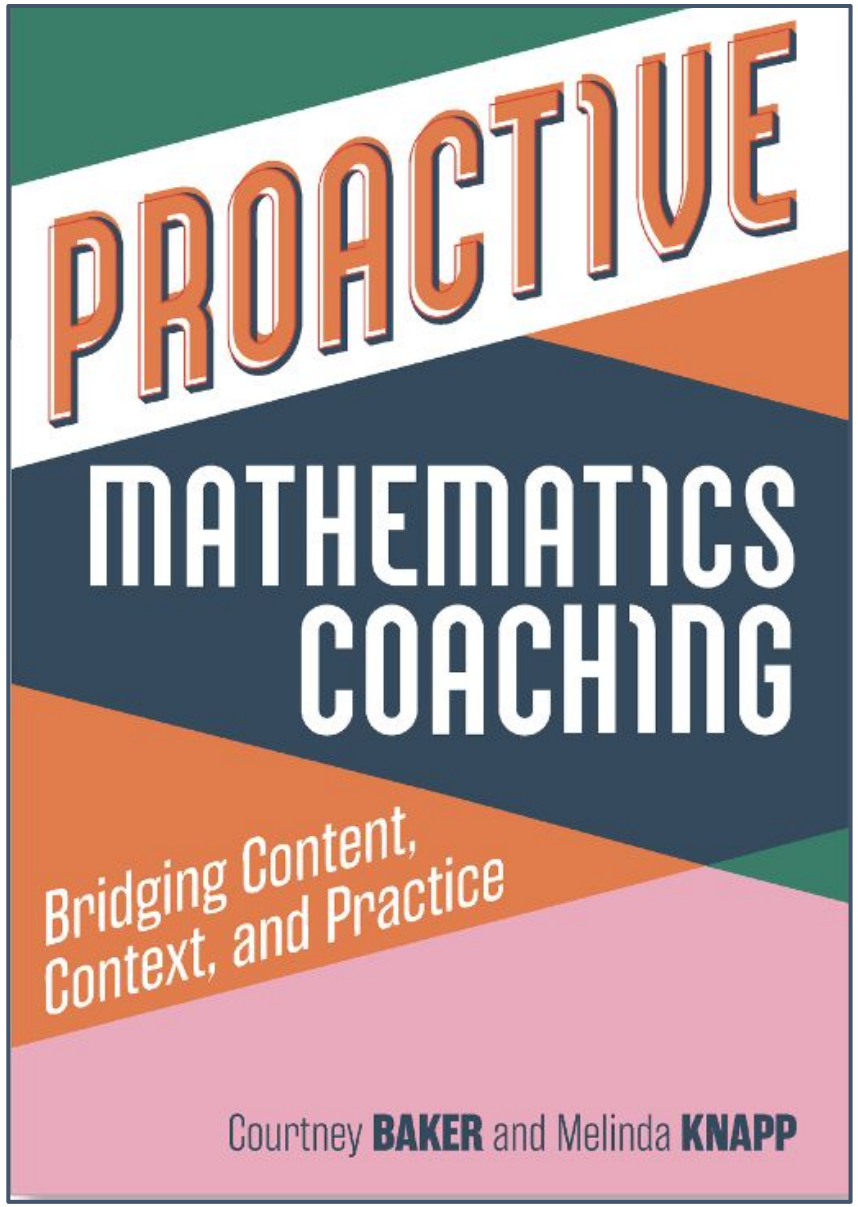
WELCOME!

NCTM Book Study

Proactive Mathematics Coaching

Engaging In Math Studio

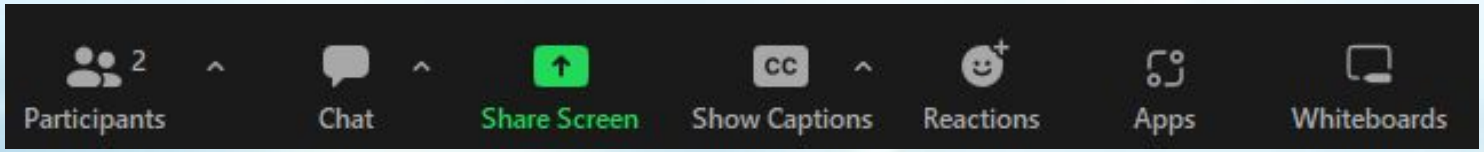
Courtney Baker, PhD
Melinda Knapp, PhD

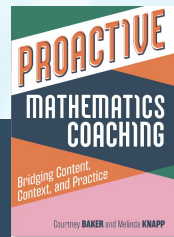


NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

Welcome!

