

Equitable and Empowering Learning through Math Instruction Focused on Issues of Social Justice

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October 28, 2022



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Development Team

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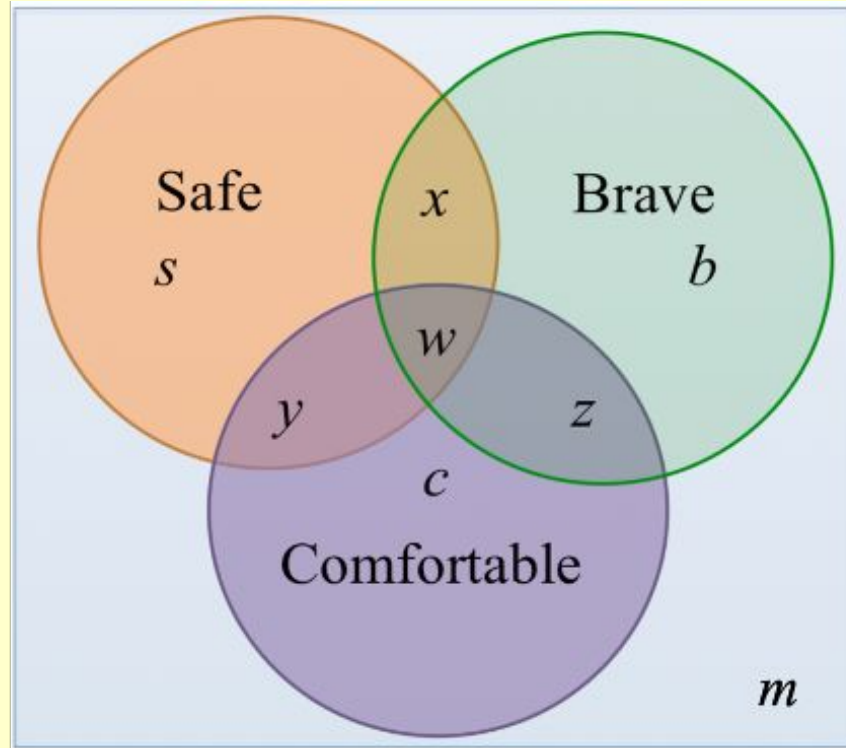
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Four agreements for challenging conversations*

- (1) stay engaged,
- (2) expect to experience discomfort,
- (3) speak your truth and listen to truths of others,
- (4) expect and accept a lack of closure.

*Singleton, G. E., & Linton, C. (2006). *A field guide for achieving equity in schools*. Thousand Oaks, CA: Corwin.



U = Personal experience of an interaction

Reflect

The students we teach today will be working, voting, and making decisions for decades to come.

1. What mathematical content could help them make decisions that make for a better society?
2. In what course are they likely to learn that content?

Take a moment to think about your answers and make notes for yourself.

Effective systemic change

1. Course structures
2. Curricula
3. Pedagogy
4. Professional development for instructors & leaders
 - 4a. Broadly humanistic
 - 4b. Deeply discipline-specific
5. Purposeful networked improvement

Carnegie Math Pathways

1. Course structures
2. Curricula
3. Pedagogy
4. Professional development for instructors
 - 4a. Broadly humanistic
 - 4b. Deeply discipline-specific
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Guide for Justice & Teaching Math

1. Course structures
2. Curricula
3. Pedagogy
- 4. Professional development for instructors**
 - 4a. Broadly humanistic**
 - 4b. Deeply discipline-specific**
5. Purposeful networked improvement

Mathematics and Justice Intertwined

- ***With justice***: classroom routines and conversations encourage equitable participation and status.
- ***About justice***: lessons are purposeful in looking at serious or provocative issues using mathematics.
- ***For justice***:
 - mathematics is a means to challenge the status quo,
 - mathematical activity can transform social, political, and economic conditions to reduce injustice.

Mathematics Teaching and Justice

- We teach *with* social justice to increase fairness within existing educational structures.
- We teach *about* social justice because spurring student motivation to learn mathematics is good pedagogy.
- We teach *for* social justice to emancipate our students and ourselves from a deeply unjust, unfair world.

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Teaching Mathematics *With* Justice

- Lived experiences
- Classroom community
- Build skills in critical thinking and equitable communication

Classroom community

Community building begins in [the syllabus](#) (Taylor et al., 2019) and is rooted in what happens on [the first day of class](#) (Lang, 2018). Because college students are adults, instructors have opportunities for [key moves](#) (Bok, 2022) in the classroom that include students in the choices made by the group about how communication will happen...

Syllabus examples 1 and 2

1. All students are required to take the final exam and four midterm exams. A makeup exam (or other arrangement) will only be given for reasons approved by the instructor. In this case permission should be sought prior to the exam.
2. Due dates will be announced in class and in Canvas. If you need more time for your assignments for any reason, let me know. You will find me flexible - your opportunity to learn and demonstrate your learning is more important to me than due dates.

Syllabus example 3 *with justice*

All of us at Redacted University are committed to creating an inclusive learning environment, and our learning community in this class will honor this commitment. It is important to honor our differences based on race, sex, religion, sexual orientation, national origin, and socioeconomic status. Please feel free to share personally or anonymously anything we can do to make sure you do not feel excluded. The term “we” includes the instructor, fellow students, one's self, or anyone else that is part of our community.

Teaching Mathematics *About* Justice

- Choose lessons with care
- Orchestrate mathematically rich conversations
- Build skills in hearing and speaking about injustice

Mathematics *About* Justice

1. Sea Level Change and Function Composition [functions]
2. Student Loans: Fulfilling the American Dream or Surviving a Financial Nightmare? [fit to polynomial models]
3. Exploring the Problem of Human Trafficking [builds on algebra, introduces network/graph use]
4. Evaluating Fairness in Electoral Districting [geometric]
5. Voting with Partially-Ordered Preferences [builds on algebra, introduces voting theory]
6. Implementing Social Security [QR/stats]
7. Using Calculus to Model Income Inequality [calc 2]

Teaching Mathematics for Social Justice—Instructional Strategies

Preconditions for Teaching for Social Justice	Characteristics of Teachers Who Teach for Social Justice	Social Justice Teaching Strategies
Recognize and validate students' perspectives.	Incorporate student mathematical strengths and varied perspectives.	Engage students in the varied perspectives of other students.
Appreciate varied perspectives in school.	Demonstrate high expectations of each and every student.	Engage students in actionable social change efforts.
Value teacher-student relationships.	Facilitate discussion between students that ensures opinions are valued.	Legitimize students' real-life experience.
Value the stories and lived experiences of others.	Form emotional affiliation with each and every student.	Provide storytelling of others to shape and describe varying perspectives.
Provide space for authentic student voice.	Exhibit a genuine caring attitude toward each and every student.	Use investigative learning processes.
Ensure security for marginalized youth.	Engage with the community.	Provide real and meaningful opportunities to engage with data and contextual situations.
	Listen actively and synthesize student voice.	Include content relative to students' lives—social and cultural experiences.

Teaching Mathematics *For* Justice

- Long view of roles as citizens and change agents
- Students choose what matters to them
- Build skills in identifying and considering life challenges

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Mathematics *For* Justice - Strategies

1. Varied perspectives
2. Actionable change
3. Students' real-life experiences
4. Storytelling
5. Investigative learning
6. Engage with data in context
7. Content relative to students' lives

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Find Out More

Link to Guide:

<https://carnegiemathpathways.org/solutions/educator-resources/>

-Scroll down to “Toolkits and Guides for Educators”

Thank you!

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