

Embedding Practical Measures in Supports for Teachers' Learning

Federal Way Public Schools

Metro Nashville Public Schools

San Francisco Unified School District

Stanford University

University of Washington

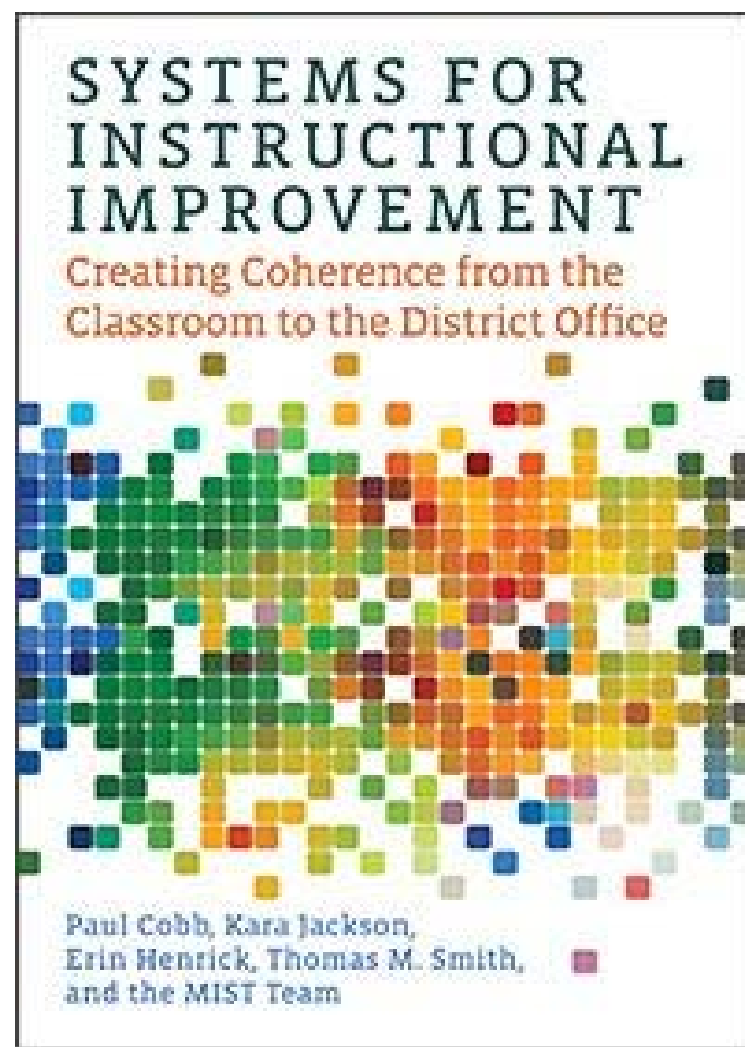
Vanderbilt University

Agenda

- Introduction to practical measures
- Practical measures for equity
- Practical measures as supports for teachers' and coaches' learning
- Practical measures as supports for teachers' collective learning
- Questions
- Closing comments and discussion

Background

- **Goal:** Develop a theory of action for improving instruction at the district-wide scale
 - Coherent Instructional System
 - School Instructional Leadership
 - District Instructional Leadership
- **Challenge:** How to implement this theory of action effectively



Background

- How can practitioners assess their instructional improvement efforts *easily* and *rapidly*?
- 3 Research Practice Partnerships (RPPs) working to improve the quality of discourse in middle-grades mathematics



Practical Measures

- Measures of improvement
(Carnegie Foundation for the Advancement of Teaching)
- Provide practitioners with frequent, rapid feedback
 - 3 minutes or less to administer
 - Easy to analyze
- Enable practitioners to assess and adjust their practices
- **Conjecture:** Can also serve as *levers* for improvement

High Quality Mathematics Instruction

- Challenging, non-routine tasks
- Launch
- Individual or Small Group Work
- Whole Class Discussion
 - Teachers press students to explain and justify their reasoning
 - Teachers presses make connections between different solutions

Practical Measures of Mathematics Discussions

- Two practical measures of the quality of discussions:

Small Group Discussions

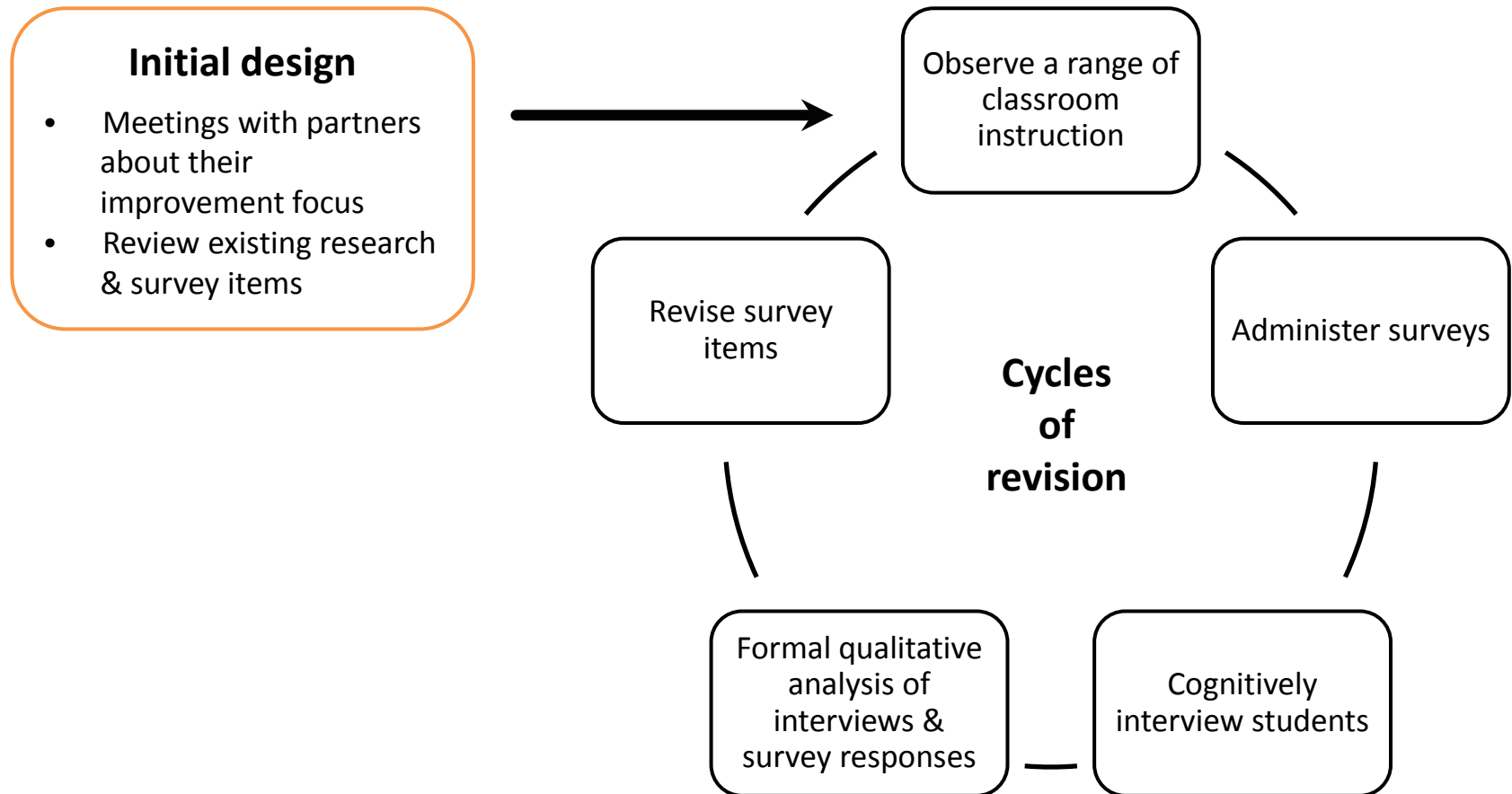


Whole Class Discussions



- Developed in partnership with teachers, coaches, and district leaders

Development Process



Aspects of Productive Mathematics Discussions

- Selecting and implementing cognitively demanding tasks that engage students in mathematical reasoning
 - Ex: What did you need to do to be successful in your math class today?
- Establishing a classroom culture in which students feel safe to share and respond to ideas
 - Ex: How comfortable were you sharing your thinking in the whole class today?
- Pressing and supporting students to explain their reasoning in ways that other students can understand

Example: Whole Class Discussion Survey

	Class 1	Class 2																								
<p>1. What did you need to do in order to be successful in your math class today?</p> <ul style="list-style-type: none">Solve problems using the steps the teacher showed meListen to and make sense of other students' reasoningFinish all of my work	<table border="1"><thead><tr><th>Response</th><th>Percentage</th><th>Count</th></tr></thead><tbody><tr><td>Solve problems using the steps the teacher showed me</td><td>56%</td><td>10</td></tr><tr><td>Listen to and make sense of other students' reasoning</td><td>33%</td><td>6</td></tr><tr><td>Finish all of my work</td><td>11%</td><td>2</td></tr></tbody></table> <p>n = 18</p>	Response	Percentage	Count	Solve problems using the steps the teacher showed me	56%	10	Listen to and make sense of other students' reasoning	33%	6	Finish all of my work	11%	2	<table border="1"><thead><tr><th>Response</th><th>Percentage</th><th>Count</th></tr></thead><tbody><tr><td>Solve problems using the steps the teacher showed me</td><td>27%</td><td>4</td></tr><tr><td>Listen to and make sense of other students' reasoning</td><td>67%</td><td>10</td></tr><tr><td>Finish all of my work</td><td>6%</td><td>1</td></tr></tbody></table> <p>n = 15</p>	Response	Percentage	Count	Solve problems using the steps the teacher showed me	27%	4	Listen to and make sense of other students' reasoning	67%	10	Finish all of my work	6%	1
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<p>3. How comfortable were you sharing your thinking in the whole class today?</p> <ul style="list-style-type: none">Not comfortableSomewhat comfortableVery comfortable	<table border="1"><thead><tr><th>Response</th><th>Percentage</th><th>Count</th></tr></thead><tbody><tr><td>Not comfortable</td><td>30%</td><td>3</td></tr><tr><td>Somewhat comfortable</td><td>30%</td><td>3</td></tr><tr><td>Very comfortable</td><td>40%</td><td>4</td></tr></tbody></table> <p>n = 10</p>	Response	Percentage	Count	Not comfortable	30%	3	Somewhat comfortable	30%	3	Very comfortable	40%	4	<table border="1"><thead><tr><th>Response</th><th>Percentage</th><th>Count</th></tr></thead><tbody><tr><td>Not comfortable</td><td>47%</td><td>7</td></tr><tr><td>Somewhat comfortable</td><td>53%</td><td>8</td></tr></tbody></table> <p>n = 15</p>	Response	Percentage	Count	Not comfortable	47%	7	Somewhat comfortable	53%	8			
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Potential Users

- Teachers:
 - Identify aspects of instruction on which to work
 - Track quality of math instruction over time
- Coaches:
 - Identify aspects of instruction in need of improvement
 - Negotiate instructional improvement goals with teachers
 - Track quality of math instruction over time
- District math specialists:
 - Track quality of math instruction over time
 - Use to inform school and district improvement efforts



Center to Support
Excellence in Teaching

Practical Measures for Equity

San Francisco Unified School District
Stanford University

History of Use

- Initial reactions were positive, focused on responses overall (e.g., “that’s great that 90% answered ...”).
- More recently, have begun to dig into the data (e.g., “I guess my question is, ‘who are these kids?’”).

