

BetterLesson
Professional Learning
Webinar

The 5th Practice for Orchestrating Productive Discussions



Connecting Student Ideas to Learning Goals
Ohio Department of Education & Workforce
February 21, 2024
Padraic O'Donnell/ Megan Nagel

Welcome!



Welcome!

Share in the chat:

- Where are you joining us from today and what is your current role?
- If you have tried to implement one of the five practices—what was it and how did it go?





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
- 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







Your Hosts



Padraic O'Donnell
Instructional Coach



Megan Nagel
Instructional Coach



Lisa Fik
Instructional Coach
(Tech Support)







Our Series: The 5 Practices for Orchestrating Productive Mathematics Discussions

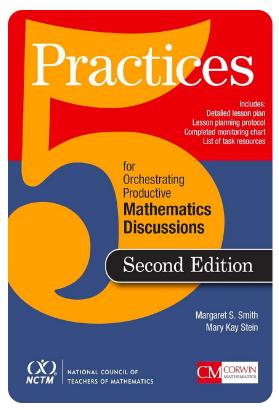


Goal

Explore tools and strategies that lay the foundation for productive discourse

DEFINE	EXPLORE	BUILD	TRY, MEASURE, LEARN
"Good" Questions	Holding Students Accountable	Understanding with resources for Connecting	+

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



- 1 Setting Goals & Selecting Tasks
- 2 Anticipating & Monitoring
- **3** Selecting & Sequencing
- Connecting Student Ideas to Learning Goals









Let's Check In!

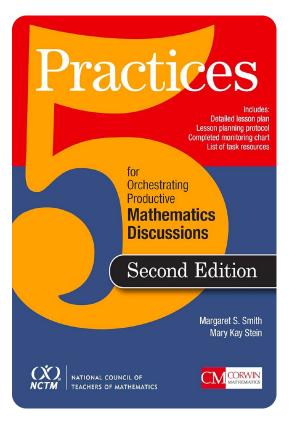
You just asked a question to start a discussion. You get a sea of blank faces in response.

What's your go-to teacher move to get the conversation going?



+

5 Practices for Orchestrating Productive Mathematics Discussions





Anticipating



Monitoring



Selecting



Sequencing



Connecting















What do we need so students can listen, connect, and revise during whole class discussions?

- Selected and sequenced student strategies
- Visibility of responses
- Connecting questions
- Active thinking and participation
- Accountability to the learning community





Connecting Student Responses



What: Facilitate an interactive whole-class discussion bridging students' ideas to the learning goal

When: After all students have had a chance to grapple with a problem independently and in groups

How:

- Use student work to create context
- Pose thoughtful questions and prompts
- Plan Teacher Discussion Moves
- Introduce ideas driven by student thinking









Connecting: Using Student Work



- Focus on mathematical meaning, relationships & generalizations
- Framed in context of the student work that has been shared
- Teachers can introduce ideas but it should driven by student thinking
- Don't forget to think about how students will share their work







"Connecting may in fact be the most challenging of all the five practices because it calls on the teacher to **craft questions** that will make the mathematics visible and understandable... they must **begin with what students know**."

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5 Practices for Orchestrating Productive Mathematics Discussions, Smith & Stein



Funnel vs. Focus Questions

What's the difference between these two conversations?



Funnel Questions

Teacher: How many markers will be in each box?

(long pause)

Teacher: How many markers are there total?

Students (in unison): 18.

Teacher: How many 3's are in 18?

Javier: 6

Teacher: So there are 6 markers. Good!

Focus Questions

Teacher: How many markers will be in each box?

(long pause)

Teacher: How did you draw out this problem?

Amy: I made 3 squares and tallies.

Teacher: What did the tallies represent?

Amy: Each tally was a marker, till I got 18.

Teacher (to class): How can we use Amy's drawing to find out how many markers are in each box?





Funnel vs. Focus Questions



Funnel Questions

- Lead students to a particular strategy and solution.
- Series of questions leading to a specific end determined by the teacher.

Focus Questions

- In response to student thinking.
- Encourage students to communicate their thoughts clearly.
- Set expectation that they should reflect on their thoughts and those of their classmates.

In the chat: Why do the questions we ask matter?





Focus Questions for Connecting



Your questions and discussions should help students notice:

- Connections between their solutions
- Key mathematical ideas
- Consequences of different approaches
- Patterns
- Efficacy and efficiency

Solutions should **build** on each other.





Effective Questioning





Discussion Generating

Do you agree? Disagree?

What do others think?



Probing

Why do you think that?

Does that make sense?



Make Math Visible

Do you see a pattern?

What would happen if ...? What if not ...?

https://docs.google.com/document/d/1nBlBeanYceL9GZTI17sJfzWGG5pLF3LPTunag6E0jLs/edit#heading=h.nyhjhfm4hqw2







Can We Plan Our Questions?



Pre-planned Questions

VS.

"Back Pocket"
Questions

number of quarters	number of dimes	
0 0	20 2.00	
4 1.00	10 1.00	
8 2.00	0 0	
6 1.50	5 0.5	
0.25	16 1.60	
2 0.50	15 0.5	

A student has \$2.00 and 17 coins in their pocket. If they only have quarters and dimes, how many of each do they have?





Can We Plan Our Questions?

