Affordances of and Challenges in Using Practical Measures to Advance Equity and Justice in Mathematics Teaching and Learning

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https://www.pmr2.org

Materials:
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Carnegie Foundation Summit on Improvement in Education

Carnegie Foundation
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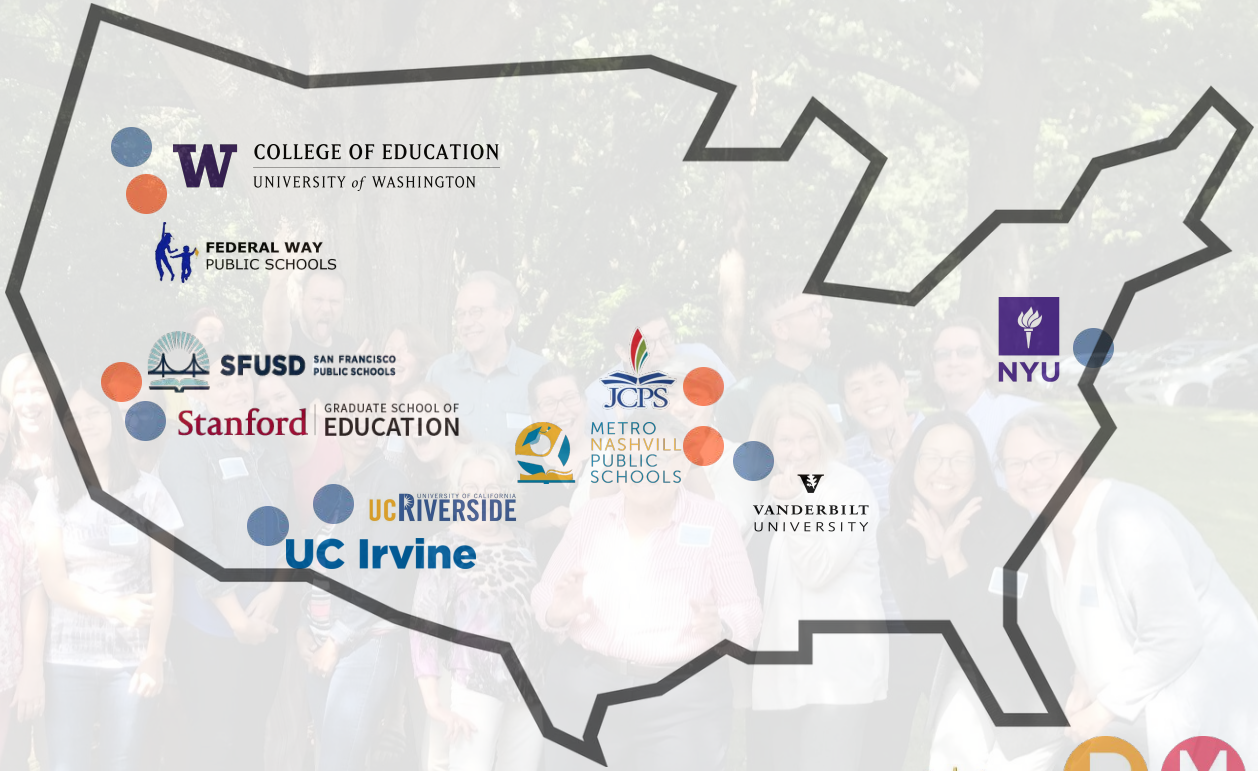
Our context: 3 research-practice partnerships working to improve secondary mathematics teaching and learning

Develop a system of practical measures, data representations & routines to support improvement of mathematics teaching

