From Inclusion to Inqu[ee]ry

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Honoring the Beautiful Souls We’ve Lost to Transphobic Violence in 2021

Tyianna “Davarea” Alexander
Samuel Edmund Damián
Bianca “Muffin” Bankz
Dominique Jackson
Fifty Bands
Alexus Kimmy Icon Braxton

References:
“I come to mathematics carrying all of my humanity. My relationship with it passes through my experience. It affects my view of my world and I bring to it my own perceptions. I can't relate to Bertrand Russell's notion that mathematics is beyond humanity. Without us it is nothing” (Kent, 2019,p. 40).

References:
Positioning Myself In this Work

Florida Born
Middle Class
Monolingual Millennial
White mTBI Survivor
Second-Gen Cuban American
Teacher Educator Latinx
Math Teacher Queer Partner
Learner Woman
First-Gen College Grad Formerly Catholic
Cisgender NJ Resident

The Queer Mathematics Teacher
Educational Coaching to Rehumanize Mathematics
LGBTQ+ Terminology - A Crash Course
Breakout Activity #1


Queer Identity in K-12 Schools

- 86.3% of LGBTQ+ students report being harassed or assaulted at school (Kosciw et al., 2020)
- LGBTQ+ students attending schools with LGBTQ+ inclusive curricula have been found to report significantly lower levels of harassment, assault, and bullying at school (Snapp et al., 2015)
- As of the 2019 National School Climate survey, only 33.2% of LGBTQ+ respondents indicated they had been exposed to LGBTQ+ curricula (Kosciw et al., 2020)

References:
Queer Representation in K-12 Math

- Students are *least likely* to report seeing positive representations of LGBTQ+ topics in math (only 3.6% of those with inclusive curricula reported such representation in math) (Kosciw et al., 2020).
- Many math problems are still presented with the assumption of a gender binary or heterosexual pairings (Esmonde, 2011; Rubel, 2016; Yeh, 2017)

References:
But Does it *Really* Matter in Math?

- In undergraduate studies, fewer LGBTQ+ students pursue STEM majors than non-LGBTQ students (Greathouse et al., 2018)
  - Fewer LGB students go on to persist in their STEM majors than non-LGB students (Hughes, 2018)
- LGBTQ+ students are less likely to complete Algebra II than non-LGBTQ+ students, which “is particularly relevant given... algebraic understanding is gateway material to both college and a successful career” (Whipple, 2018).
- At least one study has indicated that supportive LGBTQ+ school environments relates to “stronger mathematical identity” (Fischer, 2013, p. vii)
  - This is consistent with my own experience as a queer individual.

References:
What Can We Do?

LGBTQ+ Inclusive Curriculum

Mathematical Inqu[ee]ry
LGBTQ+ Inclusive Math Curriculum

LGBTQ+ inclusive math curriculum refers to math curricular materials that provide LGBTQ+ representation, avoiding the presentations of solely heterosexual pairings, male/female binary of gender, normative gender roles, and so on. Rands (2009) calls this *add-queers-and-stir*

**Examples:**
- Illuminations LP Symmetry & Identity: An Exploration of the “Progress” Flag [Handouts](#) (coming soon!)
- Harper’s (2020) What’s a Fair Living Wage? [Activity](#) and [Task Cards](#)
- Using GLSEN’s [National Climate Survey](#) and/or [infographics](#) for a lesson on statistical concepts or other mathematical concepts (such as [matrices](#)).

**References:**
Mathematical Inquiry

Mathematical Inquiry is about “questioning the tasks, the strategies, the very ways of thinking and doing mathematics as well as the way mathematics is used to interpret and act in the world” (Rands, 2009, p.186).

Making Connections:
Gutstein’s (2006) pedagogy of questioning - “students have opportunities to pose their own real, meaningful questions about issues of sociopolitical importance, fairness, and equality” (p. 132) and use mathematics to explore those questions.

So is this just another method of teaching math for social justice but with queer stuff too?

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Social justice and Gutstein’s pedagogy of questioning

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Questioning of ALL knowledge, not just power and privilege

Social justice and Gutstein’s pedagogy of questioning

NOT EXACTLY

References:
Mathematical Inquiry

My interpretation:
Inquiry is about fostering a questioning stance within students, so they may learn to engage critically with everything they encounter, questioning norms not only in the classroom but also in their everyday lives.

