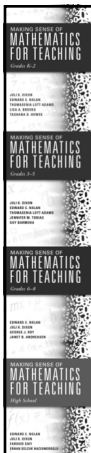


**Six (Un)Productive Practices in
Mathematics Teaching
(and what to do about them)**

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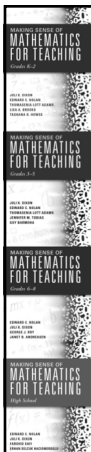
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Goals for this Session

- Make sense of six potentially unproductive mathematics teaching practices
- Explore reasons for why the practices exist.
- Learn productive strategies to counteract the madness.

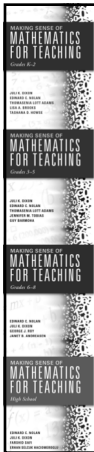
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Six Unproductive Practices

1. Posting Lesson Objectives for Conceptual Lessons.
2. Teaching Concepts Using Gradual Release of Responsibility.
3. Providing Scaffolding Just in Case.
4. Leading instruction by Introducing Academic Vocabulary.
5. Neglecting Opportunities to Connect Concepts and Procedures.
6. Limiting student thinking in small group instruction

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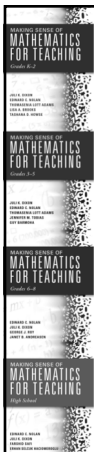
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Conceptual Lessons have Special Needs

All lessons are not created the same. Lessons on making sense of division are not the same as lessons focused on long division.

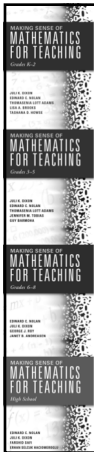
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What requirements do you have regarding the essential question?

Are there requirements that might be undermining efforts to engage in rigorous standards?

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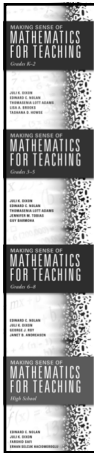


How many stories can you write for $26 \div 4$?

Write 4 different story problems to correspond to the following expression: $26 \div 4$.

Each problem should lead to a different answer. The answers to the problems should be $6\frac{1}{2}$, 7, 6, and 2 respectively.

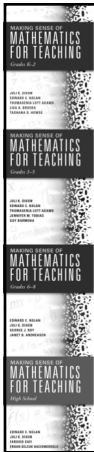
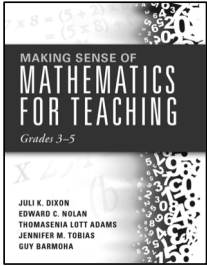
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What does this look like in grade 4?


“Write a word problem for $26 \div 4$ so that the answer to the word problem is 7.”

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Making Sense of Mathematics for Teaching
Grades 3-5

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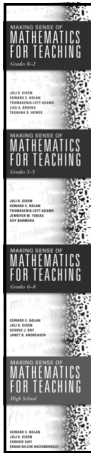
Conceptual Lessons have Special Needs

Now consider this lesson objective:

Students will interpret the remainder when encountering division in context.

Posting this objective would have stolen the “ah-ha” from the students!


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Four Queries for the Essential Question:

1. What is the learning goal?
2. Is the lesson conceptually based?
3. What question do I want students to answer by the end of the lesson?
4. How can I zoom out on that question to protect the discovery?

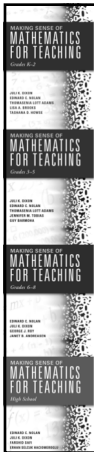
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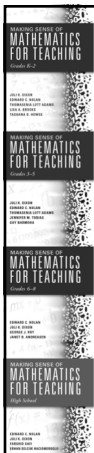


Stop the Madness.

Is the application of Gradual Release of Responsibility (*I do, we do, you do*) expected in every lesson every day?

Is this appropriate for mathematics?

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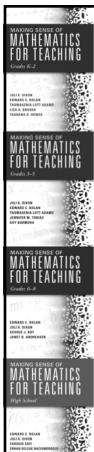


Ask this:

Who should be doing the sense making?

If the answer is, “the students,” then the *layers of facilitation* should be in place.


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Layers of Facilitation

- I facilitate the *whole class* to engage in meaningful tasks through questioning;
- I facilitate *small groups* to extend the learning initiated in the whole-group setting; and
- I facilitate *individuals* to provide evidence of their understanding of the learning goal.

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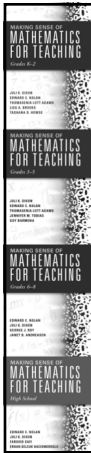


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What best describes how you provide support (differentiation)?

