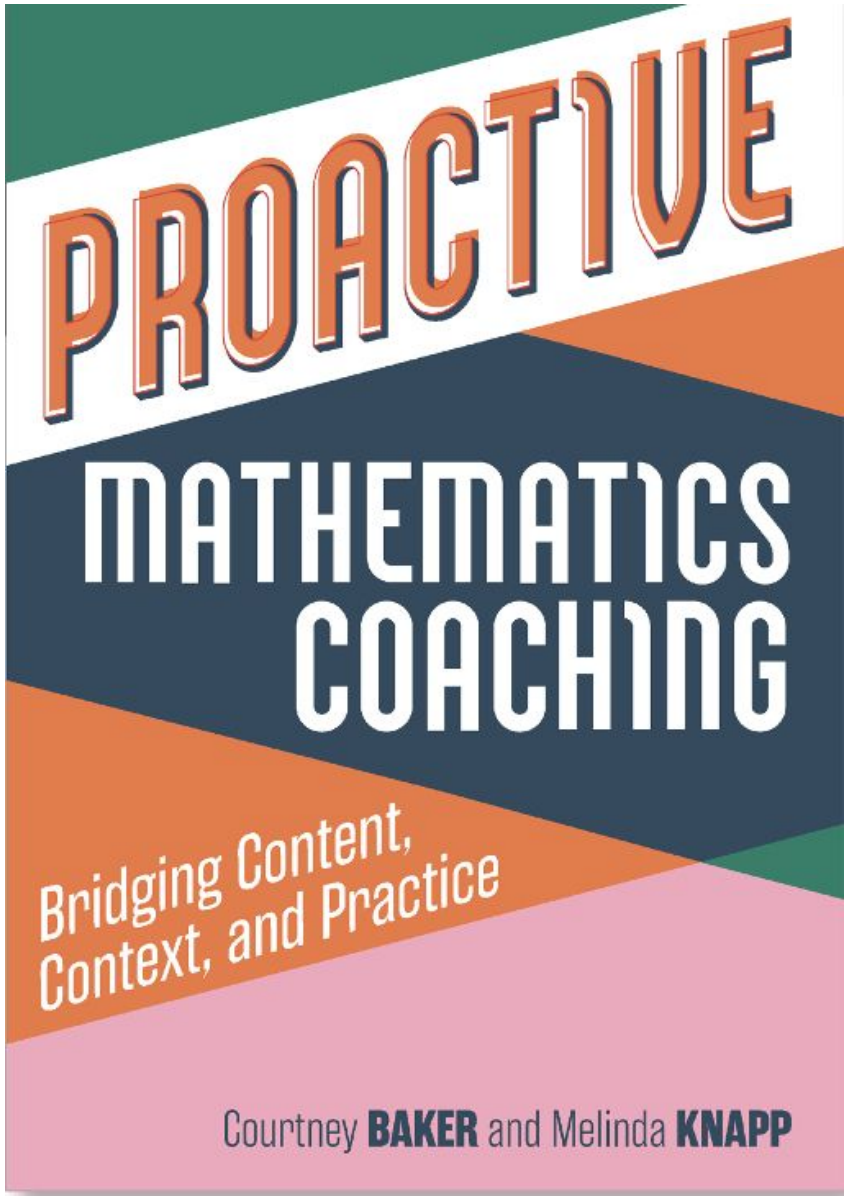
WELCOME!

NCTM Book Study

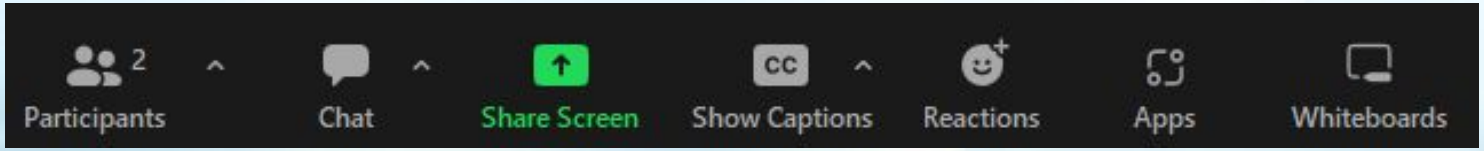
Catalyzing Change Through Proactive Mathematics Coaching

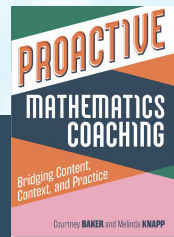
Melinda Knapp, PhD
Courtney Baker, PhD



Welcome!

