Making Sense of Teachers' Varied Responses to Representations of Practice

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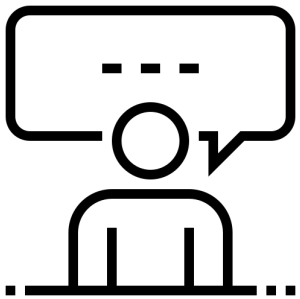
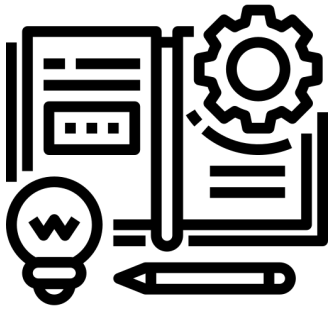
"Representations of practice"

Examples:

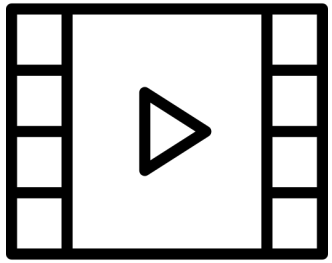


teachers' verbal accounts

Material representations



lesson plans



video records of teaching

student work

(Little, 2002; 2003; Grossman et al., 2009)

Research Problem

- Importance of teachers engaging with **representations of practice**
  - **Make particular features of classroom practice visible and available for investigation**
- **How teachers engage with representations of practice varies, and to different effects**
  - open up practice for inquiry
  - reinforce existing stances on teaching, learning, or students

What shapes teachers' engagement with representations of practice?

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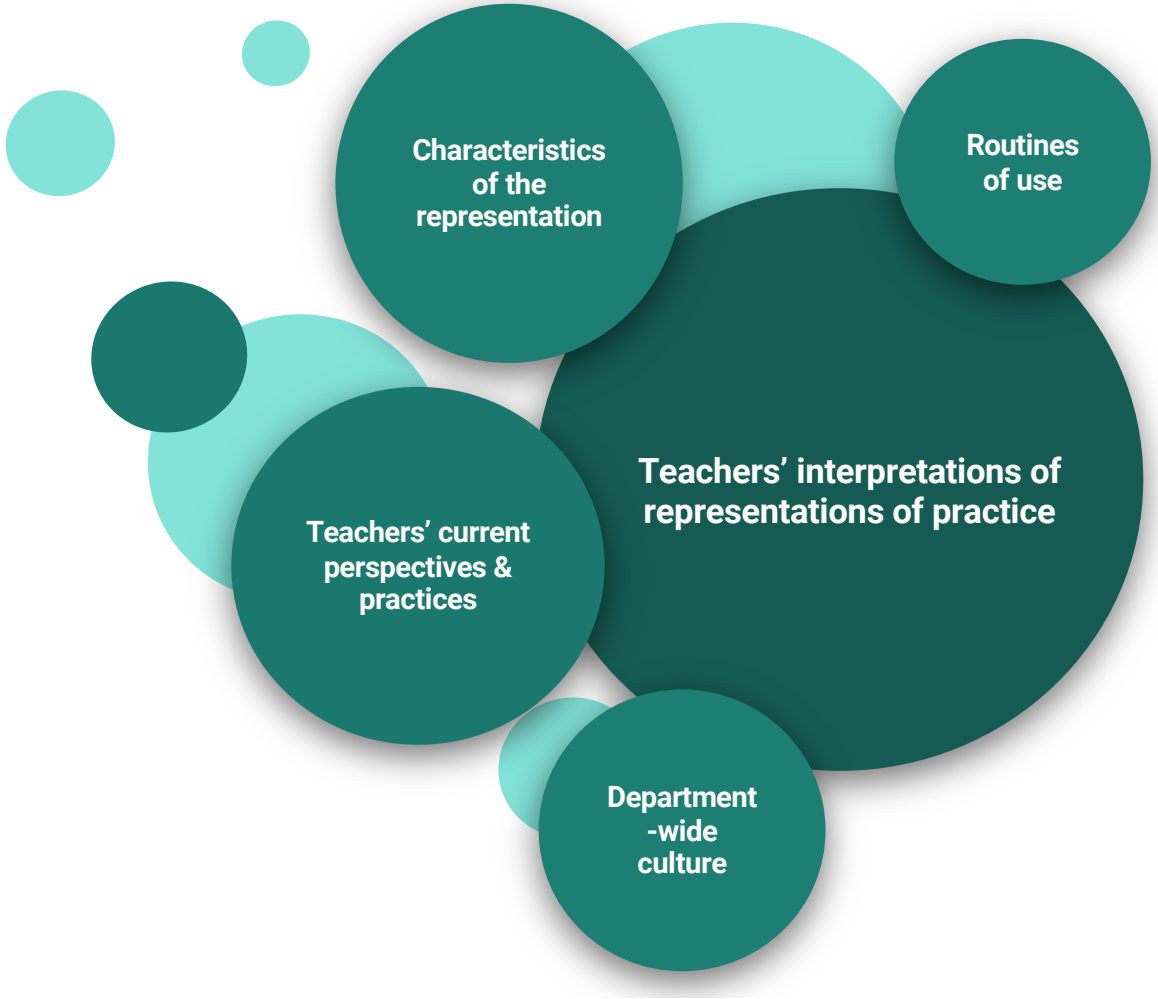