- **Please keep your microphone muted!**
- **Chat box**: Comment, chat with other participants, and ask questions.
- **Video**: Be mindful that everyone can see your video unless you choose to stop sharing.
- **Show Captions**: Use to hide or view subtitles.

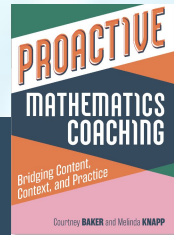




NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

Welcome!

- A recording will be available to registered attendees for 30 days after the session.
- We will provide a certificate of participation within a few days of the session.
- Follow us on Twitter @NCTM and share your thoughts about today's session using the hashtag #NCTMPD.



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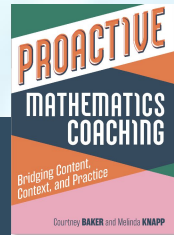
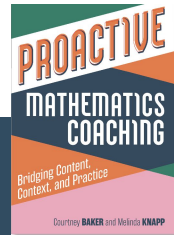


Proactive Mathematics Coaching

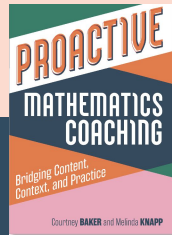
Today's Agenda

Part I: Welcome & Overview

Part II: Exploring The Case of Stuart & Engaging In Math Studio



Part I: Welcome & Overview



Introductions

Mathematics Coaches At Heart

Courtney Baker, PhD

GEORGE MASON UNIVERSITY

cbaker@gmu.edu

Melinda Knapp, PhD

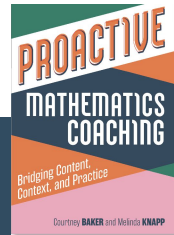
OSU Oregon State UNIVERSITY Cascades

melinda.knapp@osucascades.edu

Understanding Our Influence

Questions At The Core of Our Practice

Is what I am doing actually effective? And who is it effective for?



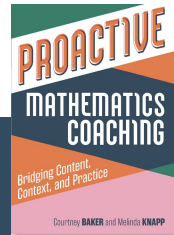
Understanding Our Influence

Developing A Proactive Practice

Our Book Study Goals

Connecting Research & Practice

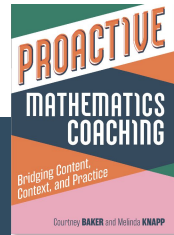
- Explore a specific MCP through example cases that provide broad exposure to instructional practices and leadership approaches.
- Analyze cases that recognize a range of coaching contexts, focus on math content, and empower school communities to surmount obstacles.
- Gain insights into what it takes to plan professional learning and/or coaching interactions that advance leadership agendas for both long- and short-term goals.



Our Book Study Goals

Connecting Research & Practice

- Bring transparency to decision making and illustrate how the use of the PCF advances the vision of teaching and learning mathematics described within the Catalyzing Change series.
- Engage in discussions (network and collaborate) with peers to share common problems of practice, evaluate contexts, define a content focus, establish goals, select practices, and engage in debriefs that can inform future actions.

