Welcome!

Consider problems from EngageNY's Geometry Curriculum in this document: bit.ly/3xEuegd

What do you notice? What do you wonder?

Introduce yourself (name, pronouns) and put your answers in the chat box.

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Queering the Unqueerable: Rethinking Geometric Proof

We encourage you to tag others and tweet highlights from the conference using #TODOS2021

Image Descriptions: *Blue rectangle with an image of the twitter logo (black circle with a white outline of a bird inside) on the inside left. To the right (also inside the rectangle) is the following text in yellow "we encourage you to tag others and tweet highlights from the conference using #TODOS2021"*

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Cumulative Impact: EngageNY Geo Curriculum Themes

- Women engaged in domesticized activities
- Men as builders, farmers, engineers, mathematicians, pilots, fishermen, sailors, etc.
- Traditionally "male names" → Why is their thinking correct? Vs. traditionally "female" names"→ Error analysis
- No non-binary usage of "they"
- No noticeable gender-bending
- No non-traditional families

Positioning Ourselves In this Work

Brandie

Image Description: *Wordle with the following words - First Gen College Grad, Second Gen American, Latinx, White, Middle Class, NJ Resident, Scholar Activist, Cisgender, Monolingual, mTBI survivor, Woman, Math Teacher, Learner, Math Coach, Millennial, Florida Born, Independent Scholar, Teacher Educator, Wife, Queer, Intersectional Feminist, Anti-Capitalist, Anti-Colonialism*

Arundhati

Image Description: *Wordle with the following words - South Asian, Immigrant, Cis Woman, Teacher, Queer, Feminist, Math, Anti-colonial, Multilingual, Labor Organizer, Tamil, Anti-Capitalist*

Useful Terminology

LGBTQ+ Terminology for your "Toolbox":
http://bit.ly/QMT_LGBTQ_Terms

Heteronormativity & General Normativity

Heteronormativity is [the] societal assumption of certain norms: 1) that there are two distinct sexes; 2) that male and female functions and characteristics are distinctly different; and 3) that traits such as attraction and sexual behavior correspond to anatomy. Those who do not fit these norms—be it through same-sex attraction, a non-binary gender identity or nontraditional gender expression—are therefore seen as abnormal, and often marginalized or pressured to conform to norms as a result.

-[Learning for Justice, from Best Practices for Serving LGBTQ Students]

Normativity is the phenomenon in human societies of designating some actions or outcomes as good or desirable or permissible and others as bad or undesirable or impermissible.

-[Wikipedia: Normativity]

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Queerness as Resistance

Queerness as resistance to normativity, which includes queer identity (resistance to heteronormativity) but also:

Different ways of knowing, doing, & being in the world & in mathematics

Resources for future reflection (math-specific): Alexander S. Moore, Brandie E. Waid, Cathery Yeh, Christopher Dubbs, Heather Mendick, James Sheldon, Kai Rands, Laurie Rubel, Luis Leyva, & Mario I Suarez [email us if you want access]

Mathematical inqu[ee]ry is "...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." (p. 186)

Mathematical Inqu[ee]ry goes ==beyond mere inclusion== of queer students, families, and issues into extant frameworks and allows elementary teachers and students to ==deconstruct and disrupt educational norms== as well as ==imagine new possibilities in mathematics and in the world.== (p.183)

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Breakout Rooms (15 minutes)

Links to the document for each breakout room is in the chat.

You will see a problem, sample responses, and scores.

1. Unpack the problem: what **expectations or NORMS** does the problem itself set? In what ways does it allow for freedom of thought? In what ways does it restrict thought and the imagination? *Think about how the problem invites students to structure and organize their response; make arguments and claims; represent their thinking (through words/pictures)*.

2. Consider how the sample responses have been scored: how does the scoring reflect some of what you observed about the problem in prompt 1?

3. Unpack student responses: What creativity or queerness of thought do you see in these responses? How is this creativity received by the "scorer"?

4. Given our system's current educational focus on standardized testing, how do we provide space for our students to engage in creativity or queerness of thought, while setting them up for success within the limitations of the current system?

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Creative Insubordination as Queer Pedagogy

In choosing to use Creative Insubordination, we are refusing the status quo when it is not in the best interest of our students. This means questioning some of the typical norms in mathematics teaching and learning. An important step in this work is first deconstructing what is going on around us, making the "normal" seem abnormal. For example, do we notice that the students in our calculus classes do not represent the demographics of our school? Only then can we imagine and plan for a different possible future where that representation is present.

Teaching mathematics involves negotiating one's practice with colleagues, parents, administrators, students, and at times, community members. Choosing to refuse the status quo is an important option for maintaining our sense of morals, especially given the fact that we will never please all of the aforementioned constituents at the same time. Having political clarity on why we are doing the things we do is important..(p. 58).

