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Highly-Aligned Curriculum as a Guide

Reimagining Observations as
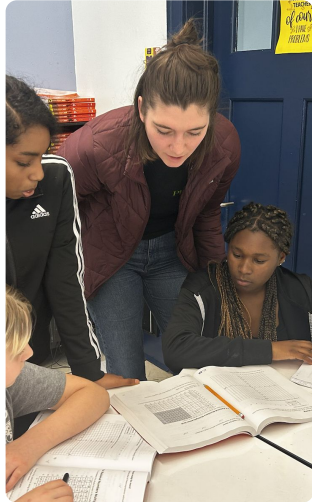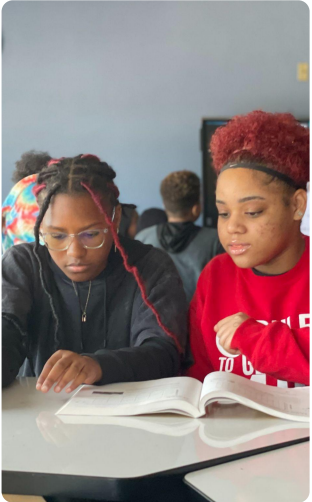Conversation-Rich Learning Experiences

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Session Outcomes

- Discuss strategies that elevate the practice of teaching and learning

- Explore how to leverage high-quality curricular materials

- Create opportunities to position teachers as lead learners

- Reimagine traditional evaluation-based observations

Reflecting on an Observation
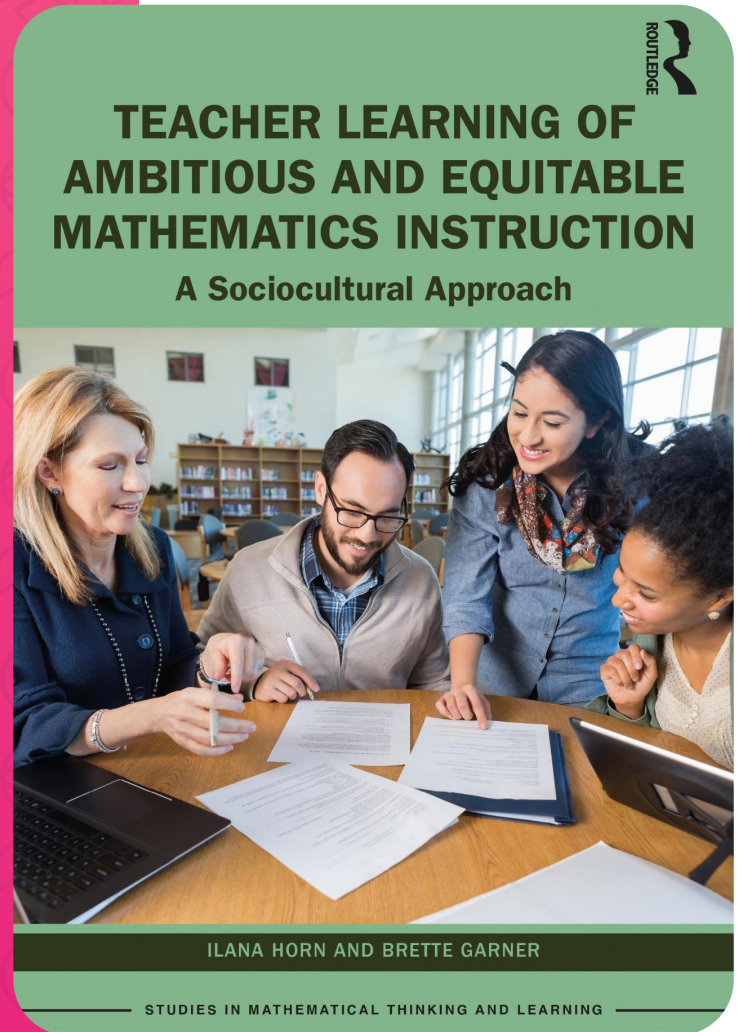
"That was the smoothest lesson I've ever seen."

What did you see?

SHARE

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"Smoothness, as feedback for teacher learning, offers limited information for revising teachers' understanding and actions."