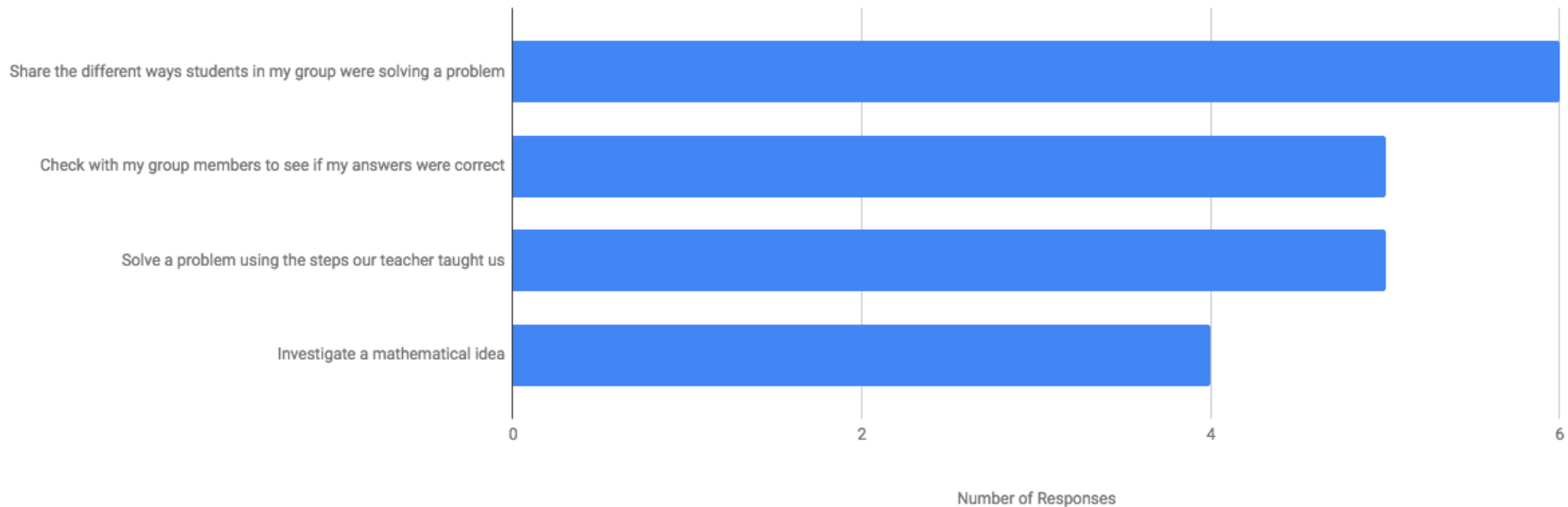


Administering Surveys Digitally

- SFUSD students take the practical measures surveys online using Google Forms.



Question #10. What was the purpose of working in a small group today? (Choose one item that best describes your experience.)



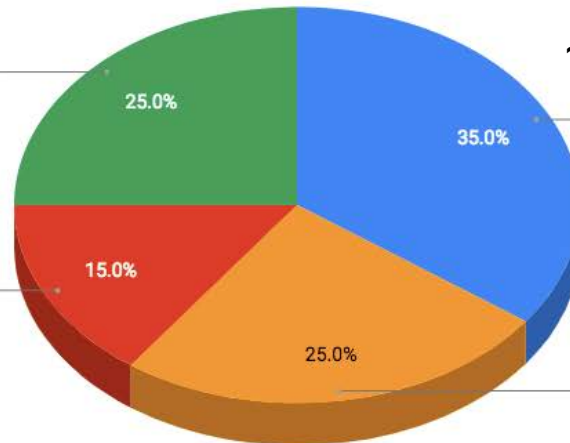
Disaggregating Data

- In interviews and focus group, both coaches and teachers expressed desire to know how individual students responded.

Question #12. Who talked the most in your small group today? (Choose one.)

Students who asked questions
25.0%

The teacher
15.0%



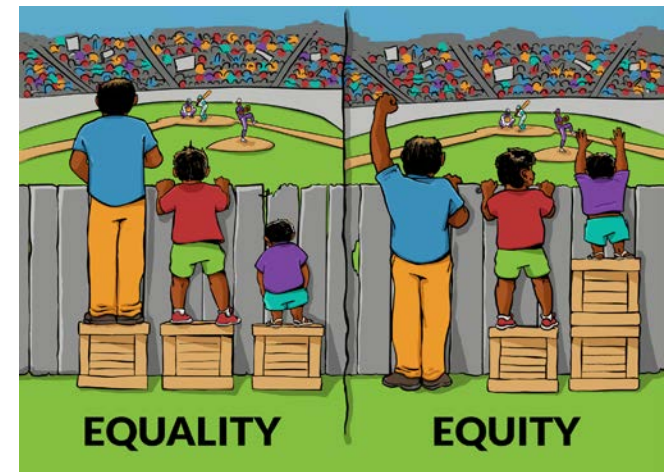
*"I guess my question is,
'who are these kids?'"*
~District Coach

Students who shared ideas
35.0%

Students who knew the right answer
25.0%

SFUSD Commitment to Equity

- “All students can and should engage in rigorous mathematics through rich, challenging tasks.”
- Some SFUSD coaches now using the measures to address issues of equity alongside teachers.



www.sfusdmath.org/our-vision.html

Teacher Inquiry

- Movement from direct instruction.
- Kids in rows vs. groups.
- Focal student – African American male with IEP.

“I want to know if group-work works for this student.”

~Teacher

“Make changes in the lesson, group task, monitor group to make the group more inclusive.”

~Coach

Measures for Focal Student Coaching

10) What was the purpose of working in a small group today? (Choose one item that best describes your experience.)

- Solve a problem using the steps our teacher taught us
- Check with my group members to see if my answers were correct
- Investigate a mathematical idea
- Share the different ways students in my group were solving a problem

12) Who talked the most in your small group today? (Choose one.)

- Students who knew the right answer
- Students who shared ideas
- Students who asked questions
- The teacher

Evolving Curiosity

“That’s great that 90% answered ...”

?

“I guess my question is, ‘who are these kids?’”

?