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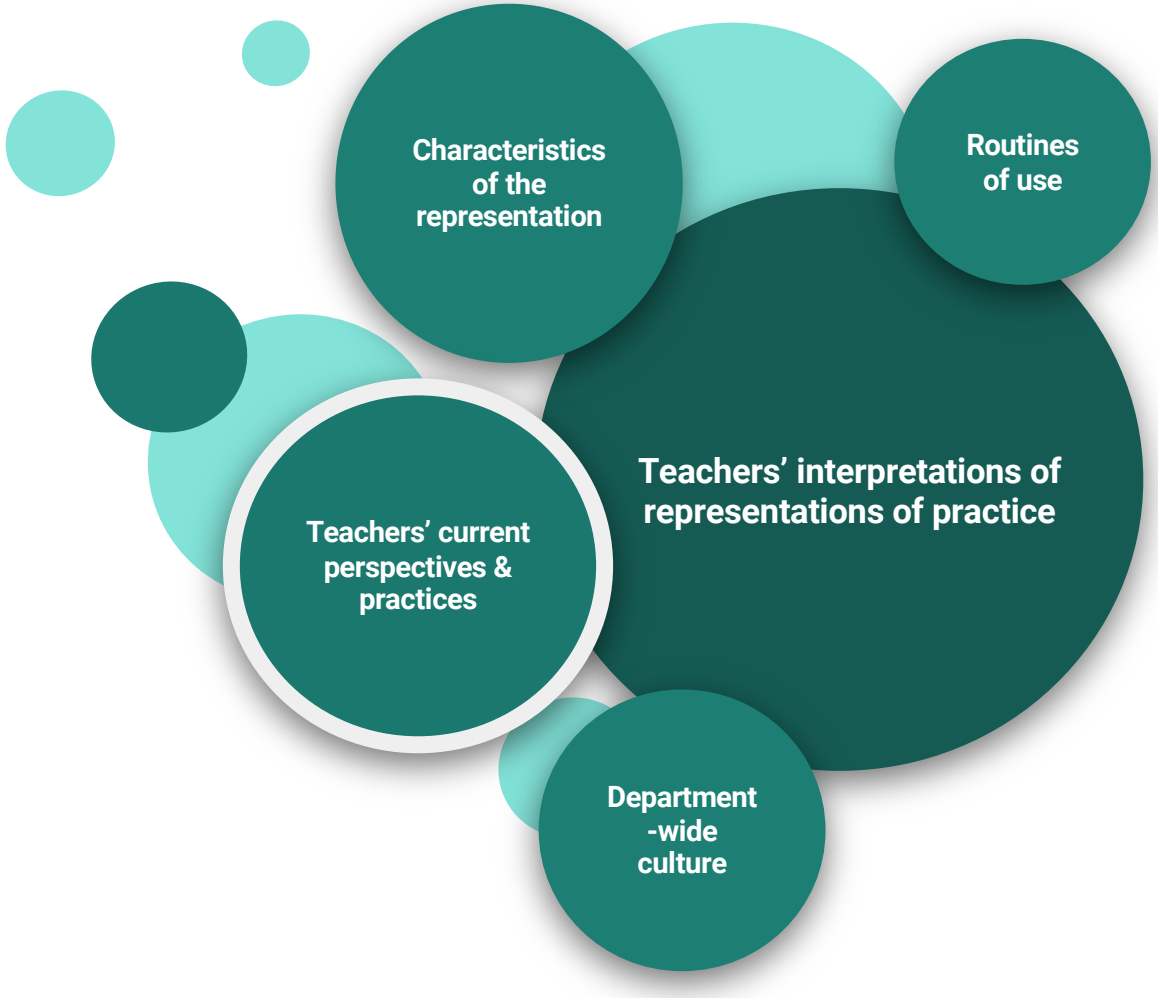