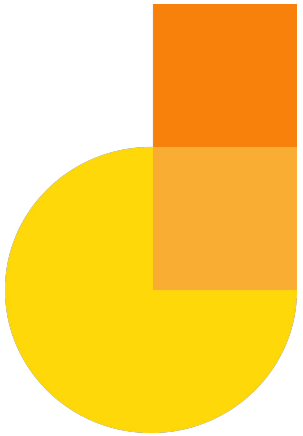


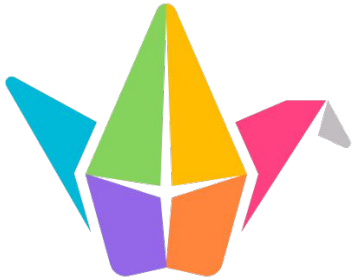
Maximize Your Experience

Engage in Multiple Formats

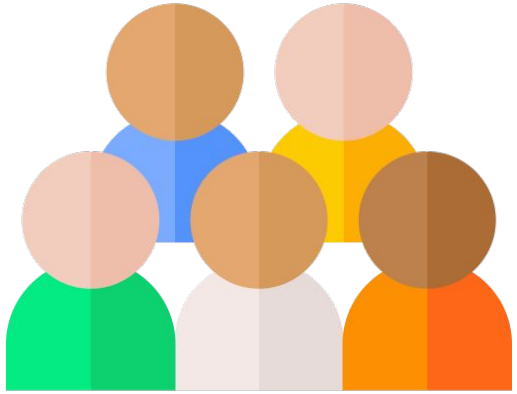
Chat & Microphone

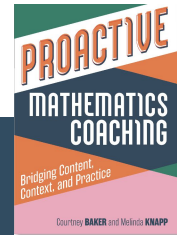
Jamboards & Padlets





Breakout Rooms





Maximize Your Experience

Workshop Norms to (Re)Frame Leadership

- Assume Positive Intent
- Learn From & With Each Other
- Maintain An Asset-Based Approach
- Value Others' Experiences
- We Teach All Students & Lead/Coach All Stakeholders
- Other?

Creating Alliances

Building Your Network

Please Share on Our Google Sheet

- Name
- Position
- School(s)
- Coaching/Leadership Experience
- Email address

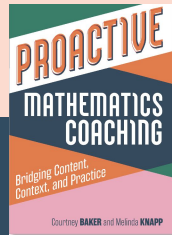
Invitation to Share

Your Turn

What did you try?

- 1-2 questions?
- A specific phase?
- The entire PCF?

Part II: Exploring the Case of Stuart and Engaging In Math Studio as a Mathematics Coaching Practice

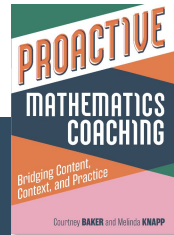


Engaging In Math Studio As A Coaching Practice

Defining the Practice

Mathematics Coaching Practice: Engage in Lesson Study, Math Lab, and Math Studio

Effective coaching of mathematics brings together groups of teachers, administrators, and/or instructional specialists in a collaborative professional learning in the context of school classrooms. One or more cycles of lesson study, math labs, and math studio may include coplanning a lesson, observing the implemented lesson, gathering student evidence, analyzing student data, and reflecting on the enactment and outcomes. These forms of professional development also provide opportunities for coaches to help teachers deepen their content knowledge.



Engaging In Math Studio as a Coaching Practice

Connecting To Your Practice

What is your familiarity with engaging in math studio?

- ❑ I have never heard of engaging in math studio
- ❑ I have read about engaging in math studio
- ❑ I have tried engaging in math studio a few times
- ❑ I regularly engage in math studio

Engaging In Math Studio as a Coaching Practice

Connecting To Your Practice

What do you notice?

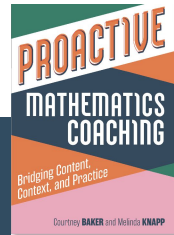
What do you wonder?

	Never Heard Of	Read About It	Tried a Few Times	Use Regularly
Co-Teaching	0%	13%	67%	20%
Modeling	6%	18%	41%	35%
Examining Student Work	0%	20%	40%	40%
Engaging In Mathematics	0%	0%	40%	60%
Engaging in Math Studio	20	60	20	0

Engaging In Math Studio As A Coaching Practice

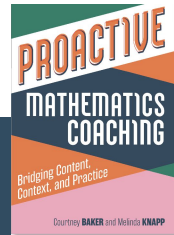
Connecting to Research

In the past decade, models of professional learning that are embedded in a teacher's everyday work of teaching have made considerable progress. Lesson study (Fernandez & Yoshida, 2004; Lewis, 2009; Perry & Lewis, 2009) and variations, such as math studio (Teachers Development Group, 2010; Thanheiser et al., 2017) and math labs (Gibbons et al., 2018; Kazemi et al., 2014) have been influential in this regard and have be referred to more generally as practice-embedded professional learning (Gibbons et al., 2021).