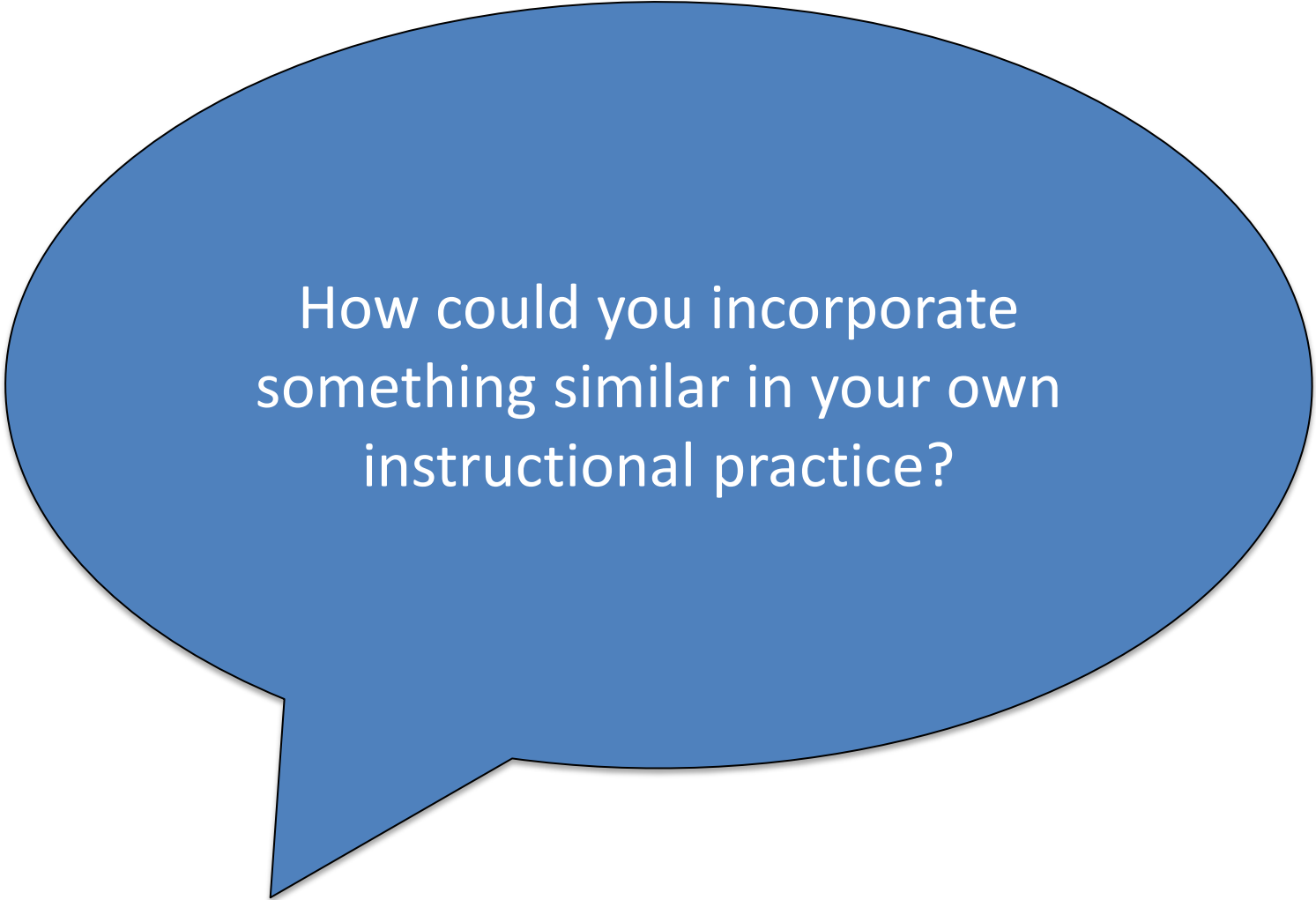
“So, why did this happen?”

?

“What can we do now?”

?

Turn and Talk



How could you incorporate something similar in your own instructional practice?

Practical Measures as Tools for Supporting Teachers' and Coaches' Learning

Metro Nashville Public Schools
Vanderbilt University

Facilitating High Quality Mathematics Discussions

- Teacher poses non-routine mathematics tasks that focus on problem solving and conceptual understanding
 - Anticipates likely student solution strategies when planning a lesson
 - Monitors student solution strategies during individual/group work
 - Selects particular students to present their solution strategies
 - Purposefully sequences student explanations to highlight mathematically significant ideas
 - Helps students make connections between different solution strategies

(Stein, Engle, Smith, Hughes, 2008)

The Current Situation in MNPS

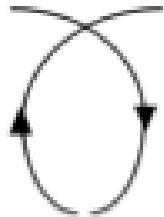
- Many teachers are not conducting whole class discussions of students' solution strategies
 - Most discussions that are occurring are show-and-tell
 - Unlikely to support students' learning
- Learning to plan and facilitate high-quality discussions involves *significant teacher learning*
 - Requires sustained support

One-on-One Coaching Initiative

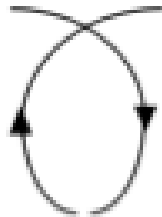
- Middle grades mathematics coaches working with teachers in their classrooms to support teachers' in planning and leading productive math discussions
- Supporting teachers to plan and lead productive math discussions is demanding work that involves *significant coach learning*
 - Requires sustained support
- Eight professional development sessions for 15 middle-grades mathematics coaches across the current school year

Research Practice Partnership

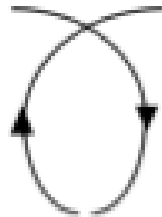
- Literature on supporting coaches' learning is thin
 - Little guidance on the design of coach PD sessions
- Conducting the coach PD sessions as a design study
 - Test and revise our design conjectures on an ongoing basis



