman, Lindsey Mann, Mimi Owusu, Darrius Robinson, William Waychunas, Charles Eugene Brooks Wilkes II

- The more than 1,000 children who have been my students over 45 years
CONTINUING THE JOURNEY
CONTINUING THE JOURNEY

UNCOVERING THE SPECIAL MATHEMATICAL WORK OF TEACHING*

Deborah Loewenberg Ball
University of Michigan USA
12 July 2016 - ICME13 Hamburg

* The title slide was not used in the talk.

WHY “MATHEMATICAL” WORK OF TEACHING”?

To look at how mathematical listening, speaking, interacting, acting, fluency, and doing are part of the work of teaching, not just resources for it.

TRYING TO SEE THE WORK OF TEACHING

Taking a socio-cultural perspective on teaching and learning, and drawing on many others’ work:

- Discursive nature of teaching and learning (e.g., Sfard, Adler, many others)
- Diversity: language, identities, race and ethnicity, class, gender

means that there is something to the mathematically interactive, discursive, and performative work of mathematics teaching that is important to understand.

Ball (2016) https://lecture2go.uni-hamburg.de/l2go/-/get/v/19780

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AND ON . . .

AND ON . . .
UNDERSTANDING THE POWER OF THE WORK OF TEACHING AND ITS ROLE (IN)JUSTICE: WHAT IS MY PROJECT IN THIS LECTURE?

1. What is it to *do* the ‘work of teaching’?
2. What does it mean to foreground the ‘power’ of that work and why does it matter?
3. What are continuing challenges in trying to understand that work, and why should we care?
1. What is it to do the ‘work of teaching’?
IT’S COMMON

72.5 million teachers worldwide

15 million teachers

866,600 teachers

1 million teachers

8.7 million teachers

410,000 teachers

756,900 teachers

1.4 million teachers
What fraction of each rectangle below is shaded gray?

What do you pay attention to?
What is ‘complex’ here?
Antar: I think it's not a fraction because all of the parts are not equally the same shape.
What is meant by ‘complex’?
What do I mean by the ‘work of teaching’?
What do I mean by the ‘work of teaching’?

Using myself as the object and tool of my inquiry, I teach mathematics daily to a heterogeneous class of third graders at a local public elementary school. . . . I am increasingly aware that there are many resources beyond knowledge that contribute to wise practice: patience, respect, flexibility, humor, imagination, and courage, for instance. (Ball, 1993)

‘What do teachers need to do in teaching mathematics—by virtue of being responsible for the teaching and learning of content—and how does this work demand mathematical reasoning, insight, understanding, and skill?’ (Ball, Thames, & Phelps, 2008)

‘. . . the core tasks that teachers must execute to help pupils learn. . . . leading a discussion of solutions to a mathematics problem, probing students’ answers, . . . [as well as] planning for instruction, meeting with parents. . . ’ (Ball & Forzani, 2009)

The perspective that we adopt here is that curriculum materials could contribute to professional practice if they were created with closer attention to processes of curriculum enactment. Our perspective is premised on an understanding of the nature of teaching itself. While “curriculum” is often taken to refer strictly to the textbook or curriculum materials, the enacted curriculum is actually jointly constructed by teachers, students, and materials in particular contexts. (Ball & Cohen, 1996)

WHY “WORK” OF TEACHING”?

1. To focus our attention on what teachers DO and to distinguish this from other features of classrooms, such as instructional formats, classroom culture and norms, what students are doing, how the curriculum is designed
2. To honor the effortful and deliberate nature of teaching and not to leave it invisible, implicit, and taken for granted
What do I mean by the ‘work of teaching’?

- In part, this is the ongoing inquiry.
- It rests on trying to understand what is involved for teachers in their interactions with learners in contexts, in broad sociopolitical environments.
- It is fundamentally both a theoretical and practical question.
What do I mean by the ‘work of teaching’?

