Promote Equitable Teaching Practices
AND
Focus on Content & Connections:
Don’t Settle For Only One!

Farshid Safi  
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#NCTM100

School of Teacher Education
University of Central Florida
June 18, 2020   7 PM EST
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My Journey & Privileges of Teaching
My Journey
MY commitment

My story is NOT unique!
I happen to have a great deal of privilege through teaching and a platform to share and vocalize some long standing concerns and critical issues!

Personal Acknowledgement:
I have a lot to learn and will remain committed to listening, reflecting and growing personally and professionally!
Serving Our Students & Communities

As we are all busy trying to provide content to students, let's remember that what many students need MOST from us - specially now - are the connections & relationships! Not one or the other, but both! 🍎✨📚❤️
@UCFTeacherEd #educhat #MTBoS #iteachSTUDENTSmath #iteachmath @UCFCCIE

Farshid Safi
@FarshidSafi

Thank you @nctm @TrenaWilkerson @robertqberry "As a mathematics education community, we must not tolerate acts of racism, hate, bias, or violence." #NCTM #MTBoS #education We MUST "challenge systems of oppression that privilege some while disadvantaging others" #BlackLivesMatter

Farshid Safi
@FarshidSafi

Connections and Relationships Matter to Support, Elevate & Empower our Students and Communities!
Safi, 2020

As NCTM's Catalyzing Change series advocates, we need to engage in critical conversations that urge educators to create structures where each and every student can be fully engaged in our democratic society. We owe this not only to our students but also to the society we wish to inhabit both now and in the future.

One either allows racial inequities to persevere, as a racist, or confronts racial inequities, as an antiracist. There is no in-between safe space of "not racist." The claim of "not racist" neutrality is a mask for racism. (Ibram X. Kendi, author of How to Be an Antiracist, p. 9)

Trena L. Wilkerson
NCTM President
@trenawilkerson

Robert Q. Berry III
NCTM Past President
@robertqberry

12:13 PM · Mar 26, 2020 · Twitter Web App

11:00 PM · Jun 1, 2020 · Twitter Web App
OUR commitment

WE need to commit personally and professionally!

Empathy → Awareness → Activism

• For our students
• For our colleagues
• For our communities

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Session Goals

- Build on human connections and our collective experiences
- Explore the significance of our students & issues related to identity
- Connect equitable teaching practices AND mathematical content & connections
Educators From All Around

Go to www.menti.com and use the code 117491

Select a region with which you identify

Go to www.menti.com Use Code 117491

@FarshidSafi #NCTM100
Educators From All Around

Select a region with which you identify

- The Great Northeast: 24%
- The Great Lakes: 15%
- The Great Plains: 7%
- The Southeast Manufacturing Belt: 22%
- Gulf Coast: 4%
- Inland West: 4%
- Pacific Coast: 16%
- Canada, Mexico, Other: 7%

Go to www.menti.com and use the code 117491
Educators From All Around

Implications related to:

• Identity
• Representation
• “Other”ing
• History
• Power
• Policies
• ...
Representation, Identity & History

Mathematical Connections and Implications

Mercator Projection vs the true size of countries

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Complexity of Identity
Complexity of Identity
Complexity of Identity

Negin Farsad Retweeted
TED Talks • @TEDTalks · 1d
"Islam doesn’t explain me, Iranian poetry doesn’t explain me, and apple pie doesn’t explain me. And yet I understand all of those things." — comedian and @TEDFellow, @NeginFarsad

I’m an Iranian-American Muslim. Here’s how that works ideas.ted.com

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Professional Commitment

Commitment to continue to educate ourselves and listen to the experts...Not just mathematically and pedagogically but also in ways to rehumanize mathematics education for/with our students!
“The rush to move onto the next mathematical concept (or response to intervention procedure) almost ensures we will not ask why this concept? Who benefits from students learning this concept? What is missing from the mathematics classroom because I am required to cover this concept? How are students’ identities implicated in this focus?

Indeed, we are at a moment in history where we have ready excuses not to attend to issues of identity and power in mathematics education - after all, what does power have to do with a rational, universal field like mathematics?”

(Gutiérrez, R., 2013, p. 37)
“The sociopolitical turn signals the shift in theoretical perspectives that see knowledge, power, and identity as interwoven and arising from (and constituted within) social discourses. Adopting such a stance means uncovering the taken-for-granted rules and ways of operating that privilege some individuals and exclude others.

Those who have taken the sociopolitical turn seek not just to better understand mathematics education in all of its social forms but to transform mathematics education in ways that privilege more socially just practices.”