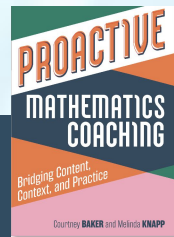
- **Please keep your microphone muted!**
- **Chat box**: Comment, chat with other participants, and ask questions.
- **Video**: Be mindful that everyone can see your video unless you choose to stop sharing.
- **Show Captions**: Use to hide or view subtitles.





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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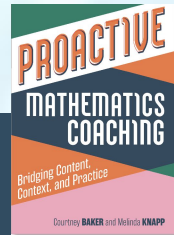


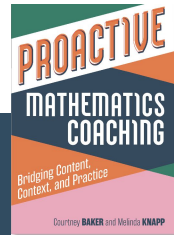
Catalyzing Change Through Proactive Mathematics Coaching

Today's Agenda

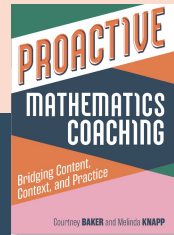
Part I: Welcome & Overview

Part II: Connecting to *Catalyzing Change*

Part III: The Proactive Coaching Framework



Part I: Welcome & Overview



Introductions

Mathematics Coaches At Heart

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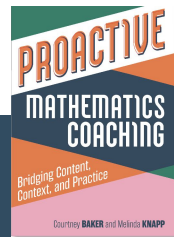
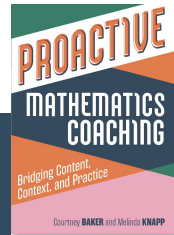


Our Book Study Goals

Connecting Research & Practice

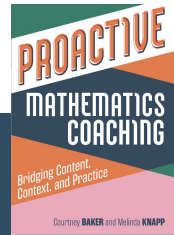
- Gain insights into what it takes to plan professional learning and/or coaching interactions that advance leadership agendas for long- and short-term goals.
- Illuminate how the use of the Proactive Coaching Framework (PCF) can advance the vision of teaching and learning mathematics advocated for within the Catalyzing Change series.



Our Book Study Goals

Connecting Research & Practice

- Engage with activities presented in the book such as Calling In/Calling Out (p. 63), and Perspective Taking (p. 183) to consider how these activities could be useful within your coaching context.
- Participate in discussions (network and collaborate) with peers to share common problems of practice and engage in debriefs that will inform goal setting within your context.



Creating Alliances

Building Your Network

Please Share on Our Google Sheet

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

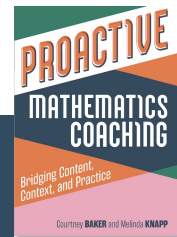
Mathematics Leadership

Many Part- & Full-Time Positions

Check Out the Preface! (page v)

Some Possibilities

- Classroom Teacher
- Math Lead
- Department Chair
- Interventionist
- Mathematics Specialist
- Instructional Coach
- District Supervisor