Engaging In Math Studio As A Coaching Practice
Connecting to Research

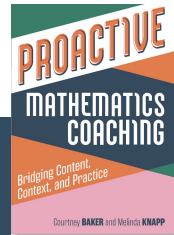
Each of these models of professional learning have important common and unique features (see Table 1). Practice-embedded models offer especially rich contexts where teachers and leaders can make their practice public and available for inquiry as they enact instruction in front of each other *with* students present (Anthony et al., 2015; Fauskanger & Bjuland, 2019; Kavanagh & Rainey, 2017; Kazemi et al., 2018; Lampert et al., 2013).



Engaging In Math Studio As A Coaching Practice

Understanding the Practice

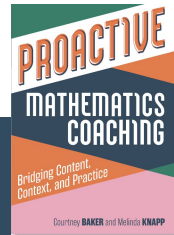
	Lesson Study	Math Labs	Math Studio
Commonalities	• Goal of improvement of teaching • Needs skilled facilitator (typically a coach, experienced teacher, or university partner) • Includes planning, classroom enactment with students present, and collaborative debriefing • Careful noticing to better understand students' mathematical thinking		



Engaging In Math Studio As A Coaching Practice

Understanding the Practice: The Nuances

- Lessons are typically planned in depth with a teacher who will lead the lesson enactment
- This planning typically happens prior to Math Studio Day, though some refinement of the lesson happens the day of
- One major goal of math studio is to deepen teachers' understanding of conjecturing, generalizing, and justifying
- Math studio focuses on use of mathematically productive teaching routines
- Math studio focuses teachers' attention on public work with students as a way to rehearse and refine research-based teaching practices versus polishing a whole lesson