(Gutiérrez, R., 2013, p. 40)
Context Matters

Human Connections
AND
Mathematical Content & Connections

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Factors Influencing Identity

Go to www.menti.com and use the code 11 74 91

List factors that may influence identity

Go to www.menti.com   Use Code 11 74 91

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Factors Affecting Student Learning

**Figure 2:** The many factors that affect student learning.

Identity & Some Related Factors

(Safi, 2020)
Classifications of Shapes

Emphasize
- Definitions
- Classifications
- Representations
- Characteristics
- Intersections

All Matter!

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Identity & Intersections

What about *marginalization* and *oppression* taking place at multiple intersections?

- Race
- Language
- Nation of Origin
- Religion
- ...
- Gender
- Sexual Orientation
- Health
- Natural Disasters
- Poverty

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Identity & Intersections

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*My story is NOT unique!*
Equitable Mathematics Teaching Practices (Bartell, et. al, 2017)

1. Draw on students’ funds of knowledge
2. Establish classroom norms for participation
3. Position students as capable
4. Monitor how students position each other
5. Attend explicitly to race and culture
6. Recognize multiple forms of discourse and language as a resource
7. Press for academic success
8. Attend to students’ mathematical thinking
9. Support development of a sociopolitical disposition
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Research Commentary

Toward a Framework for Research Linking Equitable Teaching With the Standards for Mathematical Practice

Tonya Bartell
Michigan State University
Anita Wager
University of Wisconsin–Madison
Ann Edwards
Carnegie Foundation for the Advancement of Teaching
Dan Barman
Rutgers University
Mary Fote
Queens College
Jo Spencer
University of San Diego

The Common Core State Standards for Mathematics (CCSSM) do not make any promises about the teaching practices that should be used to support students’ enactment of the standards. Thus, equity gains framed as achievable through making the standards a goal for all students. We know from research on past reform efforts that standards without explicit (or companion) teaching practices, and teaching practices without explicit attention to equity, will inevitably result in the failure of the standards to achieve goals for students. This commentary provides a framework for future research that hypothesizes research-based equitable mathematics teaching practices in support of the CCSSM’s Standards for Mathematical Practices, connecting research, policy, and practice in order to realize the equity potential of the CCSSM.

Key words: Equity, Diversity; Special needs; Common Core State Standards for Mathematics; Equitable teaching practices; Research issues

The Common Core State Standards for Mathematics (CCSSM) delineate the mathematical content all students should learn as well as eight Standards for Mathematical Practice (SMP) through which students should engage the mathematical content (National Governors Association [NGA] Center for Best Practices & Council of Chief State School Officers [CCSSO], 2010). In this commentary, we consider how the CCSSM, and thus the SMP, is positioned within a larger political context and how these political forces, combined with a lack of attention.
### Equitable Mathematics Teaching Practices

**Table 1**

<table>
<thead>
<tr>
<th>Equitable practice</th>
<th>Examples of the practice</th>
</tr>
</thead>
</table>
| 1. **Draw on students’ funds of knowledge** | - Build on community and cultural knowledge and practices (Civit, 2007)  
- Recognize students’ cultural and linguistic resources (Gay, 2002; Ladson-Billings, 1995)  
- Have robust knowledge of students, validate shared ideas and experiences, and connect instruction to students’ experiences and interests (Aguirre et al., 2013; Bartell, 2011; Hedges, Cullen, & Jordan, 2011; Wager, 2012) |
| 2. **Establish classroom norms for participation** | - Recognize that student voice has implications for power and authority and builds agency (Cobb & Hodge, 2007; Turner, Dominguez, Maldonado, & Empson, 2013)  
- Set up and guide discussions so that students from nondominant backgrounds develop strong mathematical identities (Hodge, 2006)  
- Connect pedagogical practices to student participation (Boaler & Greene, 2000; Wager, 2014)  
- Question whose participation norms are valorized (Planas & Gorgori, 2004)  
- Construct social structures that enable students to “develop strategies that help maintain certain positions and reduce others” (Planas & Civit, 2010, p. 145)  
- Challenge and counteract societal stereotypes and inequities to which students and communities are subjected (Bartell, 2011; Gay, 2002; Ladson-Billings, 1995)  
- Attend to how the curriculum may influence perceptions of students (Atweh, Bleicher, & Cooper, 1998)  
- Share power in the classroom by allowing students to provide meaningful input in making decisions about classroom practices, curriculum, and assessment (Cornelius & Herrenkohl, 2004; Sheets, 2005) |
| 3. **Position students as capable** | - Assign competence to support students’ repositioning of one another (Cohen, Lottan, Sears, & Arelizon, 1998)  
- Attend to reification of existing status structures so as to reposition some students with their peers (Forman & Ansell, 2002)  
- Position students to use one another as mathematical resources (Dunlevy, 2015)  
- Make connections to students’ mathematical, racial, and cultural identities (Batty, 2013; Martin, 2007)  
- Recognize that certain groups have been positioned as anti-intellectual (Martin, 2009; Steele, 2003) |
| 4. **Monitor how students position each other** | - Assign competence to support students’ repositioning of one another (Cohen, Lottan, Sears, & Arelizon, 1998)  
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| 5. **Attend explicitly to race and culture** | - Assign competence to support students’ repositioning of one another (Cohen, Lottan, Sears, & Arelizon, 1998)  
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**Table 1 (continued)**