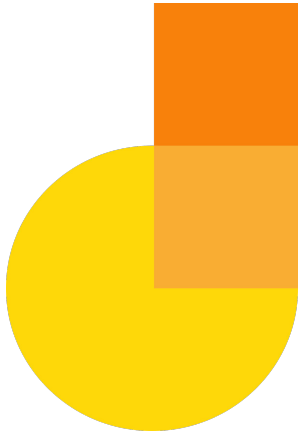


Maximize Your Experience

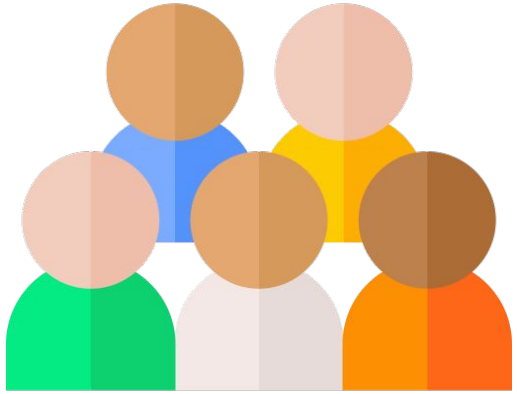
Engage in Multiple Formats

Chat Box

Jamboards



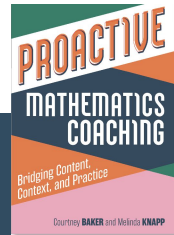
Breakout Rooms



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

Maximize Your Experience

Workshop Norms to (Re)Frame Leadership

Assume Positive Intent

"Whatever anybody says or does, assume positive intent. You will be amazed at how your whole approach to a person or problem becomes very different."

- Indra Nooyi

Maximize Your Experience

Workshop Norms to (Re)Frame Leadership

Learn From & With Each Other

Maximize Your Experience

Workshop Norms to (Re)Frame Leadership

Maintain An Asset-Based Approach

Hesitant

vs.