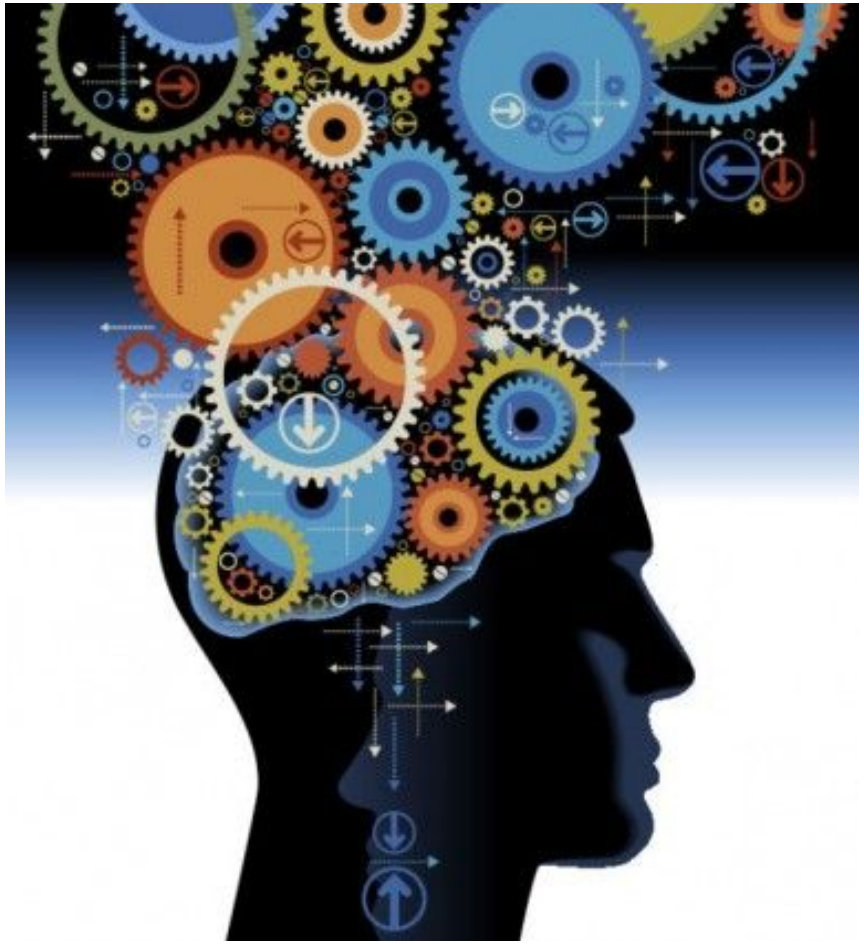


Engaging In Math Studio As A Coaching Practice

Connecting To Practice

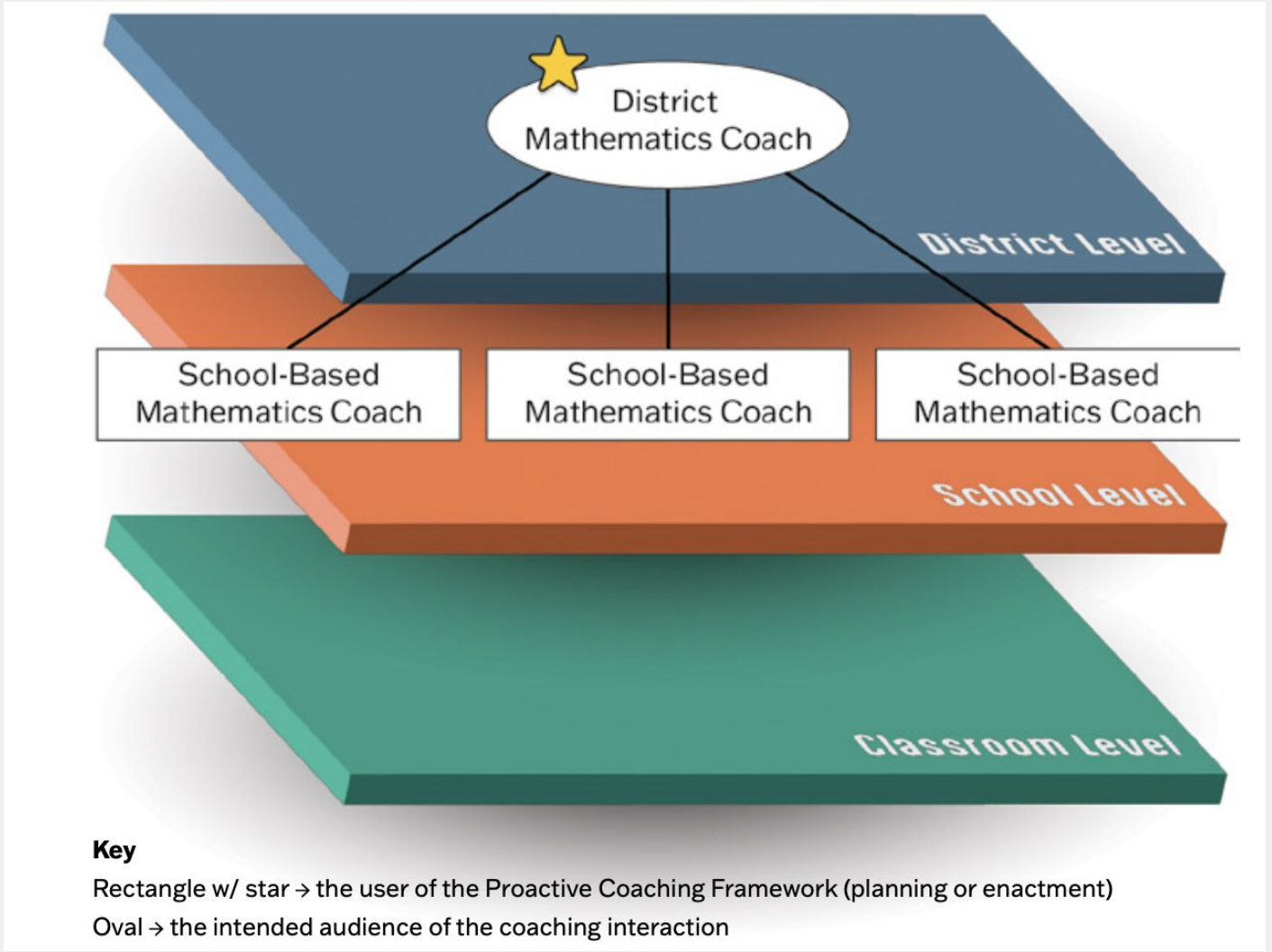
What insights or questions do you have about engaging in Math Studio?

- From reading Chapter 9?
- From your own experiences?