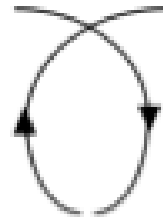
Session 1



Session 2

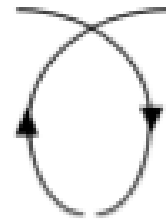


Session 3



Session 4

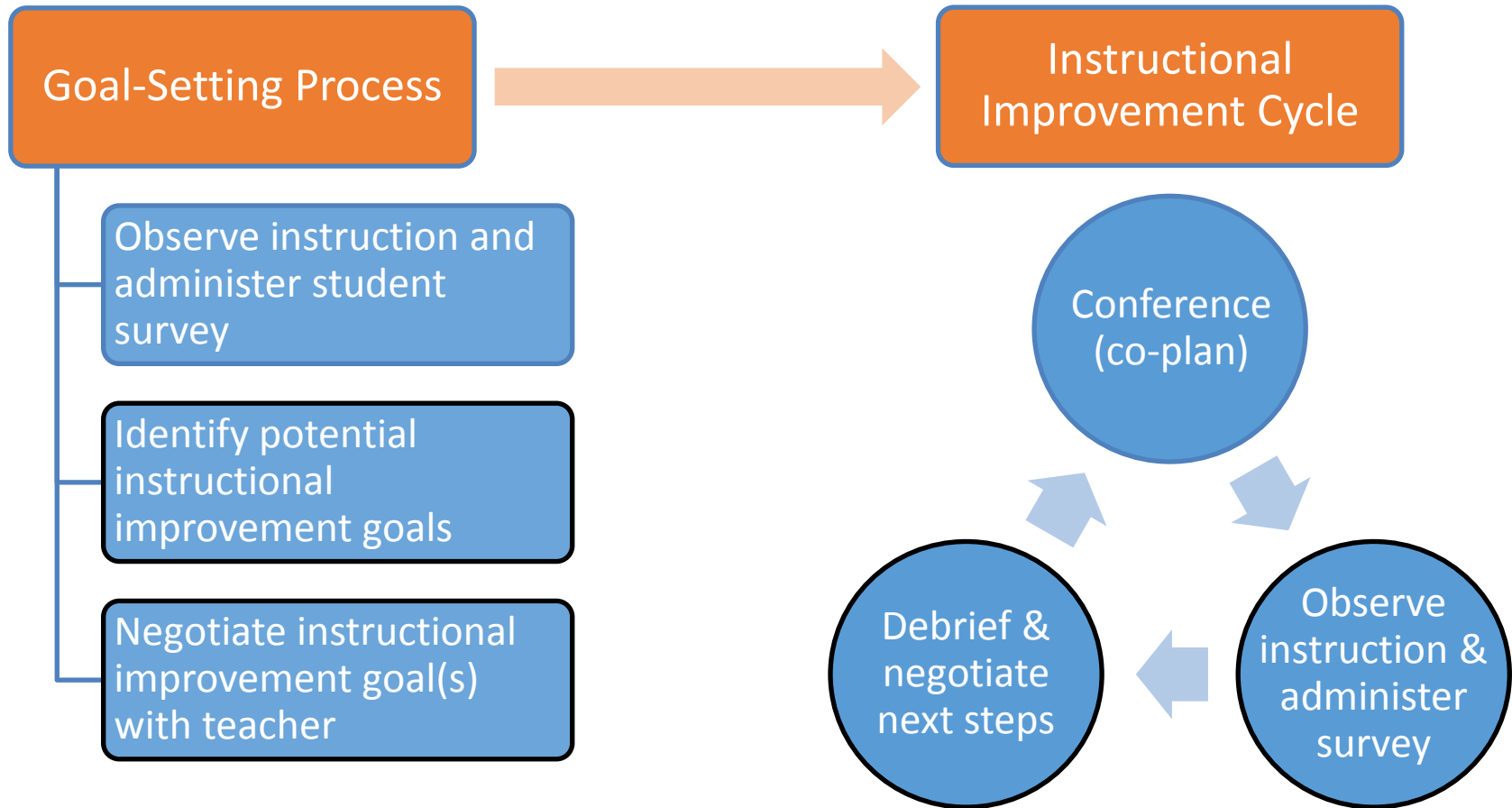
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Session 8

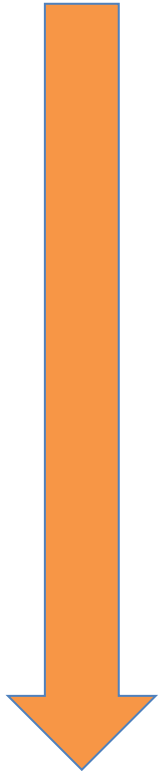
- Researchers and practitioners co-plan and debrief each session

Coaching: Goal-Setting and Instructional Improvement



Negotiating Instructional Improvement Goals

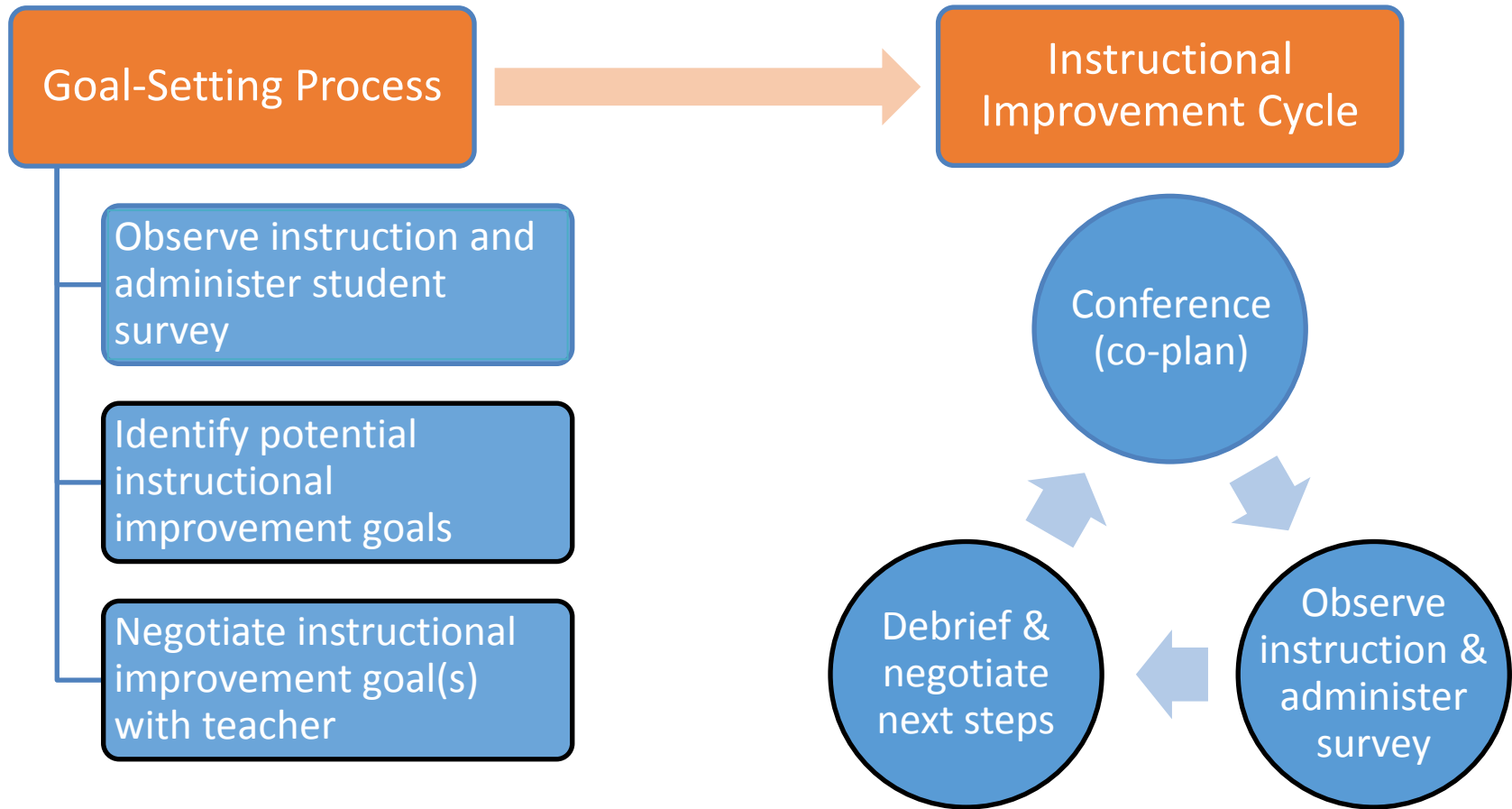
Collaborative
analysis



Goal-setting

- How did you expect students would respond on the survey?
- Are any of the students' responses surprising? Why do you think they responded that way?
- Given the students' responses, what are your thoughts about the impact of the discussion on their learning? Why?
- If you could teach the lesson again, is there anything you would do differently? Why?
- What do you see as the things we should work on next?

