Looking at Student Work with Grade-level Colleagues:

A Formative Assessment Protocol for Co-Planning

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Looking at Student Work (LASW)

Why might you be interested in having teachers collaboratively analyze student work?

Better understand individual students' current mathematical thinking

Examine beliefs about what students can do

Consider how instruction impacts student learning

Use assessment to inform instructional next steps

Improve student outcomes

Deepen mathematical content knowledge

Looking at Student Work (LASW)

- Developed the protocol in 8 Chicago Public Schools over 4 years (2011-2015)
- PreK through 3rd grade teachers in grade-level teams
- Teachers significantly outperformed comparison teachers on a measure of pedagogical content knowledge, controlling for pretest scores, grade level, and years of experience, after three years of intervention.

Looking at Student Work (LASW)

- Currently engaged in this work with
  - North Chicago School District #187
  - Latin School of Chicago
  - Archdiocese of Chicago Catholic Schools
- Body of research on Looking At Student Work (LASW) with older students, but it can begin before symbolic, written work
- Teachers assist in capturing evidence of student thinking (video, photos, transcription)

Looking at Student Work

Phase 1:

Selecting a Common Task & Anticipating Student Responses

Phase 2:

Analyzing & Learning From Student Work Samples

Looking at Student Work

1. Getting Started (5 min.)

Choose a facilitator to guide the group through the process and keep track of time.

Make sure everyone has a chance to review all proposed tasks. *What kind of thinking does the task require? What big idea(s) are addressed? Will all of your students be able to engage in the task?*

2. Selecting a Common Task (5 min.)

Facilitator asks each teacher to comment on the proposed tasks. Keep the focus on what the task will reveal about student understanding. Everyone has an opportunity to talk. *What are we hoping to learn about our students? Which task is best suited to our formative assessment goal?*

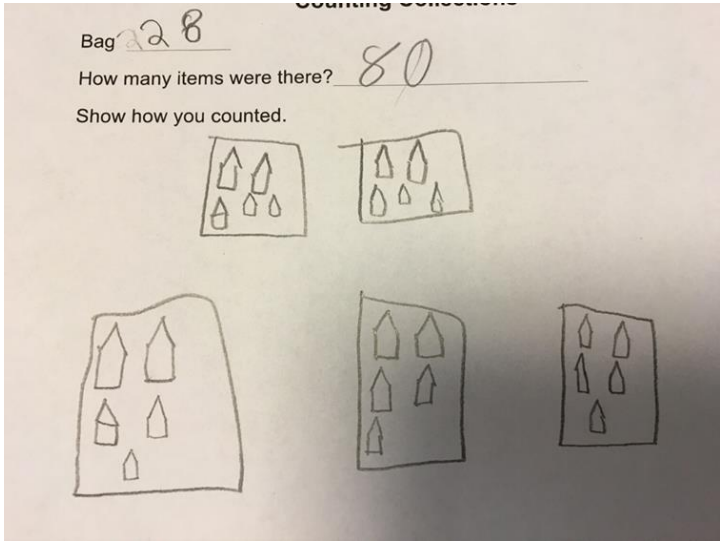
Come to a consensus about which task to implement.

Selecting a Common Task

- Consider cognitive demand (use 4-point scale from Stein & Smith, 1998)
- Examine language and context
- Weigh different number choices
- Ask, *What are we hoping to learn about our students? Which task is best suited to our formative assessment goal?*

Common Task: Counting Collections

- In Counting Collections (Franke, Kazemi, & Turrou (2018), children are given a collection of objects to count.
- Then, they record their collection on paper.



