NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

Humanizing Online Mathematics Teaching

Possibilities and Resistance

Mary Candace Raygoza, Ph.D.
Assistant Professor,
of Teacher Education
Saint Mary's College of CA

Kelsey Macias, MA
Mathematics Teacher,
Dublin High School &
Adjunct Professor,
Saint Mary's College of CA

Nima Harirchian
Mathematics Teacher,
Berkeley High School

SAINT MARY'S COLLEGE of CALIFORNIA

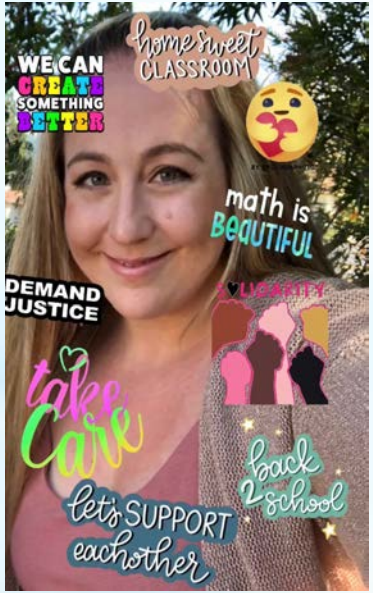
TODOS Mathematics for ALL

The mission of TODOS: Mathematics for ALL is to advocate for equity and high quality mathematics education for all students— in particular, Latina/o students.

Introductions

Kelsey Macias
she/her/hers

Nima Harirchian
he/him/his



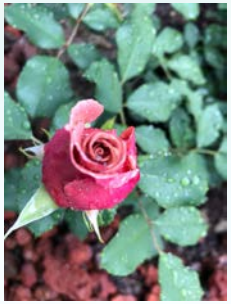
Mary Candace Raygoza
she/her/hers

Dedicated to our colleague and professor, Dr. Gemma Niermann 1950-2020

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS



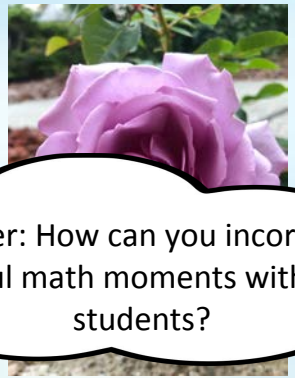
















Consider: How can you incorporate mindful math moments with your students?

Mindful Moment for Mathematics

SAINT MARY'S COLLEGE of CALIFORNIA

TODOS Mathematics for ALL

Perspectives Informing Our Praxis

Re Humanizing Online Mathematics Teaching

Paulo Freire *Pedagogy of the Oppressed* (1970): Process of *becoming* more fully human, never-ending process of struggle against oppression

Lisa Kelly (2020): We are not online teaching; we are REECHing (Remote Emergency Education for Community Health)

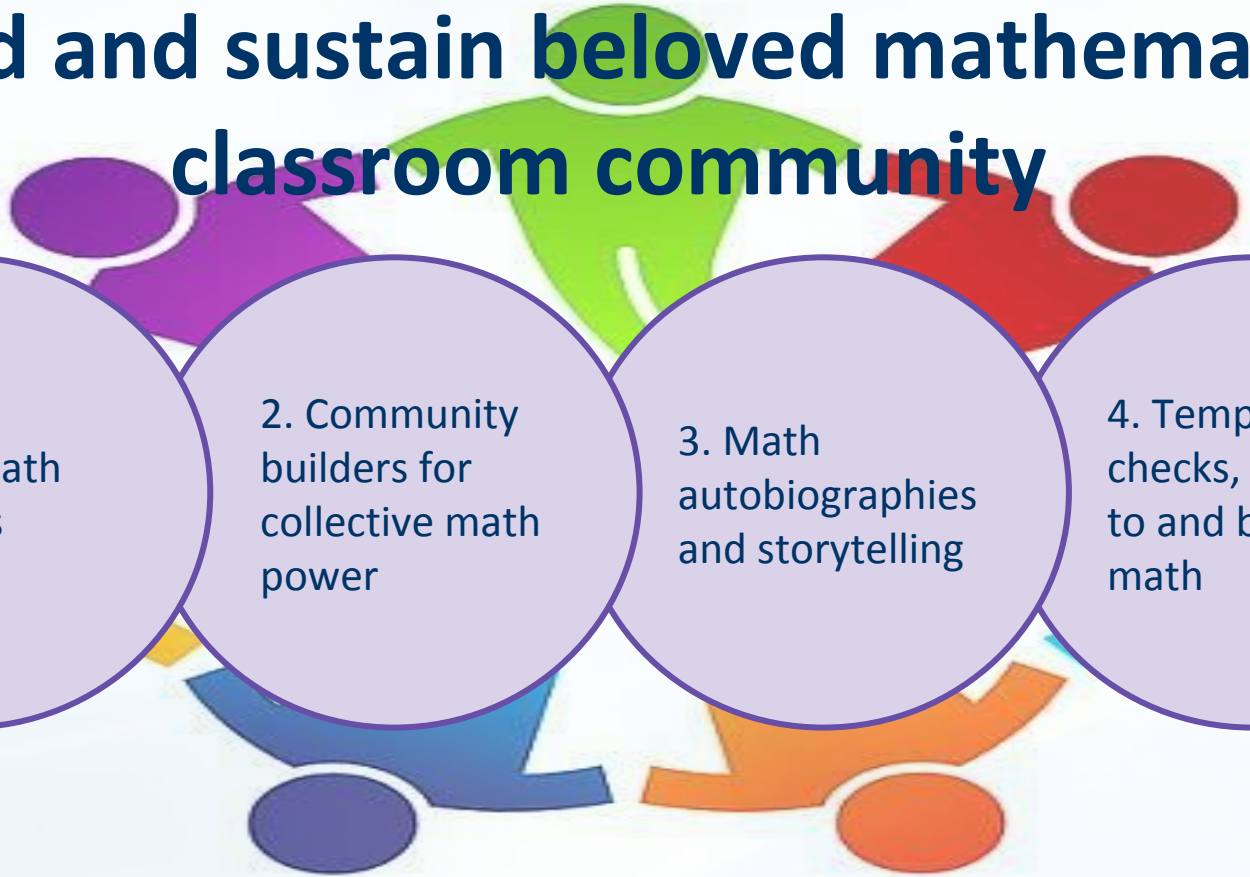
Imani Goffney and Rochelle Gutierrez (2018) Rehumanizing mathematics for Black, Indigenous, and Latinx students- honoring that humans have been practicing mathematics for centuries in ways that are humane

Be an advocate for access

- Technology
- Basic human needs
  - Food, shelter, safe space, clean clothes, school supplies
- Organized communication with families

remind
Communicate safely with students & parents.

Build and sustain beloved mathematics classroom community



1. Online math class norms
2. Community builders for collective math power
3. Math autobiographies and storytelling
4. Temperature checks, in relation to and beyond the math

Build and sustain beloved mathematics classroom community

1. Online math classroom norms

Chat a norm idea!