References:
Mathematical Inqu[ee]ry

Questioning ALL Norms in Mathematics

Questioning Heteronormativity in Mathematics / Using Mathematics to Challenge Heteronormativity
One Model of LGBTQ+ Centered Inqu[ee]ry: CDQs for Gender and Sexuality

1. What do you notice?
2. What do you wonder?
3. What is the context?
4. What genders are represented, and how are they presented?
5. Who is included in the represented genders and who is not?
6. What other genders are there?
7. What would considering other genders identities (not just male and female) add to our understanding? (p. 83, Waid and Turner, 2021)

Non-social justice examples:
- There are 83 girls and 76 boys in the 3rd grade. How many total students are in the 3rd grade? (NYSED, 2015a, p.20)
- There are 48 students going on a field trip. One-fourth are girls. How many boys are going on the trip? (NYSED, 2015b, p.109)
- At a school dance, there are X boys and Z girls, and there are more boys than girls. How many different possible couples for dancing are there? (Asdourian et al., 2006, p.15).

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</tr>
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Benefits of using CDQs in this way:

- Pushes students to recognize boundaries/borders/norms and look beyond them
- Allows students to pose mathematical questions (just like mathematicians!)
- Moves away from inauthentic problems
  - No more buying 100 watermelons at the supermarket!

References:

CDQs Social Justice Secondary Example

1. What do you notice?
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Social justice example (Middle or High School):

2019 Annual Median Income as Compared to White Men's (non-Hispanic/Latinx)

![Graph showing median income comparison by gender and race]

Data Source: US Census Bureau

References:

CDQs Social Justice Secondary Example: CDQ 3 Adaptations

1. What does the x-axis represent? The y-axis?
2. What’s the difference between white and white (non Hispanic/Latinx)? Why is there no categories for Black (non Hispanic/Latinx), Black Latinx or white Latinx?
3. For every dollar made by a white man (non Hispanic/Latinx), how much does an Asian man make? A Black woman? A Native American woman?
4. Overall, what can we say about the income of men vs women? Of people across races/ethnicities?
5. For every dollar made by
   a. a white woman (non Hispanic/Latinx), how much does a Black woman make? A Black man?
   b. an Asian man, how much does a Native American man make? A Latinx woman?
   c. a Black man, how much does a woman of two or more races make? A woman of some other race?

References:
Waid, B.E. (under review) A Mathematical inquiry into the pay gap. *Journal of Mathematics Education at Teachers College.* [questions in green box]
CDQs Social Justice Secondary Example:
CDQ 3 Adaptations (Continued)

1. Where did this data come from?
2. How is US Census Bureau data collected? Are there other ways this data could have been collected?
3. Who is included in this data and who is not? Would this be considered a representative sample?
4. Are percentages the only way to understand this topic?
5. Does this data represent sex or gender? What’s the difference?
6. Why does the Census Bureau report asking about respondents sex? Why do they state such information is helpful?
7. Could similar reasoning be used to justify changing the question from asking about sex to asking about gender? Why or why not?

References:
CDQs Social Justice Secondary Example: CDQs 4-6 Adaptation

CDQs 4-6:

What genders are represented, and how are they presented?

Who is included in the represented genders and who is not?

What other genders are there?

(Waid and Turner, 2021, p.83)

If the authors of the American Community Survey were to instead ask for gender, but the available options remained limited to male and female, who would the data set include (i.e. which genders?) and who would not?

References:
CDQs Social Justice Secondary Example: CDQ 7 Adaptations

CDQs 7:

What would considering other gender identities (not just male and female) add to our understanding?

(Waid and Turner, 2021, p.83)

- What would considering other gender identities (not just male and female) add to our understanding of pay inequality?
- Is there data available on the income of people that identify outside the male/female binary? Is there data available on the income of transgender people?

References:
CDQs Social Justice Secondary Example: Rinse and Repeat

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2. What do you wonder?
3. What is the context?
4. What genders are represented, and how are they presented?
5. Who is included in the represented genders and who is not?
6. What other genders are there?
7. What would considering other genders identities (not just male and female) add to our understanding?
(Waid and Turner, 2021, p.83)

Findings from Schilt and Wiswall’s (2008) study of transgender men and women’s income before and after transition:
- Transgender women's income falls approximately 32 percent after they transition.
- Transgender men’s income increases approximately 1.5 percent after they transition.

Note: Not all transgender people transition and those that do transition in various ways and to various degrees. Each transgender person’s experience is unique.
CDQs Social Justice Elementary Example

1. What do you notice?
2. What do you wonder?
3. What is the context?
4. What genders are represented, and how are they presented?
5. Who is included in the represented genders and who is not?
6. What other genders are there?
7. What would considering other genders identities (not just male and female) add to our understanding? (Waid and Turner, 2021, p.83)

References:
Breakout Activity #2

What are some ways in which you could engage students in inquiry in your math classes?

Resources

Check out the new “Resources” tab on my website!

https://www.TheQueerMathematicsTeacher.com/resources/
Questions?

Have Feedback?
Thank you!

Stay Connected!

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