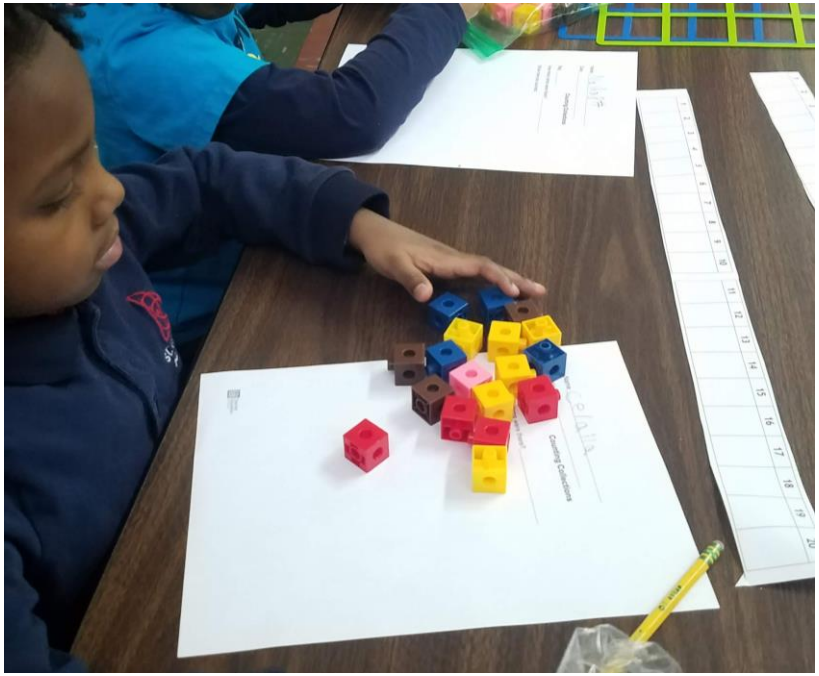
Evidence of Student Thinking

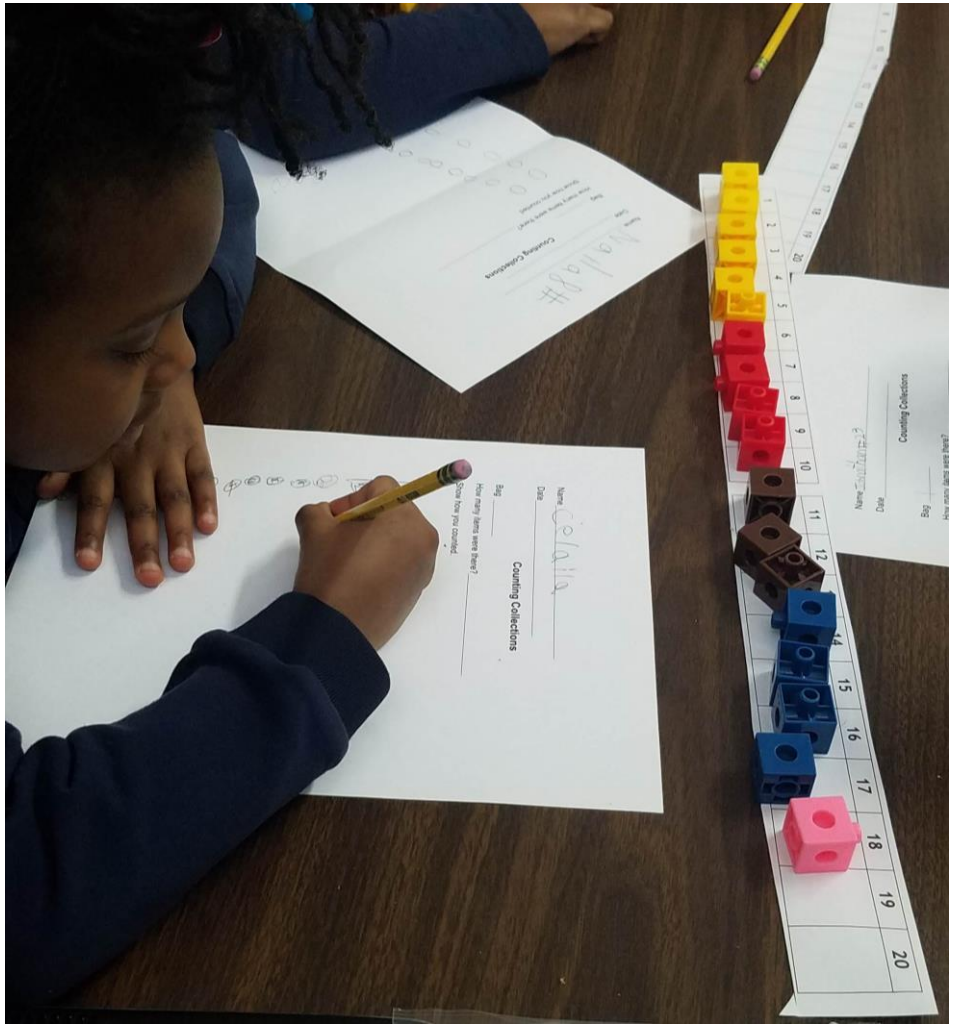
It is important to keep in mind that collecting students' written representations at the end of Counting Collections will not be sufficient information to understand children's ideas about counting and quantity.

- How did they count and how does that compare to their recording?
- Did they revise their thinking along the way?
- Did they know how to write the numeral, or did they consult a resource?

For answers to these kinds of questions, you will need to talk with children about their work.

A Case in Point: Counting in Kindergarten





Looking at Student Work

Phase 1 Guidelines

Phase 1 Guidelines structure conversations among teachers to select and plan for a common assessment task. The goal is to examine what a task offers teachers in terms of understanding student thinking and to foster common understanding about the development of student strategies.

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developmental sequence of student strategies, grouping ones that are similar.

- Consult the *Landscape of Learning* (© Catherine Twomey Fosnot. Heinemann, Portsmouth, NH) for language to label strategies and to connect them to big ideas.

5. **Planning** (10 min.)
   - Decide when to implement the task based on your formative assessment goal (i.e., where within the unit of study?)
   - Plan how to introduce the task. Discuss what scaffolding to offer.
     - *What access considerations are there? What math materials will be available? How can we offer support without lowering the cognitive demand of the task?*
   - Use the sequence of strategies you created to establish categories for selecting 3-4 pieces of student work to share at the next meeting.