- In part, this is the ongoing inquiry.
- It rests on trying to understand what is involved for teachers in their interactions with learners in contexts, in broad sociopolitical environments.
- It is fundamentally both a theoretical and practical question.

1. How to understand the power of teaching to perpetuate or to disrupt injustice, racism, oppression.

2. How to leverage its possibilities for a different world.
2. What does it mean to foreground the ‘power’ of the work of teaching and why does this matter?
The commonness and complexity of teaching have powerful consequences for patterns of racism and oppression in society.
1. **Teaching is powerful.** When it is done with care and judgment, students can thrive — learn mathematics, 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.**
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<table>
<thead>
<tr>
<th>Teacher</th>
<th>Who'd like to answer what you think about the second rectangle? We're only going to be able to talk about this briefly. We probably won't finish it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>Would you like to explain what you think? Antar, what do you think?</td>
</tr>
<tr>
<td>Teacher</td>
<td>Could you come up to the board and explain? Thank you.</td>
</tr>
<tr>
<td>Teacher</td>
<td>I really like the way that people who are coming to the board are doing. You are explaining really well.</td>
</tr>
<tr>
<td>Teacher</td>
<td>What's a fraction? Can you explain your thinking? Provide material support.</td>
</tr>
<tr>
<td>Antar</td>
<td>I think it’s not a fraction because all of the parts are not equal to the same shape.</td>
</tr>
<tr>
<td>Teacher</td>
<td>Can you say that one more time to the class? Support presenter.</td>
</tr>
<tr>
<td>Antar</td>
<td>I think it’s not a fraction because all of the parts are not equal to the same. Listen.</td>
</tr>
<tr>
<td>Teacher</td>
<td>Can someone repeat what Antar said? Very nice, Antar.</td>
</tr>
<tr>
<td>Teacher</td>
<td>Many students have their hands up.</td>
</tr>
<tr>
<td>Gabrielle</td>
<td>Oh, he said that he doesn’t think it’s a fraction because not all the parts are equal. Listen.</td>
</tr>
<tr>
<td>Teacher</td>
<td>What did he say? zichurchel. Choose student to call on.</td>
</tr>
<tr>
<td>Teacher</td>
<td>Is that what you said? Position first student as authority.</td>
</tr>
<tr>
<td>Teacher</td>
<td>Okay, would someone like to comment on that? Agree or disagree with him? Choose students to one another.</td>
</tr>
<tr>
<td>Teacher</td>
<td>Okay, let’s see, how about Gabrielle. Choose student to call on.</td>
</tr>
<tr>
<td>Gabrielle</td>
<td>I disagree. Listen.</td>
</tr>
<tr>
<td>Teacher</td>
<td>What do you think? Pose question.</td>
</tr>
<tr>
<td>Gabrielle</td>
<td>I think the fraction is one-fourth. Listen.</td>
</tr>
<tr>
<td>Teacher</td>
<td>One-fourth? Do you want to come up and say why you think it’s one-fourth? Frame next step. Present/teach for entry.</td>
</tr>
<tr>
<td>Teacher</td>
<td>Antar, do you want to stay there or do you want to sit down? Okay. Thank you very much. You did a good job of explaining your thinking. Position student with agency, acknowledge confidence.</td>
</tr>
<tr>
<td>Teacher</td>
<td>So, let’s hear what Gabrielle is saying. Choose students to one another.</td>
</tr>
<tr>
<td>Gabrielle</td>
<td>I think it’s one-fourth because, like he said, all the fractions aren’t the same, but you just make them the same by dividing a line down the middle. Listen.</td>
</tr>
<tr>
<td>Teacher</td>
<td>Would you explain what you are doing? Talk to the class, ok? Provide material support.</td>
</tr>
<tr>
<td>Gabrielle</td>
<td>I didn’t do it the realistic way, since it’s not equal, you have to make it equal. Listen.</td>
</tr>
<tr>
<td>Teacher</td>
<td>And so how did you decide? Pose.</td>
</tr>
<tr>
<td>Gabrielle</td>
<td>It’s one-fourth. Listen.</td>
</tr>
</tbody>
</table>
TEACHING IS DENSE WITH “DISCRETIONARY SPACES”
A discretionary space is where interpretations, next moves, comments, or questions are necessarily determined by the teacher—and not by a policy or curriculum.

