WARM-UP ROUTINES THAT PROMOTE PROBLEM POSING AND PROBLEM SOLVING TO REHUMANIZE MATHEMATICS

NORTHWEST MATHEMATICS CONFERENCE
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I notice, I wonder

- Share an image, video, problem, or solution
- Ask, “What do you notice? What do you wonder?”
- All responses are equally valuable
- Can start individually, then share with partner, and then with entire group
The process of sense-making truly begins when we create questioning, curious classrooms full of students’ own thoughts and ideas. By asking *What do you notice? What do you wonder?* we give students opportunities to see problems in big-picture ways and discover multiple strategies for tackling a problem. Self-confidence, reflective skills, and engagement soar, and students discover that the goal is not to be “over and done,” but to realize the many different ways to approach problems.

Example
Why this approach?

- Easy to implement!
- Sets the tone for the day
- Does not take away from required “coverage”
- Everyone can have a voice
- No right or wrong answer
- No assessment
- Encourages problem posing
- Minimizes perfectionism
And also

- Can relate to students’ interests
- Can bring in current events
- Can help us start having difficult conversations in the mathematics classroom (difficult for whom?)
Mathematics for human flourishing

If you believe that mathematics is for human flourishing, and we teach mathematics to help them flourish, you will see, if you look around the room, that we aren’t helping all our students flourish. The demographics of the mathematical community does not look like the demographics of America. We have left whole segments out of the benefits of the flourishing available in our profession.

So we have to talk about race and that’s hard. ... In our community, we have to become more comfortable talking about it, listening to each others’ experiences, and being willing to recognize its there. If you want to treat others with dignity and they are hurting, you don’t ignore their pain. You ask “What are you going through?”

It’s not enough to say “I don’t think about race.” Because in a community, how one member is doing affects the whole. And for those of us not in the dominant racial group, we don’t have the luxury of saying “I don’t think about race” because racial issues affect us on a daily basis. So let me encourage all of us to try having these conversations, to be quick to listen, slow to speak, and quick to forgive each other when we say something stupid. That’ll happen if you start to have conversations, and we just have to have grace for each other if we make mistakes—it’s better than not talking.

https://mathyawp.wordpress.com/2017/01/08/mathematics-for-human-flourishing/
Dehumanizing mathematics

- Measuring categorizing bodies (e.g., tracking, mathematics as a filter);
- Evaluation that does not honor complexity, context, or individuals’ own goals (e.g., high-stakes and standardized testing, value-added modeling);
- Being asked to leave one’s identity at the door (e.g., color-blind teaching, strict pacing guides, being unable to use “foreign” algorithms from one’s home country, being unable to use one’s native language);
- Rule following as opposed to rule breaking or creation (e.g., following what seem to be arbitrary rules developed by others);
- Speed valued over reflection (e.g., get the answer quickly, cover the curriculum regardless of whether students understand); and
- Separation of mathematical practice from politics/values/ethics (e.g., perpetuating the myth that mathematics is objective and culture free, being expected to teach/learn without bringing in politics).
Rehumanizing mathematics

- Ongoing process, requires constant vigilance to maintain and to evolve with contexts. Requires evidence from those for whom we seek to rehumanize our practices
- Acknowledges that humans have been practicing mathematics for centuries in ways that are humane
- Seeks to not only decouple mathematics from wealth, domination, and compliance, but also to recouple it with connection, joy, and belonging
- Seeks to highlight where power dynamics have played out in the history of mathematics and where mathematics might come to serve the people and not the other way around
- Begins with the power of communities and assumes a relational view is important (recognizing oneself in others and others in oneself)

Being unable to predict student patterns (e.g., achievement, participation, ability to critically analyze data/society) based solely upon characteristics such as race, class, ethnicity, gender, beliefs, and proficiency in the dominant language.

Plan for our work together

- We will look at a few examples
- We will generate noticings and wonderings about the images I will share
- In some cases, generating questions will be the end goal; in others, we will think about ways to turn the questions into larger investigations
Example 1

Seeks to not only decouple mathematics from wealth, domination, and compliance, but also to recouple it with connection, joy, and belonging.
Example 2

Begins with the power of communities and assumes a relational view is important (recognizing oneself in others and others in oneself)

Example 3

Photo taken by Kathy Hanawalt
Context

- The 20th most gentrifying zipcode in the country
- The second business is a bakery that is replacing a youth community center

*Seeks to highlight where power dynamics have played out in the history of mathematics and where mathematics might come to serve the people and not the other way around.*
Measuring gentrification

- What is gentrification?
- How do we know it’s happening?
- How can mathematics help us?

Go to the American FactFinder website at https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml, type in the zip code 98402, and investigate some tables related to this zip code.

- How could you use mathematics and these tables to decide gentrification is happening? Which categories would you look at? What mathematics would you use?
Discussion

- Why might this be a rehumanizing investigation?
- How might this be a difficult conversation?
- What difficult conversations might you have to have in your classroom?
- What will you need to know to start these conversations?
- How can “I notice, I wonder” help set up the conversation?
At your tables

- Think of a context that you would like to investigate
- Think about what can be rehumanizing about the context
- Come up with an image/video/graph that could start the conversation about this context
- Think about what would follow in the investigation
- What other data would you need?
- **Be ready to share!**
Changing the culture

- Everyone’s work is adequate
- Many right ways and answers
- No credit given so no competition
- Taking time to be inclusive and encourage democratic and/or thoughtful decision-making
- Focus is not on measurable goals but the process
- Emotions and feelings considered
- Discomfort expected and discussed
Now what?

- What is one thing you will take away from this workshop?
- What is one action that you can take?
Thank you

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Email me if you want me to send you any of the data I shared and discussed