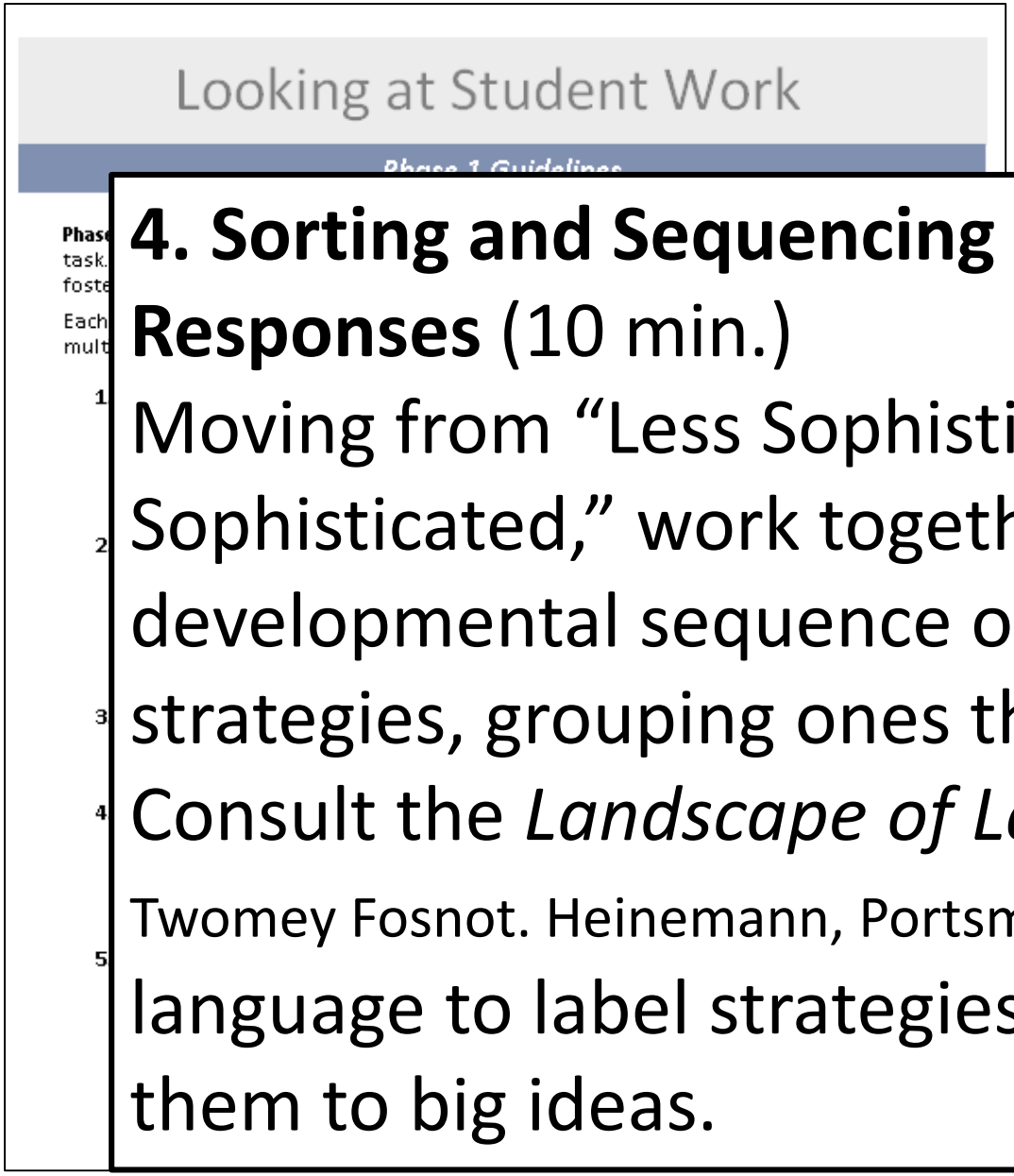
3. Anticipating Student Responses (5 min.)
All teachers use sticky notes to brainstorm possible student solution strategies (one strategy per sticky note). This is quiet, individual think-time.

Anticipating Student Responses

Our Common Task: Counting Collections in 1st grade (40 to 70 items)

Use sticky notes to write/draw possible student responses (correct and incorrect).

One response per sticky note.



4. Sorting and Sequencing Student Responses (10 min.)

Moving from "Less Sophisticated" to "More Sophisticated," work together to create a developmental sequence of student strategies, grouping ones that are similar.

Consult the *Landscape of Learning* (© Catherine Twomey Fosnot. Heinemann, Portsmouth, NH) for language to label strategies and to connect them to big ideas.

Power of the Protocol: Learning Progression

- Builds shared language among teachers
- Fosters common understanding about the development of student strategies
- Avoids the pitfall of describing students as “low” or “high”

An informed understanding of learning progressions can lead to more productive discussions about student work.

-Kobrin & Panorkou, *Educational Leadership*, April 2016

Development Over Time

Less sophisticated students are likely to:

- Draw (or trace) the actual items
- Draw the collection by ones
- Write the total amount

Less sophisticated students will work to develop keeping track strategies and work to compare counted collection to its model.