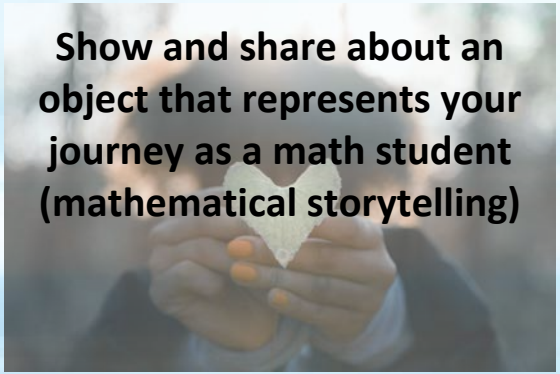
Norms > Rules	Co-create!	Display!	Reflect & Process Check
Keep your mind and heart where your feet are. Be present. That said, our families and family needs are not distractions.	Demand of yourself openness of mind and heart. Be comfortable with being uncomfortable. You also have a right to pass.	Listen deeply to each other's mathematical ideas in the virtual room.	Encourage, ask a question, or share an idea; but don't just share answers.
Mathematical dialogue and debate is wonderful. No one's humanity is up for debate.	Make space, take space. Take turns!	Ask critical questions, of math and the world, and share your "why."	We (do our best to) start on time and end on time.
Try not to interrupt, but if you do, apologize. Mute your mic when not speaking.	Everyone is a mathematician. Confusion and uncertainty is expected doing mathematics.	Use personal pronouns and gender-conscious language. You may "re-name "yourself to include pronouns.	We expect your full and safe participation in our online sessions.

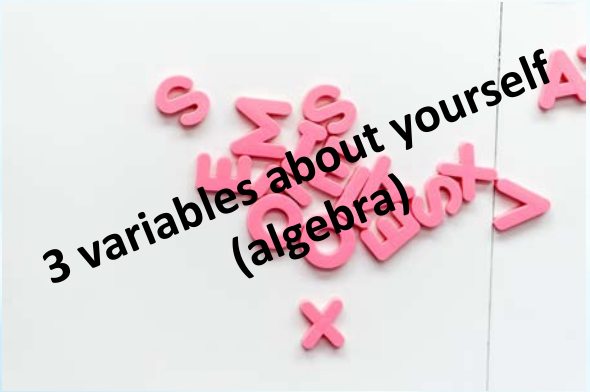
NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

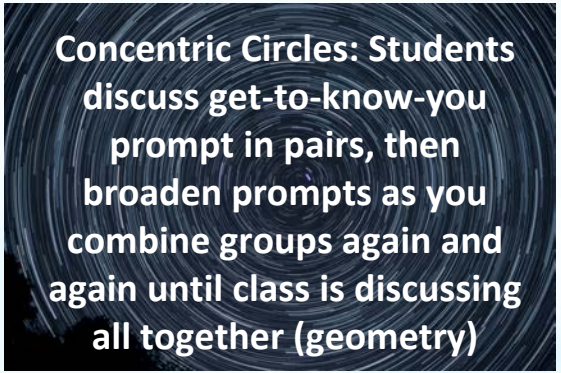
Build and sustain beloved mathematics classroom community

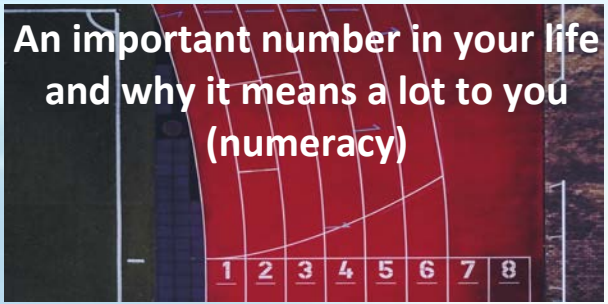
2. Community builders for collective math power

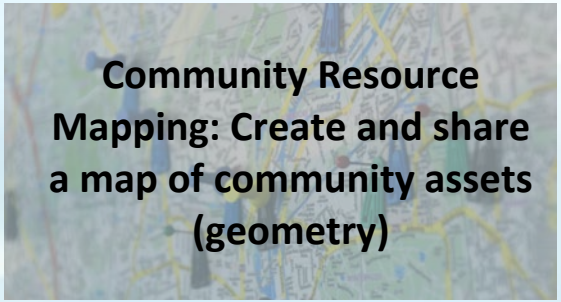
Chat a mathy icebreaker











SAINT MARY'S COLLEGE of CALIFORNIA

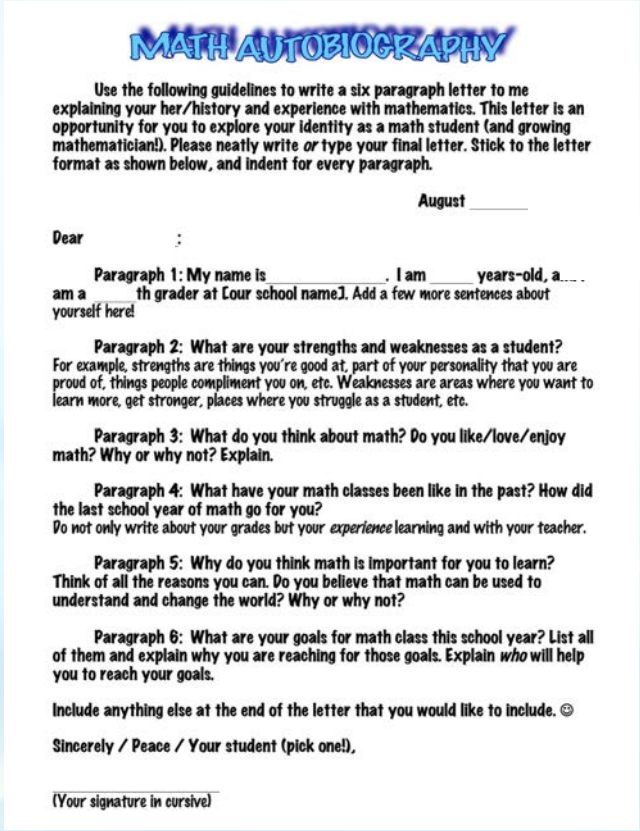
TODOS Mathematics for ALL

Build and sustain beloved mathematics classroom community

3. Math autobiographies & storytelling

- Math autobiography assignment
- Invite storytelling of students' math experiences in spring semester, math in their lives this summer, and the math in the world they wonder about right now (numbers, relationships, representations, etc.)
- Check out this Woke Math blogpost on telling stories in math class

Consider: What parts of *your* math journey will you share with students?



MATH AUTOBIOGRAPHY

Use the following guidelines to write a six paragraph letter to me explaining your her/history and experience with mathematics. This letter is an opportunity for you to explore your identity as a math student (and growing mathematician!). Please neatly write *or* type your final letter. Stick to the letter format as shown below, and indent for every paragraph.

August _____

Dear :

Paragraph 1: My name is_____. I am _____ years-old, a___. am a _____th grader at [our school name]. Add a few more sentences about yourself here!

Paragraph 2: What are your strengths and weaknesses as a student? For example, strengths are things you're good at, part of your personality that you are proud of, things people compliment you on, etc. Weaknesses are areas where you want to learn more, get stronger, places where you struggle as a student, etc.

Paragraph 3: What do you think about math? Do you like/love/enjoy math? Why or why not? Explain.