- classroom management

- organization

- not always good for student learning

ROUTLEDGE

TEACHER LEARNING OF AMBITIOUS AND EQUITABLE MATHEMATICS INSTRUCTION

A Sociocultural Approach

ILANA HORN AND BRETTE GARNER

STUDIES IN MATHEMATICAL THINKING AND LEARNING

"*Mixing up the signal of learning with the noise of smoothness leaves teachers paying attention to the wrong feedback, which then impedes teacher learning of ambitious and equitable mathematics instruction.*"

TEACHER LEARNING OF AMBITIOUS AND EQUITABLE MATHEMATICS INSTRUCTION

A Sociocultural Approach

ROUTLEDGE

ILANA HORN AND BRETTE GARNER
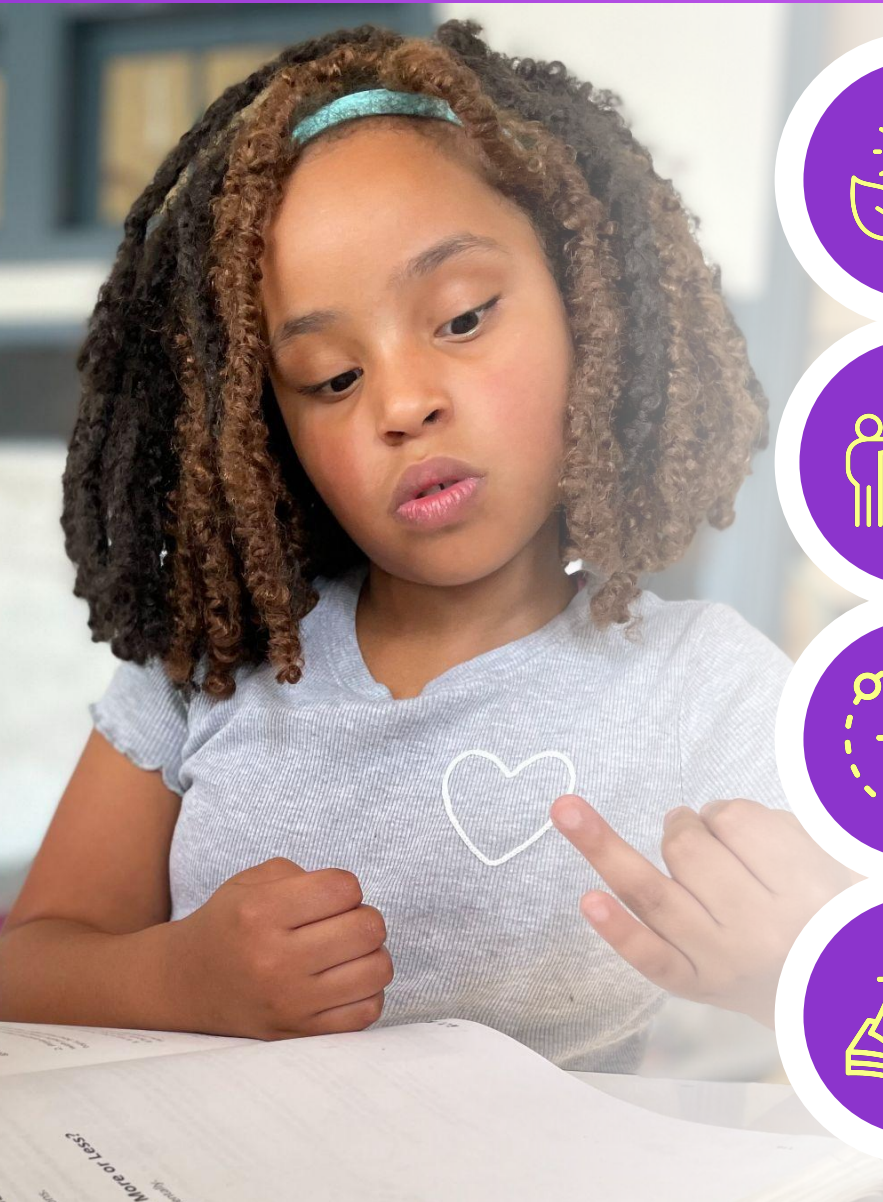
STUDIES IN MATHEMATICAL THINKING AND LEARNING

IM Believes All Students . . .