Development Over Time

As students gain more experience representing quantity, they may make more abstract drawings like:

- Lines or circles to represent each item
- Show groups of items like drawing one box for every ten items
- Write numerals to show size and number of groups

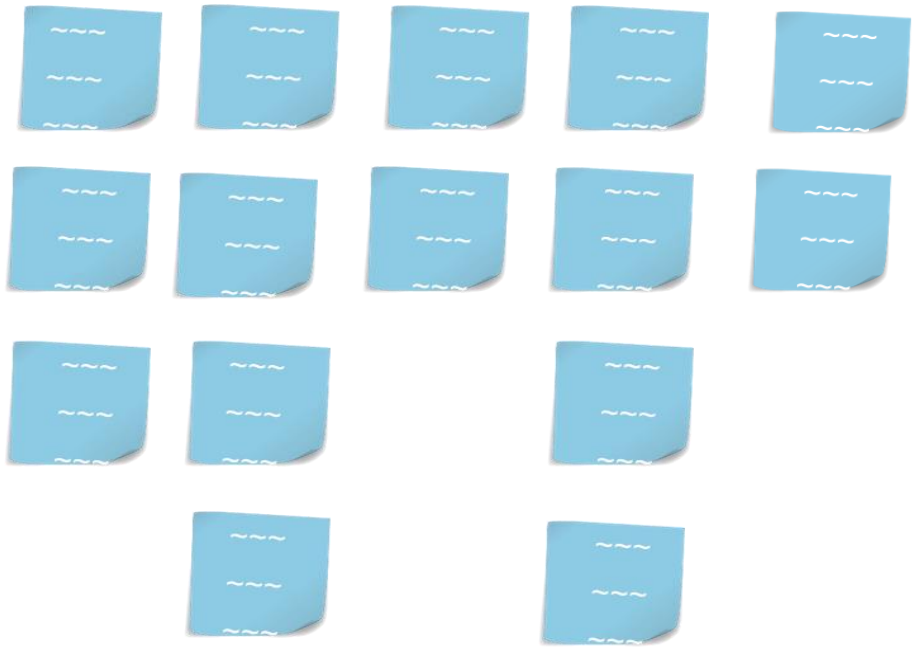
They might also use number sentences to show how items were grouped and combined when counting

Sort & Sequence Student Responses

Group the student response ideas at your table.

Order them along the continuum:

Less Sophisticated → More Sophisticated



Reflection

- Why spend time anticipating student responses?
- What's the learning in sorting and sequencing possible student responses?
- What are the benefits of doing this work as a team?

Power of the Protocol: Anticipating and Sequencing Student Responses

- Moves beyond whether students "get it" to focus on how students might *think* about the task
- Opens teachers to students' diverse thinking
- Clarifies how concepts develop and how they are related
- Reinforces and deepens teachers' own understanding of the math in a *safe* context