Introducing the Case of Stuart

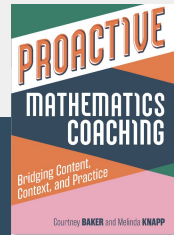
Case Essentials



Introducing the Case of Stuart

Case Essentials

Engaging in math studio for coaches' professional learning in an elementary school for the purpose of increasing the use of side-by-side coaching connected to eliciting and using evidence of student thinking.	
Long-Term Goals	• Develop coaches' ability to use side-by-side coaching with teachers to support teachers during classroom instruction. • Refine our district definition of a coaching cycle; coaching cycles include three sessions: ▪ prelesson inquiry, ▪ **side-by-side coaching**, and ▪ debrief.
Short-Term Goals	• Use math studio for coaches' professional learning in a classroom for the purpose of connecting mathematical representations and eliciting evidence of student thinking (both identified as mathematically productive teaching routines). • Utilize a math studio to rehearse in-the-moment feedback given to teachers by coaches.

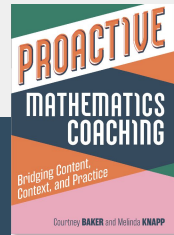


Introducing the Case of Stuart

Case Essentials

Using the PCF to Catalyze Change

The case of Stuart highlights how a K–12 district mathematics specialist who supervises all of the district's school-based coaches prioritizes and provides school-embedded opportunities for professional development. Stuart understands this type of collaboration has the potential for both teacher and coach learning while simultaneously learning about teaching and students' mathematical thinking. Stuart uses the PCF to support a group of school-based coaches to examine their own work with teachers so that they can serve as thought partners with teachers during instruction and learn how to respond "in the moment" to teachers' noticings, provide counter interpretations, and discuss potential responses related to teaching.



Introducing the Case of Stuart

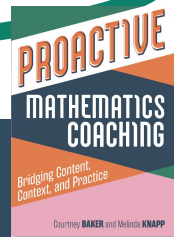
Case Essentials

Mathematics Coaching Practices (adapted from Baker & Knapp, 2019; Gibbons & Cobb, 2017; TDG, 2010)

- Engage in Mathematics
- Examine Student Work
- Analyze Classroom Video
- Rehearse Aspects of Practice
- Engage in Lesson Study/Studio Day/Math Labs
- Co-teach
- Model Instruction

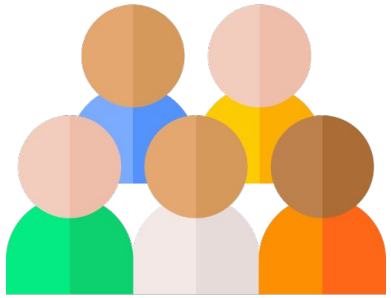
Mathematics Teaching Practices (NCTM, 2014)

- Establish mathematics goal
- Implement tasks that promote reasoning and problem solving
- Use and connect mathematics representations
- Facilitate meaningful mathematical discourse
- Pose purposeful questions
- Build procedural fluency from conceptual understanding
- Support productive struggle
- Elicit and use evidence of student thinking



Engaging In Math Studio As A Coaching Practice

Pause & Ponder: Breakout Session

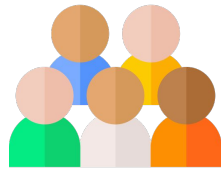


Breakout Rooms

Reflect on and discuss the questions on the next slide. You can also use the linked Jamboard to record your ideas.

Engaging In Math Studio As A Coaching Practice

Pause & Ponder: Breakout Session Qs



- How does Stuart create collaborative opportunities to provide teachers, coaches, and specialists with professional development opportunities, both in and out of the school setting? What PCF questions guide him in critically examining, learning, and reflecting on mathematics content, pedagogy, beliefs, and biases?
- Stuart wants to support the learning of the school-based coaches so they continue to develop in their coaching practices. He wants to offer meaningful learning opportunities so that the coaches can learn from each other. What next steps might he engage in and how can the PCF questions support these next steps?

Engaging In Math Studio As A Coaching Practice

Pause & Ponder: Discussion

What ideas did you have?

What ideas did you hear?

Engaging In Math Studio As A Coaching Practice

Chat Box Discussion

In which situations would side-by-side coaching not work well? Why?

