

**Toward Re-humanizing
Mathematics Education:
Participatory Approaches to
Noticing in Mathematics Classrooms**

The Co-Attend Team



Award #1661164

Co-Attend Representatives

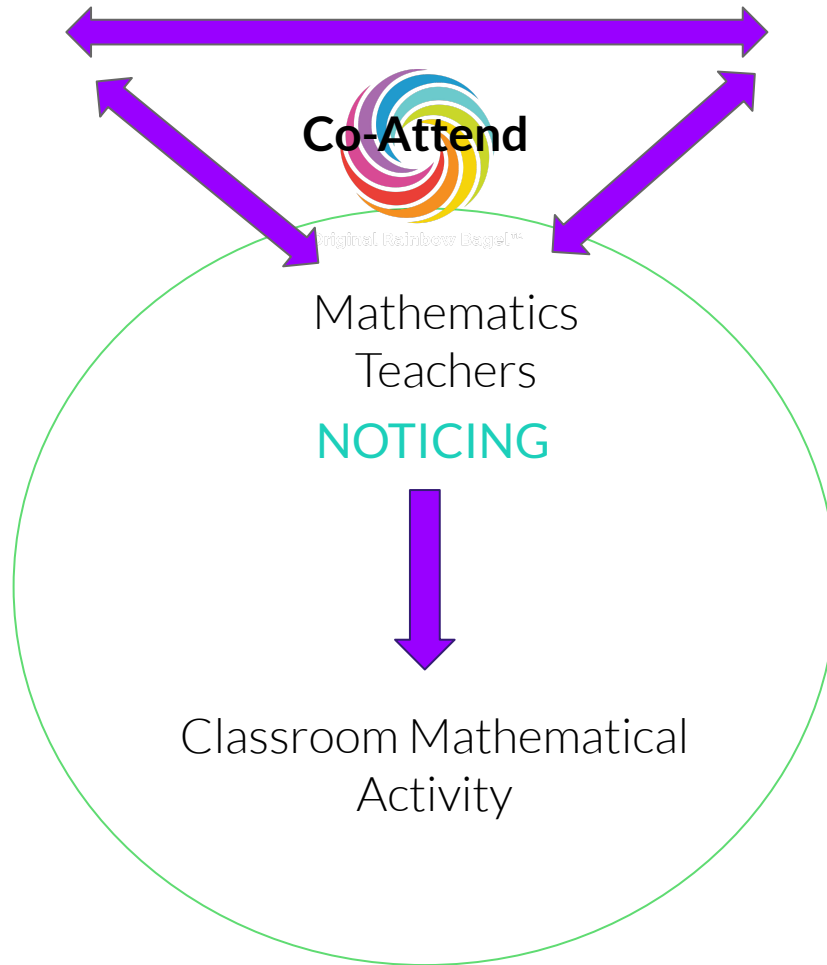
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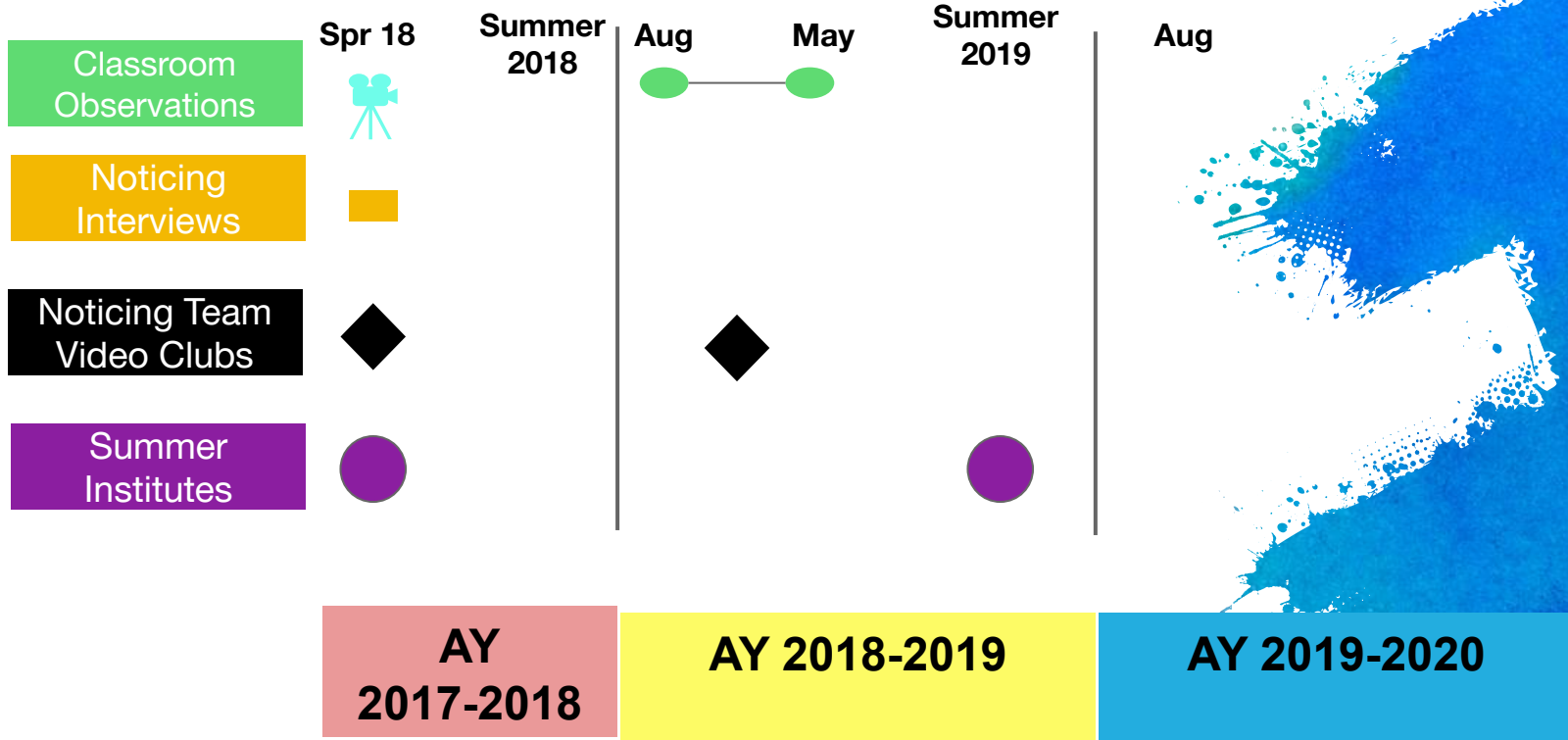


