(HOW) CAN MATHEMATICS CONTRIBUTE TO THE BUILDING OF A JUST DEMOCRATIC SOCIETY?

Deborah Loewenberg Ball
@deborah_ball

Holmboesymposiet 2018
Oslo Cathedral School
23 May 2018 • Oslo, Norway
2,600,000,000 people under the age of 18 in our world.
Our world
May 2018
Afghanistan: Taliban Kill More Than 100 Afghan Soldiers & Police in Last Week

Report: Colombian Army Executed Up to 10,000 Civilians, Claiming They Were Rebels

Mexico: Radio Journalist Juan Carlos Huerta Killed in Tabasco

North Korea Cancels Talks with South Korea over Joint U.S.-SK Military Drills

Death Toll in Gaza Rises to 61, After Israeli Military Massacres Protesters
THE SPECIAL ROLE
THAT MATHEMATICS TEACHING CAN PLAY IN
BUILDING A JUST DEMOCRATIC SOCIETY
MATHEMATICS AND EDUCATION

What special opportunities does mathematics offer?

What special risks does mathematics present?
MATHEMATICS AND EDUCATION

What special opportunities does mathematics offer?

1. Miah and her classmates
2. Mamadou and his classmates
3. Aniyah and Toni and their classmates

What special risks does mathematics present?
VIEWING FOCUS

What are the children learning?

- In and for mathematics?
- In and for participating in a democratic society?
- In and for a more just world?
PERMUTATIONS, AND PROOF

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, 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, those two.
BLUE-GREEN RECTANGLE PROBLEM

1. What fraction of the whole rectangle is shaded blue?
2. What fraction of the whole rectangle is shaded green?
3. What fraction of the whole rectangle is shaded altogether?
VIDEO: MAMADOU
What number does the orange arrow point to?

Explain how you figured it out.
VIDEO: ANIYAH, TONI, LAKEYA, DANTE

Teacher: Listen closely and see what you think about her reasoning and her answer.

This video and additional supporting materials are available online here.
TURN AND TALK WITH OTHERS

What **special opportunities** for learning democratic and just practices do you see in these short segments?

What **risks or threats** to democratic and just practices do you see in these short segments?
OPPORTUNITIES FOR LEARNING
DEMOCRATIC AND JUST PRACTICES

- Listening to others’ ideas
- Seeking to understand others before disagreeing
- Presenting one’s thinking for others’ comments
- Considering validity (or “truth”) using shared norms and processes, not through power
- Others?
RISKS OR THREATS TO DEMOCRATIC AND JUST PRACTICES

- Arguing one’s own point of view before understanding others’
- Narrow view of mathematical competence
- Positioning based on status (perceived “smartness”)
- Exclusion and marginalization of groups of students
- Others?
THE POWER OF TEACHING: REALIZING THE OPPORTUNITIES, INTERVENING ON THE RISKS
KNOWING IN TEACHING IS ABOUT OTHERS

- What is involved in knowing what someone else is thinking?
- Listening and communicating across differences of age, race, culture, gender, language, social class
- Listening with what you know, but also open to others’ ways of thinking and knowing
  1. Miah’s explanation
  2. Mamadou’s answer to a different question
  3. Aniyah’s view of the “whole” and Toni’s and Lakeya’s voices, Dante’s question
EDUCATING FOR THE INDIVIDUAL AND THE COLLECTIVE

1. What does each of the children—Miah, DeeDrah, Mamadou, Dovan, Aniyah, Toni, Lakeya, and Dante—know? And what is each learning to do?

2. What are the children who are not speaking in these short clips doing and learning?

3. What are these groups of children learning to do with other people?
Teaching must connect to children’s experiences, worlds, and lives. Often in mathematics education, we think of this as situating problems in the children’s everyday worlds.

But teaching must also create buffers from and disrupt patterns of the real world: racism, inequities, bias, and more.
THE HEAVY WORK OF TEACHING TO DISRUPT THE “REAL” WORLD

1. Miah
   - Positioning Miah with humanity and agency: “see your face”; “is that right, Miah?”

2. Mamadou
   - Creating space to hear and understand Mamadou’s idea before agreeing or disagreeing: “Let him explain”

3. Aniyah
   - Requiring comments or questions before agreeing or disagreeing
   - Children look at and speak to Aniyah

23 May 2018
The (im)possible work of teaching entails:

- Working across and not erasing human differences
- Managing and working with paradoxes
- Using their affordances and managing their challenges
TAKKE!

dball@umich.edu

Slides will be available on my website

https://deborahloewenbergball.com/

(“Google” Deborah Ball)
CREDITS

Image on slide 4:
Afghanistan: Taliban Kill More Than 100 Afghan Soldiers & Police in Last Week
Retrieved from: https://www.democracynow.org/2018/5/14/headlines

Image on slide 4:
Report: Colombian Army Executed Up to 10,000 Civilians, Claiming They Were Rebels

Image on slide 4:
Mexico: Radio Journalist Juan Carlos Huerta Killed in Tabasco
CREDITS

Image on slide 4:
North Korea Cancels Talks with South Korea over Joint U.S.-SK Military Drills

Image on slide 4:
Death Toll in Gaza Rises to 61, After Israeli Military Massacres Protesters