Paragraph 4: What have your math classes been like in the past? How did the last school year of math go for you? Do not only write about your grades but your *experience* learning and with your teacher.

Paragraph 5: Why do you think math is important for you to learn? Think of all the reasons you can. Do you believe that math can be used to understand and change the world? Why or why not?

Paragraph 6: What are your goals for math class this school year? List all of them and explain why you are reaching for those goals. Explain *who* will help you to reach your goals.

Include anything else at the end of the letter that you would like to include. ☺

Sincerely / Peace / Your student (pick one!),

_____
(Your signature in cursive)

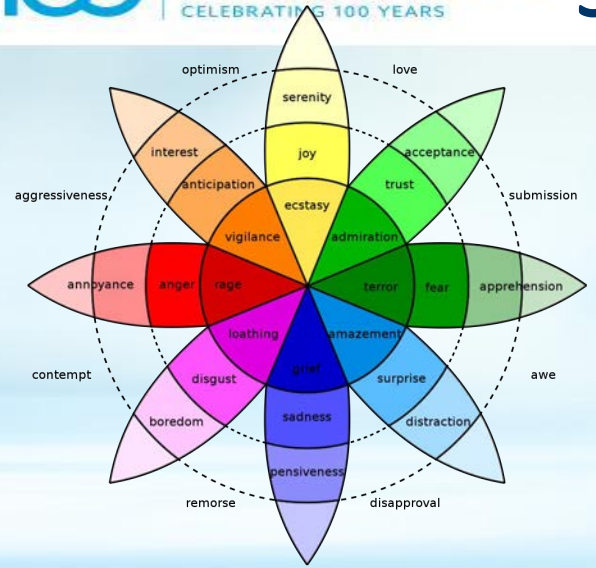
Build and sustain beloved mathematics classroom community

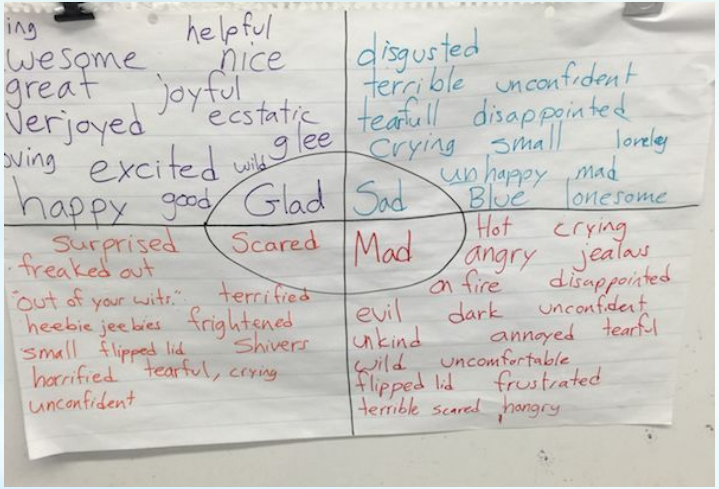
4. Temperature checks

- A high and a low
- A rose and a thorn
- Represent your week in an emoji or hashtag
- Share how you are doing in the form of a weather pattern
- What is one joyful practice that is energizing you (as a student or human in the world)?
- What is on your mind most in this time?
- What support do you need, and do you have what you need to get it?

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

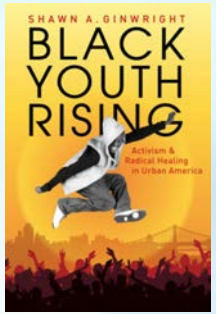
Social Emotional Learning & Healing

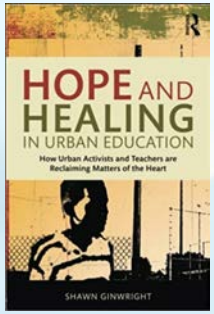




"Healing centered engagement offers an important departure from solely viewing young people through the lens of harm and focuses on asset driven strategies that highlight possibilities for well-being."

Shawn A. Ginwright





Dan Siegl's

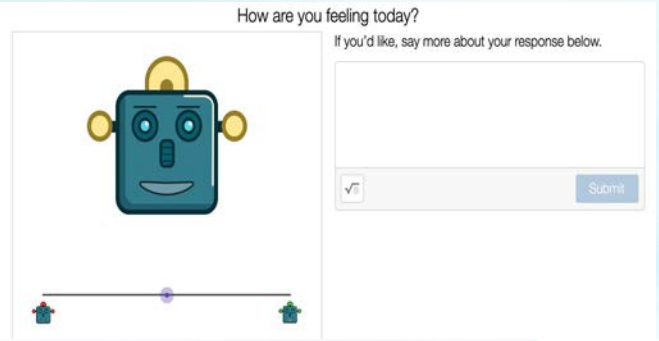
Flipping Your Lid

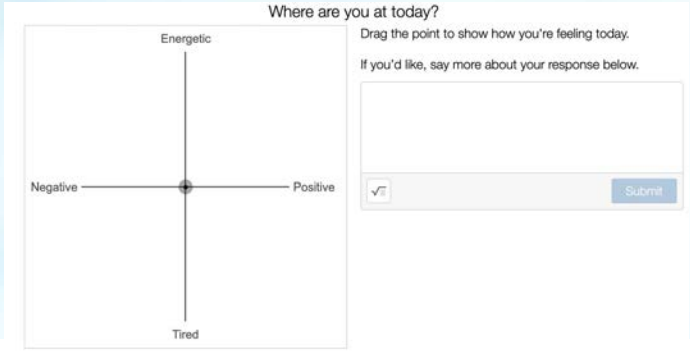
JG Larochette

Mindful Life Project

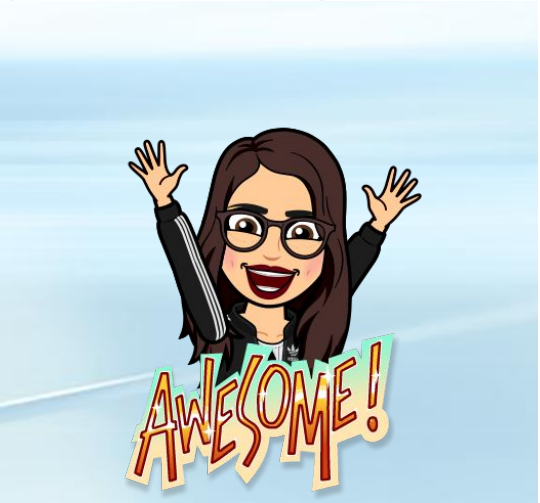
NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