Coaching: Goal-Setting and Instructional Improvement

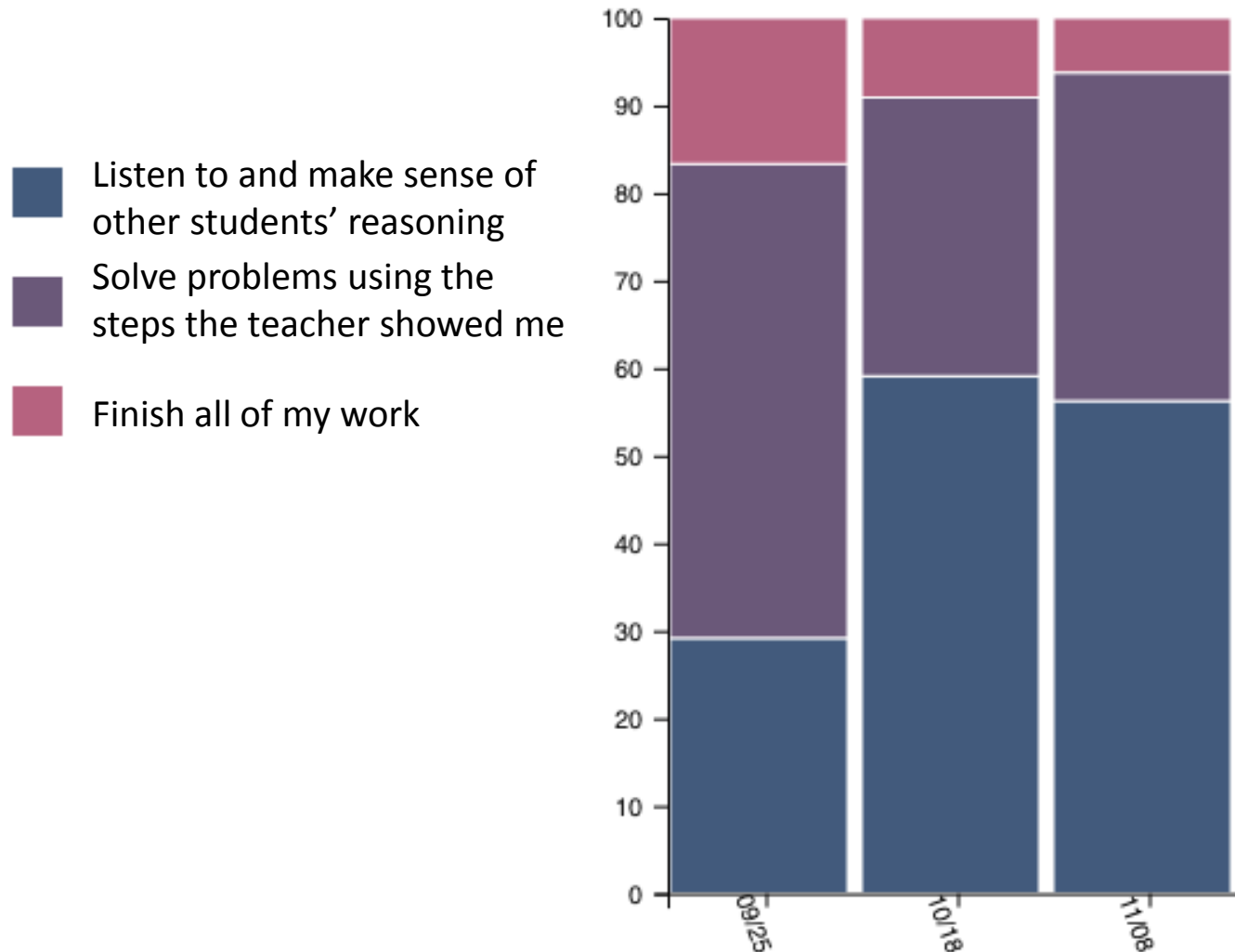


Levers for Instructional Improvement

- Integrate practical measures into supports for teachers' professional learning
- Using the whole class survey measure can support coaches in:
 - Identifying **initial** instructional improvement goals for individual teachers
 - Negotiating **initial** instructional improvement goals with teachers
 - Analyzing instruction **and** negotiating next steps for improving instruction