Engaging In Math Studio As A Coaching Practice

Proactive Coaching Framework Questions

Share Your Thinking!

What are you inspired to try out related to the **Mathematics Coaching Practice engaging in math studio**? What is your rough draft thinking about this?

Next Time [11/29]

Analyzing Classroom Video
Chapter 10

Check Out Chapter 10 Pages 152-166

The Case

In this case you will meet **Karina**, a school-based STEM coach working to support teachers in posing questions that prompt for justification and generalization within their classrooms.

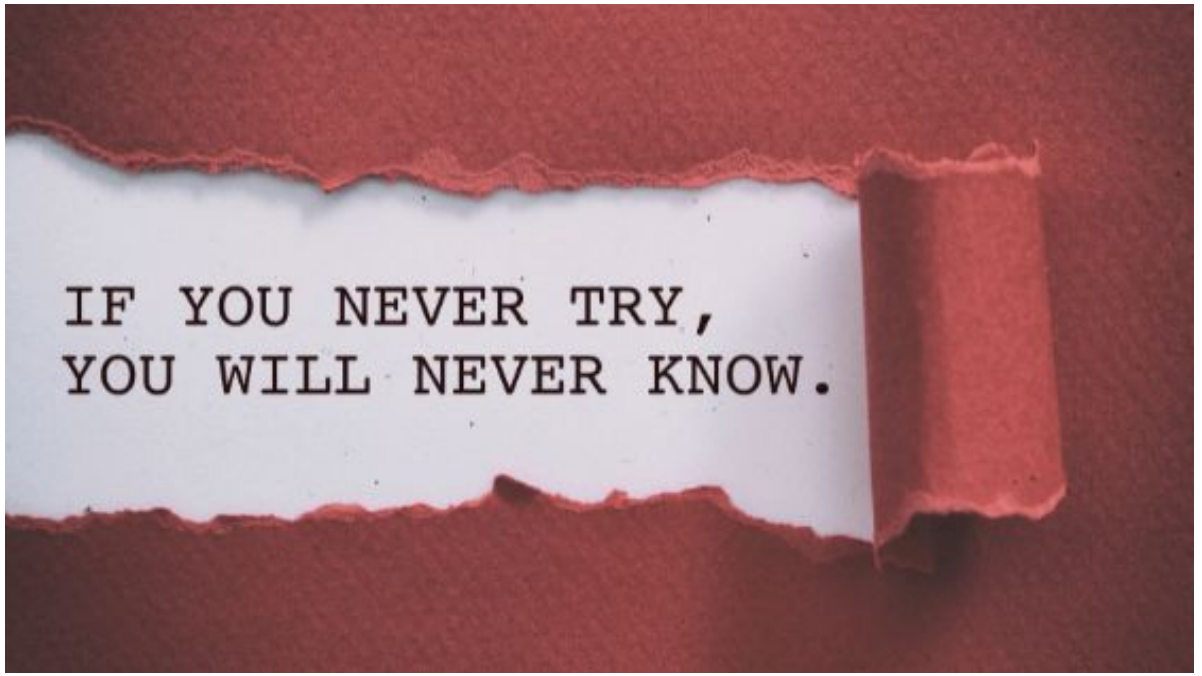
Case Summary			People		Practices		Context In Brief	
Chapter	PCF Phase Emphasized	Big Idea	Leader and Role	School Stakeholders	Coaching Practice	Mathematics Teaching Practice	Grade-Level Grade Band	Content Topic
10	Phase III	Use of a video club to support teachers to learn to press for justifications and generalizations	*Karina* K–8 school-based STEM coach	Video club for middle school mathematics teachers	Analyzing video	Pose purposeful questions	Middle school (Grades 6–8)	The hexagon pattern task
11	Phase III	Professional … that seeks to change structural barriers	*Brayden* … mathematics supervisor *Morgan* Grades 6–12 mathematics instructional specialist *Carys* K–5 mathematics instructional specialist	K–12 school-based leaders	Rehearsing aspects of …	Create equitable … structures in mathematics	Grades K–12	K–12 mathematics content

Next Time

Consider Implementing the PCF

What might you try?

- 1-2 questions?
- A specific phase?
- The entire PCF?



There will be space next session to share!

Next Time

November 29