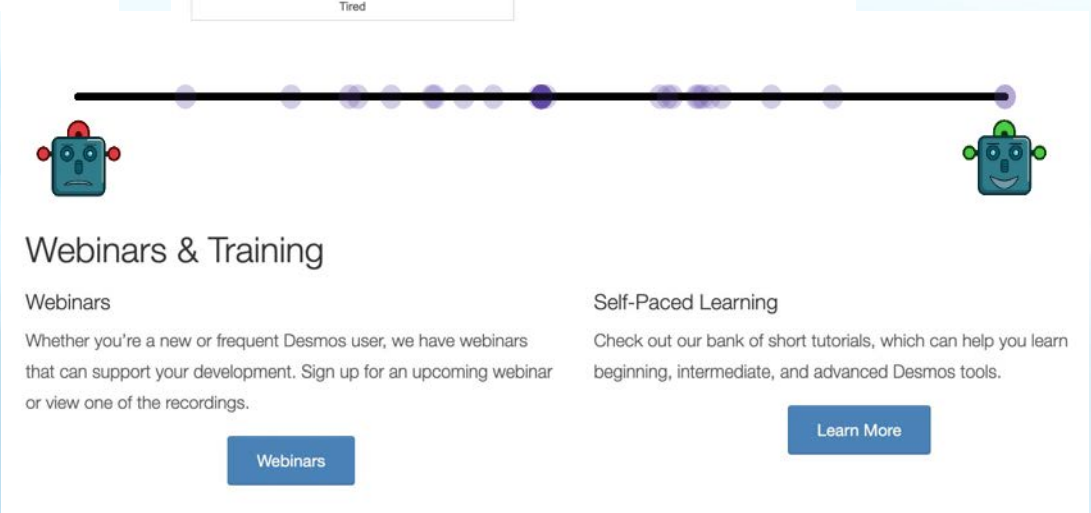
Mathematizing Emotions



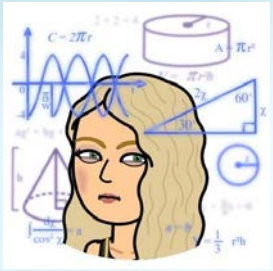


[Desmos & Distance Learning Resources]





NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS



Humanizing Essential Questions, Assessments, & Activities in Math

[Check out the Decolonize Your Curriculum FB Page for more ideas]

Essential Questions

- How can you take multiple steps to solve problems in our communities?
- How do mathematical relationships tell stories?
- How can using mathematics make solving problems easier?
- Why and how are graphs useful?
- How do we represent and predict growth?
- Where does mathematics live in nature?
- What is the relationship between mathematics and antiracism?

Assessments

- Digital portfolios: How can they capture transfer of understanding? Of my students empowering themselves as mathematicians?
- Focus on the metacognitive: Know-Want to Know-Learned charts, Exit Tickets, Self and group reflections

Activities - Mix it up!

- Quick write
- Number Talk / Math Talk
- Poll
- Digital collaborative whiteboard
- Digital interactive notebooks
- Quizzes: Quizizz and Kahoot
- Pair share in breakout rooms
- Group work in breakout rooms
- Digital gallery walk
- Jigsaw
- Graphic organizer
- Flip the classroom with asynchronous interactive pre-recorded video viewing

Be present with students and mathematics

- Connect with students and families
  - Aspirational, Linguistic, Familial, Social, Navigational, Resistant capital (Yosso, 2005)
- Consistency/normalcy- routine warm-ups, check-ins, themes throughout the week
- Technology resources/tools
  - Edpuzzle, Desmos, Flipgrid, etc

Humanizing Math Tech Tools: Google Classroom

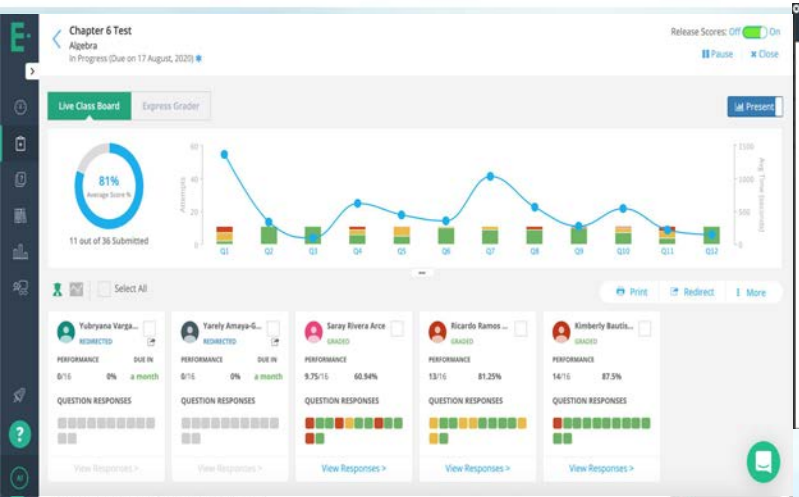
[How to create a virtual bitmoji scene in google classroom]

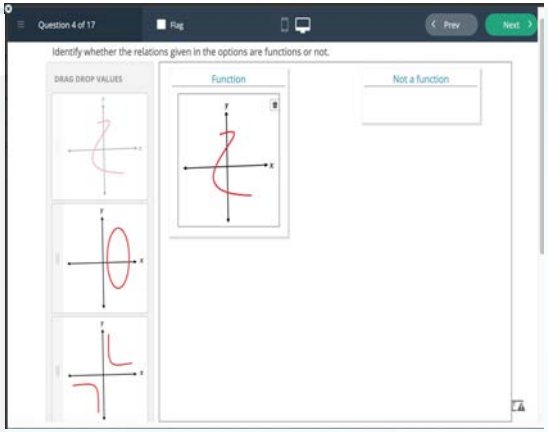
- Home Base for assignments
- Google Sites also a good option
- Counselor Information
- Parent Information

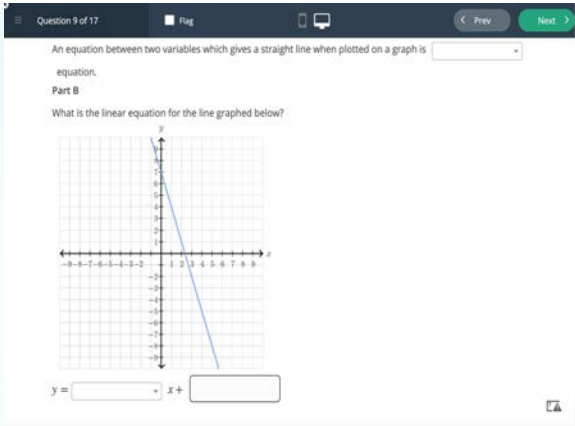
Ashley Guerrero [bit.ly/agvirtualmuseum]

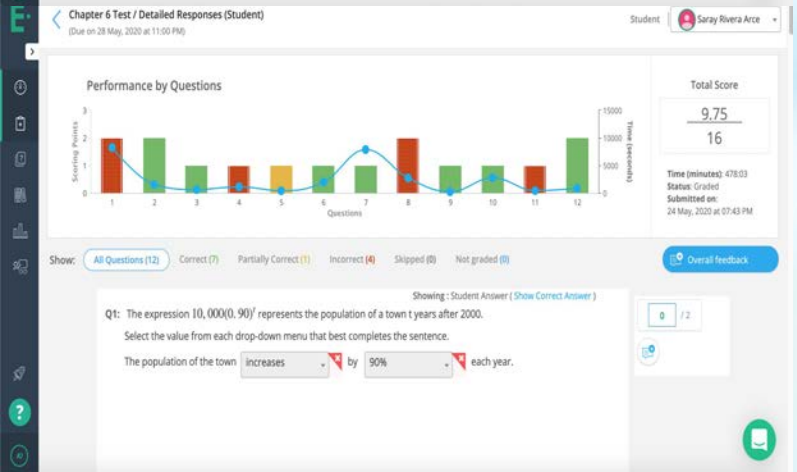
NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

