

Social Justice Lessons and Activities for the Mathematics Classroom

2018 NCTM Annual Meeting & Exposition

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This is America's Reality!

Health care insecurity, racial profiling, Black Lives Matter, Trayvon Martin, Michael Brown, Ferguson, "Stop don't shoot" and "I can't breathe," Sandra Bland dead in a jail cell, kneeling, linking arms or raising a fist against racism, the Dakota pipeline and Standing Rock water protectors, and bigotry, the Muslim ban, Charlottesville, and desecration of Jewish cemeteries, the Wall, betrayal of DACA (Deferred Action for Childhood Arrivals), **Parkland, Stephon Clark, Incident in Starbucks**

(Susana Davidenko, NCSM Monograph, 2018)



Educators Can Not Be Silent

Silence in the face of injustice conveys the impression that prejudicial behavior is condoned or not worthy of attention.

<https://www.facinghistory.org/teaching-after-charlottesville>



Schools Do Wonderful Things for Students

- Access the wealth of human knowledge and skill.
- Gain information about ourselves and others.
- Develop social relationships outside the family.
- Provide a refuge and safe haven from a confusing world.
- Offer students and families a variety of support and resources.

Weissglass (1996) Ripples of Hope – Building Relationships for Educational Change



Schools Can Encourage Social Injustices

- Memorization opposed to thinking and understanding
- Niceness; don't show your feelings, forget about it
- Competition – winners and losers
- Differentiated treatment and opportunities

Weissglass (1996) *Ripples of Hope – Building Relationships for Educational Change*
 Dudley-Mauing (2016). *The Resilience of Deficit Thinking. Journal of Teaching and Learning*, Vol 10.



Turn and Talk?

(with focus on the school)

- What other routines, behaviors, classroom/school rules or strategies can benefit or hurt students?



Educators Benefit from Their Own Self-Reflection

Teachers will benefit from doing their own self-reflective personal work around race and racism—whether this takes the form of professional development, reading and reflection, conversations with colleagues and others—to be aware of their own triggers and sensitivities and be willing to not only be uncomfortable but be a learner alongside their students.

Resources for Teaching after Charlottesville
<https://www.facinghistory.org/teaching-after-charlottesville>



Discussion Questions

(with focus on your community and state)

- What are some socio-economic issues faced by your state or the community served by your school?
- Who is affected by the suggested issue? Who isn't?
- What can be done to improve the situation or eliminate the conflict? Is it possible to do so?



Define and Discuss Terms

- **Prejudice** – making a decision or forming an opinion without sufficient, not based on reason or actual experience
- **Bias** – an inclination or preference for against one thing, person, or group compared to another
- **Stereotypes** – a fixed oversimplified image of a particular type of thing, person, or group.
- **Discrimination** – the unjust or prejudicial treatment of different categories of people or things based on race, age, or sexual orientation, political affiliation
- **Racism** – belief or prejudice in the superiority of one race over another which results in prejudice and discrimination

Race Talk: Engaging Young People in Conversations About Race and Racism ADL.org



Mathematics Education Through the Lens of Social Justice: Acknowledgment, Actions, and Accountability

...a social justice stance interrogates and challenges the role power, privilege and oppression play in the current unjust system of mathematics education – and in society as a whole.

<http://www.todos-math.org/socialjustice>



Define and Discuss Terms

- **Identity** - distinctive characteristics
- **Agency** - capacity of individuals to act independently and to make their free choices.
- **Authority** - capacity, innate or acquired, for exercising ascendancy over a group
- **Power** - the ability to influence the actions of others.



★ What is leadership?

- ★ *Leadership* – is no more (and no less) than taking responsibility for what matters to you.

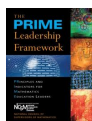
(Ripples of Hope, Julian Weissglass, 1996)



Stage 1 Leadership Making a difference in self

Leadership of self-knowledge, awareness, and development. This is the ***"know and model"*** stage of leadership growth and development.

<https://www.mathedleadership.org/resources/summary.html>



Stage 2 Leader Making a difference in others

This leader is respected for his or her interpersonal skills and commitment for leading change among teams of teachers and colleagues. This is the ***"collaborate and implement"*** stage of leadership development.