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<thead>
<tr>
<th>Equitable practice</th>
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</table>
| 6. **Recognize multiple forms of discourse and language as a resource** | - Facilitate respect among students by cultivating culturally responsive relationships among students and validating possible differences in their language practices (Moschkovich, 2013)  
- Coconstruct resources with students in moment-to-moment interactions around mathematics (Domínguez, 2014)  
- Consider linguistic choices and acknowledge home language as a valid language of mathematics (Menney, 2005; Setati, 2005)  
- Bridge language practices through affirming students’ home languages, modeling code switching, and fostering interactional patterns familiar to students (Brenner, 1999; Howard, 2001; Lee, 1995) |
| 7. **Press for academic success** | - Assess student learning, build on student strengths, explicitly communicate expectations for students, and communicate the teachers’ responsibility in student success (Morrism, Robbins, & Rose, 2008)  
- Have high academic expectations while maintaining students’ cultural and psychological well-being rather than accept deficit views about students’ intellectual potential (Fine, 1986; Fordham, 1988) |
| 8. **Attend to students’ mathematical thinking** | - Recognize, understand, and build from children’s understanding of mathematics (Carpenter, Fennema, Franke, Levi, & Empson, 1999)  
- Respond to developmental needs so as not to expect a student to do mathematics they are not developmentally ready for (Jackson, 2009)  
- Incorporate critical texts, discuss controversial topics, serve the community, and allow social issues to drive instruction (Hickling-Hudson & Ahlquist, 2003; Hyland, 2005; Tate, 1995)  
- Provide opportunities to explore sociopolitical topics using mathematics (Frankenstein, 2012; Gates & Jorgensen, 2009)  
- Engage students in conversation about real-world problems and how mathematics can be used to examine them (Gutstein, 2006; Skovsmose, 1994) |

History Should Be a Guide

Oppression, Colonialism, & Militarization are not new and they are not unique to the United States of America.

Let history be our guide, our teacher and our ally in uniting our efforts to bring about change!
Finding Solutions to Inequalities

Properties of Inequality

If $a > b$, then $a + c > b + c$

If $a > b$, then $a - c > b - c$

If $x - 3 > 5$
then $x - 3 + 3 > 5 + 3$
$x > 8$
Finding Solutions to Inequalities

Properties of Inequality

If \( a > b \), then \( a + c > b + c \)

If \( a > b \), then \( a - c > b - c \)

If \( x - 3 > 5 \), then \( x - 3 + 3 > 5 + 3 \)

\( x > 8 \)

Properties of Systemic Inequality*

If \( a > b \), then \( a + c^n >>>>> b - c^n \)
Importance of Dissonance

Often times as teachers we would like our students to examine the content from a new perspective - *Cognitive Dissonance* for our students!

How about some *Professional Dissonance* for us as teachers and educators?
“It may be useful for future research to explore how sequences of schooling practices for African American and other minority students form a developmental trajectory and how the practices afford new kinds of engagement, imagination, and alignment.”

(Nasir, 2002, pg. 243)
“Diversity and inclusion has not caught us off guard. It’s been ongoing for years. If we can quickly respond to COVID, why have we failed to respond at all to diversity and inclusion?”

(Childs, June 2020)
In the Chat section,

In your own words, provide a definition for the concept of “majority”.
Majority in Context
Implications for Equitable Teaching

We need to look *within* ourselves,

Listen, Listen More Deeply,..., Process, Reflect

so that we can look *outward* and *look out* for/with

• our students,
• our colleagues,
• our communities

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Content & Connections

Content

• Graphs
• Logs
• Scale
• Unit Rate
• Rate(s) of Change
• Concavity
• Local vs. Absolute Extrema

Connections

• Public Health
• Effect on Communities
• Disproportionate Impact on POC
• Economic Implications
• Planning for Schools
• Care
• Elderly
• Access to Resources
• ...