Teachers' current perspectives & practices

- Teachers' **instructional vision**
- Teachers' **current perspectives on their students' capabilities**

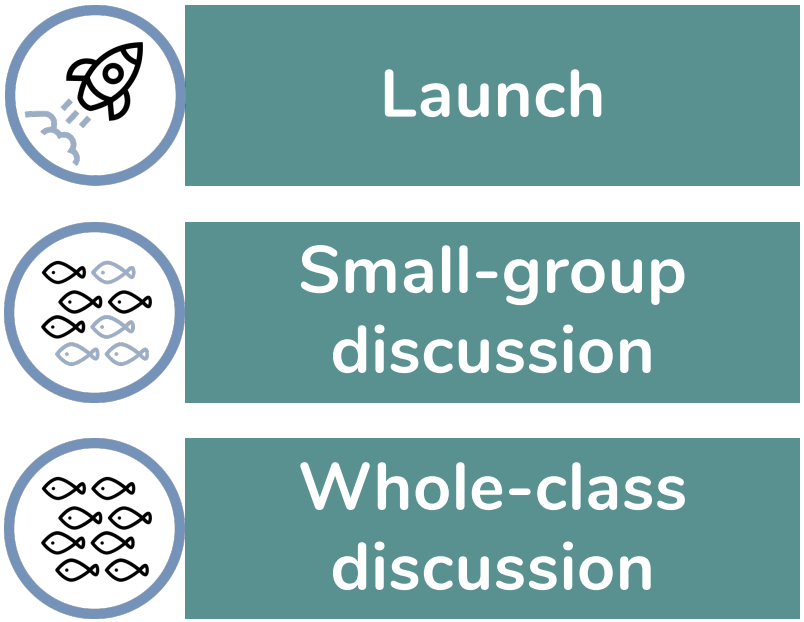
Research Context

Multiple university-district partnerships working to improve the ***implementation* of instructional improvement strategies in middle-grades mathematics**

Long-term goal: System of "measures for improvement" ('practical measures') of:

- key aspects of classroom instruction that prior research has linked to student learning
- key aspects of professional learning (e.g., one-one-coaching, collaborative time) that prior research links to teacher learning

Measures for Instructional Improvement: Assessing Students' Experiences of Key Aspects of Instruction



- *Quick, easy to administer student surveys (2-3 minutes)*
- Developed in partnership with teachers, coaches, and district leaders
- 5+ rounds of design, administration, analysis, and revision

Varied responses to a representation of practice:

How comfortable were you sharing your thinking in today's whole-class discussion?

Teacher A

- 39% very comfortable
- 26% somewhat comfortable
- 35% not comfortable

"That's pretty far into the school year, so that makes me worry. Are there still that many students in that class that are not comfortable sharing? Are they not comfortable sharing because they didn't know exponents. … I want to know more of the reason behind why they were not comfortable … I wonder how much of it was the content. … This is really making me reflect."

Teacher B

- 27% very comfortable
- 50% somewhat comfortable
- 23% not comfortable

"You always have those kids that always have their hands up in the air first. … You have the kids that are kind of there, and you have the kids who are just not willing for whatever reason. Some of them don't know the answer, some of them just don't talk."

Research Questions

1. How do teachers respond to a specific representation of practice -- aggregate data about students' experiences of a discussion -- in the context of an interview?

2. In what ways, if at all, might teachers' perspectives on teaching and learning (e.g., instructional vision, views of their students' capabilities) explain, in part, variation in their responses?