University
Scholars
NOTICING



Leaders of
Community-Based
Organizations
NOTICING

Project Activities



(Why) Noticing?

- Professional vision that involves **attending** closely to qualities of students' mathematical talk and inscriptions supports student engagement in powerful mathematical argumentation and reasoning (Sherin, Jacob & Philipp, 2011; van Es, 2011).
- How do mathematics teachers **notice** aspects of classroom mathematical activity that have consequences for re-humanizing mathematics education (Gutiérrez, 2018)?

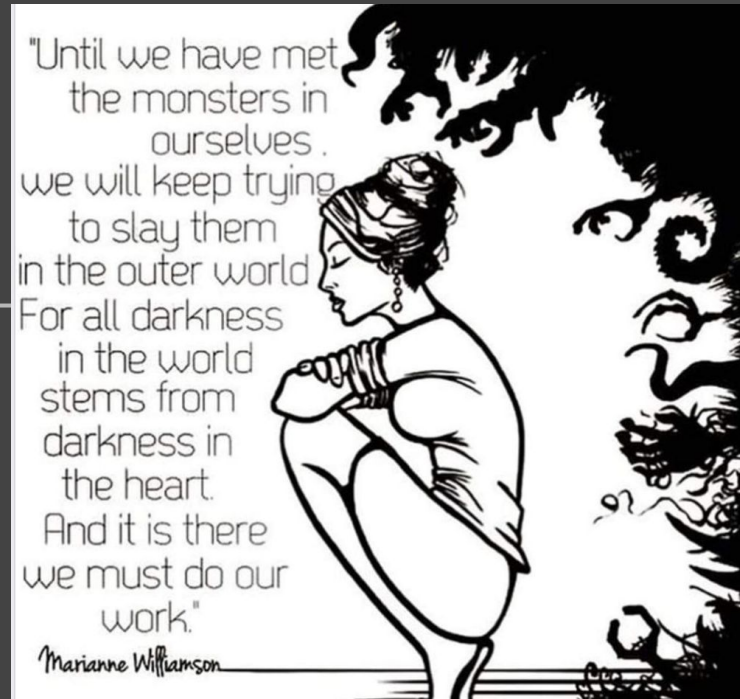
(van Es, Hand & Mercado, 2017)



Expanding Noticing

Critical Embodied Noticing

Cecilia Valenzuela, Elizabeth Mendoza and Miguel N. Abad



Noticing Walk

Without talking to one another, take a 1 minute “noticing walk”, in other words: What do you notice? What are you noticing? Keep in mind, how might you later describe your experience to a friend?