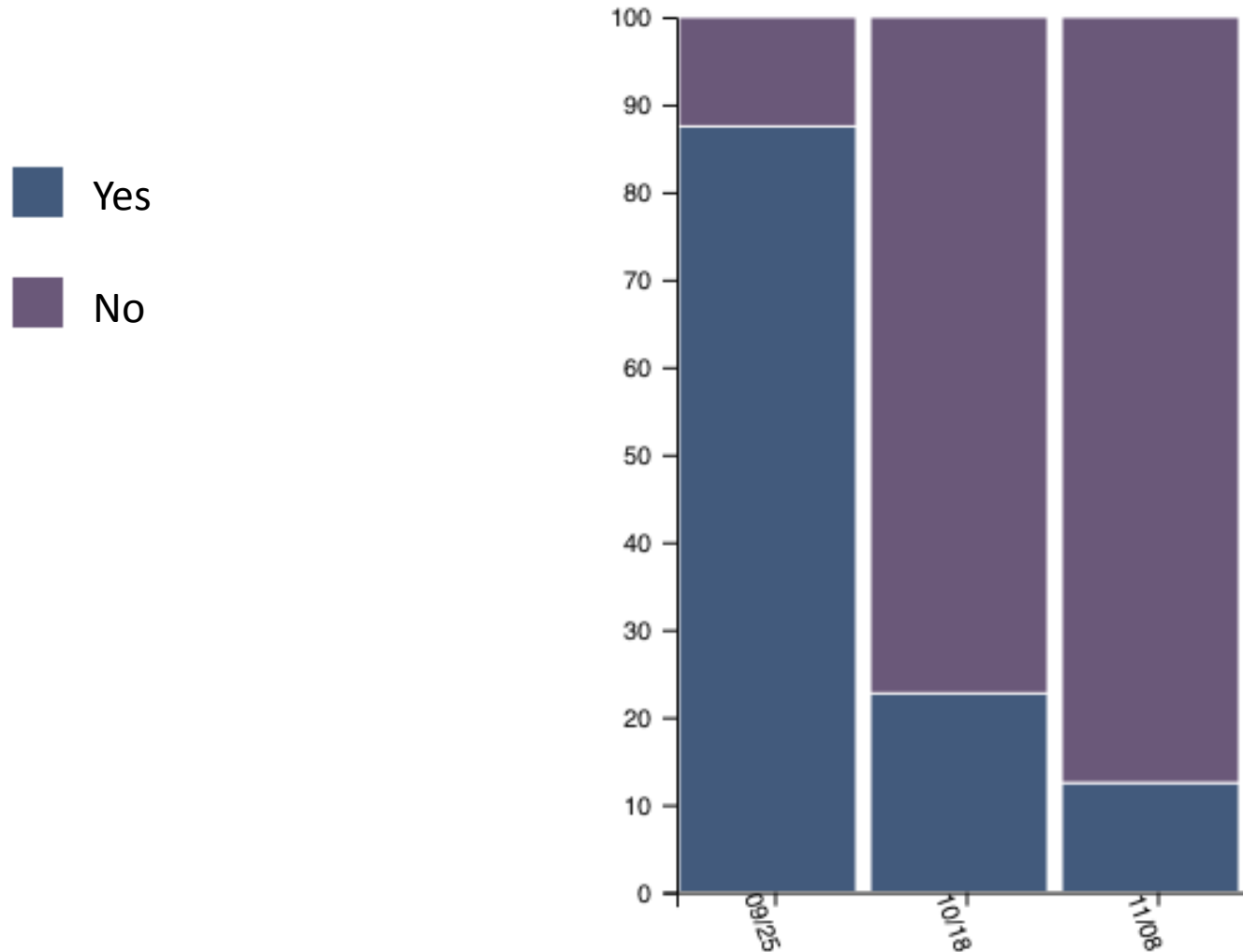
Measures of Improvement

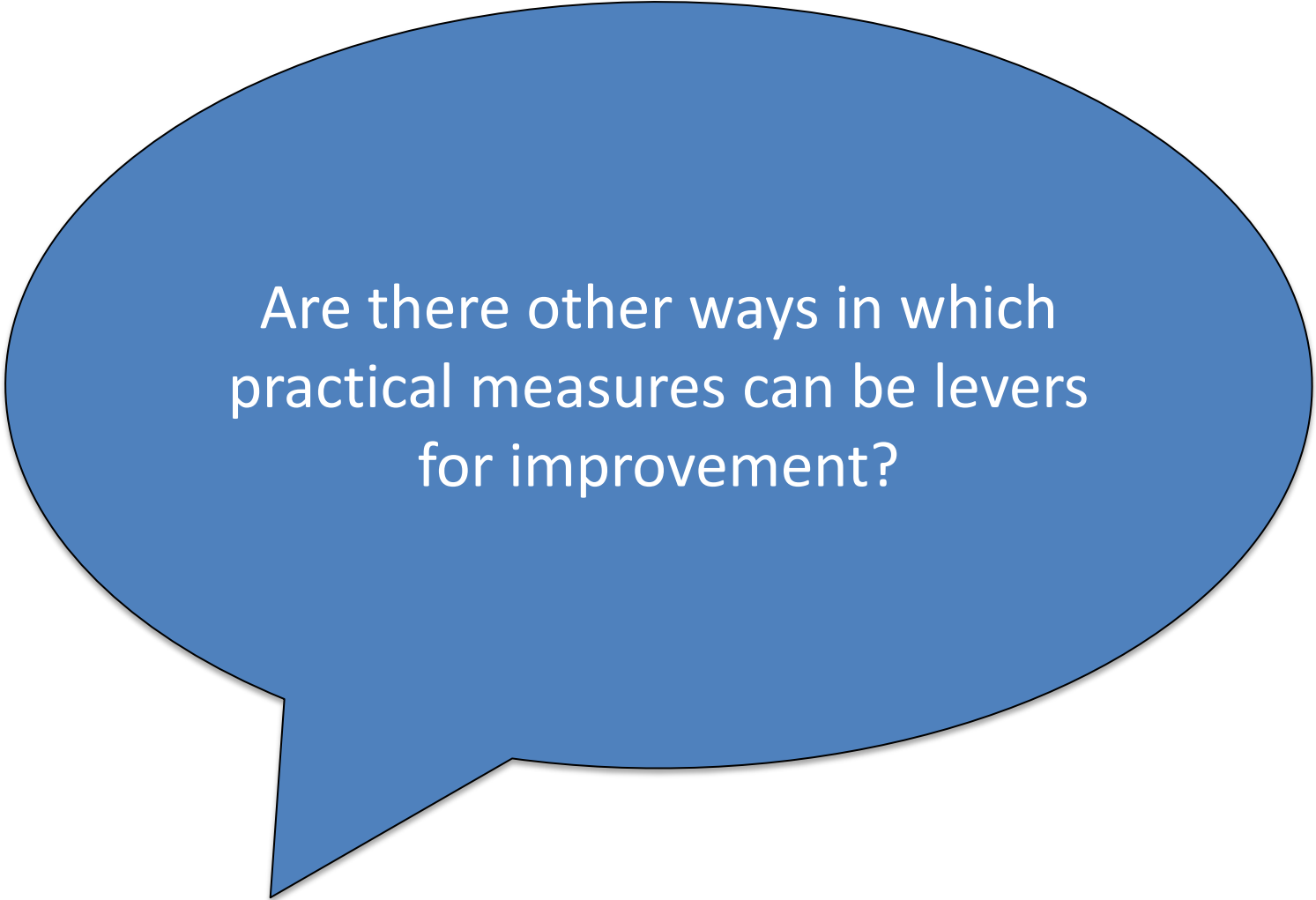
- What did you need to do in order to be successful in your math class today?



Measures of Improvement

- Did you have trouble understanding your classmates' thinking in today's whole class discussion?





Are there other ways in which practical measures can be levers for improvement?