Methods

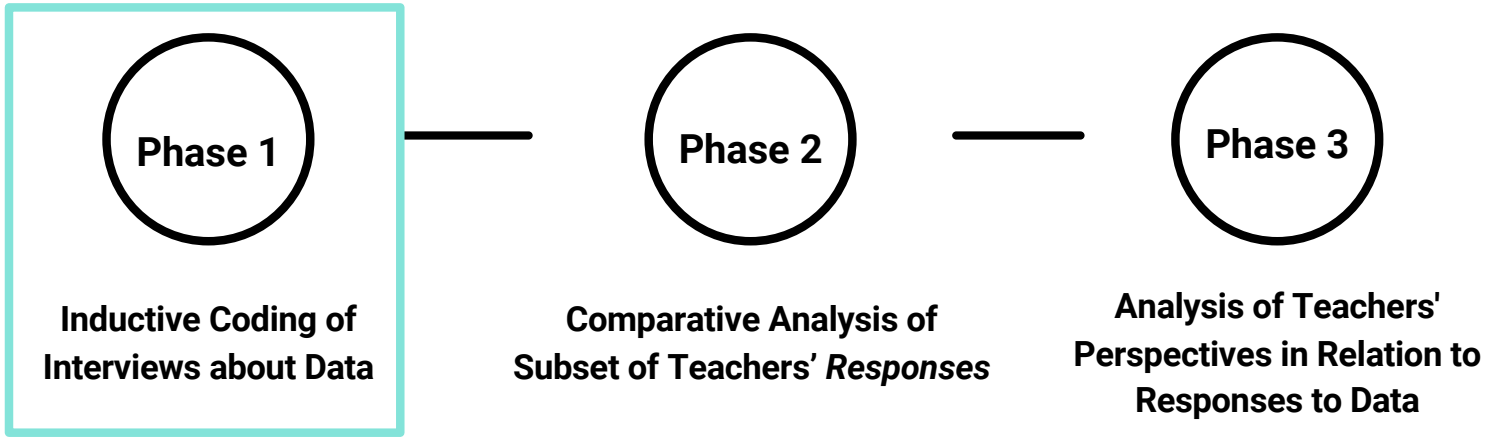
Participants:

- 10 middle-grades math teachers (4 in District D; 6 in District I)

Data sources:

- Interviews in which teacher reviews student survey data focused on students' perspectives on discussion in a lesson
- Interviews with each teacher about their goals for their practice, vision of instruction, views of their students' current capabilities, etc.

Methods of Analysis



What characterizes the teacher's response to the data?