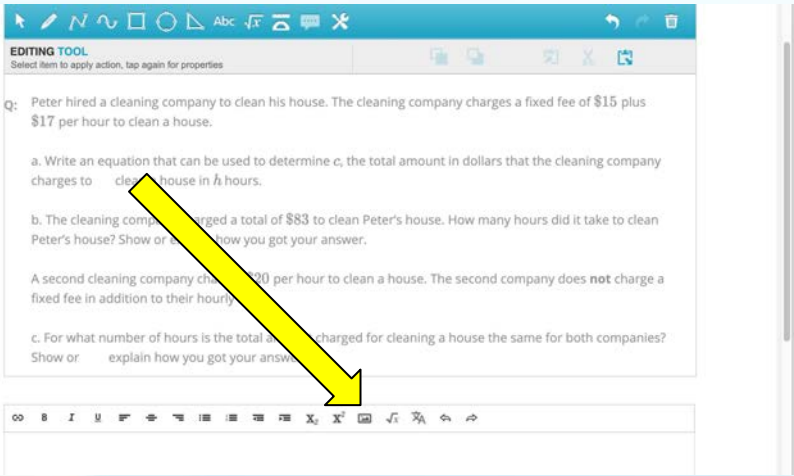
Humanizing Math Tech Tools: Edulastic







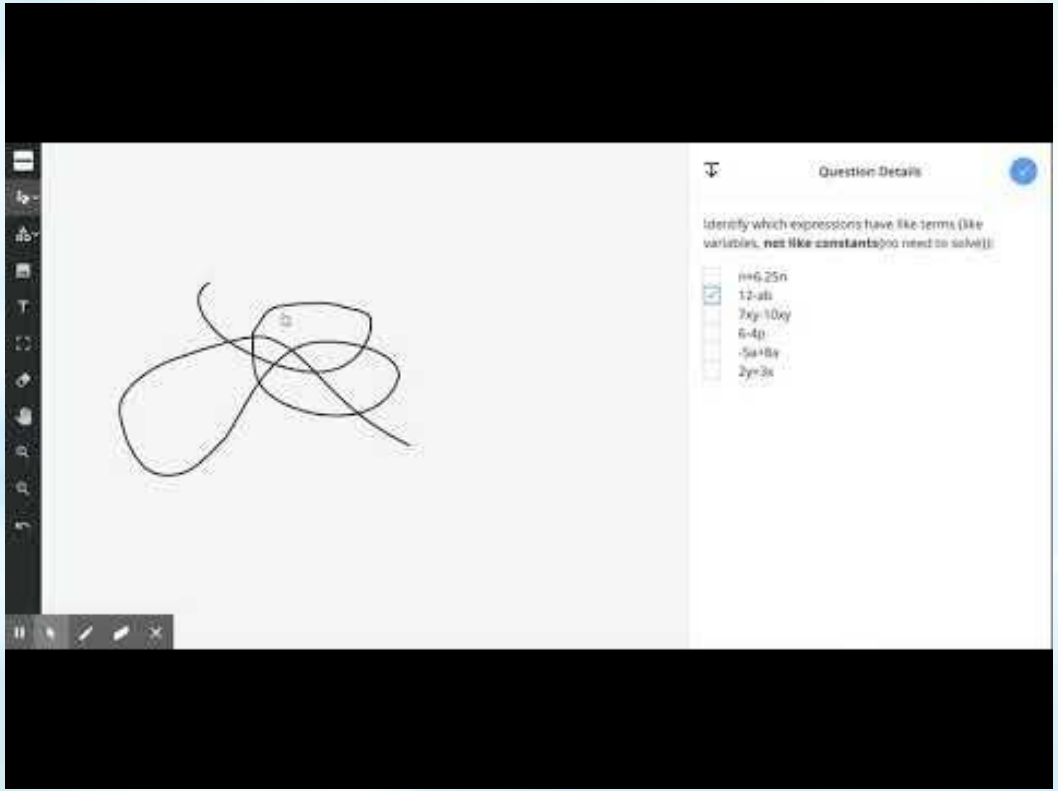




NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

Humanizing Math Tech Tools: GoFormative

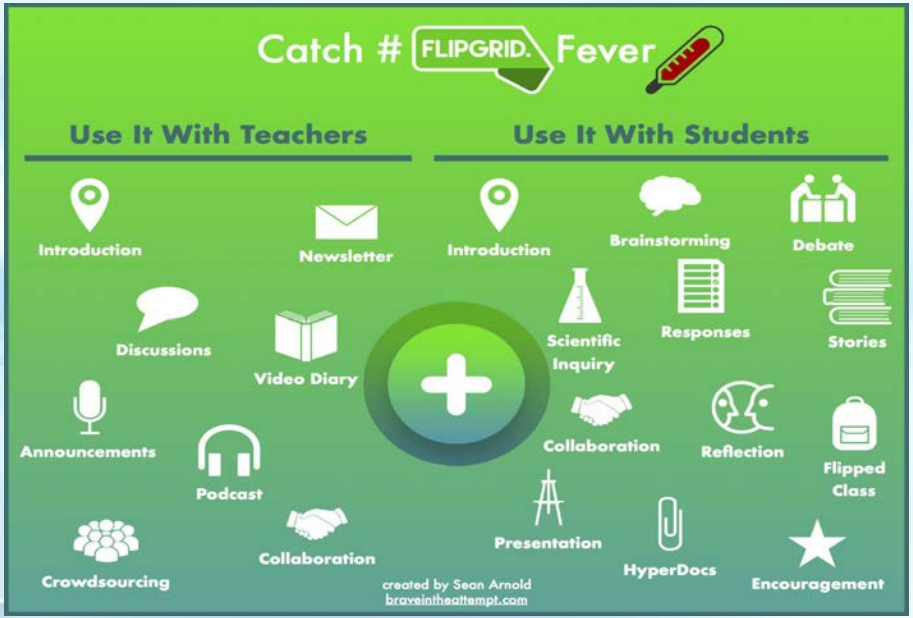
- Standards Based Question Bank
- Opportunity for student uploads of work
- “Scribble” option for students to show work
- IMMEDIATE LIVE intervention with students via text box within a student’s assignment while they are working on the assignment



NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

Humanizing Math Tech Tools: FlipGrid

FlipGrid Tutorial



Getting Started with Flipgrid for Remote Learning | Saturday, July 11, 2020, 10:00 AM CT (16:00 DST) Join the live broadcast on Youtube or on Facebook.