These interpretations and actions are learned through firsthand experience in society and in school.

These interpretations and actions are also habituated. (Ngo, 2017, Noel, 2018, Sfard)
Teacher education could work to disrupt habits that are embedded in normalized and oppressive patterns of practice.


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Teacher education could work to disrupt habits that are embedded in normalized and oppressive patterns of practice.

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## HARNESSING THE POWER OF DISCRETION

- Teacher education could work to disrupt habits that are embedded in normalized and oppressive patterns of practice.

<table>
<thead>
<tr>
<th></th>
<th>Black girls</th>
<th>White girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of enrollment</td>
<td>15.6%</td>
<td>36.6%</td>
</tr>
<tr>
<td>% of single suspensions</td>
<td>41.6%</td>
<td>52.0%</td>
</tr>
<tr>
<td>% of in-school suspensions</td>
<td>50.1%</td>
<td>32.9%</td>
</tr>
<tr>
<td>% of multiple suspensions</td>
<td>28.4%</td>
<td>22.7%</td>
</tr>
</tbody>
</table>

- But teachers would need more than awareness and commitment: They also need knowledge, repertoires of practice, and judgment.

This is the work of teaching. Studying its broad and powerful role in(justice) is necessary. But such research is challenging.
3. What are continuing challenges in trying to understand the work of teaching, and why should we care?
Let’s return to the classroom.
Antar: I think it's not a fraction because all of the parts are not equally the same shape.
AND AS THE LESSON IS ENDING.

Antar’s right. It’s not equal.
VIDEO: KASSIE

Kassie: But he's right, it's not equal. So-
Teacher: That was Antar.
THESE MOMENTS: FILLED WITH DISCRETIONARY SPACES RELATED TO REINFORCING OR DISRUPTING PATTERNS OF RACISM AND HARM

What are some of the discretionary spaces and risks?
THESE MOMENTS: FILLED WITH DISCRETIONARY SPACES RELATED TO REINFORCING OR DISRUPTING PATTERNS OF RACISM AND HARM

What are some of the discretionary spaces and risks?
What are some of the discretionary spaces and risks?

- How are these three different Black children—Antar, Gabi, and Kassie—positioned in front of their classmates—as contributing to the mathematics, as lacking understanding? Are their brilliance and humanity seen?
- What is signaled about being a ‘doer of mathematics’—both what and who?
- What mathematical understanding is developing in the class?
- How are Antar, Gabi, and Kassie experiencing their teacher, their peers, this lesson?
- What are the other children in the class learning about Black children, about who and what it means to be ‘smart’?

PRACTICING (IN)JUSTICE: UNDERSTANDING THE WORK OF TEACHING

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

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

Kessle: before you add the line, and my answer for it was one and one half.
Antar: I think it’s not a fraction because all the parts are not equally the same.

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

Kessler: Before you add the line, and my answer for it was one and one half.
- Racial narratives about ‘ability’ and struggling learners (Nasir & Shah, 2011; Shah, 2017)
- Area models with fractions
- Patterns related to being a ‘doer of mathematics’ ‘while Black’ (Martin)
- Views of mathematics as centered on narrow ideas about ‘correctness’ and ‘errors’
Racial narratives about ‘ability’ and struggling learners (Nasir & Shah, 2011; Shah, 2017)


Area models with fractions

Patterns related to being a ‘doer of mathematics’ ‘while Black’ (Martin)

Views of mathematics as centered on narrow ideas about ‘correctness’ and ‘errors’
1. Combining the embodied and relational dimensions with the cognitive and knowledge entailments.