-[Rochelle Gutiérrez: Strategies for Creative Insubordination in Mathematics Teaching]

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"Using the Master's Tools"

*Often, we are subjected to specific policies or constructs that confine us to doing things in ways that maintain the status quo of systemic power and privilege. These may be looked upon as the master's tools, the ways we are controlled (Lorde, 1984). However, we can flip this around and use these tools in ways they were not intended but that work to our advantage....With **Use the Master's Tools**, we find ways to do what is in the best interest of our students and justify it with language that is valued in our schools or in professional documents (p. 55).*

-[Rochelle Gutiérrez: Strategies for Creative Insubordination in Mathematics Teaching]

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Queering Geometric Proof: Final Thoughts

- Ditch the two-column proof emphasis (allow students a variety of ways/formats to prove: induction, contradiction, paragraph proof, concept mapping, flexible language/code-switching)
  - Math without words
  - Which one doesn't belong
- Create assignments and projects that elicit ideas from students, rather than prescribing procedures
  - What can be proven here?
  - Problem Posing
  - Providing students with the solution/end-result and have them explain the process (encourages discovery and reasoning)
- Humanizing geometry with history of math and other real world (not pseudo-real world) connections
  - Architecture from around the world: "How did _____ get built?"
  - Art from around the world: Origami and Paper folding; Islamic Art; Traditional "kolams" from South India; Flags (LGBTQ+, Country, Community, Movements)
  - Artifacts and practices from students home, community, cultures, and other areas of their lives (let them bring in items that reflect queer identity)
  - Asking professionals to share with students how they engage in geometric concepts in everyday life.
- De-emphasize memorization
  - Formal naming conventions can be reinforced later, if necessary

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A Note On "Good Teaching"

If we are not attending to students' identities, cultures, languages, histories, and humanity, we cannot claim we are engaged in "good teaching"

Therefore→ We must attend to queer identity in mathematics
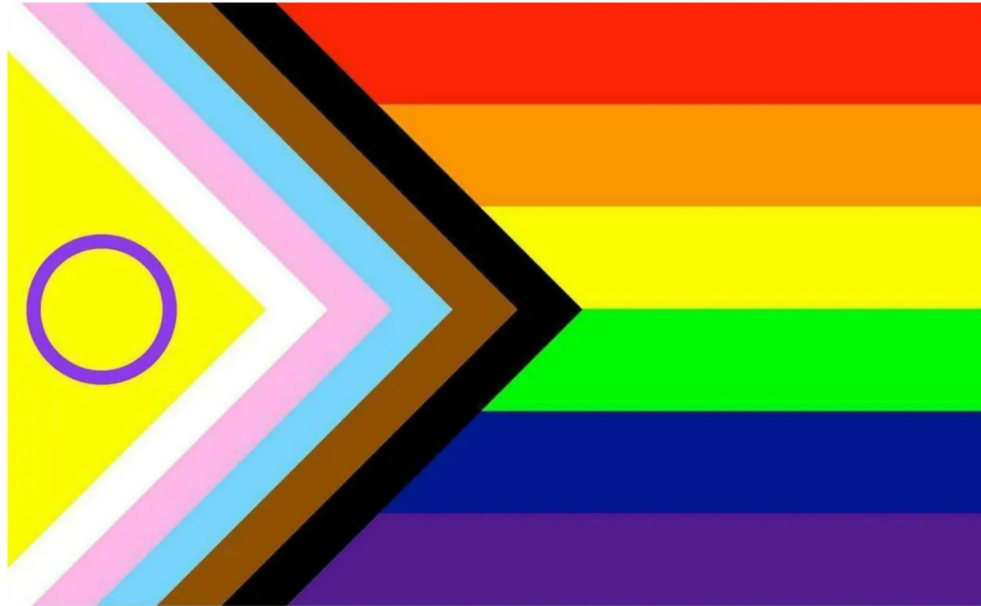
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Example

Image description: *Image of the traditional pride flag (six horizontal strips from top to bottom: red, orange, yellow, green, blue, purple) with an arrow shape overlaid on the leftmost side (as if coming out of the leftmost side). The arrow shape contains a number of striped colors (as if several triangles have been overlaid). Order of colors from leftmost to rightmost is black, brown, blue, pink, white, yellow. Inside the yellow (leftmost) triangle is a circle outlined in the color purple.*

Questions?

Individual Session Feedback

We value your input. Please take a few minutes to provide TODOS with feedback on each of the sessions you attend. Answering will allow us to improve our conferences moving forward.
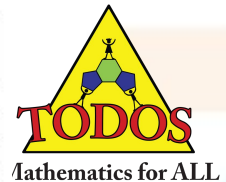
https://bit.ly/3uYIpuJ

Thank you!

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