Noticing Walk

Now go back outside and follow your same route. This time, focus on a sense you may not habitually use (sound, touch, body).



Sound: As you are walking, center your focus on the sounds around you. What sounds surround you? What is the soundscape (ever present noises/ sounds / voice/ vibrations)? Listen beyond conversations.

Stop a few times on your walk and close your eyes. Listen deeply to every sound. When you start on your walk back, hone in on one sound. Follow that sound, how does it ebb and flow, when does it start and stop? At one point, stop and close your eyes on that one sound. Cup your hands behind your ears and push your ears and earlobes forward. Listen deeply.

Touch: As you are walking, center your focus on sense of touch. What is touching your skin as you walk, pay attention to the texture below your feet. Switch walking on various kinds of grounding. In other words, along the same path, where can you go “off trail” to feel and touch various elements and surfaces around you.

Body: As you are walking center your focus on the way your body is reacting to the environment. Where does your body feel tense, where is your body relaxed, why do you think these are emerging. Focus on how are you moving your body as you walk?

On your way back vary your stride. How does your body feel when you take giant strides? How does your body feel when you walk sideways? How does your body feel when you walk with your arms in the air?

Overview

Noticing should move beyond cognitive frameworks:

- Interaction between teacher and student
(Dominguez,2019)
- Involve context an understanding of dominant ideologies
(Louie, 2017)

Mathematics knowledge needs to include the ways in which our world is deeply relational, embodied across our lived experiences and socio-political realities (Gutiérrez, 2012)

“Split” by Rodrigo-Vega



Concepts and Guiding Scholarship

Women of Color Feminism (Theories of the Flesh)

Sentipensante Pedagogies

sentir (to feel) + pensar (to think)

Cultural Politics of Emotions



Art by Anna Alvarado

Guiding research question

What new forms of noticing can arise when we center our bodies and emotions across educational contexts?



"De todo Corazon (With All My Heart)"
by Jade Leyva

Methods

Data Sources:

- Video and audio recordings from the Summer Institute at both sites of CoATTEND
- Written self-reflections on noticing practices and activity prompts

Focused on Interactions that:

- Engaged self-reflection about their emotions or bodies and/or prompted by their bodies and emotions and
- How their bodies were communicating either discomfort or other deeply affective experiences.



Critical embodied noticing

- Noticing Inward (reflecting & sitting in between inner/ outer realms)
- Working through discomfort

Ana Mendieta
"Untitled (Body Tracks), 1974"



Noticing Inward

Taking time to slow down and reflect is as important as spending time and energy in action to transform the institution. The work of transformation is not only about changing what is “out there”; it is about transforming what is “in here,” our own internal views and assumptions. To what extent do I carry the oppressor within me? When I opt to do/say nothing, to what extent do I bring or perpetuate suffering to those who suffer from unjust institutional norms and values? How am I being changed by the work I do to create conditions of social justice? (Rendon, p. 48)



Noticing Inward

“I was doing a different program on this campus earlier this year. At the time there was a lot of dance groups on the courtyard. I remember pulling up to this campus and

“I tend to be aware of my surroundings, but now, with intentionality around noticing, I am much more aware than just visual awareness/noticing. **I am feeling with my whole body, listening, tasting, remembering, existing.** I appreciate this practice because **I am both present and expansive in my thought**”. (Justin, Self-reflection)

Working through discomfort -

At first when I was walking on the stairs I was really relaxed and I started to think about yesterday. Then there was a tension in me when I got to the bottom of our stairs, I had to remember which direction I went, I wanted to go one way, but I needed to follow the same path as before [as stated in the activity directions]. **So there was a tension in me**

I wanted to see if I could sit with the discomfort to see if I could push past it.

It stresses me out to be watched. That rule following part of me it stresses me out, because I am like “I am doing fine, ‘quit watching me’. But there are things I had to do, and I am in the street and I look ridiculous. [It was the] **perception that others have of me and bringing those out.**

- Shannon, Math Teacher

Working through Discomfort - Socio-political & historical positioning of bodies

The first time around I noticed the police car on the corner, and I realized that the first time, my body tensed up. In the back of my mind **I had it in my mind to run. But I didn't notice it until I was asked to focus on my body the second time.**

Antonio, Community Member

- How might Shannon's White female body have been influenced by social norms to "follow the rules"?
- How might Antonio's brown male body been influenced by social norms to feel a need to run in the presence of a police car? In this reflection?

Final thoughts

- We believe engaging in Critical Embodied Noticing—Noticing Inward, Working through discomfort and rupturing habitual ways of noticing—will bring us closer to the transformation in math education we seek.