2. Building theory and insight while contextualizing the work and centering identities.

3. Connecting the dots between macro-structures and micro-interactions.

4. Using care to distinguish prescription from detail.

5. Representing the work in a usable discourse of practice.
AND ALSO . . .
AND ALSO . . .
Developing our approaches to understanding the work of teaching (in)justice is collective work.

It demands diversity in who ‘we’ are as scholars and as a research community.

This will broaden what we consider evidence, what we think the objects of study are, and what we value: epistemology, ontology, axiology.
谢谢你

- The ICMI Felix Klein Award Committee
- The ICME-14 organizers
- My doctoral students, present and past
- My young students, the children I have taught over four decades
- My colleagues at the University of Michigan
- My U.S. and international professional colleagues

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THANK YOU!

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Slides will be available on my website
https://deborahloewenbergball.com/

(Google Deborah Ball)
Image on slide 2:
Location map of the State of Michigan in the United States.
Retrieved from https://www.nationsonline.org/oneworld/map/USA/michigan_map.htm

Image on slide 2:
Map of treaty lands in what is today called Michigan.
Retrieved from https://theways.org/map

Image on slide 2:

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Image on slide 2:
Photo from “Lake Michigan Beaches,” Experience Grand Rapids.

Image on slide 12:
Map of People’s Republic of China.
Image on slide 12:
Political Map of India.
Retrieved from https://surveyofindia.gov.in/pages/political-map-of-india

Image on slide 12:
South Africa Provinces Map.

Image on slide 12:
Map of Canada
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Map of Turkey.

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Map of France.
Retrieved from https://kids.britannica.com/kids/article/France/345690

Image on slide 12:
Map of Brazil.
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Image on slide 23:
Photo from “Mass Incarceration Is Declining — But Not For Women” by Robert P. Alvarez, Institute for Policy Studies.
Retrieved from https://ips-dc.org/mass-incarceration-is-declining-but-not-for-women/

Image on slide 23:
Photo from “Housing cuts would exacerbate inequality” by Laura Mascuch, Kristin Miller, Jolie Milstein, and Barika Williams, New York Daily News.

Image on slide 23:
Graphic from “‘Enough is enough’: Gilead-Morehouse study racial, ethnic disparity in COVID-19,” by Michael Gibney, S&P Global Market Intelligence.
Image on Slide 23:

Image on Slide 23:
Graphic from “Six policies to reduce economic inequality” by John A. Powell, Othering & Belonging Institute. 
Retrieved from https://belonging.berkeley.edu/six-policies-reduce-economic-inequality

Image on Slide 23:
Photo from “UN agrees to urgent debate on racism and police violence,” Deutsche Welle (DW). 
Image on slide 23:

Image on slides 24–26:
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 24–26:
Image on slides 24–26:
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Photo from "Want to be a poll worker? Philly says it’s responding to ‘unprecedented’ number of applicants" by Ximena Conde, WHYY

Image on slides 24–26:
Photo from “Trump Rioters Storm U.S. Capitol (photos),” Variety
Image on slides 25 and 26:
Photo from “20 Classroom Interventions for Children with Anxiety Disorders” by Jerry Kennard, Ph.D., HealthCentral.

Image on slide 26:
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/

Data on slides 34–37:
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Image on slides 35–37:
Still image taken from “Teacher Caught Berating First Grader (VIDEO),” The Young Turks.
Retrieved from https://www.youtube.com/watch?v=yIJqbSkb5Jk

Image on slide 37:
Photo from “7 Ways to Build Strong Relationships with Students” by Margy Jones-Carey, Getting Smart.
Retrieved from https://www.gettingsmart.com/2017/02/7-ways-to-build-strong-relationships-with-students/

Image on slide 52 and 53:
Map of the World.
Retrieved from https://geology.com/world/world-map.shtml
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Image on slide 53:
“A Large Group Of Diverse People Standing Together.”
Retrieved from https://www.vhv.rs/viewpic/hTmTii_a-large-group-of-diverse-people-standing-together/