



Building Bridges: Creating Community Around Learning and Teaching Mathematics



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 @julidixon 

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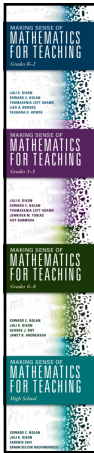
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Session Goals

- Share structures of LCEEQ Mathematics Summer Institute.
- Examine four foundations upon which the bridges were constructed within the project.
- Explore applications of the foundations for future work in mathematics and beyond.

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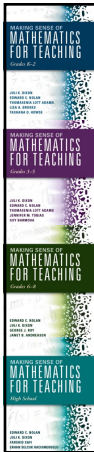
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Structures of the LCEEQ/DNA Math Project

1. Organized in grade band cohorts for 3 years (starting in 2015, 6 cohorts, approximately 650 teachers in total).
2. Convened each summer for 3 days and explored specific content progressions.
3. Offered virtual live PD during many school years.
4. Supported during summers and through school years by consultants.

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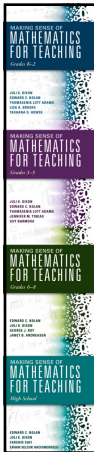
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## Four Foundations of the LCEEQ/DNA Math Project

1. Create a safe space to be vulnerable.
2. Design a structure that is an immersive and continuous mathematics learning experience.
3. Respect the need for teachers to be learners.
4. Center purpose and expect excellence.

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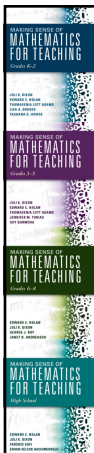
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## We always begin with a task.

Four friends go hiking. They bring snacks, a compass, and  $3\frac{1}{3}$  litres of water. If they share the water equally, how litres will each person get?

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## Discourse Norms

- Provide explanations and justifications with solutions.
- Make sense of others' solutions.
- Communicate when you don't understand or don't agree.

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# HMH

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## Why do we intervene?

Cultivate Perseverance

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




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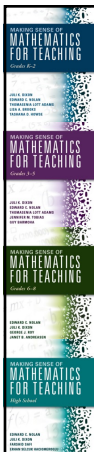
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It was a reunion where we saw the same friends year after year. We played together.



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We learned together.



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And we offered opportunities to learn together virtually...



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even for administrators...

### ADMINISTRATOR SUPPORT

with Juli Dixon

January 18, 2021

**FIGHTING FIXED MINDSETS: FIVE CLASSROOM CULTURE SHIFTS FOR MATHEMATICS TEACHING AND LEARNING**

The instructional choices teachers make impact not only classroom lessons, but how students feel about their ability to learn mathematics. Juli Dixon asks, "Do your school and classroom norms fight fixed mindsets or support them?"

Juli helps participants make sense of five classroom culture shifts to support students while engaging in the mathematical practices. By examining school and classroom structures that might inhibit growth mindsets, teachers discuss ways to adjust those structures. She helps teams create a shared image of what it looks like when students are set up to succeed.

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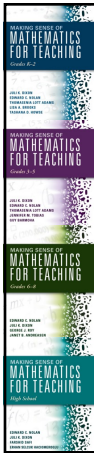
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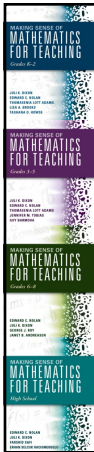
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### Plan with the TQE Process in Mind



- **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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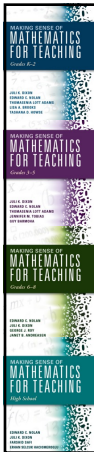
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## Plan with the TQE Process in Mind



- **Tasks** connect to learning goals and help identify student errors.

**Learning Goal**  
Represent, name, and add fractions with unlike denominators.

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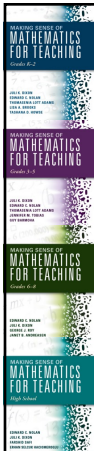
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We used just the right tasks we knew people would get wrong.

Brandon shared 4 cookies equally between himself and his 4 friends. He started by giving each person (including himself) a half of a cookie. What could he have done next?

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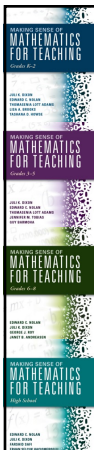
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MAKING SENSE OF MATHEMATICS FOR TEACHING  
*the Small Group*

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

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Eliciting Student Errors

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**MATHEMATICS FOR TEACHING**  
Volume 1: Middle School Mathematics

## Eliciting Student Errors

What is the thinking behind the common error of  $\frac{1}{3}$ ?

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**MATHEMATICS FOR TEACHING**  
Volume 2: High School Mathematics

## Eliciting Student Errors

What is the thinking behind the common error of  $\frac{1}{5}$ ?

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**MATHEMATICS FOR TEACHING**  
Volume 3: High School Mathematics

## How do we intervene?

Six features for reinventing intervention

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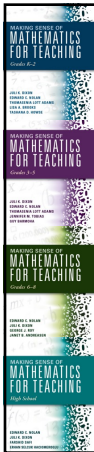
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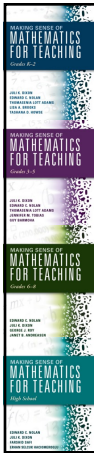
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## Five Instructional Shifts

1. Students provide the strategies.
2. Teacher provides strategies "as if" from students.
3. Students create the context.
4. Students do the sense making.
5. Students talk to students.

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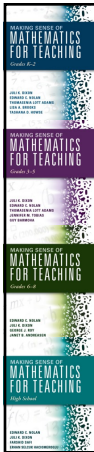
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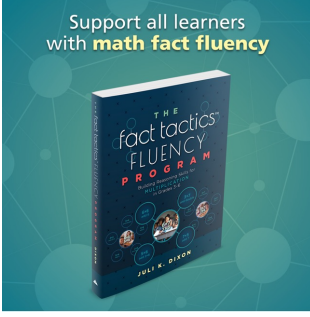

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Support all learners with **math fact fluency**

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