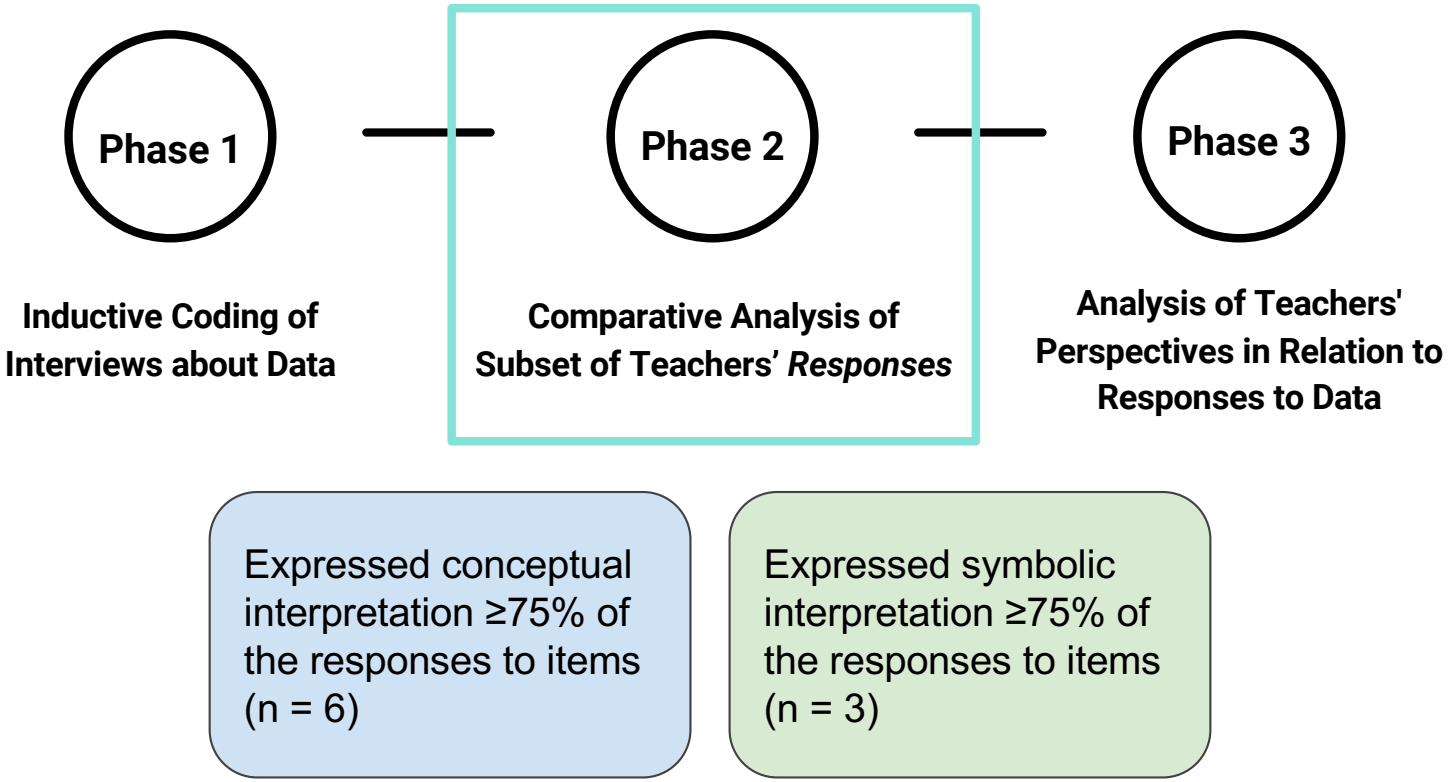
Inquires about students' experience(s)	Uses the data to support an extant explanation or stance
Teacher **makes conjectures** (e.g., I wonder if) about why students may have responded in specific ways **that are open to revision** (e.g., "trying on explanation(s), theory testing") Teacher **asks questions** about why students may have responded in specific ways	Teacher provides an account that **explains students' responses** and that is conclusive.

What characterizes the teacher's response to the data?

Conceptual	Symbolic
Inquires about students' experience(s)	**Uses the data to support an extant explanation or stance**
Teacher A: "That's pretty far into the school year, so that makes me worry. Are there still that many students in that class that are not comfortable sharing? Are they not comfortable sharing because they didn't know exponents. … I want to know more of the reason behind why they were not comfortable … I wonder how much of it was the content. … This is really making me reflect."	Teacher B: "You always have those kids that always have their hands up in the air first. … You have the kids that are kind of there, and you have the kids who are just not willing for whatever reason. Some of them don't know the answer, some of them just don't talk."

(Murnane, Sharkey, & Boudett, 2009)

Methods of Analysis



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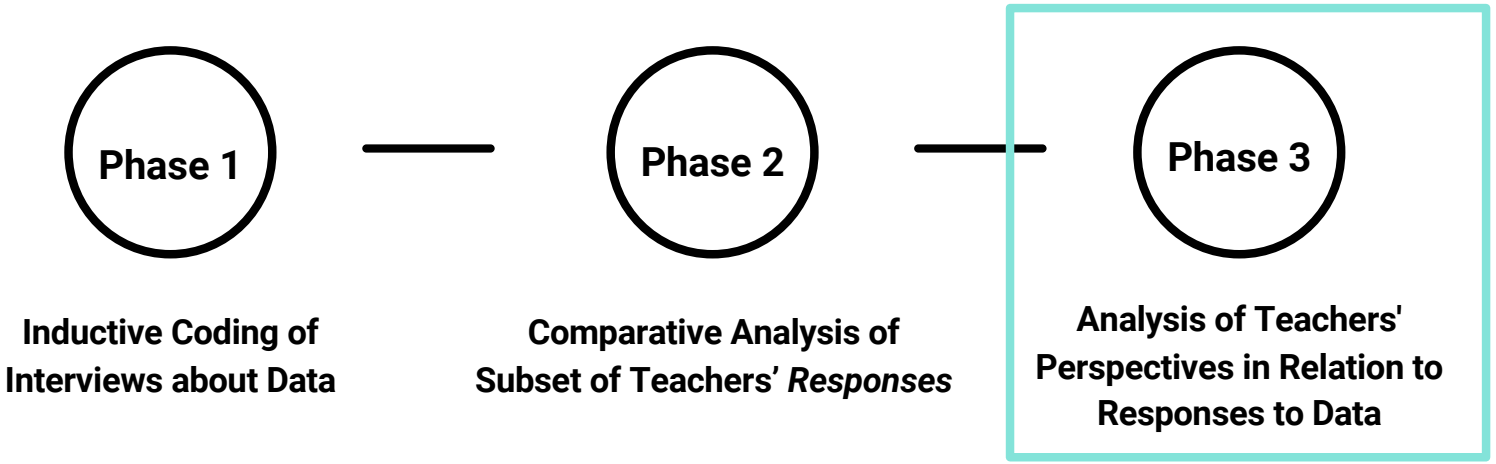