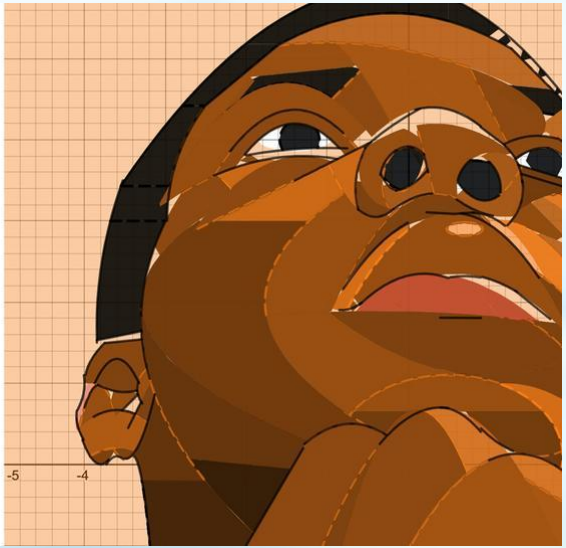
Getting Started - Coaches/Specialists | Thursday, July 16, 2020, 10:00 AM CT (16:00 DST) Click this link to join at the time listed!

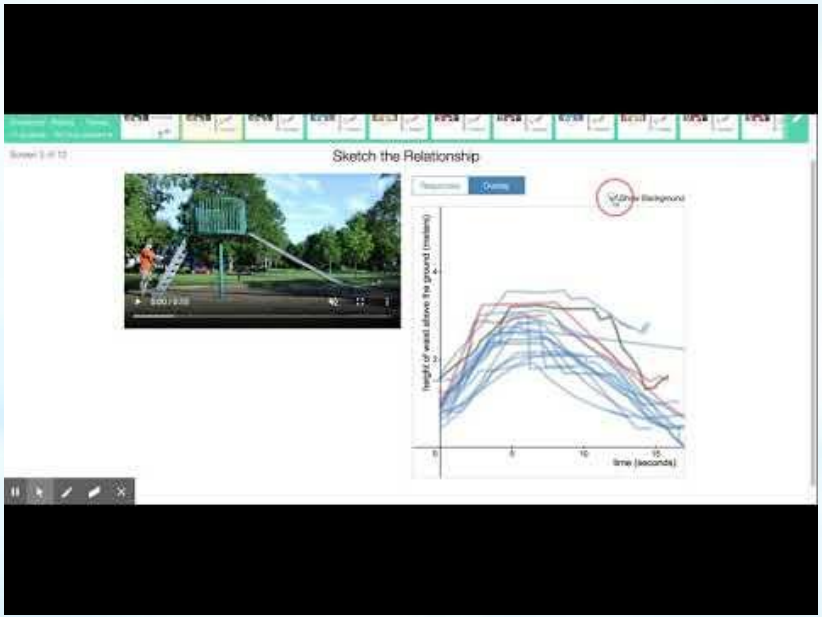
Getting Started with Flipgrid | Monday, July 20, 2020, 11:00 AM CT (17:00 DST) Click this link to join at the time listed!