Investigate the use of the measures, data representations & routines in context



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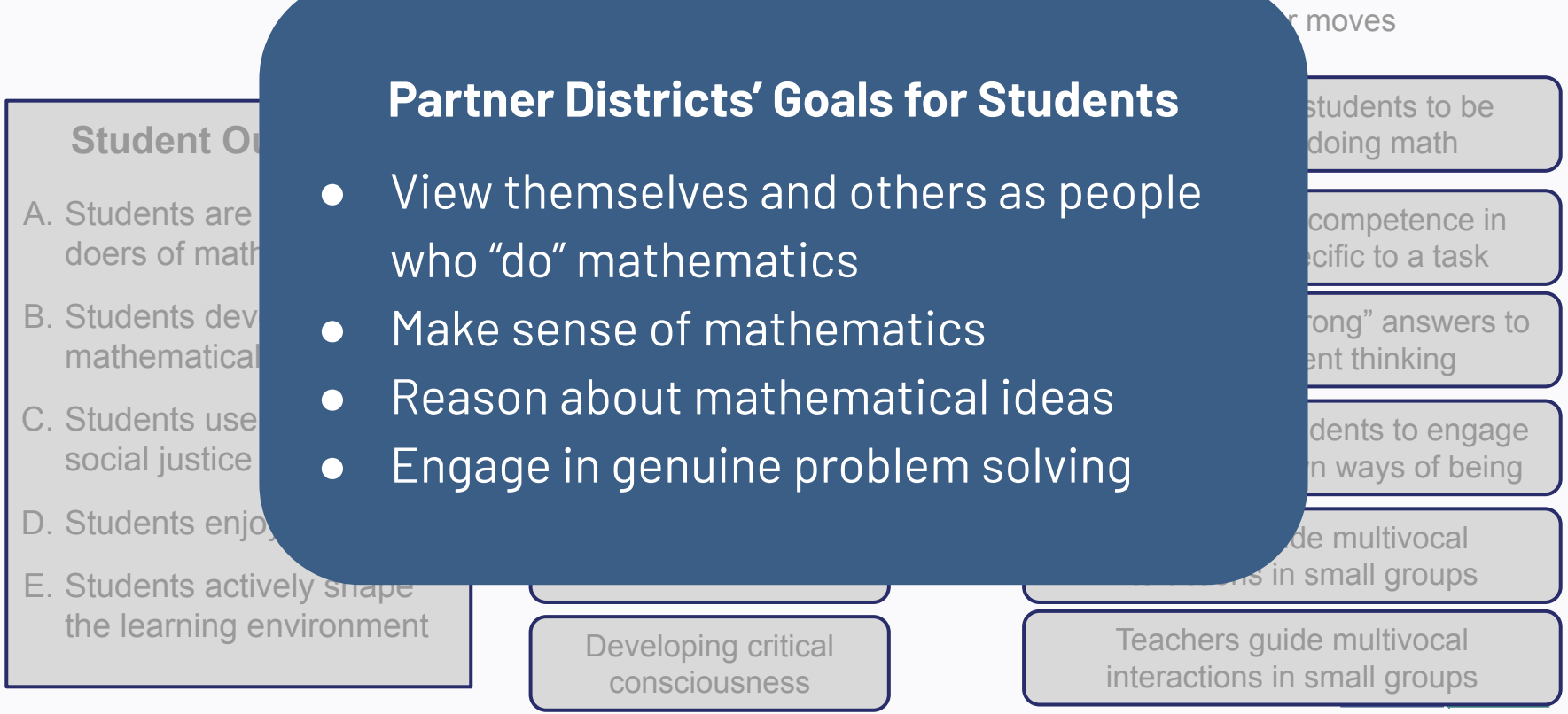
Conceptualizing Math, Justice, & Equity

Partner Districts' Goals for Students

- View themselves and others as people who "do" mathematics
- Make sense of mathematics
- Reason about mathematical ideas
- Engage in genuine problem solving



Conceptualizing Math, Justice, & Equity

Student Outcomes

A. Students are competent doers of math

B. Students develop mathematical identities

C. Students use math for social justice

D. Students enjoy math

E. Students actively shape the learning environment

Teaching Practices	Teacher moves
Responding to student behavior	Teachers allow students to be human while doing math
Positioning students as capable	Teachers assign competence in public ways specific to a task
Attending to student thinking	Teachers value “wrong” answers to validate student thinking
Drawing on funds of knowledge	Teachers invite students to engage in math in their own ways of being
Disrupting hierarchies	Teachers guide multivocal interactions in small groups
Developing critical consciousness	Teachers guide multivocal interactions in small groups

- **Achieving an ambitious, equity-oriented vision of mathematics teaching requires – in part – ongoing professional learning for teachers.**
- **Practical measures are one TOOL among many to support and enhance ongoing professional learning.**