Resistant

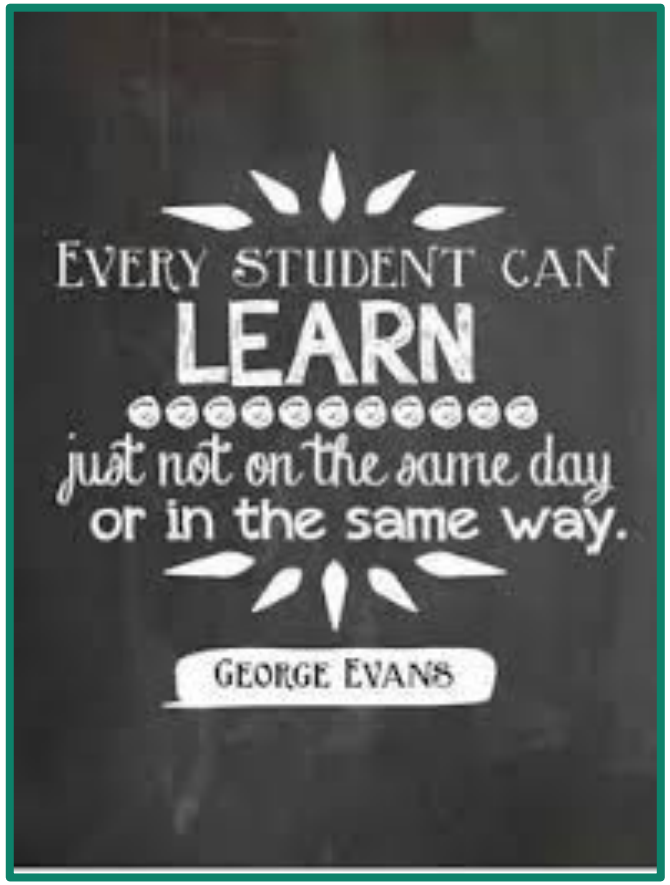
Maximize Your Experience

Workshop Norms to (Re)Frame Leadership

Value Others' Experiences

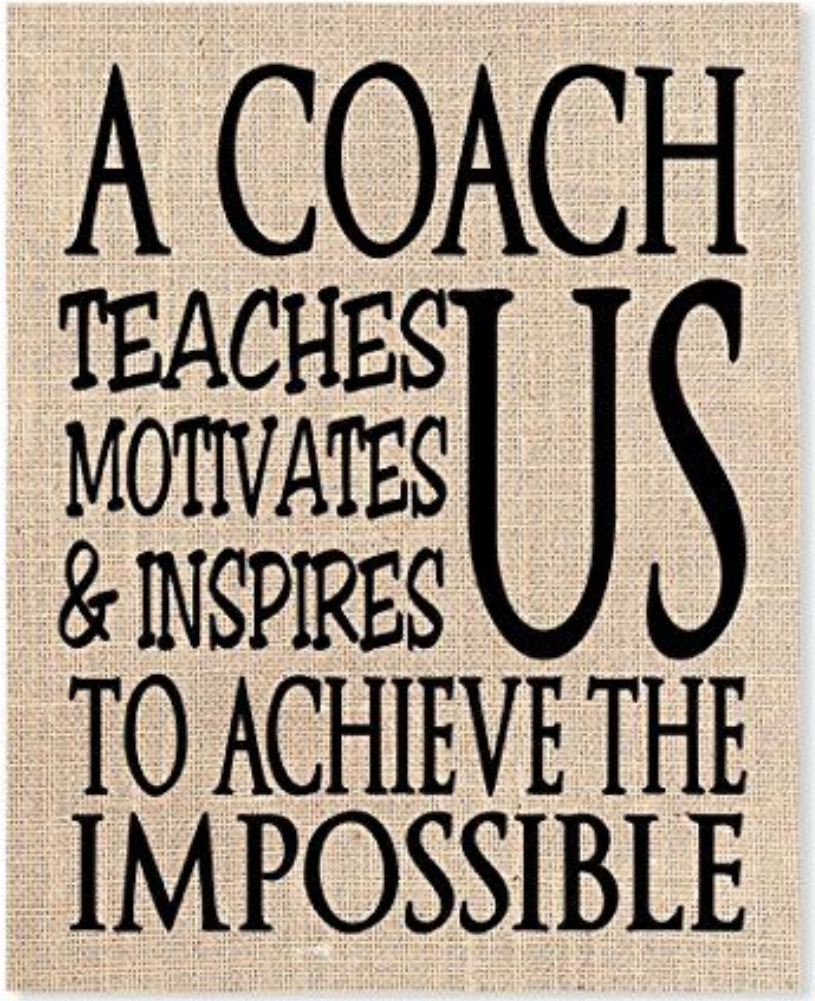
Beliefs on Teaching Mathematics

We Teach All Students



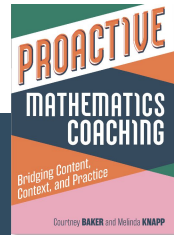
Beliefs on Coaching Mathematics

We Coach All School Community Stakeholders



What's Your Why?

What are you hoping to learn through engaging in this book study and with this community?

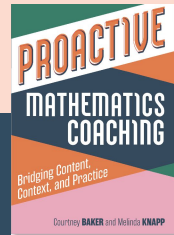


Invitation to Share

Your Turn

What are you hoping to learn through engaging in this book study and with this community?

Part II: Connecting to *Catalyzing Change*

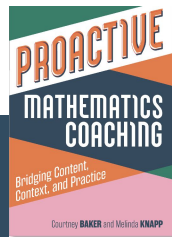


Connecting to *Catalyzing Change*

Connecting To Your Practice

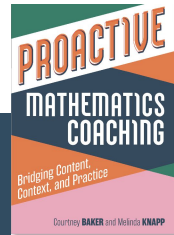
What is your familiarity with the Key Recommendations in Catalyzing Change?

- ❑ I have never heard of the Key Recommendations.
- ❑ I have read about the Key Recommendations.
- ❑ I'm unsure how to incorporate the Key Recommendations in my practice.
- ❑ I have had success utilizing the Key Recommendations in my practice.



"We are challenged that children's mathematics experiences are of **uneven quality** at every level. **Disparities exist** within individual classrooms, across grade levels within schools, and across schools within districts. The **evidence is compelling** that children who are identified as Black, Latinx, Indigenous, language learners, poor, and with disabilities, along with other **marginalized learners, do not have the same opportunities** as their peers to access and learn in mathematically powerful spaces."

