

Exploring Knowledge and Practices for Facilitating Collaborative, Classroom-Based Teacher Learning

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Shifts in student and teacher learning

Shifts in mathematics instruction

Delivering mathematical rules and procedures



Supporting students to grapple with and make sense of mathematics

Shifts in teacher learning

- one-off
- “sit-and-get”
- separate from practice
- individual coaching



- collaborative
- school-based
- ongoing
- artifacts or enactments of practice



Facilitator

What do facilitators need to know and be able to do to support teacher learning?

Facilitation as teaching

Teachers need to be able to...

Identify and understand student learning goals

Know how to structure activities to support student learning

Interpret student thinking and assess developing understanding

Facilitate learning of individual students in a collaborative setting

Improvise in response to developing student thinking

Facilitators need to be able to...

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Improvise in response to developing **teacher** thinking

The work of facilitation

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Example:

Teacher learning goal: How to elicit student thinking during a strategy share.

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Discuss

Think about your own context and role in supporting teacher learning

- How do you draw on these aspects of the work of facilitation in your own role? Can you think of examples?
- Which of these aspects feel the most established for you? Which feel the newest or most challenging to you?

The work of facilitation

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Toward Developing Complex Practices

- Goals for students' learning
 - Deep and interconnected understandings of math concepts, procedures, and principles
- Instructional Practices
 - Build on students' current reasoning to achieve a mathematical agenda that focuses on central mathematical ideas
 - maintaining the rigor of cognitively demanding tasks
 - pressing students to share their mathematical reasoning
 - supporting students to make sense of their peers' solutions

Supporting Ambitious Instruction

- New conceptions of teachers work is complex
- Requires considerable learning and changes in deeply held beliefs, knowledge, and habits
- Teaching is intellectual work and requires specialized knowledge
- Teaching is something that can be learned
- Learning to do something requires repeated opportunities to practice
- There is value in making teaching public



Learning in, from, and for
teaching practice

Rethinking the design of teacher education

Characteristics of High-Quality Professional Learning Opportunities

- Intensive and ongoing
- Focus on problems that teachers encounter in their daily work
- Orients teachers to focus on student thinking
- Supports the development of teacher communities
- Opportunities to investigate and enact specific pedagogical routines and practices

Math Labs

a structure for collective, classroom-based learning



An example of a Math Lab

- Team first grade teachers
- All the teachers are in initial stages of developing ambitious mathematics instructional practices
- Second time experiencing a Math lab
- Facilitated by experienced facilitator, Megan



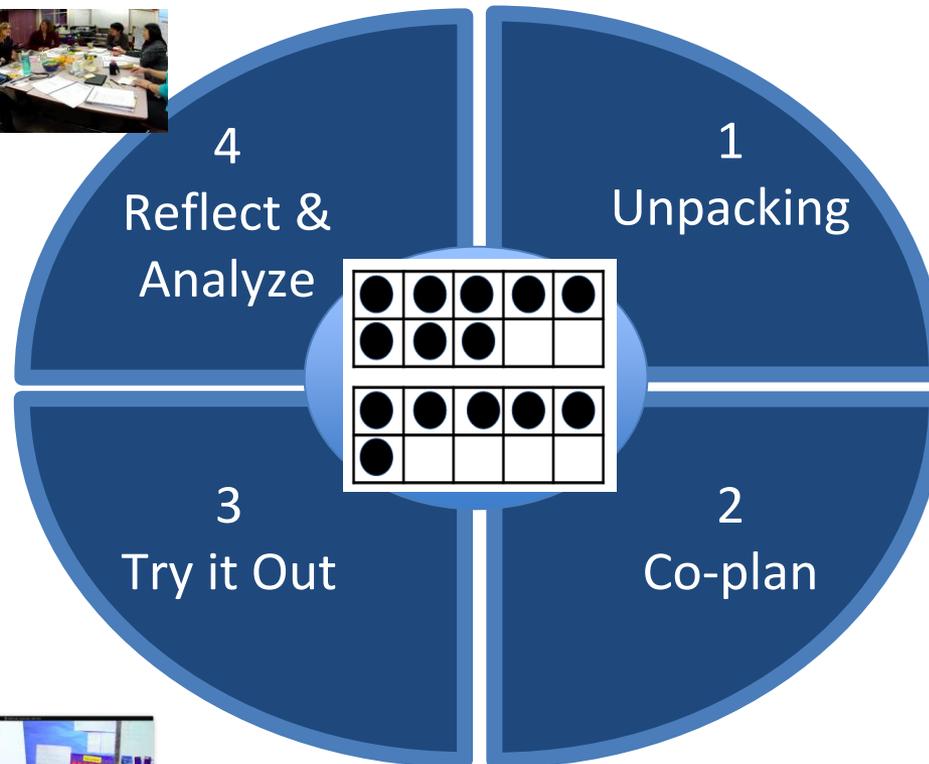
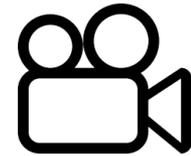
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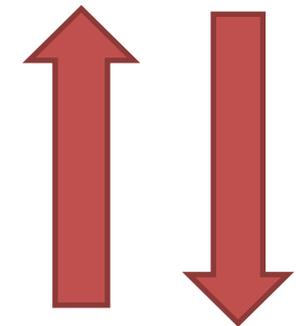
Reflect on the ten-frame activity, think about implications for practice