Classroom Practical Measures: Student-Facing Surveys

- **Student-facing surveys** that elicit students' perspectives on part of a lesson
- **Focus on key aspects of a mathematics classroom learning environment that research indicates matters for equity in students' learning opportunities, and for students' identities.**
- **Quick, easy to administer** (e.g., surveys are 2-3 minutes, **electronic** or **paper form**)
- Developed in **partnership** with students, teachers, coaches, professional learning facilitators, and district math specialists
- Available in **15 languages**

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CONTENT of the measures	ANALYSIS of students' perspectives

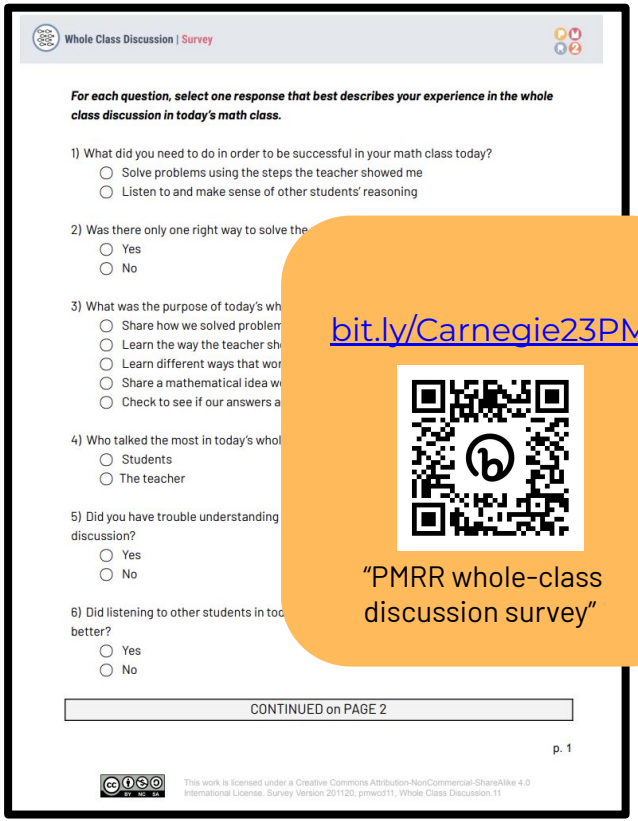
Example Survey: Students' Perspectives of Whole-Class Discussion

1. **Take a look at the Whole-Class Discussion Survey.** (Download an electronic version via the QR code to the right.)

2. **Turn & Talk with a neighbor:**
   - How might students' responses to the items provide you with insight about inequities in the classroom?
   - How might they support you to identify goals for advancing equity and justice?

3. **Submit at least one idea via Slido:**

   slido.com
   #1892 130


Whole Class Discussion | Survey

For each question, select one response that best describes your experience in the whole class discussion in today's math class.

1) What did you need to do in order to be successful in your math class today?
   - ○ Solve problems using the steps the teacher showed me
   - ○ Listen to and make sense of other students' reasoning

2) Was there only one right way to solve the
   - ○ Yes
   - ○ No

3) What was the purpose of today's wh
   - ○ Share how we solved problem
   - ○ Learn the way the teacher sh
   - ○ Learn different ways that wor
   - ○ Share a mathematical idea w
   - ○ Check to see if our answers a

4) Who talked the most in today's whol
   - ○ Students
   - ○ The teacher

5) Did you have trouble understanding discussion?
   - ○ Yes
   - ○ No

6) Did listening to other students in too better?
   - ○ Yes
   - ○ No

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"PMRR whole-class discussion survey"

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CONTENT of the measures	ANALYSIS of students' perspectives

- How might students' responses to the items provide you with insight about inequities in the classroom?
- How might they support you to identify goals for advancing equity and justice?