- have brilliant mathematical ideas
- have valuable experiences and perspectives
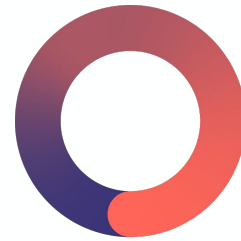- can make sense of and solve problems
- can learn grade-level mathematics

A Seamless, Coherent, and Aligned Mathematical Experience

IM® K–5 Math

IM® 6–8 Math

IM® 9–12 Math

A world where all learners know, use, and enjoy mathematics

Problem-Based Teaching and Learning

1 Teacher invites students to the math and ensures students understand the question.
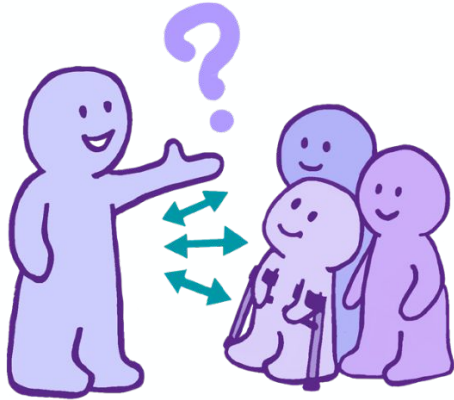
2 Students have quiet think time.
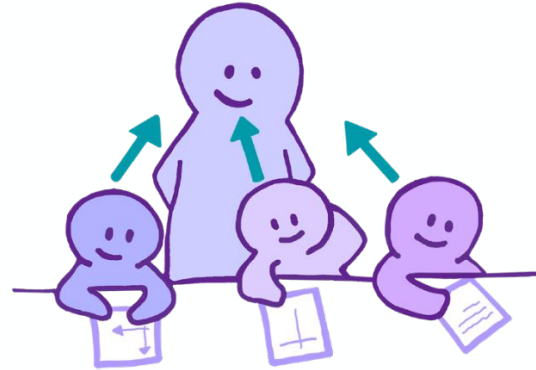
Teacher monitors, listens, and asks questions to understand student thinking.
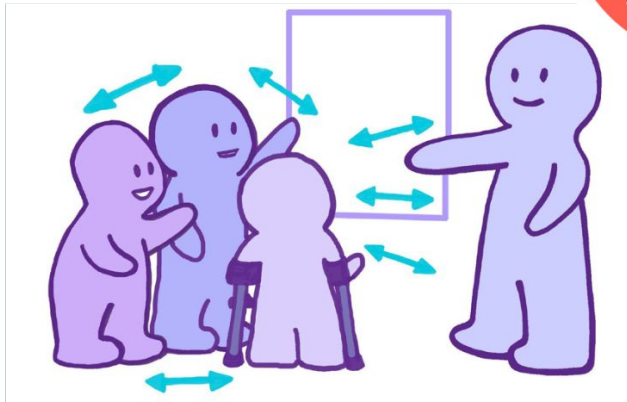
4 Teacher provides opportunities for students to synthesize their learning of the lesson goals.

3 Students work with partners or in small groups.

LAUNCH
STUDENT WORK TIME
SYNTHESIS
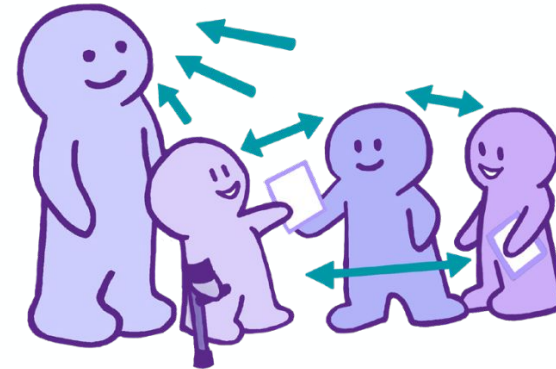
"*Mathematical ideas are the outcomes of the problem-solving experience rather than the elements that must be taught before problem solving.*"
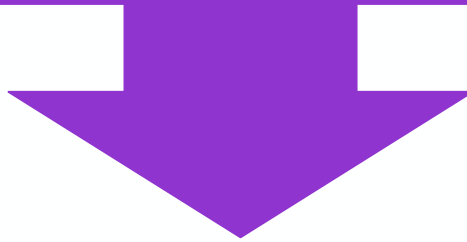
In IM classrooms, students spend most of their time in math class doing math, rather than watching their teacher do math.