The ways support is provided during instruction is a potential issue of both access and equity.

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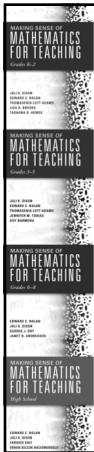


Cultivating Perseverance

- Just-in-case scaffolding
- Just-in-time scaffolding

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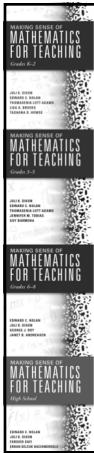
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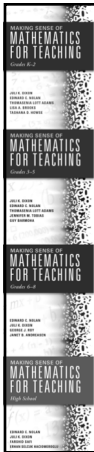


The importance of a good task

Consider this...

Brandon shared 4 cookies equally between himself and his 4 friends. How much of a cookie should each person get?

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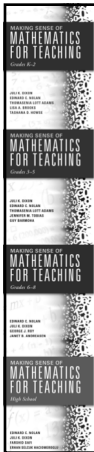


Try This:

Talk through the process of adding fractions with unlike denominators without using:

- numerator & denominator, or
- top number & bottom number

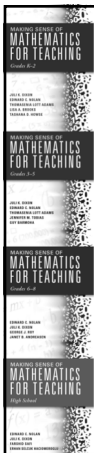
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What happens when you don't use academic vocabulary?

Everyday language should come first – take a lesson from our English Language Learners!

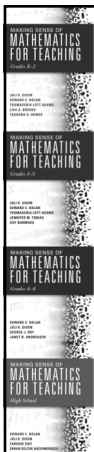
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Academic vocabulary is still important – when you introduce it is what needs to be adjusted.

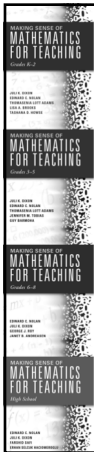
Introduce academic vocabulary as you connect concepts to procedures.

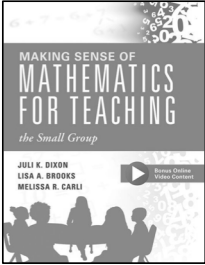
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What does this look like during instruction. Consider this pulled small group of students in grade 5.

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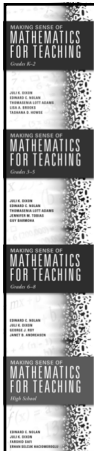


MAKING SENSE OF
MATHEMATICS FOR TEACHING
the Small Group

JULI K. DIXON
 LISA A. BROOKES
 MELISSA R. CARLI

Making Sense of Mathematics for Teaching
 the Small Group

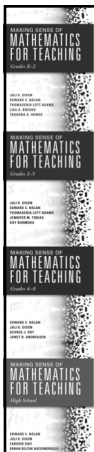
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Three types of mathematics lessons:

1. Lessons focused on building conceptual understanding.
2. **Lessons focused on connecting concepts and procedures.**
3. Lessons focused on the practice and application of procedures.

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2. Lessons focused on connecting concepts and procedures.

How could experiences with the “cookie problem” task support connecting concepts and procedures?

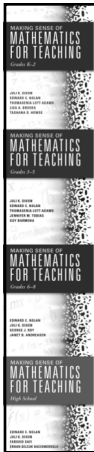
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Keep Planning Real

- As a team, make sense of the learning arc of the upcoming module.
- Determine the 2-3 most important lessons of the module.
- Plan those 2-3 lessons together using the TQE Process.

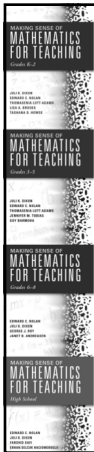
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Plan with the TQE Process in Mind



- **Tasks** connect to learning goals and help identify student errors.
- **Questions** elicit mathematical understandings and common errors.
- **Evidence** drives scaffolding and guides extensions.

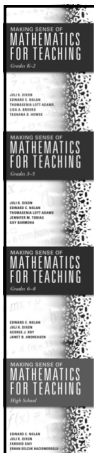
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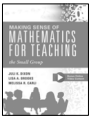
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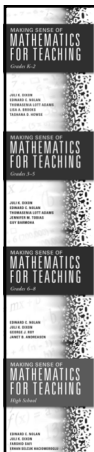
Small Group Instruction

1. What does it look like?
2. What is the purpose?
3. What can we do better?

Making Sense of Mathematics for Teaching Small Groups



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