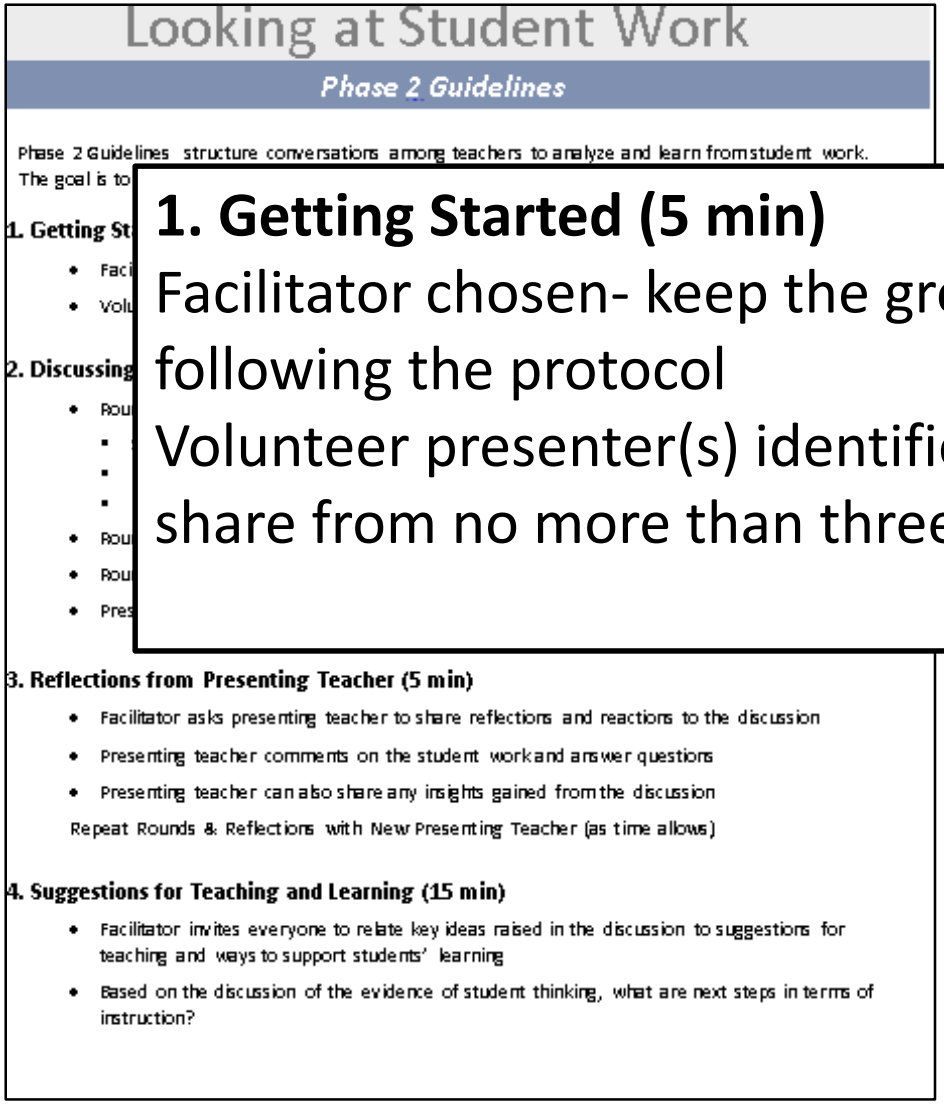
Looking at Student Work

Phase 1:

Selecting a Common Task & Anticipating Student Responses

Phase 2:

Analyzing & Learning From Student Work Samples



Looking at Student Work

Phase 2 Guidelines

Phase 2 Guidelines structure conversations among teachers to analyze and learn from student work.
The goal is to

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2. Discussing

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3. Reflections from Presenting Teacher (5 min)

- Facilitator asks presenting teacher to share reflections and reactions to the discussion
- Presenting teacher comments on the student work and answer questions
- Presenting teacher can also share any insights gained from the discussion

Repeat Rounds & Reflections with New Presenting Teacher (as time allows)

4. Suggestions for Teaching and Learning (15 min)

- Facilitator invites everyone to relate key ideas raised in the discussion to suggestions for teaching and ways to support students' learning
- Based on the discussion of the evidence of student thinking, what are next steps in terms of instruction?

1. Getting Started (5 min)

Facilitator chosen- keep the group focused and following the protocol

Volunteer presenter(s) identified- select work to share from no more than three students

Looking at Student Work

Phase 2 Guidelines

2. Discussing Each Work in Rounds (10 min or ~3 min per student)

Round 1: **What did you notice about the work?**

Say what you see in the student work. Use non-judgmental language.

Keep it brief- If you say "and" you are saying too much

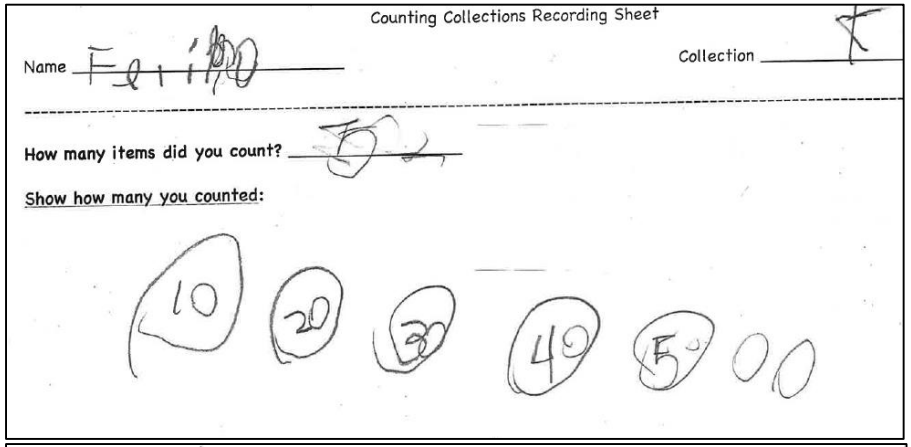
Do not infer what you "think" the child understands—that will come next

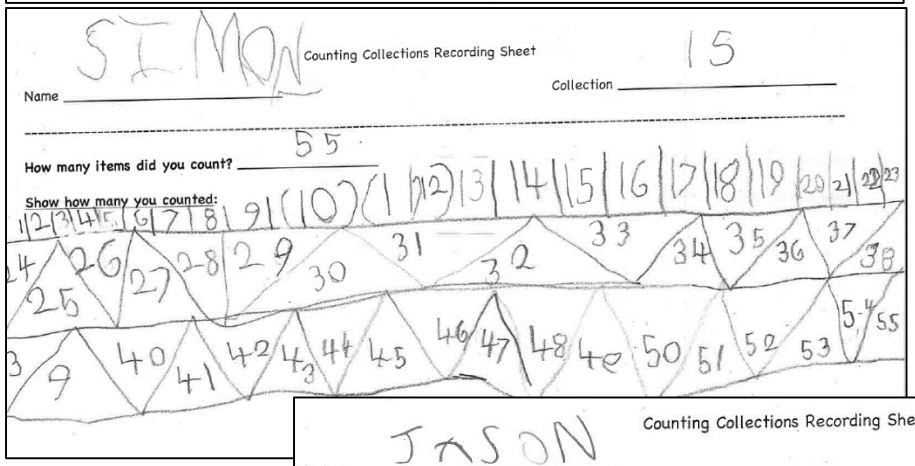
Round 2: **What does the student understand?** State evidence.