Hiebert, J., et. al. (1996). Problem solving as a basis for reform in curriculum and instruction: the case of mathematics. Educational Researcher 25(4), 12-21. doi.org/10.3102/0013189X025004012 Students learn mathematics as a result of solving problems.

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Overarching Design Structure

Invitation to the mathematics

Deep study of concepts and procedures

Consolidating and applying

Learning Goal

- Warm-up
- Activity
- Activity
- Lesson Synthesis
- Cool-down
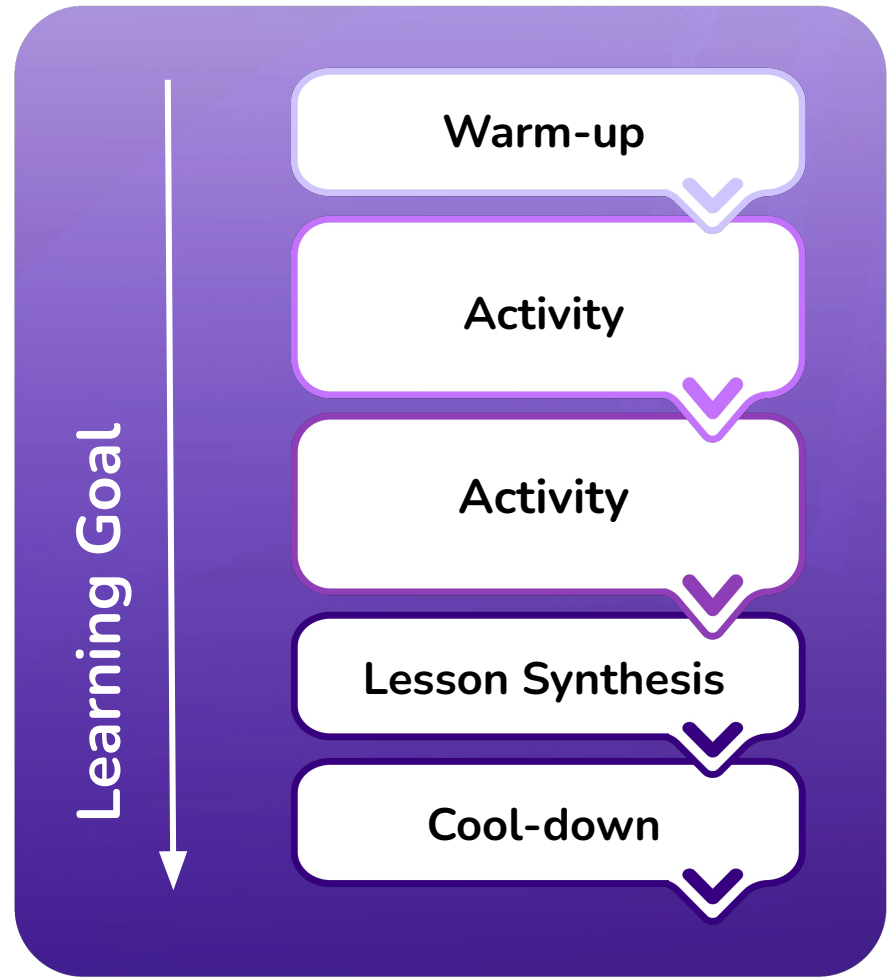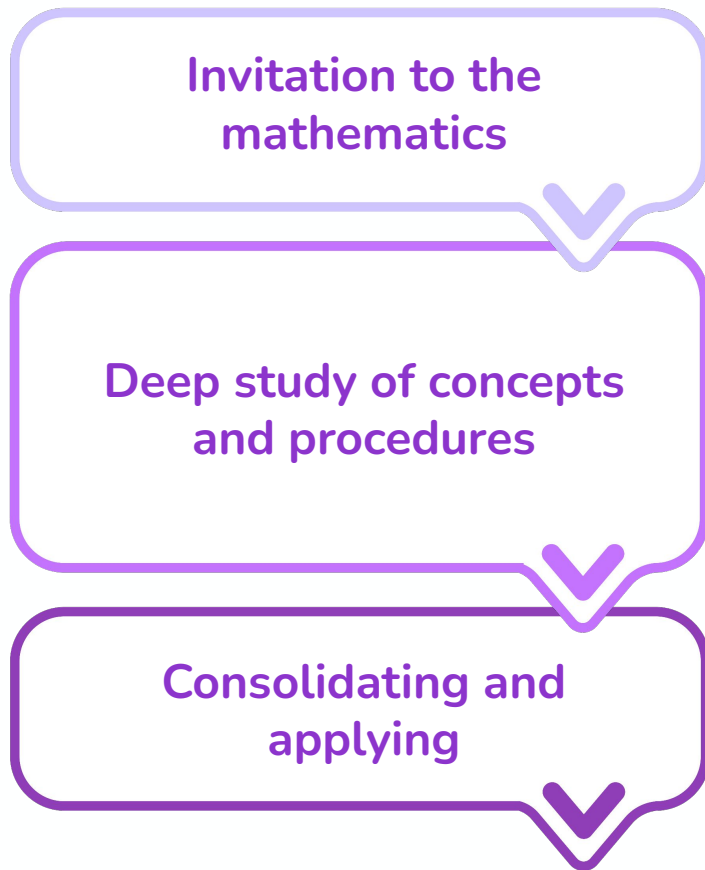
IM Believes All Educators . . .
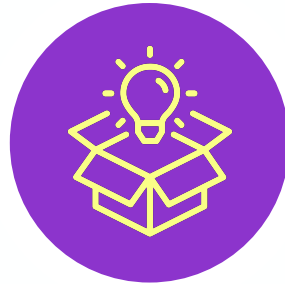
- bring valuable experiences and perspectives that can be examined and reflected upon
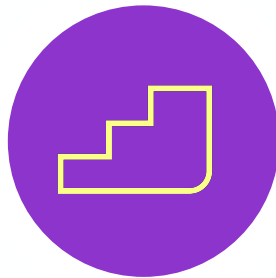
- can continually grow in their knowledge of and expertise in mathematics teaching and learning