Watch video of a number talk of $8+6$, discuss



Co-plan the ten-frame activity, anticipate student thinking



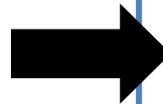
Try out the ten-frame activity together



Planning for the day

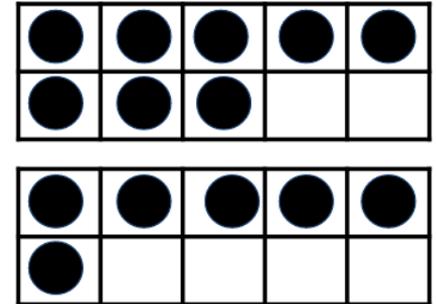
Goals for teacher learning:

- Notice a range of strategies alive in classroom for simple computation problems
- Develop understanding of value for *student learning* AND *teacher learning* in seeing range of strategies



Activity to try:

Show image to students and elicit range of strategies for finding total number of dots.



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Know how to structure activities to support student learning

Identify and understand **teacher** learning goals

Know how to structure activities to support **teacher** learning

Framing the teacher learning goal

“Quick Images is a nice activity, but that’s not what our work is about. The question I would love to keep on the surface is: what is it that we’re learning about teaching, children, and math learning? Not ‘oh we’re learning this activity and now we’re going to do it every day.’

What is the merit of letting the range of strategies live in your classroom? Does it support fluency? Does it support conceptual understanding?”

1
Unpacking



Identify and understand **teacher** learning goals

Know how to structure activities to support **teacher** learning

Unpacking

The team watches a video of mathematics instruction in which a teacher surfaces multiple strategies from students for $8 + 6 =$

Megan: *“What do you see? What’s the merit?”*

Teacher 1: *“In terms of the kids thinking, they’ve obviously been working on it – they knew names of strategies.”*

Megan: *What do we make of the role she’s playing and the kind of questions she is asking?*

Teachers discuss how the teacher in the video wasn’t telling students anything. She was asking them about it.

Megan: *So back to our original question – what’s the merit of having all these different strategies. Why not just say, $8+6=14$. Is there merit to this, genuinely, mathematically? It can be very validating, but given just what you saw here is there merit to this kind of conversation? What do kids learn mathematically?*

1
Unpacking



Co-Planning

2 Co-Plan

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Support teachers to develop shared ownership of the instructional plan

Support teachers to prepare for eliciting and responding to student ideas

Allow space for teacher ideas while also steering conversation towards particular goals.

Co-planning

Megan: Ok so, do you think this is worth trying with the kids today?

Kaitlin: Are they going to have counters?

Megan: No, we're just going to have them think about it and then talk about it. I think it's worthwhile to have them really talk about it.

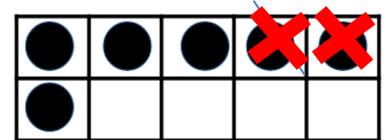
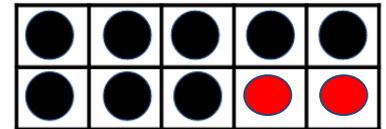
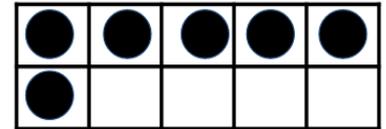
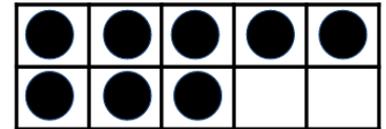
Megan: Let's just practice how we would mark these. Let's anticipate what kinds of things kids will do.

Diane: Last year I had a girl say these ones are empty and you can fill it with these two.

Megan: Models – drawing with arrows? Or should we cross out and draw new ones?

The teachers decide to cross them out and draw new ones. Megan represents the idea.

Megan: I realize that I didn't ask which two (referring to Dee) you were talking about. So let's add that to our toolkit. Having kids come up and showing what they meant.