Expanding Noticing and Who is Noticing



Overview

- Missing from conversations on teacher noticing are communities that have experienced marginalization and trauma from mathematics education.
- A participatory approach to noticing attempts to re-center the perspectives and sense-making of families and children from less dominant racial, cultural and linguistic backgrounds (Bang et al., 2016; Fine, 2017; Gutiérrez & Jurow, 2016)



Participatory Perspectives

Systemic change that works towards the dismantling of the (in)visible racism in mathematics requires research approaches that focus first on **building coalitions across stakeholders, and center the perspectives of communities that are most affected by inequities in mathematics education** (Bullock, 2012).



Participatory Perspectives

Participatory approaches work from the assumption that all forms of knowing are embedded in systems of meaning that are grounded in experiential, propositional, and practical forms of knowing and being, which are assigned equal status. These forms of knowing co-create each other as individuals critically reflect on the multiple realities they experience in living with and through others (Fals-Borda, & Rahman, 1991; Fine, 1994, 2003, 2017; Guba & Lincoln, 2011; McTaggart, 1991; Morales, 2016, Torre, 2009)

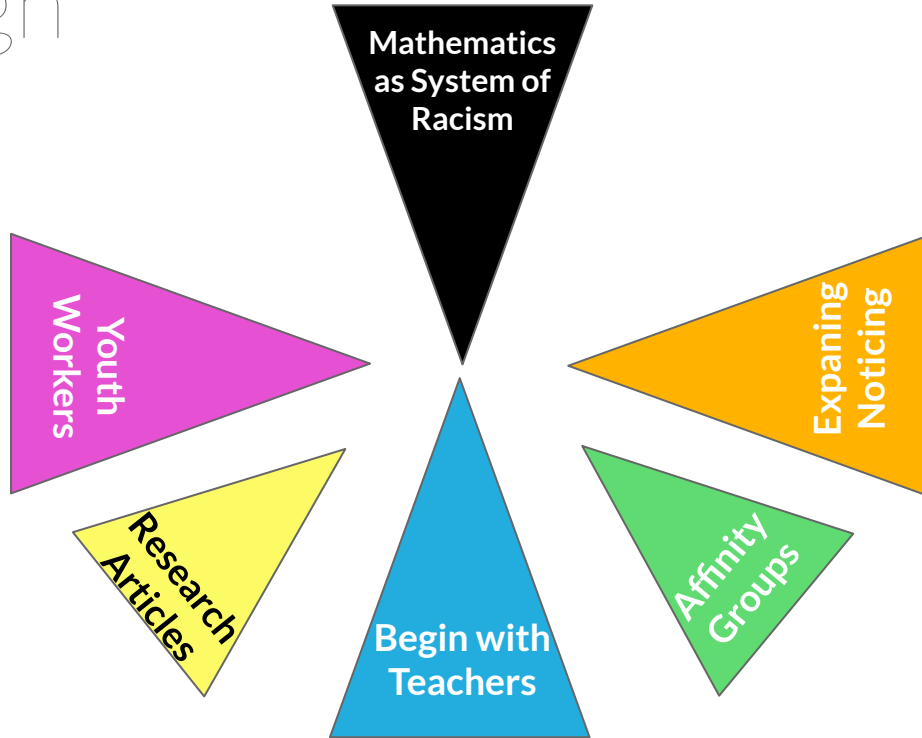
Participatory Commitments

1. Invite Historically Marginalized Communities to be Co-Researchers
2. Bring Disparate Forms of Knowing into Continuous Contact with Each Other
3. Historicize People, Institution, and Practice
4. Embrace Tensions as Spaces for Learning and Social Re-imagination
5. Re-Negotiate Practice and Making in Social Change

(Hand, Osibodu, Byun, LópezLeiva, in preparation)



Co-Attend Participatory Approach: Design





Tension under study

How to study the racialization of Black and brown bodies in mathematics education with Black and brown community leaders and scholars within a system of white supremacy without having the discussion land on them in oppressive ways.