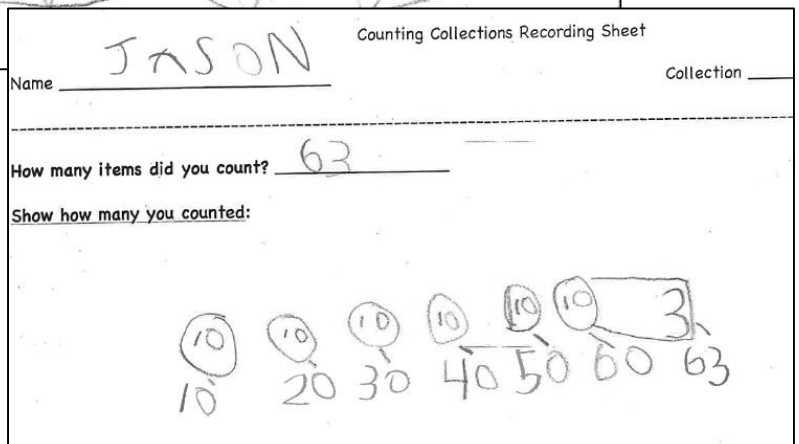
Round 3: **What question do you have about the work?**

Presenting teacher remains silent, listens and takes notes

Discussing Student Work in 3 Rounds







Round 1 DESCRIBE:
What do you notice about the work? Say what you see.

Round 2 INTERPRET:
What does the student understand? State evidence.

Round 3 QUESTION:
What questions do you have about the work?

Counting Collections Recording Sheet

Name ______________ Collection ______________

How many items did you count? 50

Show how many you counted:

10 20 30 40 50 0 0

SIMON

Counting Collections Recording Sheet

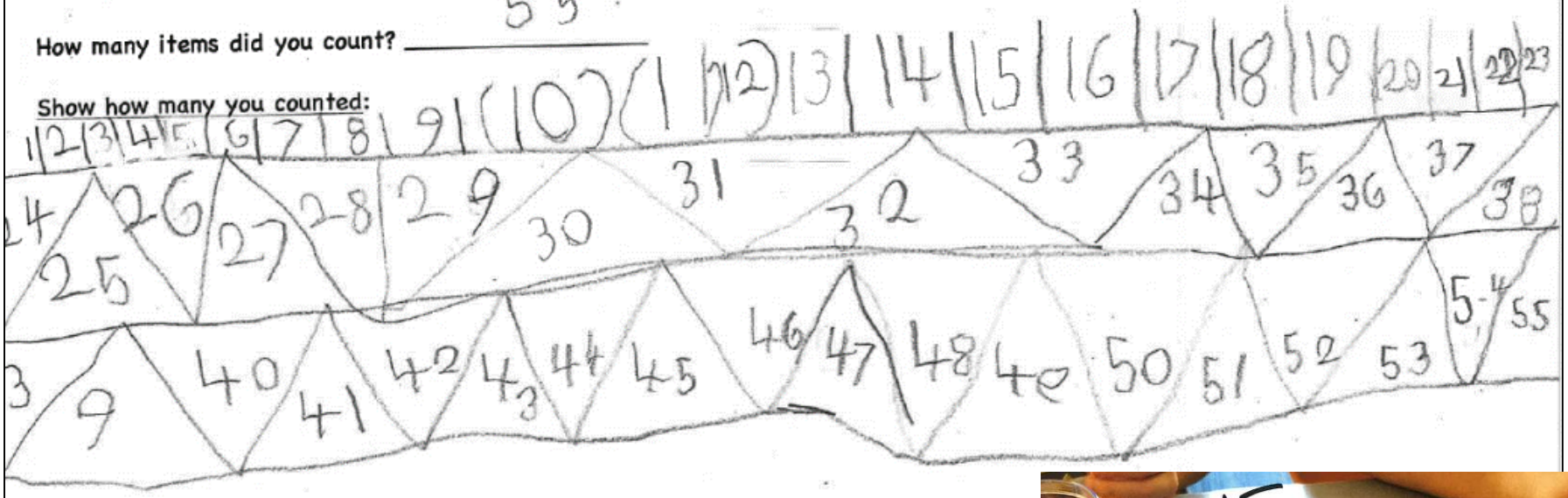
15

Name _____

Collection _____

How many items did you count? 55

Show how many you counted:



1's	sorted by colors Kate counted her side then Simon counted on for his side	wrote all the #'s by 1	worked nicely together but not efficiently	we don't know how many in each jar b/c sorted by color