- make instructional decisions based on their knowledge, beliefs, and understanding

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- **How did "smoothness" or "non-smoothness" support learning?**
- **What feedback would you give this teacher?**

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Let's use scientific notation to describe large and small numbers.
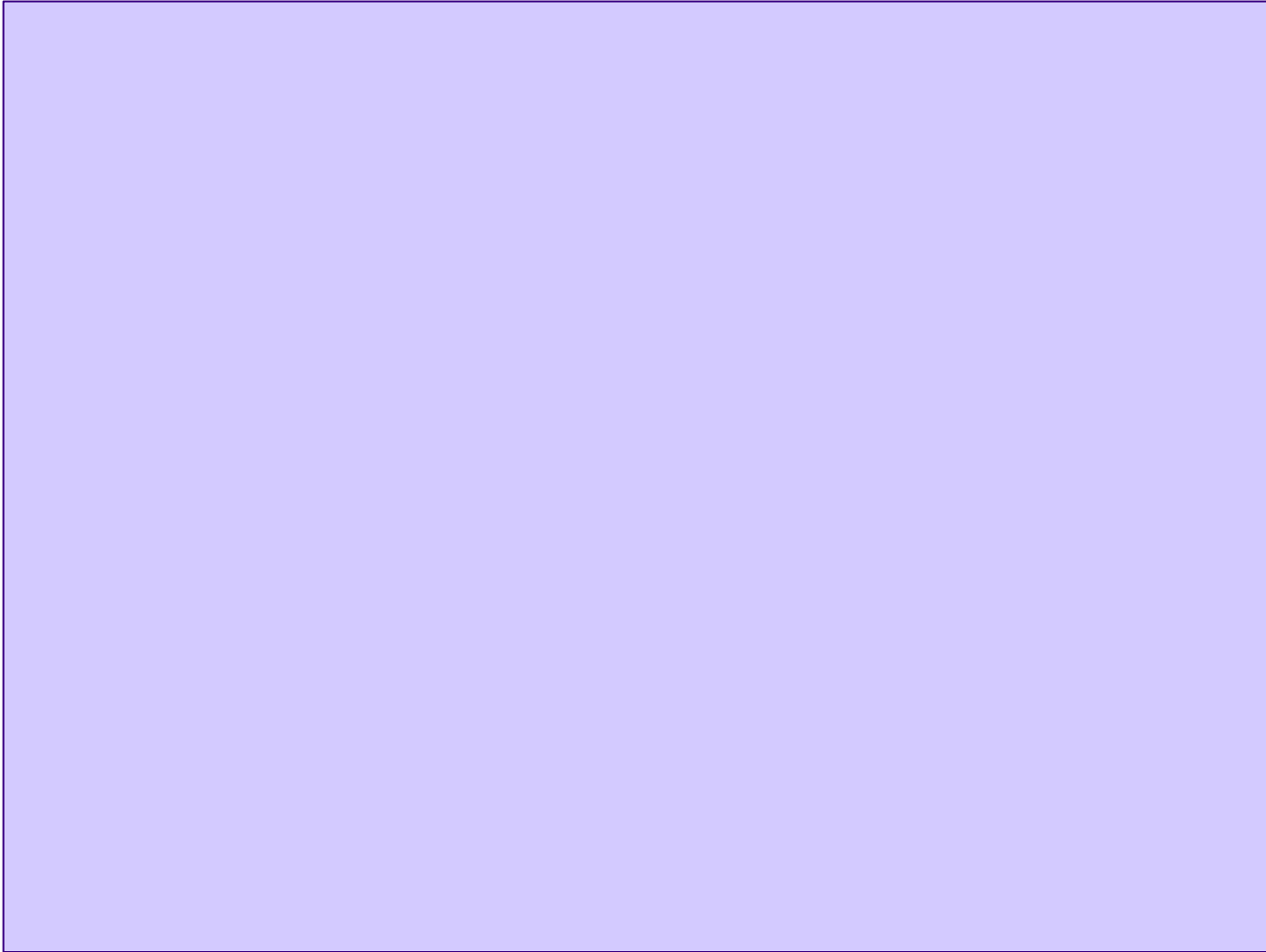
Grade 8 ● Unit 7 ● Lesson 13 ● Activity 1
Number Talk: Multiplying by Powers of 10

- **How did "smoothness" or "non-smoothness" support learning?**

- **What feedback would you give this teacher?**

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C1.2 Fostering Academic Safety and Belonging

Teachers create conditions for students to communicate with peers and make connections to lived experiences and past learning.

Progression of Practice

Integrating	**The classroom community is set up to promote students to ask questions of peers, respond to peers, and make connections to personal experiences and past learning without teacher prompting.**
Implementing	The teacher **intentionally creates opportunities for students to develop a sense of safety and belonging** (e.g., co-creates and **revisits** classroom agreements for doing math, provides opportunities for students to build relationships with peers). The teacher **provides opportunities for students to make connections between their lived experiences and the lesson** and highlights links to **past learning.**
Developing	The teacher **signals the importance of safety and belonging by co-creating classroom agreements for doing math. Evidence of classroom agreements is visible** (e.g., anchor charts, student discussions). The teacher **may provide an opportunity for students to connect personal experiences to the lesson**.
Emerging	The teacher may use language that promotes belonging, but there is little evidence of established classroom agreements for doing math (e.g., anchor charts, protocols).

C1.3 Promoting Student Agency

Teachers empower students to engage with math activities, share and revise ideas, and respond to classmates' thinking. Teachers provide math tools that students can access as needed.

