



# Exploring Preservice STEM Teachers' Vulnerability

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## Purpose

- ★ Teaching is a relational act, and authentic relationships (rooted in honesty, vulnerability, trust) are important in K-12 classrooms (Noddings, 1988; Suárez & Krist, 2023); however, building such relationships is not straightforward for PSTs. Our hope is that providing PSTs with opportunities to engage in vulnerability and relationship-building in their own teacher preparation courses can develop a sense of comfort with relationality in their future classrooms.
- ★ The purpose of this study is to explore the interactional dynamics that emerged in a secondary STEM teacher preparation course. More specifically, in this study we seek to name and describe PSTs' efforts toward relationality by exploring the ways in which they vulnerably engaged with one another during a conversation about teacher expectations and racial biases. This effort could support teacher educators to notice and cultivate these efforts toward relationality in their teacher preparation courses.

## Framework: Relationality

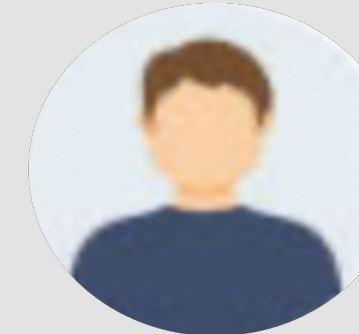
- ★ Relationality goes beyond simply striving to build positive relationships; rather, it's about learning and growing alongside one another in connected, interdependent, contextually-situated ways (Suárez & Krist, 2023). Such a relational stance can play out in micro-level interactions (Krist, 2024). Within these interactions, PSTs take conversational risk as they express vulnerabilities—e.g., emotions, uncertainties, and stories (Krist, 2024).
- ★ We are interested in how PSTs express and respond to vulnerability in these micro-level interactions as bids toward relationality.

## Methods

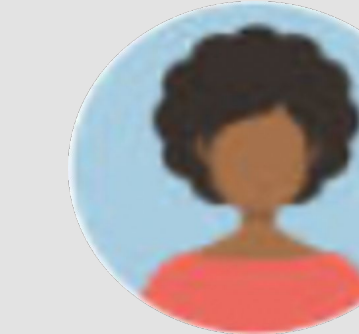
- ★ **Context:** This study is part of a larger design-based project within a small learning theory course in a STEM teacher preparation program. One of the course's central aims is to cultivate PSTs' capacities for listening to and understanding students. Throughout the course, PSTs were invited to critically reflect on their experiences, assumptions, and ideas.
- ★ **Data sources:** The data corpus for this study includes video and transcripts of an in-class discussion and PSTs' written reflections.
- ★ **Analytical Approach:** We used Multimodal Discourse Analysis to explore the ways in which PSTs express and respond to one another's vulnerability at the level of their utterances (Michaels & O'Connor, 2015). This iterative process involved collaborative data viewing, making analytical notes, and inductively coding the transcript.

## Context: An In-Class Discussion about Connecting with Student Across Lines of Difference

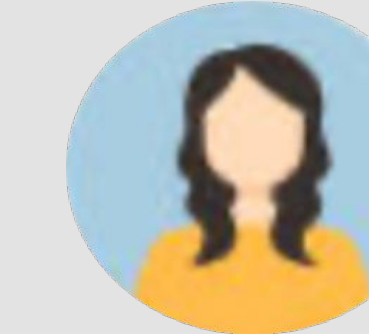
★ During the focal semester, 8 PSTs were enrolled in the course. Throughout the course, PSTs interrogated the theories, assumptions, and contexts that shape "what counts" and "who counts" in science and math learning spaces. In the central discussion for this study, PSTs reflected on assigned podcasts about stereotype threat and racial bias, and discussed their own experiences with connecting to students across lines of difference. Here, we center the interactions of four PSTs in particular who participated the most in this conversation (listed to the right).



**Ira** (he/they)  
White, gender-fluid person  
Chemistry Major



**Carmen** (she/her)  
Black woman  
Biology Major



**Junie** (she/her)  
White, Latina, Jewish woman  
Biology Major



**Amanda** (she/her)  
White woman  
Mathematics Major

## Findings: A Snapshot of Vulnerability

★ Here, we share one excerpt of the discussion transcript that is representative of the larger of patterns of interaction that were salient across the data. This moment, which happened toward the end of the discussion, begins with Ira posing a question about how to teach and relate to students who hold prejudiced perspectives. The PSTs considered Ira's question and responded by connecting to their personal experiences and seeking potential solutions. To illustrate our approach to this ongoing analysis, we use color codes to tag descriptions of PSTs' expressions of and responses to vulnerability during their turns of talk.