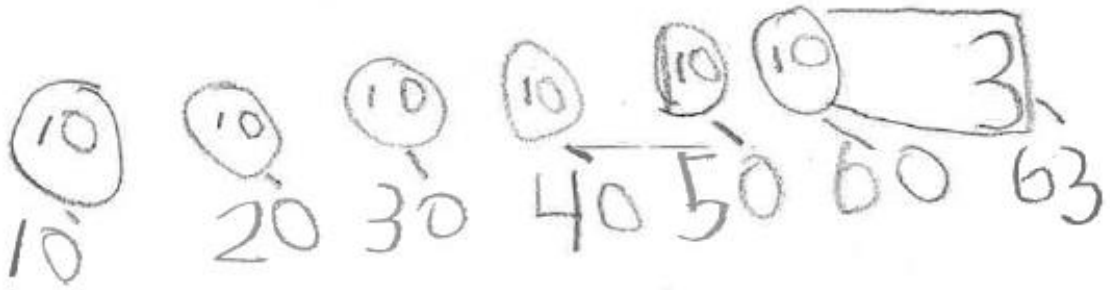
Counting Collections Recording Sheet

Name JASON

Collection ____

How many items did you count? 63

Show how many you counted:



Rani Jason (rings)	counted by 1's to get groups	groups of 10 in lids "3 left over"	bars quick circles leftovers as 1 #s	each counted some lids

Reflect

- What were some of the advantages of having a structured conversation around the student work?

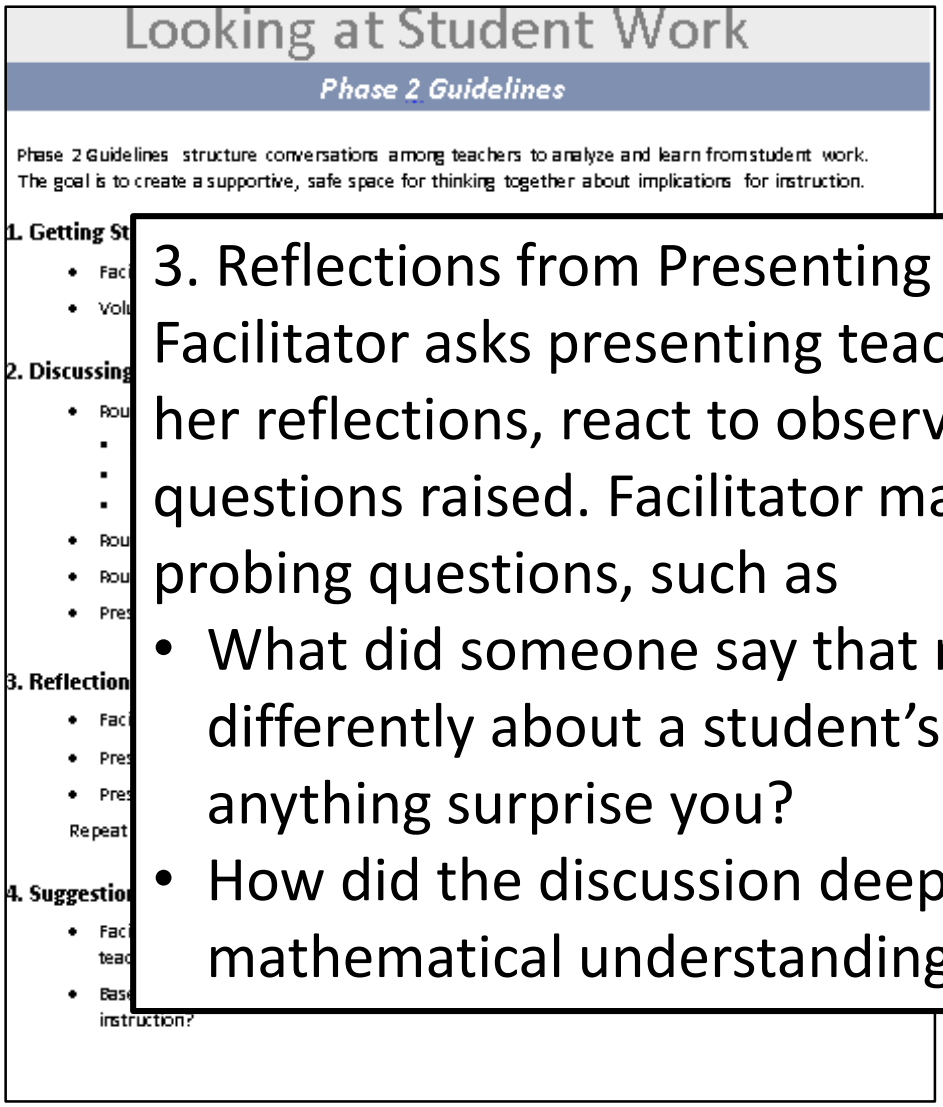
- How did it feel to have such a structured conversation?