Respond at
slido.com
#1892 130

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CONTENT of the measures	ANALYSIS of students' perspectives

- Communicates what teachers care about to students

"...one of the benefits of having the practical measures like in a classroom with the students is even asking them some of these questions might give them some insight into like, 'Oh I hadn't really thought about that. **Oh my teacher is interested in whether or not I feel comfortable talking' ... it communicates something just even in the nature of the questions."**

Coach / District Math Specialist

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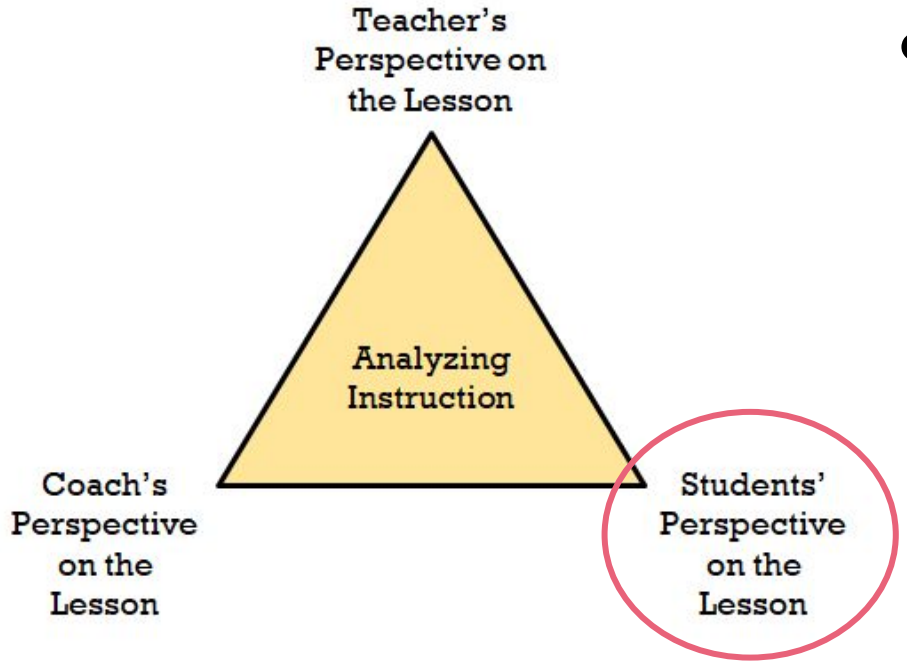
CONTENT of the measures	**ANALYSIS of students' perspectives**



- Value of highlighting students' voices / bringing students' perspectives to bear on teaching decisions

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CONTENT of the measures

ANALYSIS of students' perspectives

What do you notice in these teachers' responses??

What differences stand out?

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

"[The date of the survey administration] is 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 Wanda***

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

"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." - ***Teacher Nicole***

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CONTENT of the measures	**ANALYSIS of students' perspectives**

- Analyzing the resulting data can surface educators' perspectives on their students' capabilities
  - Interpreting students' responses *can* reify deficit narratives...
  - But it also presents an opportunity to make deficit narratives an explicit object of inquiry!

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CONTENT of the measures	**ANALYSIS of students' perspectives**

→ Importance of establishing orientations and routines for analyzing resulting data

1. take a learning stance
2. value one another's perspectives
3. share an appreciation for the complexity of teaching

Affordances of and Challenges in Using Practical Measures to Advance Equity and Justice in Mathematics Teaching and Learning

- Attention to equity and justice matters THROUGHOUT the practical measurement life cycle
  - Content of the measure and how it's designed, with whom
  - Social routines for administering the measure
  - Social routines + orientations for analyzing the resulting data
  - How the data are visualized, and for/with whom

- Integration of practical measurement in ongoing professional learning is critical

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Thank you!

