

## BetterLesson Professional Learning Webinar

Introduction to the 5 Practices for Orchestrating Productive Mathematics Discussions



Selecting & Sequencing Ohio Department of Education & Workforce Feb. 7th, 2024 Megan Nagel/Padraic O'Donnell

#### Welcome!



Welcome!

#### Share in the chat:

-Where are you joining us from today and what is your current role?

-If you attended the webinar last week on anticipating & monitoring, what was a key takeaway for you?



## **Aligned & Tailored for Ohio ESC Partnership**



Aligned

Our partnership is specifically designed to amplify the impact of other state-wide infrastructure and initiatives.

Our coaches will be familiar with key efforts, including:

• Materials Matter

**BetterLesson** 

- HQIM-related work streams with EdReports & Instruction Partners
- Ohio Standards for Math Practice



Tailored

Our team has worked with leadership from the ESC of Central Ohio, OESCA, and the Department of Education to tailor our workshop, coaching, and learning walk content to the unique needs of ESC Math Specialists



Department of Education & Workforce  $\langle \cdot \rangle$ 

#### **Your Hosts**



Padraic O'Donnell Instructional Coach



Megan Nagel Instructional Coach



#### Lisa Fik Instructional Coach (Tech Support)

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#### Our Series: The 5 Practices for Orchestrating Productive Mathematics Discussions



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#### Goal

Explore tools and strategies that lay the foundation for productive discourse

DEFINE	EXPLORE	BUILD	TRY, MEASURE, LEARN
Selecting Student Ideas	Crafting a Mathematical Story	<b>Understanding</b> with resources for Selecting and Sequencing	+
BetterLesson			ESC Department of Education & Workforce

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#### **Our Webinar Series: The 5 Practices for Orchestrating Productive Mathematics Discussions**



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## Let's Check In!

Most often, how do you decide who gets to share during whole class discussions?

- Random generator
- Cold calling
- Correct answers
- Unique ideas
- A raised hand
- Something else- I'll share in the chat.



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## **Student-Centered Whole Class Discussions**



Whole-class discussions should not feel like:

- A lecture
- A surprise party
- A series of book reports

Our goal is telling a mathematical story driven by student work where students:

- Listen
- Connect
- Revise



## **Selecting Student Ideas**



**Professional Learning Reimagined** 

#### 5 Practices for Orchestrating Productive Mathematics Discussions









## **Selecting Student Responses**



**What:** Intentionally select students and strategies to highlight as part of the whole class discussion

When: While students work

#### How:

- Monitor for strategies
- Consider time, value, math storyline
- Adjust based on student understanding
- Set students up for success to share





## **Questions to Consider for Selecting Work**



#### What

- What **patterns** are showing up?
  - What do they mean about student understanding?
- What **unique strategies or approaches** are used? Will they always work?
- What **mathematical ideas** can be highlighted or reinforced related to the lesson goals?
- What errors are visible?
  - How can these errors lead to learning?



**2nd Grade Learning Goal:** Select a strategy to subtract a one-digit number from a two-digit number

Find the value **82-9** 

Show your thinking. Use blocks if it helps.

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Related standard:

**2.NBT.9** Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.



A	2	3	4	5	6	7	8	9	10
	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	93	74	75	76	71	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100













7th Grade Learning Goal: Represent different equations with a tape diagram. Draw a tape diagram to match each equation. 114 = 3x + 18  $\mathbf{T}$ 

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114 = 3(y + 18)

Related standard:

**7.EE.4.a** Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.



**<u>7th Grade Learning Goal:</u> Represent different equations** with a tape diagram. Draw a tape diagram to match each equation.

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$$114 = 3x + 18$$

114 = 3(y + 18)





## **Selecting: Choosing the What and Who**

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#### What

Which mathematical ideas will you focus on?

Based on:

- Learning Goals
- Anticipated Responses
- What students actually produce

#### Who

Which students will share? Based on:

- Authors of helpful ideas
- Students who haven't shared recently
- Students who need to opportunities to be positioned as mathematically competent





#### **Questions to Consider When Selecting Students**

#### Who

- How can every student have a voice in the classroom?
- What **supports** set students up for success when sharing their ideas?
- How can the learning environment allow for students to share and learn from mistakes?





# Selecting the What and the Who



What messages do we send to students based on *what* and *who* shares in whole class discussions?



## **Crafting a Mathematical Story**



**Professional Learning Reimagined** 

#### 5 Practices for Orchestrating Productive Mathematics Discussions







## **Sequencing Student Responses**



**What:** Create an accessible path to the learning goal using selected student strategies

When: Before whole class discussion

#### How:

- Determine a strategy to tell the story of students' responses
- Order the strategies according to the path





## Sequencing: What is the flow of ideas?



- No "best" sequence- based on accessible path to learning goal.
- Example paths:
  - Most common ideas
  - Concrete to abstract
  - Misconceptions, work to clarify
  - Contrasting strategies
  - Similar strategies
- Mix it up!



## Crafting a Story...

#### 2nd Grade Learning Goal: Select a strategy to subtract a one-digit number from a two-digit number







## Crafting a Story...



Draw a tape diagram to match each equation.

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$$114 = 3x + 18$$

$$114 = 3(y + 18)$$





## **Conditions for Selecting & Sequencing**



What needs to be in place for this practice to occur?

- Clarity on learning goals
- Internalized learning progression
- Understanding of student ideas and mathematical ideas
- Monitoring Charts for documentation



#### **Telling the Story...**



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What else do we need so students can listen, connect, and revise?

- Visibility of responses
- Connecting questions
- Active thinking and participation
- Accountability to the learning community



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## **Build**

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#### How can we make this work actionable?



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#### Let's Explore: Strategy Choice Board

Choose any of the sections below and explore the related BL resources & strategies.

Learn More About Leveraging Student Ideas

BetterLesson Strategy

**BetterLesson** 

Demonstrate Value in Visual Representations

BetterLesson Strategy Dig Deeper into Facilitating Productive Discourse

BetterLesson Blog



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## **Q & A**

## What questions do you have about our conversation today?





#### We value your feedback!

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Your input is important to us, please take a moment to complete our survey using the link in the chat.





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## Thank you!





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