Power of the Protocol: Rounds & Reflection

- Efficient (fits into the collaborative structures of most schools)
- Structure puts everyone on the same footing—equal air time
- Builds accountability
- Improves “kid-watching” skills and habits of documentation
- Get better as you do it

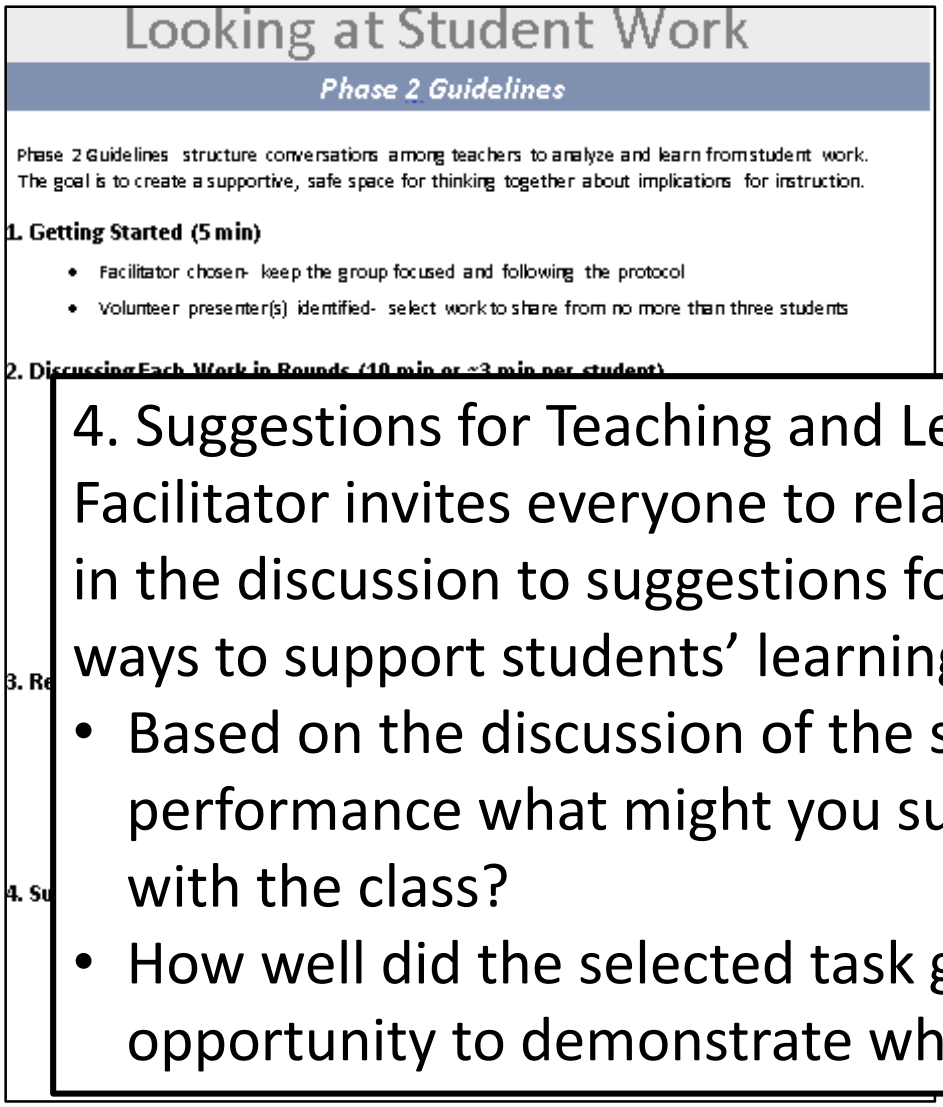
Inducting Teachers into the Protocol

- Share video case studies
- Read a transcript as Reader's Theater
- Practice selecting work from sample class sets
- Coach facilitates protocol first time
- Coach supports teacher facilitators from then on



3. Reflections from Presenting Teacher (5 min.)
Facilitator asks presenting teacher to share his or her reflections, react to observations, and answer questions raised. Facilitator may choose to insert probing questions, such as

- What did someone say that made you think differently about a student's work? Did anything surprise you?
- How did the discussion deepen your mathematical understanding?


Looking at Student Work

Phase 2 Guidelines

Phase 2 Guidelines structure conversations among teachers to analyze and learn from student work. The goal is to create a supportive, safe space for thinking together about implications for instruction.

1. Getting Started (5 min)

- Facilitator chosen- keep the group focused and following the protocol
- Volunteer presenter(s) identified- select work to share from no more than three students

2. Discussing Each Work in Rounds (10 min or ~3 min per student)

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4. Suggestions for Teaching and Learning (10 min.) Facilitator invites everyone to relate key ideas raised in the discussion to suggestions for teaching and ways to support students' learning.

- Based on the discussion of the students' performance what might you suggest doing next with the class?
- How well did the selected task give students an opportunity to demonstrate what they know?

http://earlymath.erikson.edu/video-in-the-classroom-aids-teacher-collaboration-2/

Your Questions

- Presentation and handouts available on NCTM app
- Email us at jbrownell@erikson.edu or ritzkowich@erikson.edu
- Visit our website for more video case studies of teacher collaboration (and more!):

http://earlymath.erikson.edu

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