Two Cases (at the 'extremes')

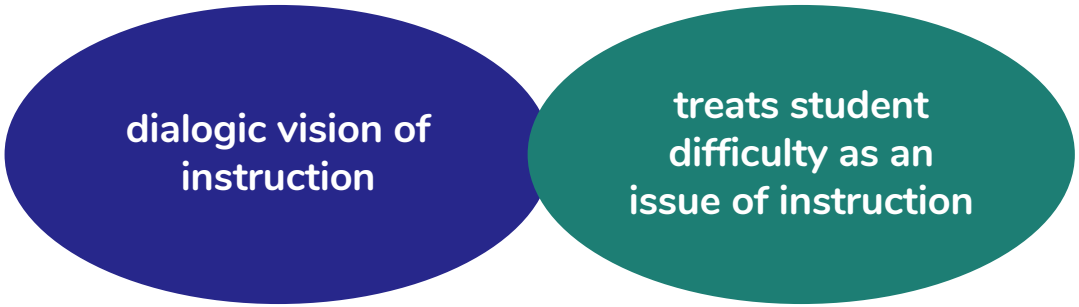
Patty

Expressed conceptual interpretation ≥75% of the responses to items

George

Expressed symbolic interpretation ≥75% of the responses to items

Patty: Vision and perspectives



- tasks with “multiple entry points, that everyone can access”
- discussions as opportunities for students’ “questioning each other and … justifying,” exploring together “why [a phenomenon] happens the way it is,” and “building on each other's knowledge”

“You want them to feel successful, because they’re all good at math, but they start to believe that they’re not, because it’s hard.”

...

“One of my goals this year is really how to improve my teaching so that I’m reaching all those kids, because what I’ve been doing hasn’t been working.”

Patty: Sample response to data

Did you have trouble understanding your group members' explanations in your small group today?

- 46% **yes**
- 54% **no**

"Did we have trouble understanding other people's thinking in small group? ...It was even, okay. Interesting. **I wonder if that had something to do with**, at the very beginning where [in small groups]... they were struggling with how to do the greatest common factor. **They were having a hard time understanding what was going on until we kind of pulled it back [to the whole group]. Even after we had that group discussion, they went back [to their small groups] and they still were struggling."**

...

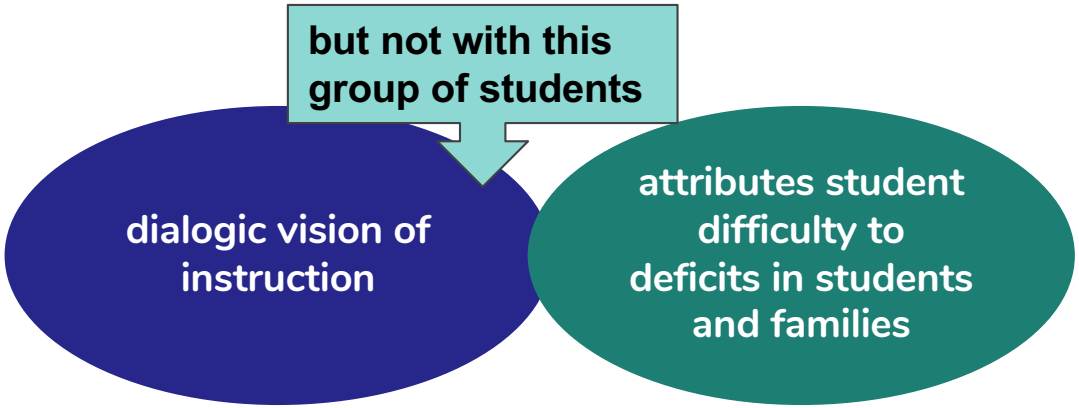
"**Actually, they probably were having a hard time with listening to other people and understanding what that person was even [saying].**"