Talking about teaching *during* instruction

Teacher Time-Out

Have a wondering?

Want to suggest a question to ask?

Not sure what to do next?



3

Try it out

"I try to establish talking during the lesson as just a thing we are going to do."



Collaborative enactment

Karen (a teacher) volunteers to lead the lesson. She puts the image up and says *“think about how many dots you see in all, and how you figured it out.”*

Karen: (to other adults) *Should we turn and talk?*

Megan: *What do we think?*

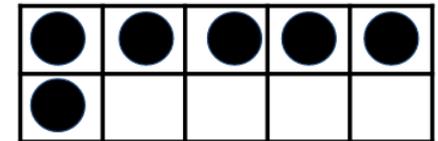
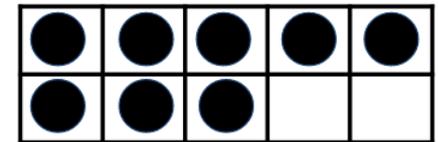
Teachers aren't sure.

Megan: *Should we hear first how many dots they think there are, then turn and talk? or should we just start hearing strategies?*

Teachers decide together to hear ideas for the total number of dots.

3

Try it out



Collaborative enactment

Students share a range of answers. Karen records them all on the board.

14, 8, 6, 12, 11, 13

Megan: *Let's go ahead and hear some strategies!*

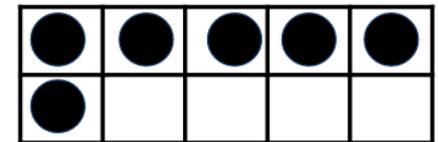
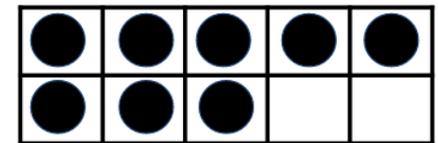
Student 1: *I did 8, 9, 10, 11, 12, 13, 14*

Laura (teacher): *(to other adults) Do we want to have others revise their thinking?*

Megan: *Yeah that's a good question. Let's hear some more ideas first.*

3

Try it out



Facilitation of collaborative enactment

Supporting student learning *in service of* teacher learning.

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Supporting teacher learning *in service of* student learning.

Debrief

The work of the facilitator:

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4
Debrief

Maintain a safe space for teachers to learn and discuss practice

Support teachers to develop more general ideas about teaching math

Allow space for teacher ideas while also steering conversation towards particular goals.

Debrief

Megan starts with more general question:
What did you notice?

Teachers share out different strategies that students used.

Megan: Let's return to our bigger question. Is there mathematical benefit to this? Why? Do kids learn anything? If so, what? What did we do to enable that?



4
Debrief



Debrief

Megan: Let's return to our bigger question. Is there mathematical benefit to this? Why? Do kids learn anything? If so, what? What did we do to enable that?

Diane: The format really hooks in my little lowest ones. My lowest one who can barely count to 20 he would still raise his hand! Whereas before, he was a day dreamer.

Interpret **teacher** thinking and assess developing understanding



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Debrief

Diane: The format really hooks in my little lowest ones. My lowest one who can barely count to 20 he would still raise his hand! Whereas before, he was a day dreamer.

Megan: What do you think it is about the format that is supporting him to participate?

Diane: He can really count on his fingers if he needs to

Megan: So you're talking about the visual – that he has the things to count.

Diane: Yeah...

Megan: Do you think it might also be the repeated exposures?

Diane: Well, I'm not sure



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Debrief



Debrief

Megan: Let's return to our bigger question. Is there mathematical benefit to this? Why? Do kids learn anything? If so, what? What did we do to enable that?



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Debrief



Debrief

Karen: They're really internalizing composing numbers this way. I just feel like they're really seeing how the numbers go together.

Nicole: Having kids come up and explain their own thinking is good for the other kids to hear.

Lauren: Solidifies it for them to when they have to describe their strategy. It takes them a second to tell me how they did it. I can see they're really processing what they do.

Karen: And they're hearing what their friends did versus what's the answer.

Deborah: You can't copy. It's verbal. They'll call each other out probably if they do copy an idea.