Practical Measures as Tools for Supporting Teachers' Collective Learning

Federal Way
University of Washington

Our Newest Friend, Colleague, and Partner



Context

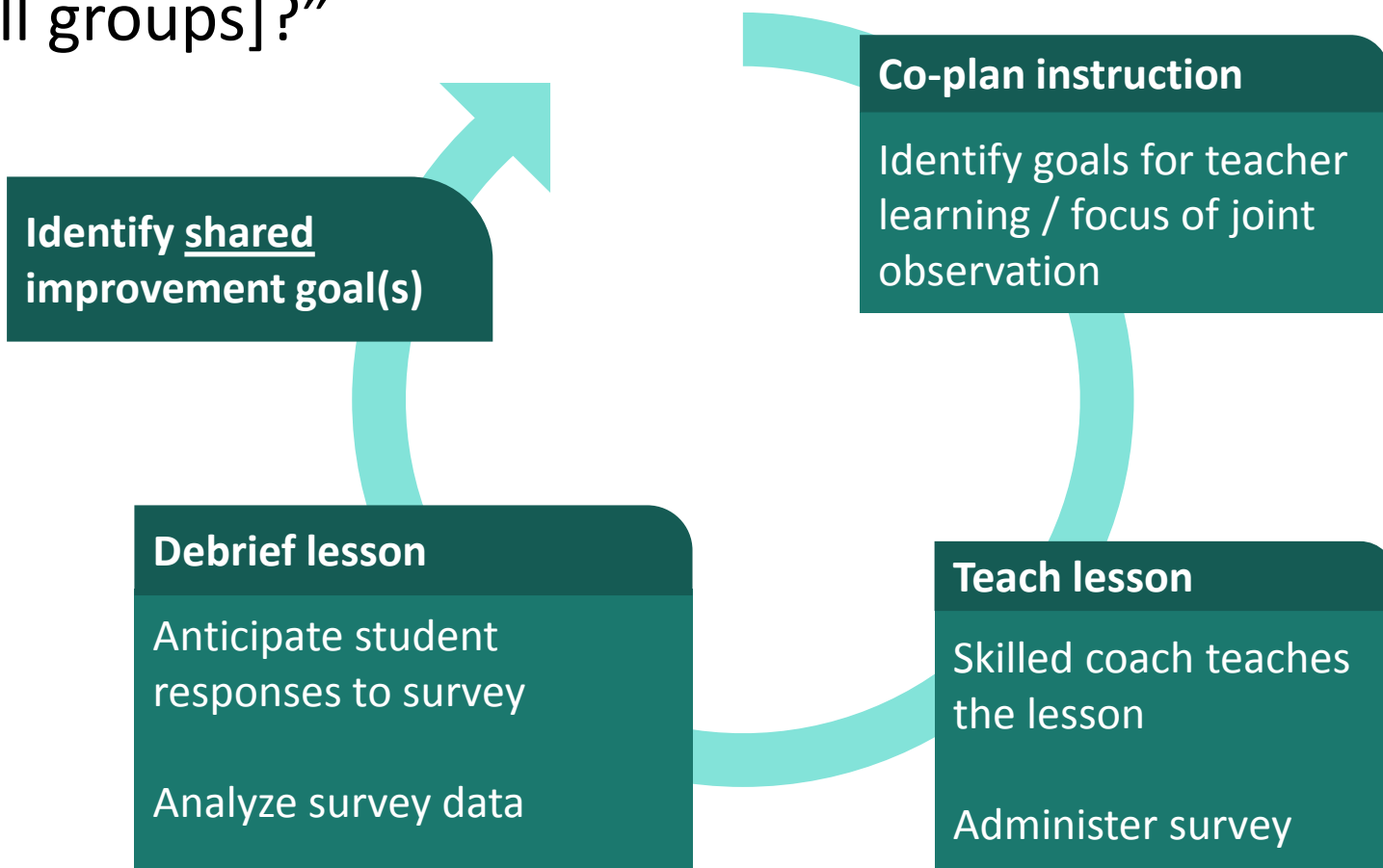
- A mathematics department that regularly engages in department-wide professional development
- Different views on the usefulness and purpose of small group discussion during math lessons
 - Some teachers have incorporated small group discussion into their practice
- Department-wide, collaborative professional development facilitated by a sophisticated coach

Department-Wide Professional Development

- The teachers and coach collaboratively plan a lesson
- One or more teachers (or an instructional coach) teaches the lesson while others observe
 - In this case: the coach taught the lesson
- The teachers and coach then collaboratively analyze the lesson

Department-Wide Professional Development

- Before the PD session: “How much are students really learning [when they are discussing a problem in small groups]?”

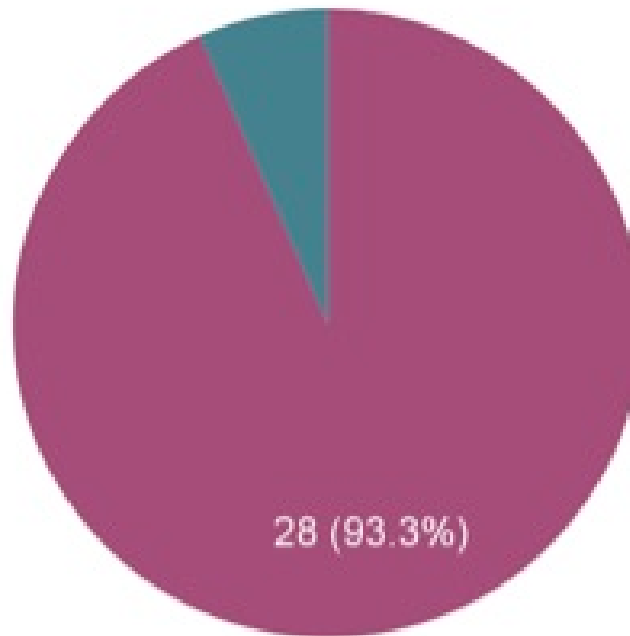


Department-Wide Professional Development

- The teachers and coach analyzed students' responses to the practical measures
- Teachers were particularly intrigued by this item:

9. Did listening to other students in your small group help make your thinking better?

- Yes
- No



Shared Improvement Goal

- All the teachers had their students work in groups in subsequent lessons
- Together, the teachers selected a more rigorous math task for an upcoming lesson
 - Concluded that group work requires mathematical tasks that are worth discussing and solving together

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How can practitioners use practical measures to support teachers' development of **will** and **agency** around improvement efforts?

Questions?

- To access the surveys, visit:
www.education.uw.edu/pmr2
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Closing Comments

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