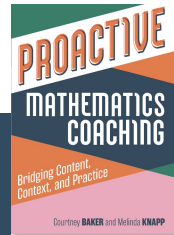
(NCTM, 2020, p. 1)



Catalyzing Change (NCTM, 2018, 2020a, 2020b)

Key Recommendations

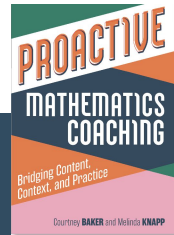
	Early Childhood and Elementary (NCTM, 2020a)	**Middle School** (NCTM, 2020b)	**High School** (NCTM, 2018)
Broadening the Purposes of Learning Mathematics	Each and every child should develop deep mathematical understanding as confident and capable learners; understand and critique the world through mathematics; and experience the wonder, joy, and beauty of mathematics.	Each and every student should develop deep mathematical understanding, understand and critique the world through mathematics, and experience the wonder, joy, and beauty of mathematics, which all contribute to a positive mathematical identity.	Each and every student should learn the Essential Concepts in order to expand professional opportunities, understand and critique the world, and experience the wonder, joy, and beauty of mathematics.



Catalyzing Change (NCTM, 2018, 2020a, 2020b)

Key Recommendations

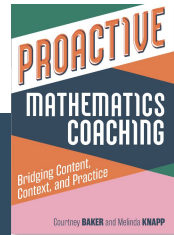
	Early Childhood and Elementary (NCTM, 2020a)	**Middle School** (NCTM, 2020b)	**High School** (NCTM, 2018)
Creating Equitable Structures in Mathematics	Early childhood and elementary mathematics should dismantle inequitable structures, including ability grouping and tracking, and challenge spaces of marginality and privilege.	Middle school mathematics should dismantle inequitable structures, including tracking teachers as well as the practice of ability grouping and tracking students into qualitatively different courses.	High school mathematics should discontinue the practice of tracking teachers as well as the practice of tracking students into qualitatively different or dead-end course pathways.



Catalyzing Change (NCTM, 2018, 2020a, 2020b)

Key Recommendations

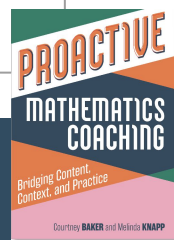
	Early Childhood and Elementary (NCTM, 2020a)	**Middle School** (NCTM, 2020b)	**High School** (NCTM, 2018)
Implementing Equitable Mathematics Instruction	Mathematics instruction should be consistent with research informed and equitable teaching practices that nurture children's positive mathematical identities and strong sense of agency.	Mathematics instruction should be consistent with research informed and equitable teaching practices that foster students' positive mathematical identities and strong sense of agency.	Classroom instruction should be consistent with research informed and equitable teaching practices.



Catalyzing Change (NCTM, 2018, 2020a, 2020b)

Key Recommendations

	Early Childhood and Elementary (NCTM, 2020a)	**Middle School** (NCTM, 2020b)	**High School** (NCTM, 2018)
Developing Deep Mathematical Understanding	Early childhood settings and elementary schools should build a strong foundation of deep mathematical understanding, emphasize reasoning and sensemaking, and ensure the highest quality mathematics education for each and every child.	Middle schools should offer a common shared pathway grounded in the use of mathematical practices and processes to coherently develop deep mathematical understanding, ensuring the highest-quality mathematics education for each and every student.	High schools should offer continuous four-year mathematics pathways with all students studying mathematics each year, including two to three years of mathematics in a common shared pathway focusing on the Essential Concepts, to ensure the highest quality mathematics education for all students.

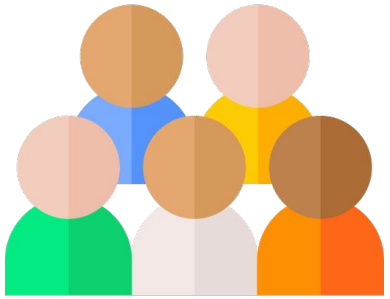


Connecting to *Catalyzing Change*

Breakout Session

Breakout Rooms

Reflect on and discuss the question(s) below. Use the Jamboard to record your groups' ideas. [starting on pg. 5]



How are these ideas happening (or not) in your communities?