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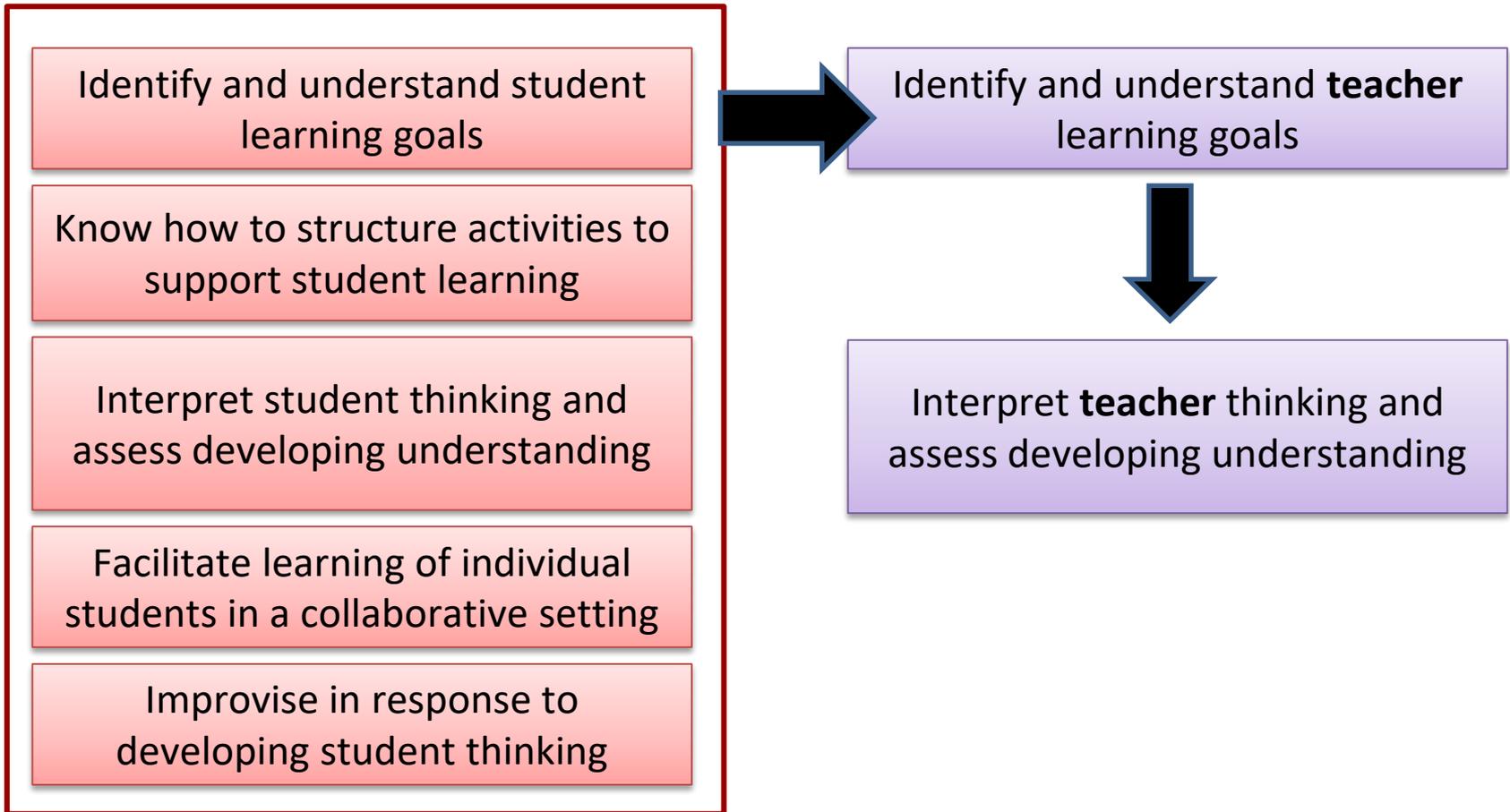
Lauren: Solidifies it for them to when they have to describe their strategy. It takes them a second to tell me how they did it. I can see they're really processing what they do.

Goal for teacher learning:
Develop understanding of value for *student learning AND teacher learning* in seeing range of strategies for simple computation problems

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Debrief

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Facilitate learning of individual **teachers** in a collaborative setting

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The work of facilitation

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Any new thoughts?

Think about your own context and role in supporting teacher learning

- How do you draw on these aspects of the work of facilitation in your own role?
- Which of these aspects feel the most established for you? Which feel the newest or most challenging to you?

Discuss

What implications does this have for your own work?

- For supporting teacher learning?
- For our own learning as facilitators?
- For supporting other facilitator learning?

What questions do you have?

Learn more!



Resources for Practice-Based Teacher Education

TEDD.org

UWTEDD@uw.edu

@UWTEDD



Interested in learning more about Math Labs?

Upcoming presentation at NCTM

**Leading School-Based Math Labs: How Principal-Coach Teams Make a Difference
for Teacher Learning**

Elham Kazemi, Becca Lewis, & Ruth Balf

Friday, April 7 (2:00 pm – 3:00 pm)

Thank you!

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