Engaging Teachers in Collaborative 5E Lesson Planning with Effective Teaching Practices
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Agenda

✓ Collaborative Planning: What is it?
✓ Reasoning and Research
✓ 5Es: What are they?
✓ Planning a Lesson
✓ Reflection and Next Steps
Collaborative Planning
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Planning Together

- Homeroom Teachers
- ELL Teachers
- Interventionists
- Special Education Teachers
Responding to Your Class’s Needs

- What do students know?
- What don’t they know? Why don’t they know it?
- What scaffolds might some students need?
- Are there language supports that will help students access math vocabulary?
- Does the problem context need to be changed?
- What manipulatives will be useful?
Reasoning & Research
Nothing has a larger impact on student learning than teacher practices.

“Every student has the right to participate substantially in all phases of a mathematics lesson and be challenged and supported in developing deep understanding and proficiency in mathematics.”

“Researcher Judith Warren Little (1990) found that when teachers engage regularly in authentic ‘joint work’ focused on explicit, common learning goals, their collaboration pays off in the form of high quality solutions to instructional problems, increased teacher confidence, and remarkable gains in student achievement.”

“Effective instruction rests in part on careful instructional planning. Teachers’ co-planning of lessons provides one of the greatest opportunities for making a positive difference on student learning.”

The 5 Es: What are they?
Research-Informed Instructional Framework

5E Graphic: Delise Andrews, Lincoln Public Schools, Lincoln, NE
Engage
Engage

Purpose: To activate prior knowledge, review critical prior learning, and share the lesson objectives. An opening problem or task that either reviews prior learning or introduces the topic by making connections is often used. Students are asked to discuss and work the task in pairs or small groups.
ENGAGE

- Is this the task you will use? Will you adapt it? Why? How?
- What do you want to hear from students?
- What conversation structures will you use? (i.e., partner talk, small group, etc.)
- How much time will you allot to this portion of the lesson?
- What questions will you ask to elicit students’ thinking?
# Math Lesson

**Grade:** 5  
**Lesson:** 10.3  
**Objective(s):** Find equivalent fractions.

## INTRODUCE
- Write the fractions $\frac{2}{3}$ and $\frac{4}{5}$ on the board.
- Ask: Are these fractions equivalent?
- Write the fractions $\frac{1}{2}$ and $\frac{3}{6}$ on the board.
- Ask: Are these fractions equivalent?
- Write the fractions $\frac{2}{3}$ and $\frac{1}{3}$ on the board.
- Ask: Are these fractions equivalent?
- Say: Today we’re going to find equivalent fractions.

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**Engage**

"Well-chosen!"

Partners

- Write the fractions $\frac{2}{3}$ and $\frac{4}{5}$ on the board.
- Ask: Are these fractions equivalent?
- Write the fractions $\frac{1}{2}$ and $\frac{3}{6}$ on the board.
- Ask: Are these fractions equivalent?
- Write the fractions $\frac{3}{9}$ and $\frac{1}{3}$ on the board.
- Ask: Are these fractions equivalent?
- Say: Today we’re going to find equivalent fractions.

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**Engage**

- Students draw fraction strips on white boards.
- How do you know?
- Show us on your model.

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**Engage**

- Students draw fraction models on their models.
Is this the task you will use? Will you adapt it? Why? How?

What do you want to hear from students?

What conversation structures will you use? (i.e., partner talk, small group, etc.)

How much time will you allot to this portion of the lesson?

What questions will you ask to elicit students’ thinking?
Explore and Explain
Explore and Explain

Purpose: To actively engage students individually or collaboratively in a mathematical task designed to help them develop a deep understanding of the mathematical concept that is the focus of the learning objective.
What math concept will students explore?

What are students likely to discover on their own?

What conceptions and misconceptions are expected?

How much time will you allot to this portion of the lesson?

What conversation structures will you use? (i.e., partner talk, small group, etc.)

What questions will be used to clarify and connect students’ ideas?
EXPLORE/EXPLAIN

How can we use this to show \( \frac{4}{8} \)? What do you notice?