Practical Measures, Routines and Representations for Improving Instruction

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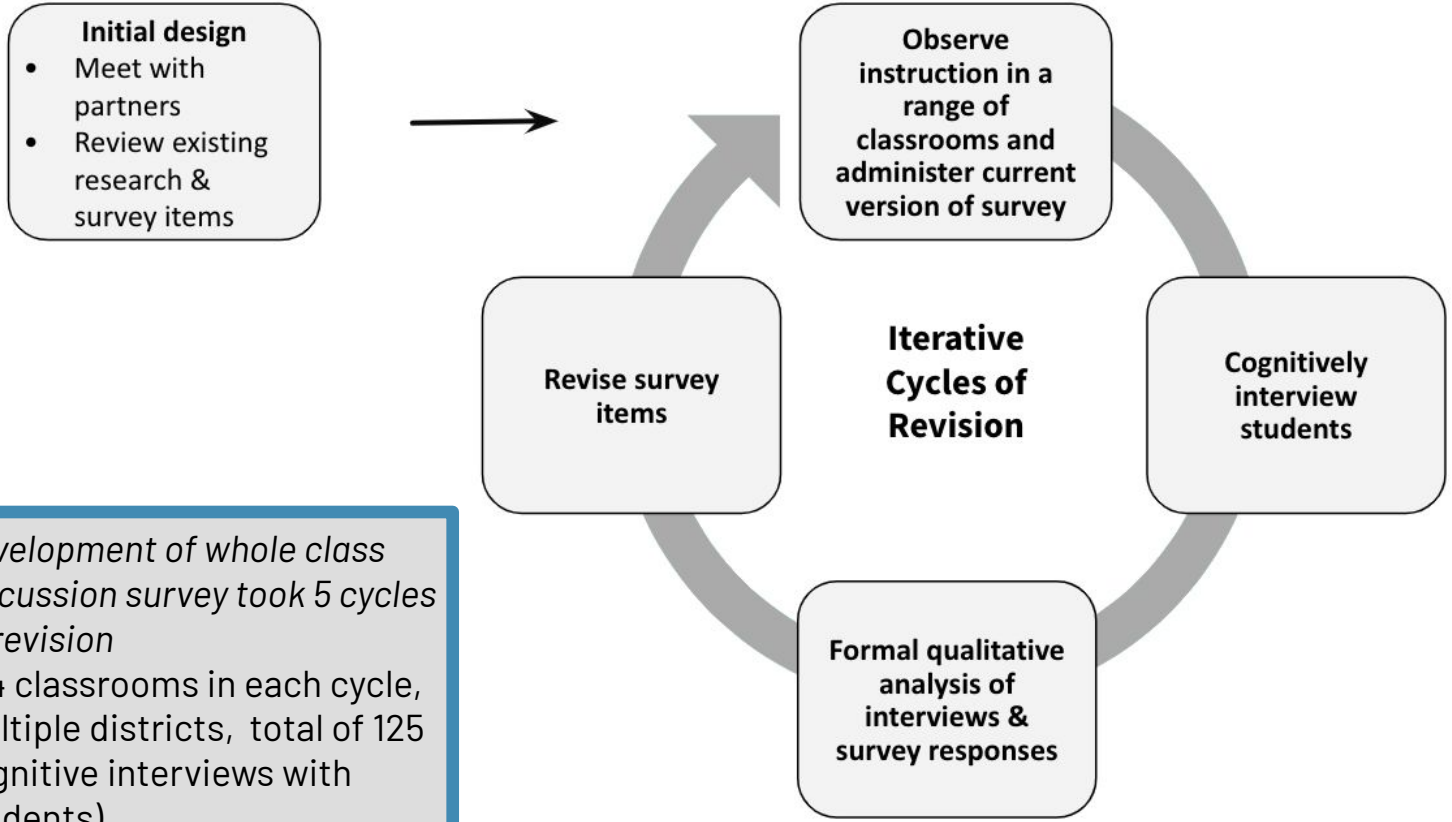
Appendix

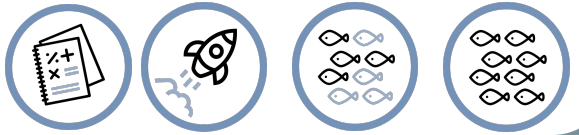
Developing the Practical Measures of Classroom Learning Environment



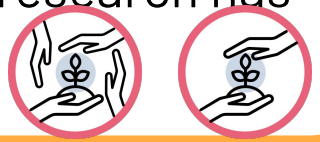
Development of whole class discussion survey took 5 cycles of revision
(~4 classrooms in each cycle, multiple districts, total of 125 cognitive interviews with students)

System of Practical Measures, Representations, & Routines

Practical measures of key aspects of the **mathematics classroom learning environment** that research has linked to *student* learning



Practical measures of key aspects of **professional learning supports** (e.g., collaborative professional development, one-on-one coaching) that research has linked to *teacher* learning



multiple users (e.g., teachers, PD facilitators, system leaders)

routines for administering the measures, and analyzing the resulting data