Progression of Practice

Integrating	The teacher provides opportunities for all students to engage with math activities, share their ideas, respond to classmates' ideas, and **revise their thinking**. The teacher provides opportunities for students to reflect on their understanding throughout the lesson. The teacher centers student discourse throughout the lesson. Math tools are readily available and students are empowered to select math tools when needed.
Implementing	The teacher **provides opportunities for all students to engage with math activities and share their ideas** (either with partners, in small groups, or with the whole group). The teacher **provides opportunities for students to reflect on their understanding throughout the lesson** (e.g., students consider how they are progressing towards the learning goal). The teacher centers student discourse throughout the lesson. Math tools are **readily available** and students are **empowered to select math tools** when needed.
Developing	The teacher **provides opportunities for students to engage with math activities and share their ideas, but protocols might not be in place to ensure equal participation** (e.g., some students dominate the conversation while others may not share at all). The teacher **begins to center student thinking but serves as the primary voice** during lesson facilitation. **Math tools are available to students who ask for them.**
Emerging	The teacher is positioned as the sole source of information. Teacher talk accounts for most or all of the speaking time during a lesson. Students do not access math tools because they are not readily available.

C3.2 Collaborative Problem Solving

When assigned collaborative work activities, students listen to each other and share their thinking throughout all stages of the problem-solving process.

Progression of Practice

Belonging	Students participate in collaborative problem solving (i.e., students talk about each other's thinking, not just their own), **make connections between their own and others' strategies, and integrate strategies to create a group solution to a problem.** Students share their thinking **throughout multiple stages of the problem-solving process**.
Interacting	Students participate in **collaborative problem solving**. Students **share their thinking with their group** and may ask the teacher for help when the group has a question after engaging in discussion.
Reacting	**Students listen to other students' solutions or ideas** and/or share their own solutions or ideas (e.g., "I got 7, what did you get?"). Students may share their thinking with their group when prompted by the teacher.
Receiving	Students elect to work independently or engage in unrelated activities, or there is a noticeable imbalance in the amount of thinking and working done by students in the same group. Students may share their thinking with their group when prompted by the teacher.

C3.4 Agency and Persistence

Students know that confusion can lead to understanding, ask questions of each other, and help each other without giving away an answer during times of difficulty, challenge, or error.

Progression of Practice

Belonging	Students continue working and persevere during times of difficulty, challenge, or error. Students listen to and help each other think through problems, **without giving away solutions**.
Interacting	Students **continue working and persevere** during times of difficulty, challenge, or error. Students **may ask each other** for help when they are confused or stuck.
Reacting	Students only **ask questions of the teacher** during times of difficulty, challenge, or error.
Receiving	Students wait for help or do not appear to ask for help during times of difficulty, challenge, or error.

- **Select an indicator**
- **Read through the progression of practice**
- **How could focusing on the indicator impact the conversation?**

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Utilize your selected IMplementation Reflection Tool indicator to focus your observation.