I think one thing that this has brought to mind is like we can, as teachers, try to show equality and care for all our students, but it like makes me think of like **what if the students don't respect us in like a certain way, like if they have homophobic ideologies or are racist or something like that. What do you do in that scenario?**

1.

2.

10 second pause

5.

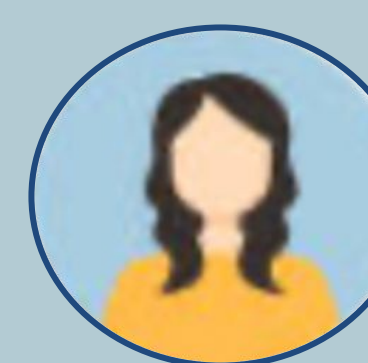


I don't even know! But like, I think it goes back to what Junie was saying where she was like if you asked me 10 years ago about my beliefs, they'd be different. And I think it's like, **you don't know what these people think. That's what goes through my head when I'm in a classroom. I'm like, what do these kids think of me?** Because there's not a lot of Black teachers, you know?

1.

2.

3.



**The town I grew up in was extremely homophobic...** My geometry teacher was gay. He had a photo of his husband and his dogs up on his computer screen every day and he would project it. And, mind you, this was a really homophobic town and he would get some nasty comments and he would just like "eh". He brushed it off his shoulders, 'cause **if you don't show them that you care and that they win, it'll just piss them off even more and they'll—you know? Just don't let them think they won.**

2.

3.



I think that's a really big thing with middle schoolers, too. They're in that stage where they like to bully you. If you're a young teacher, they enjoy it. **One of [my students] is very known for calling all the white teachers racist** just based off of what they look like without knowing them. And, it kinda comes to a point where I'm like **"are you saying this because you really believe this to be true? Or are you just saying it out of just disrespect?"** Do I need to go write this up? Or do I need to have a conversation? There's lines to be drawn, and **it's hard and frustrating.**

1.

2.

3.



I think that can also go back to what they were saying in the podcast. A white teacher was like "I was raised not to trust Black people" and the Black teacher was like "well, I was raised to not trust white people." So yeah, I guess where like conversations about race come into that, or **you might just build a personal connection with those types of students because, like, it is hard to trust white people. You know?**

4.

### Descriptive Codes

1. Expressing uncertainty

2. Sharing personal experiences or perspectives

3. Connecting to, extending, or validating a peer's ideas, feelings, questions, or experiences

4. Pushing back on a peer's perspective

5. Staying quiet, listening, and allowing space for others to respond

## Discussion

- ★ During this discussion, vulnerability manifests in multiple ways; e.g., as expressions of uncertainty, personal stories or experiences, expressing opinions, or challenge one another. PSTs responded to their peers' vulnerability by validating their ideas and perspectives, sharing stories of their own, and suggesting advice about uncertainties.
- ★ As we continue to explore these PSTs' efforts toward relationality, next steps could include analyzing PSTs' reflective writings and interviews about the course and this discussion to triangulate our claims about their vulnerability and to seek insight into PSTs' own perceptions of this conversation and their relationships with peers in this course.

## References

- Krist, C. (2024). Striving for Relationality: Teacher Responsiveness to Relational Cues When Eliciting Students' Science Ideas. *Cognition and Instruction*, 1-36.
- Michaels, S., & O'Connor, C. (2015). Conceptualizing talk moves as tools: Professional development approaches for academically productive discussion. *Socializing intelligence through talk and dialogue*, 347-362.
- Noddings, N. (1988). An ethic of caring and its implications for instructional arrangements. *American Journal of Education*, 96(2), 215-230.
- Suárez, E., & Krist, C. (2023). Designing for Justice-Oriented Critical Caring in Science Methods Courses. In *Proceedings of the 17th International Conference of the Learning Sciences-ICLS 2023*, pp. 553-560. International Society of the Learning Sciences.