- Broadening the purposes of learning mathematics
- Creating equitable structures in mathematics
- Implementing equitable mathematics instruction
- Developing deep mathematical understanding

Connecting to *Catalyzing Change*

Group Discussion

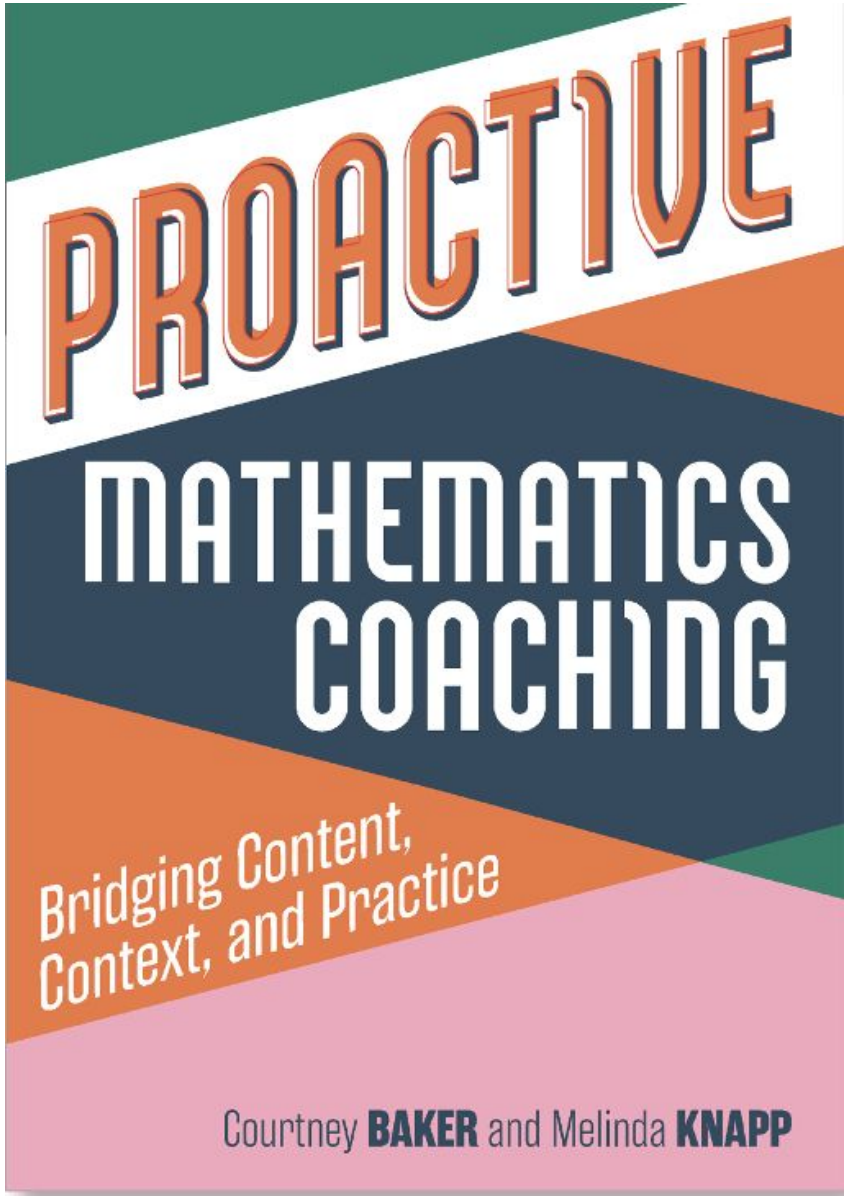
What ideas did you have?

What ideas did you hear?

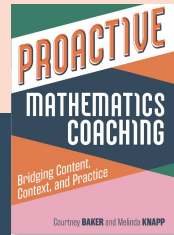
Book Orientation

A Brief Overview

Grab your book!



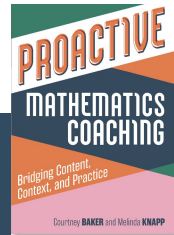
Part III: The Proactive Coaching Framework



Developing the PCF

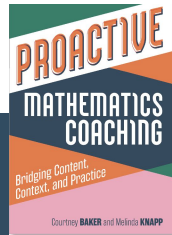
Connecting to *Catalyzing Change* (NCTM, 2020)

An actionable step includes providing "teachers, coaches, and specialists with professional development opportunities, both in and out of the school setting, to critically examine, learn, and reflect on mathematics content, pedagogy, beliefs and biases." (p. 126).