Educator Innovation Week | July 27 - July 31… *details coming soon!*

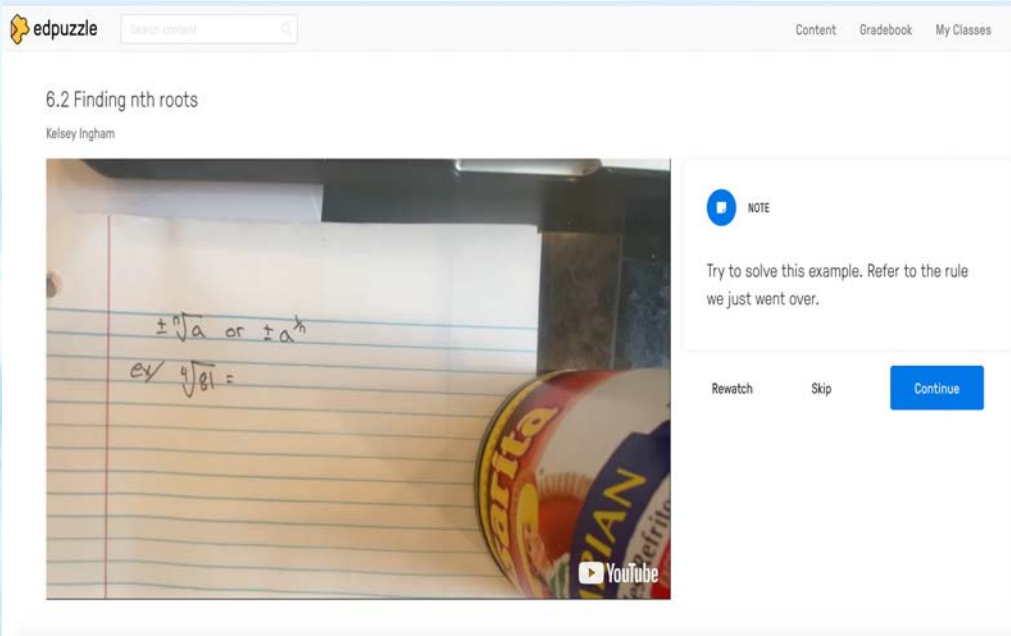
Humanizing Math Tech Tools: Desmos

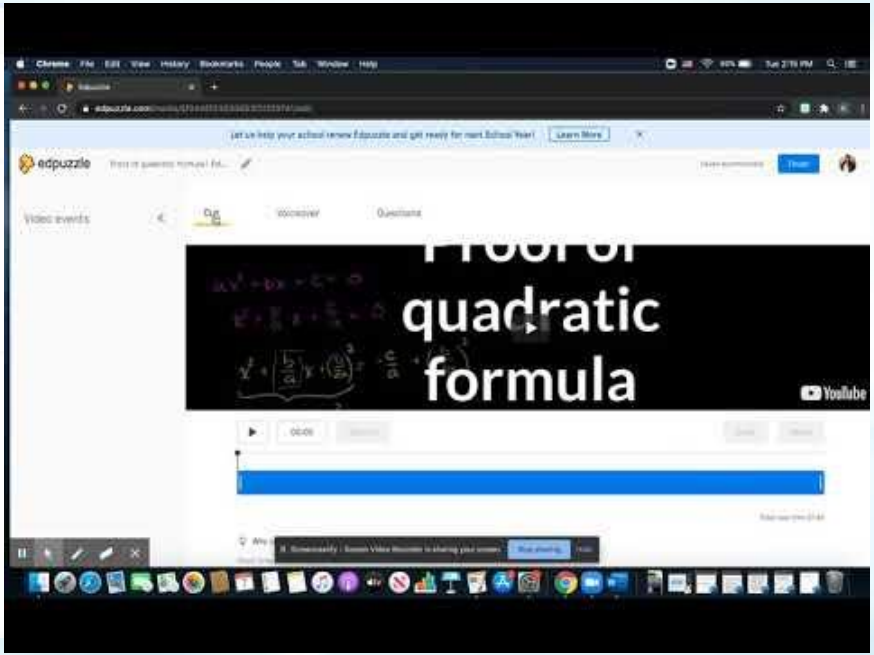
Pandemic - I notice, I wonder





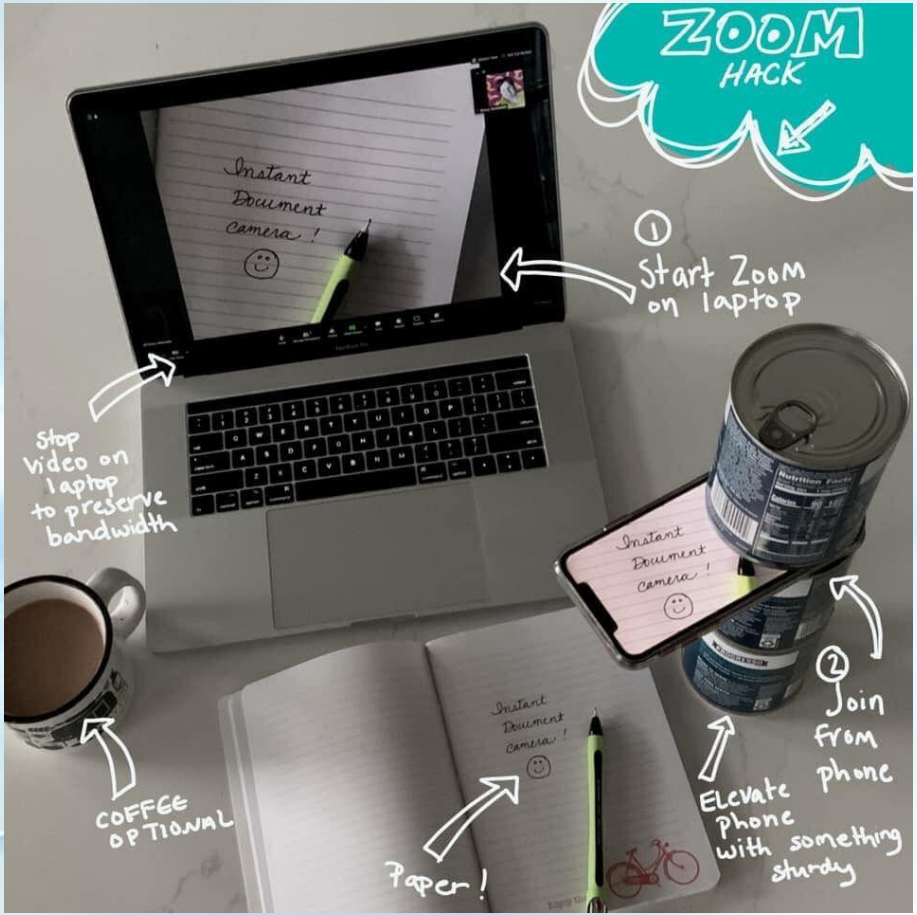
Humanizing Math Tech Tools: EdPuzzle





NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

Digital Pep Talk for Teaching Math



Don’t expect yourself to learn every awesome math tech tool or trick this year.

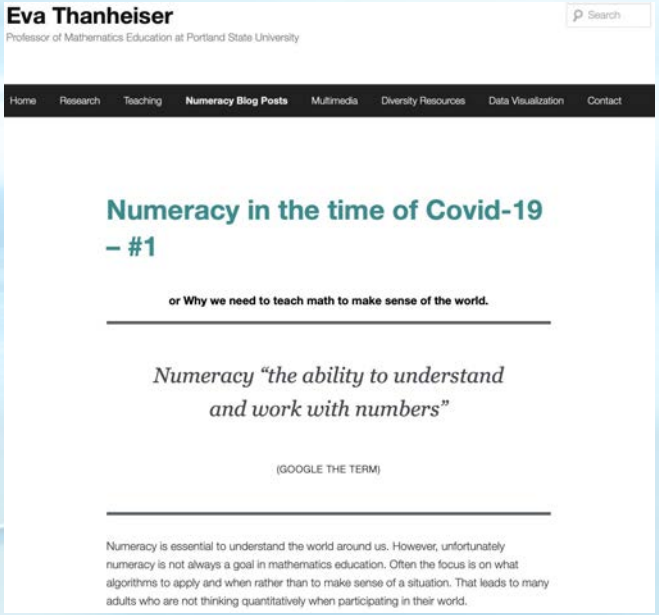
Do the best you can. Use what you have, and be creative.

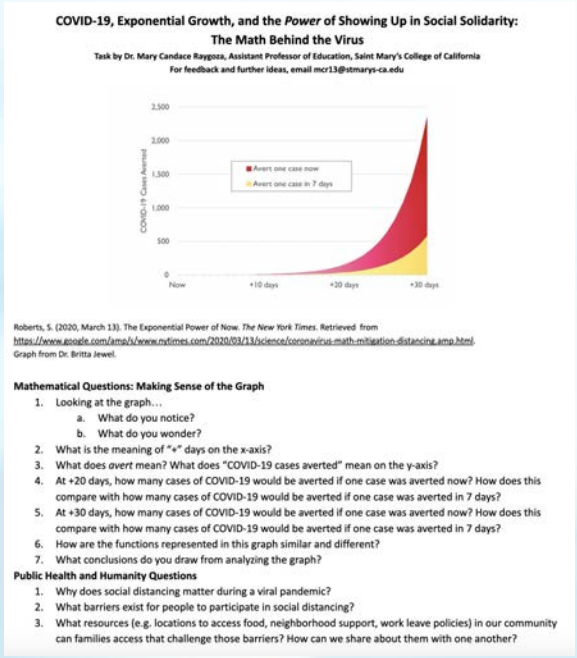
And share your ideas!

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

Teaching about the social and political world in math class

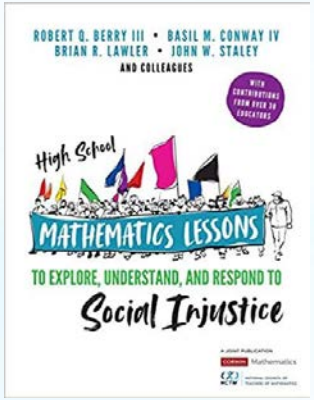
Blogs

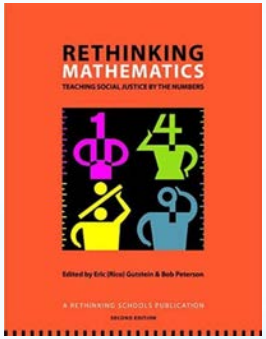

Eva Thanheiser
Professor of Mathematics Education at Portland State University
Search
Home Research Teaching Numeracy Blog Posts Multimedia Diversity Resources Data Visualization Contact
Numeracy in the time of Covid-19 – #1
or Why we need to teach math to make sense of the world.
Numeracy "the ability to understand and work with numbers"
(GOOGLE THE TERM)
Numeracy is essential to understand the world around us. However, unfortunately numeracy is not always a goal in mathematics education. Often the focus is on what algorithms to apply and when rather than to make sense of a situation. That leads to many adults who are not thinking quantitatively when participating in their world.