Are New Cases Still Growing In Your State?
Click below to toggle between new total cases, total cases and per capita cases.
Data as of 11:59 p.m. ET, June 15

<table>
<thead>
<tr>
<th>State</th>
<th>NEW DAILY CASES</th>
<th>TOTAL CASES</th>
<th>CASES PER 100,000 PEOPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida</td>
<td>Florida</td>
<td>177,325 total cases</td>
<td>777 new cases/day</td>
</tr>
<tr>
<td>New York</td>
<td>736 new cases/day</td>
<td>363,944 total cases</td>
<td></td>
</tr>
</tbody>
</table>

Notes
This chart uses a logarithmic scale, which is meant to emphasize rate of change and allows for the display of a wide range of numbers. Every axis line is 10 times greater than the previous one. In the "new daily cases" chart, the x-axis uses total confirmed cases on a logarithmic scale rather than date to underscore the overall size of a state’s outbreak relative to its daily growth.

Source: Center for Systems Science and Engineering at Johns Hopkins University

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Human Connections & Math Content

Connections
- Public Health
- Effect on Communities
- Disproportionate Impact on POC
- Economic Implications
- Planning for Schools
- Care
- Elderly
- Access to Resources
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NEW DAILY CASES TOTAL CASES PER 100,000 PEOPLE
Florida

This chart uses a logarithmic scale, which is meant to emphasize rate of change and allows for the display of a wide range of numbers. Every axis line is 10 times greater than the previous one. In the "new daily cases" chart, the x-axis uses total confirmed cases on a logarithmic scale rather than date to underscore the overall size of a state’s outbreak relative to its daily growth.

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The official Florida site says there are more than 1.3 million "total people tested" in Florida, of which about 73,500 were positive, resulting in an "overall percent positive" rate of 5.4%.

She says that on the state's dashboard, any person who tests positive will be counted as a positive test only once, no matter how many times they test positive. But a person who tests negative will be counted over and over again each time they test negative for the coronavirus.

Jones says that because many residents, such as health care workers, require repeated testing, the state's dashboard is artificially deflating the true positivity rate. "They're adding their total test figures instead of their total people, which makes their percent positive extremely low," she says.

Fractions/Decimals/Percents

CCSS.MATH.CONTENT.4.NFA.2
Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

CCSS.MATH.CONTENT.7.RP.A.3
Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.
Fractions/Decimals/Percents

People Tested
901,330

Negative
824,166

Positive
77,568

Testing Data for Orange

Does percent positive of all people tested meet criteria for Phase 1? **YES**

Does percent positive by DOH’s _new and misleading calculation_ meet criteria for Phase 1? **YES**

Testing Data Details:

Total People Tested: 62,461
Total People Positive: 3,130

Total Tests (including duplicates and re-tests): 94,627
Percent of all tests that are duplicates/re-tests: 34.0%
Who is Represented? Marginalized?

Our world & our communities can not afford to continue to exclude, marginalize, and devalue the brilliance of our students, our future teachers & leaders and their identities!

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Equal, Equivalent, or Neither?

Several factors play a role in our reasoning about equal vs. equivalent including:

❖ Composition & Decomposition
➢ Numbers
➢ Fractions
➢ Geometric Shapes
❖ Partitioning
❖ Orientation
❖ Measurement
Equal, Equivalent, or Neither?
Equal, Equivalent, or Neither?
Equal, Equivalent, or Neither?
Equal, Equivalent, or Neither?

\[
y = \frac{2x - 6}{x - 3}, \quad y = 2
\]

\[
\sqrt{x - 1} = x - 7
\]

\[
x - 1 = (x - 7)^2
\]
Engaging Students in Mathematical Reasoning

Mathematics presents a playground for us to explore, analyze and reflect on the possible consequences of our actions & inactions!
Gerrymandering: When Equivalent Is Not Equal!

Gerrymandering: When Equivalent Is Not Equal!
Mathematics Teaching in the Middle School, 24(2), 82-89.

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Gerrymandering: When Equivalent Is Not Equal!

- What are the potential mathematical and societal impacts of reconfiguring districts so that a particular group is more likely to win the state election?

- Why is it important to understand the mathematics in grouping, regrouping, and decomposing and recomposing geographical regions?

- When we think about the Gerrymandering Task, how can understanding the context empower or potentially lead to a disenfranchisement of groups throughout society?
Logical Statements

We talk about importance of logic in learning mathematics

Voters → Politicians & Policies

Politicians & Policies → Voters
Personal & Professional Commitment

Keeping “in our minds and in our hearts” …. Good start but not good enough to address and fundamentally dismantle the systemic and institutionalized aspects that impact our students, colleagues, and communities!

Keeping “in our actions” to start with ourselves, our students, our network of colleagues including family/friends and addressing long standing aspects of marginalization within our own communities!

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To Continue Our Conversation:

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