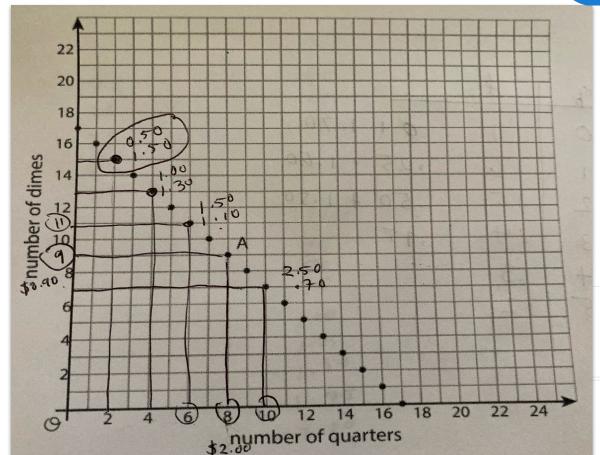


Pre-planned Questions

VS.

"Back Pocket"

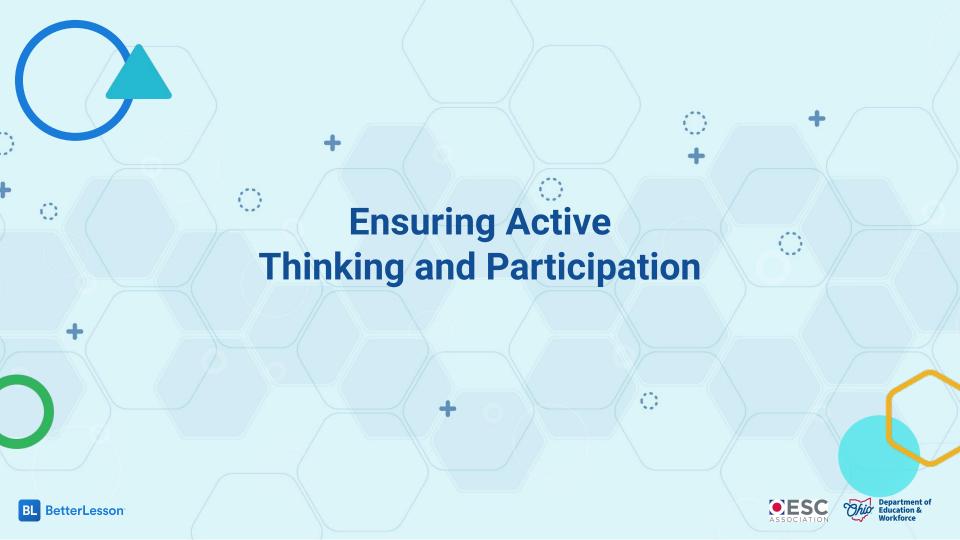
Questions













"Students learn through **communicating** their ideas, **listening** to and **critiquing** the ideas of others, and having others critique their **approaches to solving problems**, while always turning to the discipline of mathematics as the final authority on whether something is accurate and makes sense or not."





"Classroom discussions in which these activities occur do not materialize out of thin air. Rather, they are **planned**, through anticipating and monitoring; **orchestrated**, through selecting, sequencing, and connecting; and **executed**, through skillful use of identifiable discussion moves on the part of the teacher."

5 Practices for Orchestrating Productive Mathematics Discussions, Smith & Stein









Student Beliefs



What do students need to believe in order to make this possible?

- Even if I'm not finished or correct, I can participate in the discussion
- I can learn math by talking about it
- I am a part of a community of mathematical thinkers
- I am responsible for sharing and responding to ideas
- My ideas are "provable" (or not) using mathematical reasoning
- My ideas are valuable







Teacher Discourse Moves



Waiting

Inviting

Revoicing

Probing

Connecting

Reinforce students' identities as knowers and doers of math.

Purposeful responses, maintaining cognitive demand

Communicate high expectations of student thinking







Waiting



Wait Time



- Provide time to process teacher questions and think about their responses.
- After a question
- After a student responds

"Take your time (name)."

"Let's take time to think about that..."

"I want you to think about this individually, without saying anything yet."

*At least 3-5 seconds of silence



Inviting



Encourage Student Participation



- Get solutions, strategies, ideas "on the table".
- Make them visible
- Involve multiple students in discussion

OK, who is ready to share their thinking?

"Did anyone try this a different way?"

"What do you notice? What do you wonder?"

Think-Pair-Share



Revoicing



Teacher Revoice



- Restate, rephrase, or expand on students' contribution
- Check back in with student to confirm accuracy
- If overused, students may think they don't have to listen to each other.

"So the way I'm interpreting what you're saying is... Is that what you meant?"

"If we connected your idea to the vocabulary from yesterday, we might say... Does that description work?"

"Let me try to say what I think that you are saying...."



Revoicing

+

Asking Students to Revoice



- Restate, rephrase, or expand on students' contribution
- Requires active listening
- Checks understanding of students' ideas and math ideas

"That's an interesting idea. Can you say that a little louder?"

"Can someone say that in his or her own words?"

"Can you repeat what ____ said, but shorter?"





Teacher Discourse Moves



Waiting

Inviting

Revoicing

Probing

Connecting

Refining our facilitation:

- Notice the types of moves that show up in your classroom.
- Purposefully plan for these moves
- Focus on 1-2 at a time









Let's Explore: Strategy Choice Board

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

Teacher
Discourse Moves

<u>Teacher</u> <u>Reference</u> You Do, We Do,

I Do

BetterLesson Strategy Compare and Connect

BetterLesson Strategy





Q & A

What questions do you have about our conversation today?











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



Thank you!