Elizabeth Mendoza, Justin TenEyck and Victoria Hand

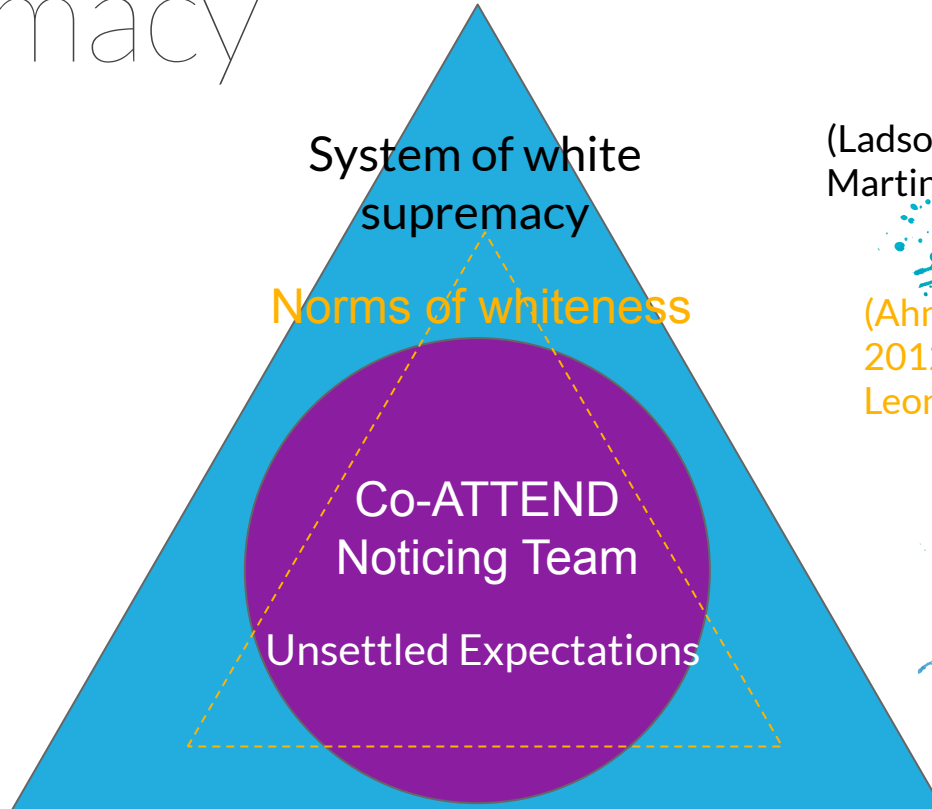
Methods for Study of Tension

- Semi-structured interviews with community leaders
- Co-analysis of themes that emerged in these conversations

Hand, V., Mendoza, E. & TenEyck, J. (2019)



Struggle around white supremacy

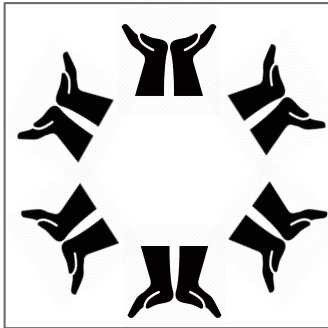


(Ladson-Billings & Tate, 1995;
Martin, 2003, 2009, 2013, 2015)

(Ahmed, 2007; DiAngelo,
2012, 2015; Dyer, 2008;
Leonardo, 2009)

Tensions upon tensions

Catching Whiteness



Navigating different levels of white consciousness (Tatum, 2000)



© Can Stock Photo



Performativity



Emotional Toll in Responding



Catching Whiteness

That's one of my biggest issues: having to feel like I'm catering to [whiteness]. I kind of had an expectation that that was the role I was going to play in this. So, it kind of helps that I had that expectation, but I also then think about where I am professionally and that it's happening simultaneously in a lot of places and that's a little triggering.

Justin, Community Member

Navigating Levels of Race Consciousness

“ I remember that one of the teachers talked about her extensive work in CRT. But, how does that work connect to yourself in the classroom, versus turning it into taking up space about your own whiteness. The things we read and activities we do around race, whiteness and privilege...how can we reflect back onto ourselves and the classroom, versus “I’m doing this and this is about me.”

JiHee, Community Member

Grappling with Performativity

I sometimes experienced it as a **performance** for me to have the discussions around race because **it feels like it is expected**. It's fine because it's something I embody and embrace, so it doesn't feel like a chore. But it feels performative knowing that expectation is placed on me. Furthermore, since the summer some healthy tensions have come up in that micro-moment when a question is posed like: "Who is going to bring up race, first?" I've been trying to play more of an educator, waiting 8 seconds, instead of jumping in. The performative element comes in so I feel like I need to jump in right away."

Janiece, Community Member

Navigating Emotional Toll

I've gotten to the point where while it's an emotional toll for me to say something, **it's almost worse** for me to not say something in the moment. It's all emotions and feelings...**It's a burden to hold back and monitor that language..**

Justin, Community Member



Data Example

Anna Noticing Interview

Anna: Terrell presented. Finally! That was a big deal. He finally got up.

Vicki: Was it hard to get him up?

Anna: Uh huh. Yep. I've been working on him. I've been calling his name for a couple of days. He knew he was on the...he knew his name was up.