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Let's divide to find the side length of a rectangle.
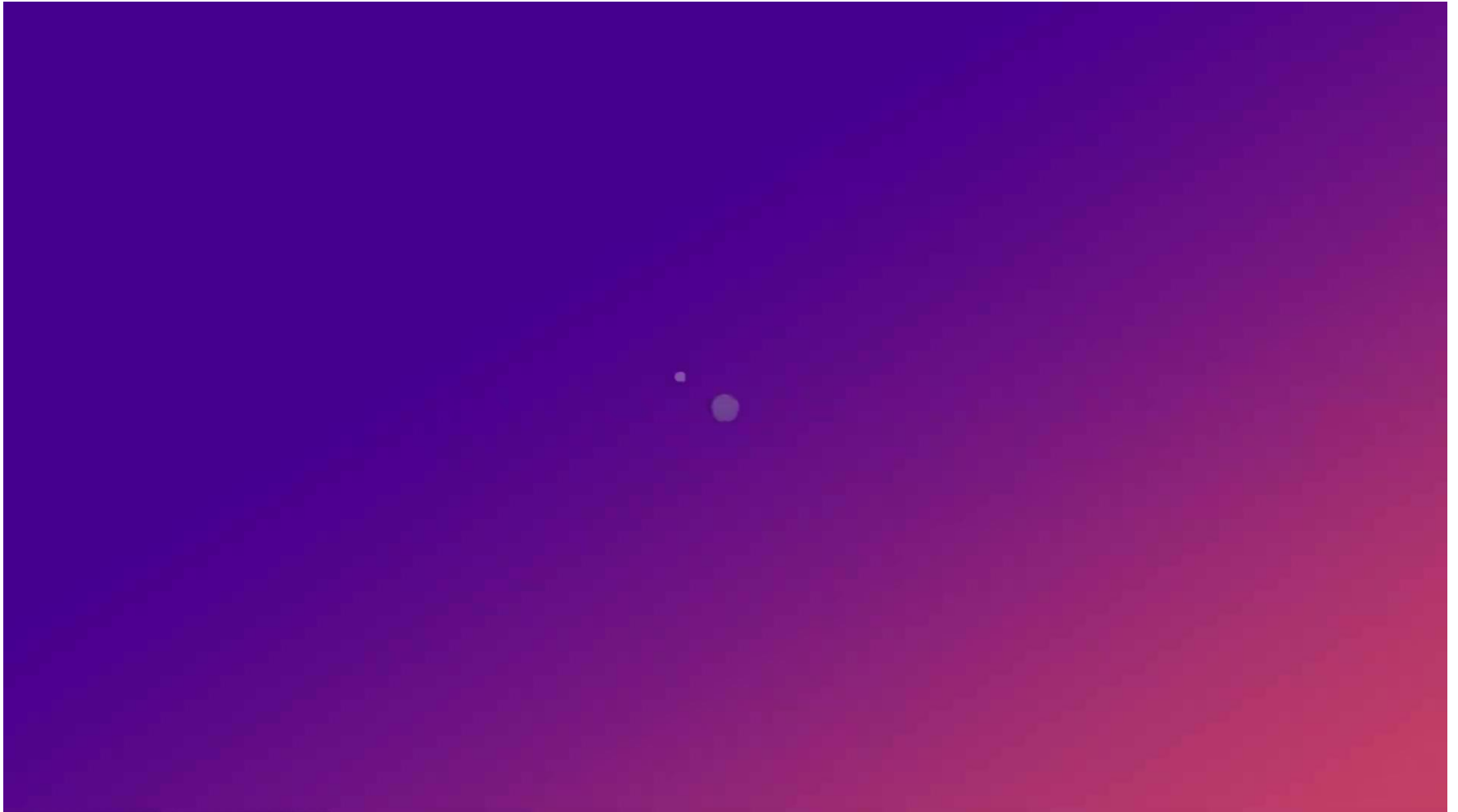
Grade 4 ● Unit 6 ● Lesson 14 ● Activity 1
Elena's Mural

- How did "smoothness" or "non-smoothness" support learning?

- What did you notice based on your IRT focus?

- How could the conversation change?

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A Sociocultural Approach

ROUTLEDGE

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STUDIES IN MATHEMATICAL THINKING AND LEARNING

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Mathematics Identity → Mathematics Achievement

"Findings suggest that students can develop stronger mathematics identity when their teachers adopt problem-solving focused pedagogies that push students to use mathematical reasoning, actively engage with mathematical logic as well as one another, and effectively explain their thinking"

~Fernandez et al., 2024, p. 2017

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The IRT should be used to:

- monitor progress of ongoing implementation and develop a plan to sustain progress
- provide clear expectations for planning and enacting lessons, equitable instructional practices, and student learning behaviors
- focus and enhance classroom observation, reflection, and feedback
- celebrate successes, self-assess, and refine teaching, leading, and learning over time

The IRT should not be used to:

- inform judgments about teacher performance
- rank teachers or schools based on performance indicators
- judge the overall quality of instructional programs

Session Reflection

- Discuss strategies that elevate the practice of teaching and learning

- Explore how to leverage high-quality curricular materials

- Create opportunities to position teachers as lead learners

- Reimagine traditional evaluation-based observations

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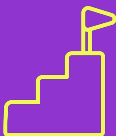LEARN MATH FOR LIFE

How do these ideas **connect** to what you already know?
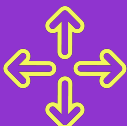
What new ideas did you get that **extend** or push your thinking in new directions?

What is now a **challenge** for you to get your mind around? What questions do you now have?

What **next step** will you take back to your teachers, students, and school(s)?

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imk12.org/TPSposters
imk12.org/GettingStarted

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