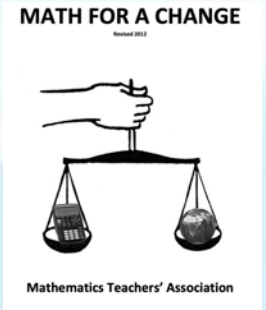

COVID-19, Exponential Growth, and the *Power* of Showing Up in Social Solidarity:
The Math Behind the Virus
Task by Dr. Mary Candace Raygoza, Assistant Professor of Education, Saint Mary's College of California
For feedback and further ideas, email mcr13@stmarys-ca.edu
COVID-19 Cases Averted
Avert one case now
Avert one case in 7 days
Now +10 days +20 days +30 days
Roberts, S. (2020, March 13). The Exponential Power of Now. *The New York Times*. Retrieved from https://www.google.com/amp/s/www.nytimes.com/2020/03/13/science/coronavirus-math-mitigation-distancing.amp.html.
Graph from Dr. Britta Jewel.
Mathematical Questions: Making Sense of the Graph
1. Looking at the graph…
   a. What do you notice?
   b. What do you wonder?
2. What is the meaning of "+" days on the x-axis?
3. What does *avert* mean? What does "COVID-19 cases averted" mean on the y-axis?
4. At +20 days, how many cases of COVID-19 would be averted if one case was averted now? How does this compare with how many cases of COVID-19 would be averted if one case was averted in 7 days?
5. At +30 days, how many cases of COVID-19 would be averted if one case was averted now? How does this compare with how many cases of COVID-19 would be averted if one case was averted in 7 days?
6. How are the functions represented in this graph similar and different?
7. What conclusions do you draw from analyzing the graph?

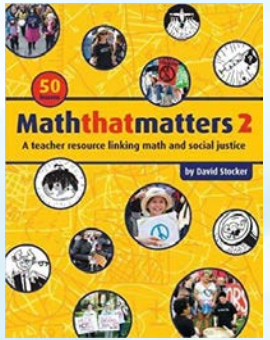
Public Health and Humanity Questions
1. Why does social distancing matter during a viral pandemic?
2. What barriers exist for people to participate in social distancing?
3. What resources (e.g. locations to access food, neighborhood support, work leave policies) in our community can families access that challenge those barriers? How can we share about them with one another?

Books


ROBERT Q. BERRY III • BASIL M. CONWAY IV
BRIAN R. LAWLER • JOHN W. STALEY
AND COLLEAGUES
With contributions from over 30 educators
High School
MATHEMATICS LESSONS
TO EXPLORE, UNDERSTAND, AND RESPOND TO
Social Injustice


RETHINKING MATHEMATICS
TEACHING SOCIAL JUSTICE BY THE NUMBERS
Edited by Eric (Rico) Gutstein & Bob Peterson
A RETHINKING SCHOOLS PUBLICATION


MATH FOR A CHANGE
Revised 2012
Mathematics Teachers' Association


50
Mathematics
Mathematics 2
A teacher resource linking math and social justice
by David Stocker

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

Acknowledging the Divide between SEL and Social Justice Mathematics

How do I bridge these ideas together to help prevent more trauma in my classroom as we tackle difficult social justice topics?

Social and Emotional Teaching and Learning in a Beloved Classroom

Social Justice Mathematics

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

Where Healing, Social Justice, and Trauma-Informed Care Overlap

- Temperature Checks
- Mindfulness (MLP)
- Practice without judgement
- Self-Regulation Techniques
- Building A Beloved Classroom (Raygoza)
- Community Building/Research
- Ecology - how we relate to each other and our physical surroundings

- Social Justice Curricular Ideas (Kari Kokka)
- Teaching About the Social and Political World - Resource Slide
- Development of "students' sociopolitical consciousness, or conscientização" (Friere, 1970).
- Observations of geo-political surroundings

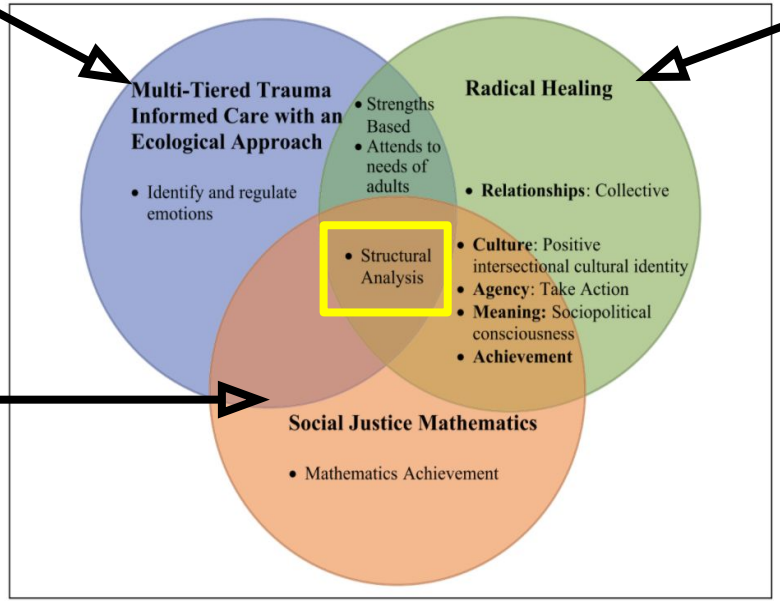


Figure 1. Theoretical framework for Healing-Informed Social Justice Mathematics. *Note:* Concepts of radical healing represented by the CARMA acronym are listed in bold letters.

CARMA - Culture, Agency, Relationships, Meaning, and Achievement

Kokka, K. (2019). Healing-informed social justice mathematics: Promoting students' sociopolitical consciousness and well-being in mathematics class. *Urban Education, 54*(9), 1179-1209.

- Culturally Responsive Pedagogy
- Radical Healing & Healing Justice (CARMA)- Shawn Ginwright
- Positive Cultural and social identities (Gutstein, 2006)
- Community Research

"Analysis of structural conditions that impact well-being is important to prevent youth from blaming themselves for their own social emotional states (Ginwright, 2016; McGee & Stovall, 2015)."

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

Resistance with Purpose

Resistance is not just saying NO, but directing the narrative of how Math Education is implemented and how we as a greater community work together.

Identifying your Community's Wants/Needs

School……..…What are the students interested in?

Colleagues……Bring 1 other person to collab with.

Parents……Parent Liaison/Coordinator

District Administrators……..Begin the conversation

MTBoS - Math Twitter Blog o Sphere

Equity and Social Justice in Math Ed Twitter Follow List

SAINT MARY'S COLLEGE of CALIFORNIA

TODOS Mathematics for ALL

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

Resistance with Purpose

RESIST

EMBRACE

Standardized & High Stakes Assessment

- Inquiry and Mathematical Practices
- Social Justice Mathematics and Science Curricular Resources for K-12 Teachers

Top-Down Decisions

- Student Councils with Site Council
- Youth-led Participatory Action Research - in math articles by Raygoza, Terry, and Yang.

Racial Inequities & Systemic Oppression

- Promoting Students' Sociopolitical Consciousness and Well-Being in Math Class

Suspension Rates

- Restorative Practices - Candice Rose Valenzuela

Engage in self and collective math teacher care

Surrender

Resistance: Action & Activism

Self-Compassion

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

Humanizing Online Math Teaching "Syllabus" AKA References

bit.ly/HumanizingOnlineMathTeachingSyllabus

SAINT MARY'S COLLEGE of CALIFORNIA

TODOS Mathematics for ALL

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
CELEBRATING 100 YEARS

Thank you & Questions

Mary Raygoza - mcr13@stmarys-ca.edu

@MaryCRaygoza

Kelsey Macias - kri1@stmarys-ca.edu

@MrsMaciasMath

Nima Harirchian - nima.harirchian@gmail.com

@nima_harirchian

SAINT MARY'S COLLEGE of CALIFORNIA

TODOS Mathematics for ALL