Vicki: What did you notice about his presentation?

Anna: He was pretty good on the calculator. I wasn't sure he was going to be able to do that, but he did.

Vicki: Uh hm. I also thought he didn't look shy or anything...

Anna: And, his vocabulary was good. He was saying everything he was supposed to say...I wanted him to say.

Noticing from Gabe

- Notices that language is consistent with mathematics standards

Noticing from Justin

- Notices that the language is evaluative
- Overlaps with deficit perspectives of Black and Brown students as needing academic remediation

Justin's Interview (later)

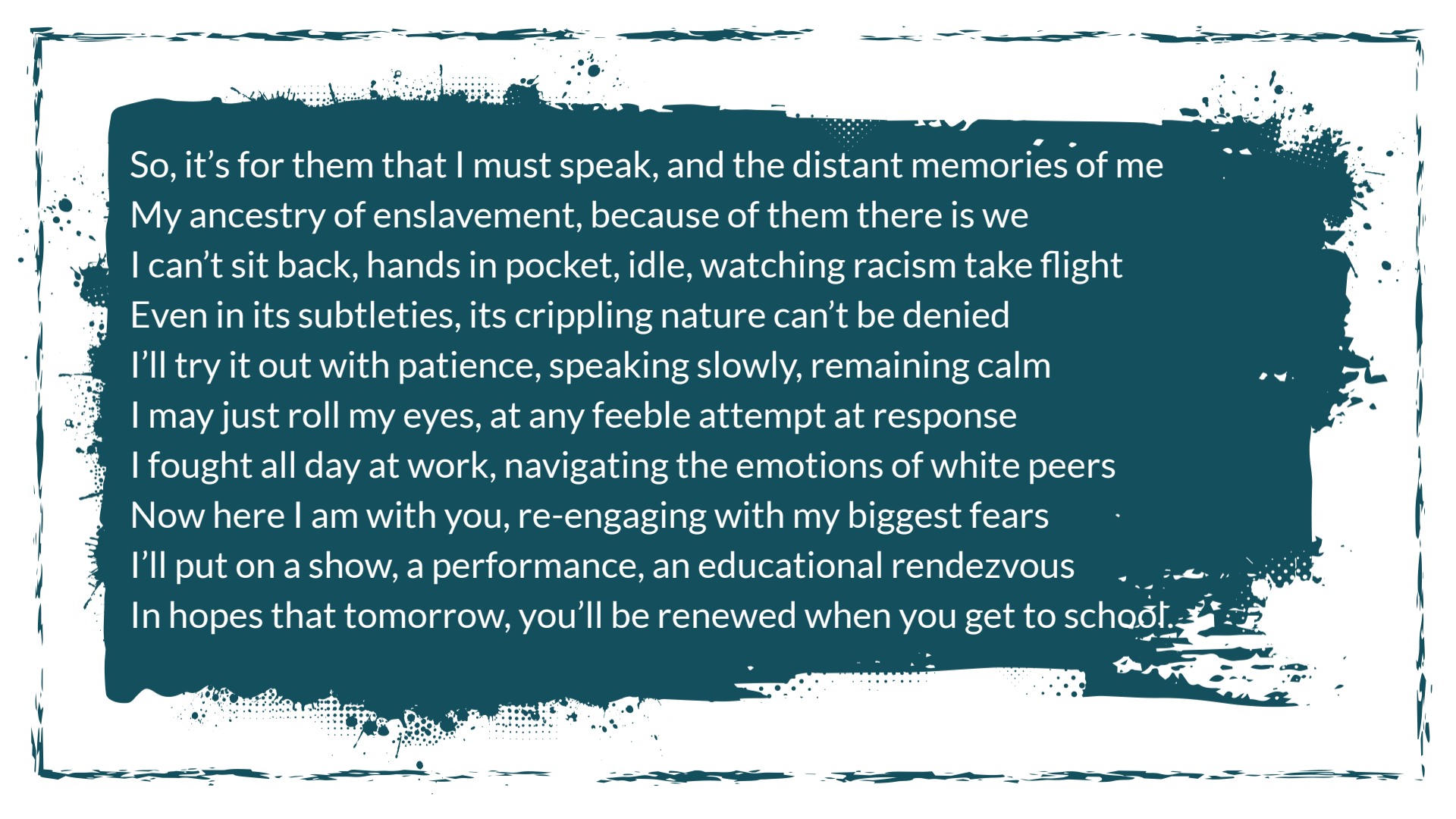
How do we manage relationships in that setting? Are we nurturing people's fragility by not calling that out.

