

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

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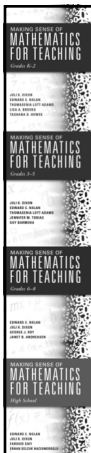
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**Goals for this Session**

- 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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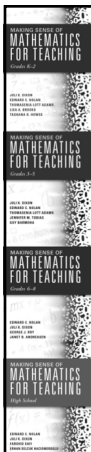
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**Six Unproductive Practices**

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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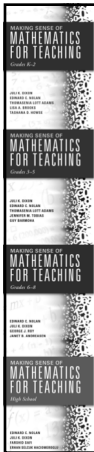
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## Six Unproductive Practices

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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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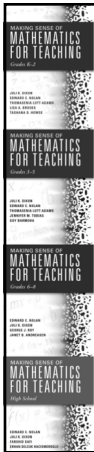
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## What requirements do you have regarding the essential question?

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

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Consider this task.

## PROBLEM

Douglas ordered 5 small pizzas during the great pizza sale. He ate  $\frac{1}{8}$  of one pizza and wants to freeze the remaining  $4\frac{5}{8}$  pizzas. Douglas decides to freeze the remaining pizza in serving-size bags. A serving of pizza is  $\frac{2}{8}$  of a pizza. How many servings can he make if he uses up all the pizza?

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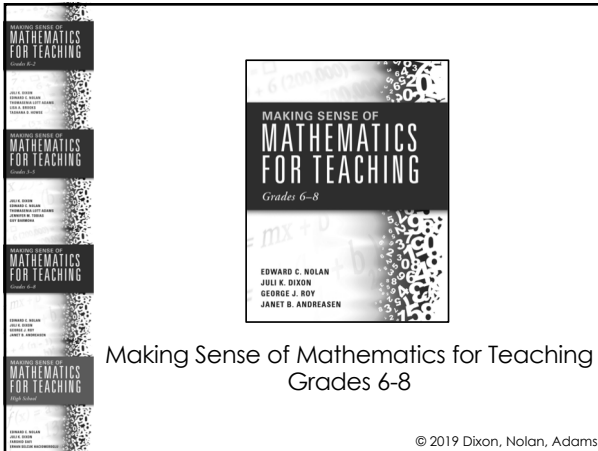
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MAKING SENSE OF  
MATHEMATICS  
FOR TEACHING  
Grades 6-8

EDWARD C. NOLAN  
JULI K. DIXON  
GEORGE J. ROY  
JANET B. ANDREASEN

Conceptual Lessons have  
Special Needs

Now consider this lesson objective:

**Students will interpret the remainder  
when encountering division of  
fractions 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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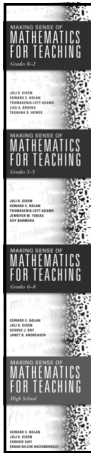
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**Stop the Madness.**

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

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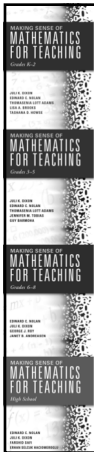
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Stop the Madness.

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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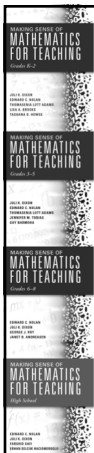
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Ask this:

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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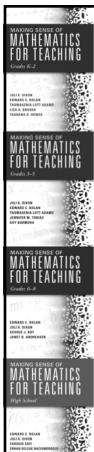
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Layers of Facilitation

- 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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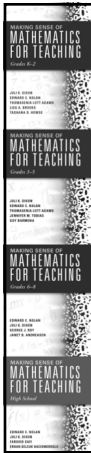
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## What best describes how you provide support (differentiation)?

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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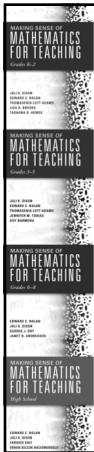
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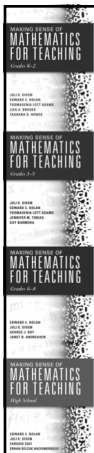
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## The importance of a good task

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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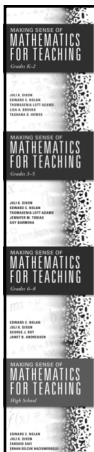
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## Try This:

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

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

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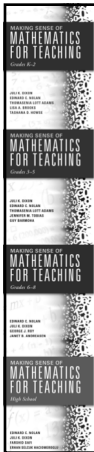
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What happens when you don't use academic vocabulary?

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

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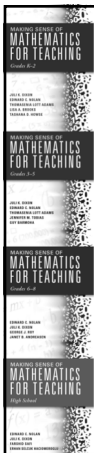
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Academic vocabulary is still important – when you introduce it is what needs to be adjusted.

Introduce academic vocabulary as you connect concepts to procedures.

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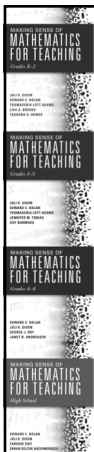
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What does this look like during instruction. Consider this pulled small group of students in grade 5.

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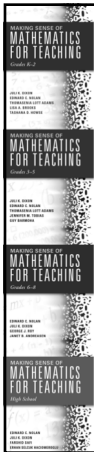
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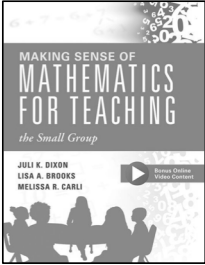
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MAKING SENSE OF  
**MATHEMATICS FOR TEACHING**  
*the Small Group*

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

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Making Sense of Mathematics for Teaching  
the Small Group

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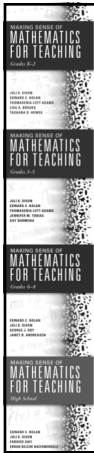
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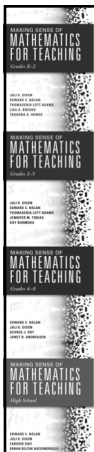
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### Three types of mathematics lessons:

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.

This takes planning!

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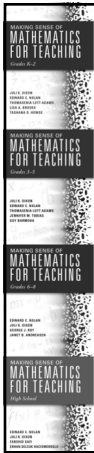
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Keep Planning Real

- 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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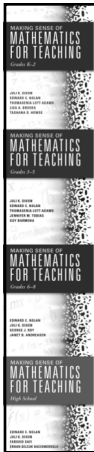
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Plan with the TQE Process in Mind



- **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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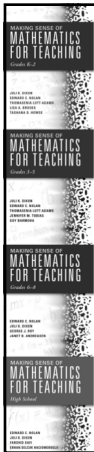
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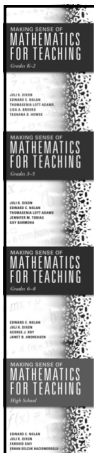
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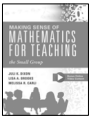
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## Small Group Instruction

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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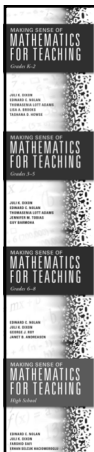
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## Goals for this Session

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