Develop:

- Draw a circle on your board. Draw a line in it to show \( \frac{1}{2} \).
- Draw another circle on the board. Draw a line in it to show \( \frac{2}{4} \).
- Draw a circle on the board. Draw a line in it to show \( \frac{3}{6} \).
- Say: Even though these are two different fractions, they are equivalent to each other. The amount that is shaded doesn’t change, there are just more parts to the circle. What fraction is being shown now? Write \( \frac{5}{10} \) on the board.
- Ask: What can we multiply the numerator and denominator by to get each of these fractions? Write 2, 3, and 5 on the board. How can we use \( \times \) or \( \div \) to prove these are true?
- Shot down: These fractions are equivalent. Why? Write equivalent on the board.

Develop:

- Draw a perpendicular line through the circle. Ask students what fraction is being shown now. Write \( \frac{2}{4} \) on the board.
- Show a line on the board. Show students other fractions that are equivalent to \( \frac{2}{4} \). Write \( \frac{4}{8} \) on the board. Show students other fractions that are equivalent to \( \frac{4}{8} \). Write \( \frac{8}{16} \) on the board.
- Ask: What did we multiply the numerator and denominator by to get \( \frac{4}{8} \)? Write 2 on the board. How can we use \( \times \) or \( \div \) to prove these are true?
- Shot down: These fractions are equivalent. Why? Write equivalent on the board.

Develop:

- Draw a circle on the board. Split the first one in half vertically and color one half of the circle. Ask students what fraction is being shown. Write \( \frac{1}{2} \) on the board.
- Ask: What did we multiply the numerator and denominator by to get \( \frac{1}{2} \)? Write 2 on the board. How can we use \( \times \) or \( \div \) to prove these are true?
- Shot down: These fractions are equivalent. Why? Write equivalent on the board.

Explore & Explain

Guided Practice:

- Students work on boards:
  - \( \frac{1}{2} \) or \( \frac{2}{4} \)
  - \( \frac{3}{6} \) or \( \frac{4}{8} \)
  - \( \frac{5}{10} \) or \( \frac{6}{12} \)

- Whole group: Students have boards.
What math concept will students explore?

What are students likely to discover on their own?

What conceptions and misconceptions are expected?

How much time will you allot to this portion of the lesson?

What conversation structures will you use? (i.e., partner talk, small group, etc.)

What questions will be used to clarify and connect students’ ideas?
Elaborate
Elaborate

Purpose: Have students deepen their understanding by engaging in guided practice activities under closer monitoring by the teacher.

This phase ends with closure after misunderstandings are clarified.
Work the selected task

Does the task need to be adapted? Why? How?

What do you want to hear from students?

How will students demonstrate conceptual understanding?

What conversation structures will you use?

How much time will you allot to this portion of the lesson?
**Guided Practice**

- Have two students come to the board.
- Give students a fraction. Students need to write an equivalent fraction as quickly as possible.
- The first student to write a correct equivalent fraction stays at the board. Continue with more pairs of students.
- *For some pairs, you may want to give them a fraction greater than 1.*

**Elaborate**

 Students at desks working on boards
- Have two students come to the board.
- Give students a fraction. Students need to write an equivalent fraction as quickly as possible.
- The first student to write a correct equivalent fraction stays at the board. Continue with more pairs of students.
- *For some pairs, you may want to give them a fraction greater than 1.*

**Independent Practice**

- Assign problems 3-18 on page 124 as independent work.
- Have students explain how they found their answers.

- How does your model show that?
  - Tell us about your work.
  - Look for other equivalent fractions from class.
Work the selected task

Does the task need to be adapted? Why? How?

What do you want to hear from students?

How will students demonstrate conceptual understanding?

What conversation structures will you use?

How much time will you allot to this portion of the lesson?
Evaluate
Evaluate

Purpose: Have students demonstrate the skills and concepts they’ve learned.

Summative assessment opportunities can serve a dual purpose as formative assessments.
EVALUATE

Do the assignment or take the test

What questions do you anticipate students will struggle with?

What are the different strategies your team used to solve the problems?

In which lessons are those skills taught?

How will you prepare students to represent their thinking?
INDEPENDENT PRACTICE
• Assign problems 3-18 on page 124 as independent work.
• Have students explain how they found their answers.

ASSESS AND CLOSE
• Have students share the answers they wrote for items 4, 7, 14, 15, and 18.
• Ask: What did you multiply or divide the numerators and denominators by to find equivalent fractions?

Evaluate

Look for other equiv. fractions from class

Exit ticket on sticky note
Do the assignment or take the test

What questions do you anticipate students will struggle with?

What are the different strategies your team used to solve the problems?

In which lessons are those skills taught?

How will you prepare students to represent their thinking?
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