Anna's entire reflection was very triggering for me. How do we manage relationships while doing it thoughtfully so that people are not defensive?

I need more time. But, we are also limited in time, especially in our video meeting. We were already over time.

Justin

To recognize your humanity, means to see the humanity in myself
To preserve your existence, words must slip gently from my mouth
I can see the tears, slowly welling, taking visibility from your eyes
Your experience, PhD, and good-intent, aim to centralize
“How does it make you feel?” “Are you okay?” “Do you need a hug?”
With arms wide open, my embrace is a facade of love
You know frameworks and spit theory, shouts, from the ivory tower
But on the path of righteousness, you clutch tightly onto power
Holier than thou, does this room feel like the one in which you teach?
Having to compromise, young Black and Brown minds, feeling under siege
The undue burden, an incessant catering to whiteness
Mathematical kool-aid, an unknowing-attempt to leave them lifeless

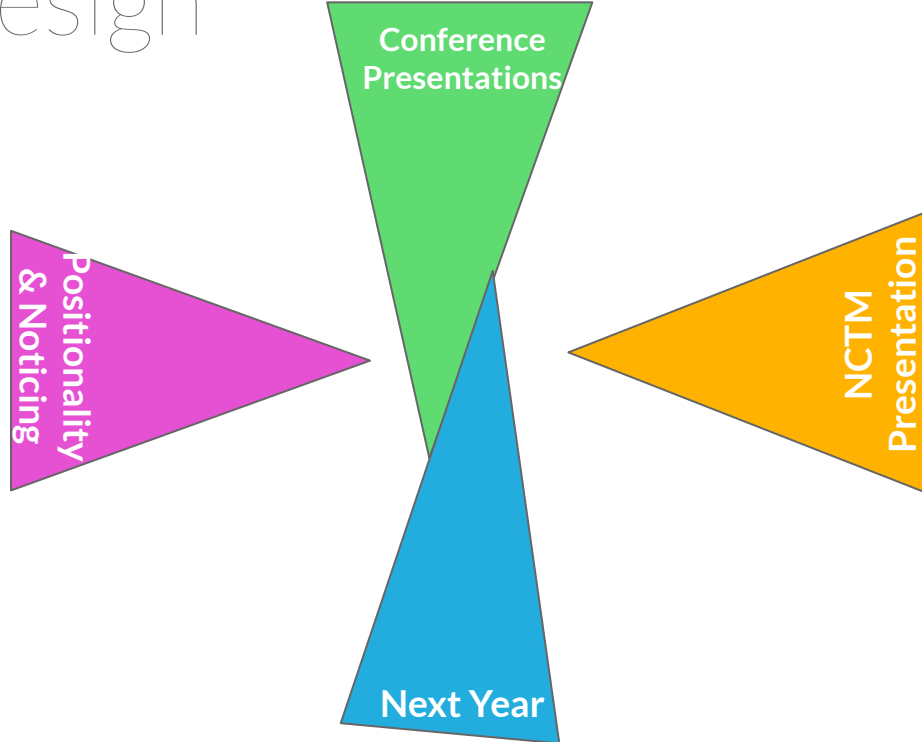


So, it's for them that I must speak, and the distant memories of me
My ancestry of enslavement, because of them there is we
I can't sit back, hands in pocket, idle, watching racism take flight
Even in its subtleties, its crippling nature can't be denied
I'll try it out with patience, speaking slowly, remaining calm
I may just roll my eyes, at any feeble attempt at response
I fought all day at work, navigating the emotions of white peers
Now here I am with you, re-engaging with my biggest fears
I'll put on a show, a performance, an educational rendezvous
In hopes that tomorrow, you'll be renewed when you get to school.



Summer Institute
2019

Co-Attend Participatory Approach: Re-Design



What Emerged?


AERA Conference
Symposium Proposal

District Level PDU

**Title: Positionality and
Mathematics Teacher
Noticing for Equity**

Student Noticing Group





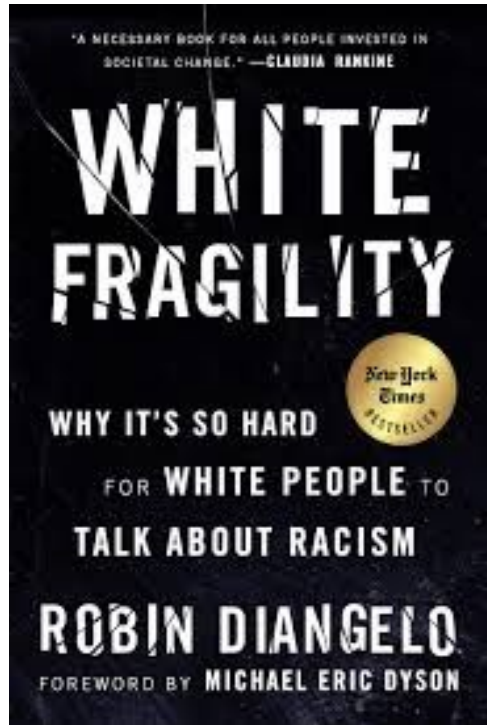
Embrace Tensions
as Spaces for
Learning and Social
Re-imagination