<https://www.mathedleadership.org/resources/summary.html>



Stage 3 Leader Making a difference beyond the school

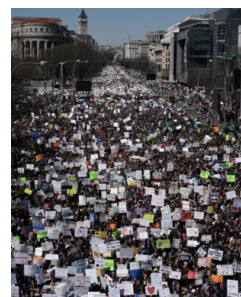
The leader is respected for his or her influence and engagement with an expanded community of educational stakeholders. This is the ***"advocate and systematize"*** stage of leadership and development.

<https://www.mathedleadership.org/resources/summary.html>



"We Have to Stand Up Against the Status Quo!" Parkland Student

March For Our Lives
March 24, 2018



Your Leadership For Social Justice

- It is important to take leadership for educational change.
- Sometimes we feel isolated, inadequate or hopeless about influencing change, face resistance.
- Sometimes we have unrealistic expectations and fall into patterns of alienating people.

Turn and Talk

1. What motivates you to want to take leadership for social justice?
2. At what stage is your leadership for social justice? Stage 1, Stage 2, Stage 3?
3. What are the challenges?

Mathematics Education Through the Lens of Social Justice: Acknowledgment, Actions, and Accountability

Include tasks that demand quantitative analysis of fairness and civic engagement issues (Gutstein & Peterson, 2013; Lesser, 2007; Turner & Strawhun, 2007; Turner et al., 2009; Simic Muller et al., 2009)

<http://www.todos-math.org/socialjustice>

Before Unit Actions

- Before the Unit
 - Make sense of the agreed upon essential learning standards
 - Identify higher-level cognitive tasks
 - Develop common assessment instruments
 - Develop scoring rubrics for the assessments
 - Plan common homework (independent practice)

<https://www.solutiontree.com/free-resources/mathematicsatwork>

During Unit Actions

- During the Unit
 - Implement higher-level cognitive tasks
 - Use in class formative assessment effectively
 - Use a lesson design for lesson planning (lesson study)

<https://www.solutiontree.com/free-resources/mathematicsatwork>



The rubric below, adapted from Bay-Williams' Task Analysis Tool (2013), provides guidance as teachers preview or develop tasks to use in instruction.

Indicator	Little or No Focus	1	2	3	The Expectation
1. The task is grade-level appropriate.	The task is below the grade-level curriculum.				The task represents an expectation of the grade level curriculum.
2. The task makes connections between concepts and procedures.	The task focuses on procedures. The focus is on a formula or series of steps to a correct answer.				The task requires conceptual thinking and understanding to broaden mathematics knowledge leading to deeper understanding about the event.
3. The task is designed to engage the learners' interest and intellect on a social justice event.	The task is based on a social justice event inappropriate for the maturity of students., for example, 1 st graders understanding poverty or prison incarceration.				Students are mature enough to show interest, curiosity and empathy as discussions unfold.
4. The task provides varying entry points.	The task does not require complex thinking. The goal is to arrive at solution from teacher-given information.				The task is presented as a statement or question requiring inquiry. Students decide what data is needed to answer the question.
5. The task requires students to reflect, illustrate, explain or justify thinking about a social justice event.	The task requires a mathematics solution only.				The task requires students to use mathematics learning to make sense of and form opinions about an event. Students can determine trends.



Events Have History Connect the Past to the Present

Many current incidents are grounded in historical events.

- Charleston church shootings and the confederate flag
- Charlottesville events and confederate monuments
- DACA and views on immigration
- #METOO and sexism, exploitation, oppression of women

Race Talk: Engaging Young People in Conversations About Race and Racism ADL.org



Developing a Mathematics Lesson

- Need background information.
- Develop social justice and mathematics learning goals.
- Begin with a launching activity.
- Design a task aligned to the curriculum.
- Develop both social justice and mathematics formative assessments.



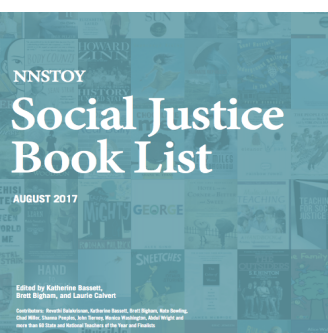
Syrian Refugee Crises Some Facts

- Syrian anti-government demonstrations began in March 2011.
- Bombings destroyed crowded cities.
- Food and medical care became sparse.
- 13.5 million Syrians require humanitarian assistance.
- 4.8 million are refugees
- 6 million are internally displaced.