conceptual

Patty: Patterns of interpretation

- Articulated a *conceptual interpretation* 7 of the 8 times she responded to the data
  - Inquired about students' experiences
  - Inquired about students' experiences in relation to instructional decisions
- Consistently treated students' responses (and experiences of discussion in the lesson) as legitimate and reasonable
  - In the one instance of *symbolic interpretation*, Patty still treated students' responses as legitimate and reasonable
- In many of Patty's responses, we see "openings" (Little, 2003) that are left "open"

George: Vision and perspectives



- tasks in which students “make sense” of the mathematics and “prove what they’re coming up with”
- discussions as opportunities for student’ to understand “the thinking that goes behind the math” and so they can ‘make sense of it”, for future problem solving

“Well, we could have enablers, parents that they're not even involved. So if they're not involved, then the kids are not into it. Because a lot of [the students] don't have any intrinsic beliefs or anything, so if it doesn't come from the parent or somebody that they look up to, it's not gonna happen for them.”

George: Sample response to data

What did you need to do in order to be successful today?

- 56% **solve problems using the steps the teacher showed me**
- 41% **listen to and make sense of other students' reasoning**
- 7% **finish all my work**

***One student chose 2 responses.**

".. it's what they're accustomed to. **Whenever we give them work that they have to talk to each other and reason things out, it takes them so long to do it.** Again, they get so easily distracted. **They're coming from classes from last year where they were just told, this is how you do this. T**hey're used to it. **For this class, there's only a few of them that would look at something ...** You've got [student A], and you've got [student B], and you've got [student C], [student D] when he's here, maybe [student E], [student F] ... You just give them something and they'll try to figure it out... **But the rest of them, they want to be spoonfed.** You have to, 'this is how you do this, this is what this means.' **That's what I'm trying to get away from, but maybe I'll do it next year, because it didn't happen this year."**

symbolic

George: Sample response to data

How comfortable were you sharing your thinking in today's whole class discussion?

- 32% **not comfortable**
- 61% **somewhat comfortable**
- 11% **very comfortable**

***One student chose 2 responses.**

[Focusing on responses to somewhat and very comfortable]

"*So why weren't they participating?* That's what comes to mind for me…. Other than the two or three that was doing all of the answering."

conceptual

"So maybe they just checked it, made a roadblock
...
Because [if they had felt truly somewhat comfortable] it'd been people raising their hand to answer the questions, other than the two that were."

dismissive

George: Patterns in interpretation

- Articulated a *symbolic interpretation* and/or dismissed the data 5 of the 6 times he responded to the data
  - Reinforced extant (deficit) stances towards students or accounts of instruction
- One instance of *conceptual* interpretation -- but this “opening” was quickly “closed” (Little, 2003)

Provisional Findings

- Teachers' current perspectives (and practice) *matter* for how they interpret this specific representation of practice
  - *and in relation to their vision of high-quality mathematics instruction ??*
- This particular representation can provide opportunity for teachers to 'try on' student perspectives, to treat student experience as an issue of instruction … but it appears important that teachers:
  - view their students as capable of engaging in the intended forms of practice
  - are pursuing genuine questions about teaching
  - see value in trying on students' perspectives

Future (Ongoing) Research

- Investigate similar questions with teachers who articulate different visions of high-quality instruction, and in relation to current teaching practice

- Develop a framework to inform the design and facilitation of professional learning in which these representations of practice are embedded
    - Consider whether this framework is of use beyond this specific kind of representation of practice

Thank you!

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