Justin TenEyck, Anna Holm & Michelle Frierson

WHITENESS



Challenging Whiteness and Expertise



Becoming Co-conspirators



To not critically engage is to remain complicit - actively breaking the mirror as to not look in it. To challenge self and systems is to not accept what's in the mirror and to actively break it.



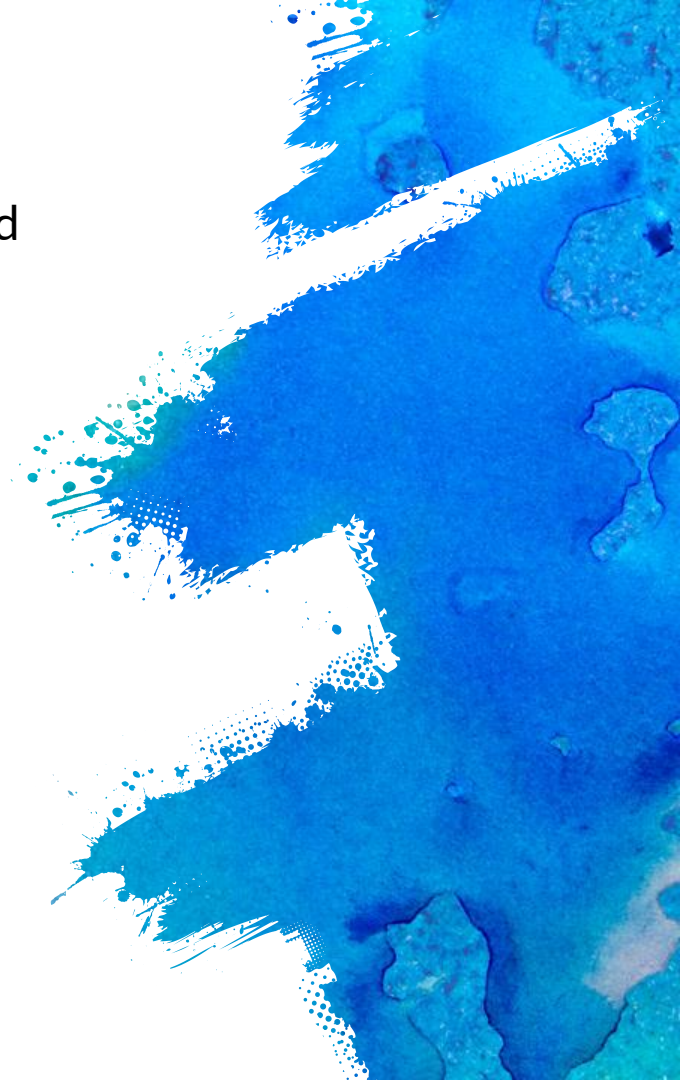
Take-Aways

- Requires a level of vulnerability to keep moving forward
- Tensions are productive
- Process is not linear (individuals (and the group) were moving in and out of different discourses)
- Groundwork should intentionally bring in discussions and conversations around race
- Requires ability to boundary cross



- Be explicit about mathematics education's legacy of violence and de-humanization among Black and brown communities
- Mathematics learning viewed as a-cultural and neutral
- Majority of secondary mathematics teachers are white and well-resourced
- Relationships are key to this process. Need to spend time with the community
- Requires shift in dispositions for all involved

Before doing PAR



Re-design

- Invite the community leaders to make the informal roles that they are taking on more explicit
- Institutionalize a question around race through structured questions/reflections
- Centralize privilege as a whole (we all carry privilege) in order to push back on whiteness together
- Disrupt and expand about ideologies built into our language practices (Louie, 2017)
- Dive into our vulnerabilities to be authentic and honest with each other



Co-Attend Teams

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Antonio Benitez, *OC Human Relations*

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Juan Alvarez, *Sycamore Jr. High*

Lisa Falt, *Cypress High School*

Kelly Turner, *Loara High School*

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Victoria Hand

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Michelle Frierson

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JiHee Yoon, *YAASPA, (soon to be ASU)*

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Taylor Betz, *McGlone Academy*

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