Social Justice Learning

- Develop **awareness** and have a better understanding of community and world events.
- See mathematics as a powerful tool for **analysis** of data to determine truths and trends.
- Know that there is **unfair treatment** of people.
- Know that people are **dehumanized** and **discriminated** against.
- Know that people can do **harmful** things to each other.
- Understand that there are **correlations**.
- Know that injustices can be **improved** and even **eliminated**.



The Launch

- How does a person become a refugee?
- Does the United States have refugees?
- What do you think life is like for a refugee?
- What does it mean to leave everything behind?



Lesson

- Title – Syrian Refugee Crisis
- Time Required - 1 class period

Objective: The student will understand the concept and attributes of functions.



Social Justice Learning

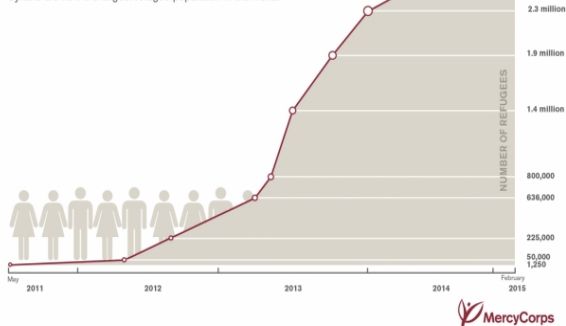
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SYRIAN REFUGEE CRISIS

Massive Displacement

Syrians are now the largest refugee population in the world.



Sample Questions

- How would you project the number of Syrian refugees in 2020?
- What other mathematics questions could be asked for your particular course?
- Predict what the graph would look like in 10 years, 20 years.



Other Task/Homework Examples

- Scatter plots
- Slope
- Best fit equations
- Area under a curve
- Naming coordinates

Exit Question?

- What are the advantages and disadvantages of using your model to determine the numbers for 2020?
- A refugee family of 2 adults and 3 children recently moved into your community. You and some of your friends want to help them. How would you take leadership in this effort?

www.todos-math.org TEEM 7

- A Raisin in the Sun.....grades 6-12
- 1950's Chicago
 - The father of the family just died.
 - There are 4 people living in a small apartment.
 - The family awaits the insurance check of \$5000.
 - The cost of dreams
 - The matriarch wanted to purchase a house.
 - Son wanted to Invest in a liquor store.
 - Invest the \$5000.



Encourage Culturally Responsive Teaching

- Have knowledge of students lives
 - Identity charts
 - Student autobiographies
 - Welcome students by name; learn to pronounce names correctly.
 - Use eye contact when speaking with students
 - Use proximity when speaking to students equally.
 - Arrange classrooms to accommodate discussion.
 - Use team building exercises before collaborative groups.
 - Inspire Hope and Activism
- Krasnoff, B. (2016). *Culturally Responsive Teaching: A Guide to Evidence-Based Practices for Teaching All Students Equitably*

Autobiography

- A student written autobiography is normally done at the beginning of the school year, but could occur at any time.
- It is an opportunity to get to know students on a variety of levels, family, hobbies, school activities, previous mathematics experiences, and learning strategies that work best for them. What is it a teacher should never say or do?
- This is also an opportunity for students to think about events within their community, state, nation or the world that may concern them.



More Ideas -

- Start small with 1-2 day projects.
- Begin with a pilot classroom or school.
- Be inclusive; keep principals and others informed.
- Inform parents in opening of school information.
- Allow students to pick topics.
- Keep mathematics rigorous.
- Allow time for discussions.
- Get feedback from students.
- Organize outside of class projects.
- Develop as an activity for Math Club.



TODOS 2018 CONFERENCE

IT'S ALL ABOUT ALL STUDENTS LEARNING
QUALITY MATHEMATICS: ADVOCATING
FOR EQUITY AND SOCIAL JUSTICE

June 21 (5pm) – 23 (4pm), 2018
Scottsdale Plaza Resort, Phoenix, AZ

Information in your conference bag

Registration is OPEN! todos-math.org

Join within a week. Get 15 months for the price of 12. Use code: MEAD



Pre-conference
for
Leaders in
Social Justice
June 21, 2018