"Research indicates that **leadership for teaching and learning** has a direct impact on student learning. Leadership is widely recognized as one of **the most important factors** in teacher and student learning."

(Loucks-Horsley, 2010, p. 5)



Book Orientation

A Brief Guide

Purpose Overview & The Guiding Questions

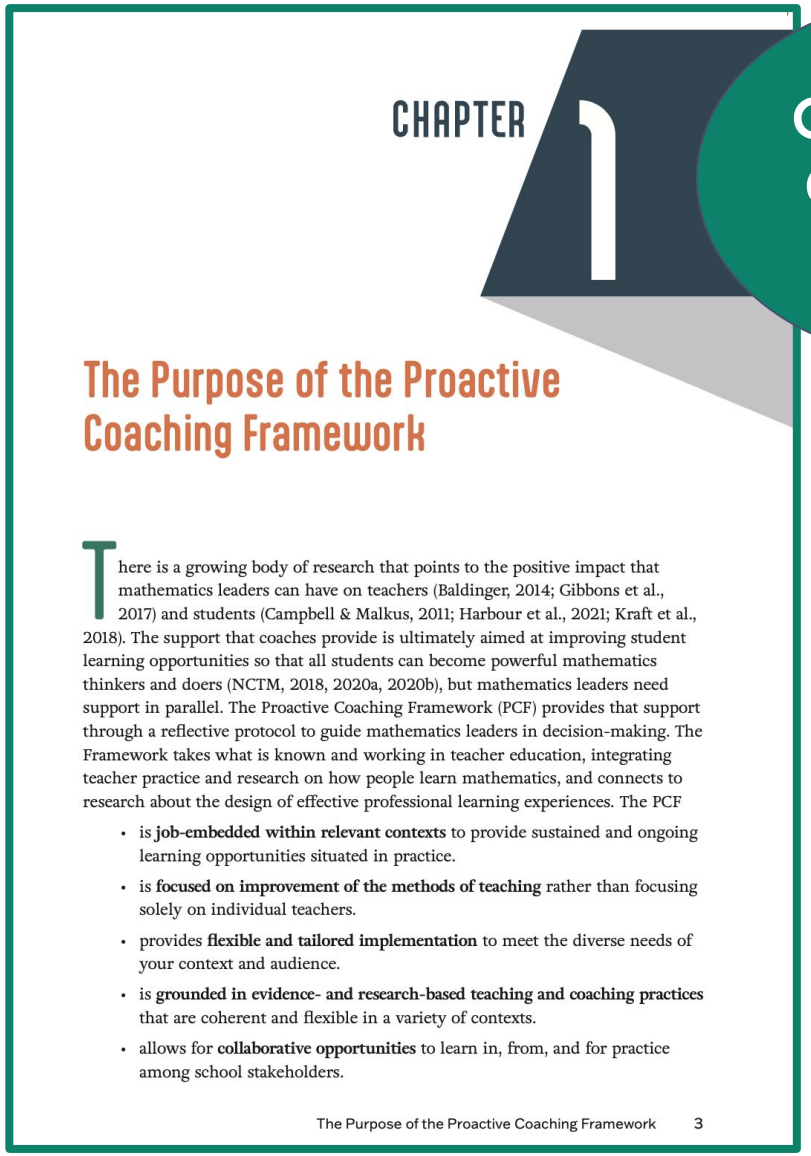
The Cases

PART 1

Book Orientation

Chapter 1

Chapter 1 details the purpose of the PCF and how it can help address challenges faced by mathematics leaders.



CHAPTER 1

The Purpose of the Proactive Coaching Framework

There is a growing body of research that points to the positive impact that mathematics leaders can have on teachers (Baldinger, 2014; Gibbons et al., 2017) and students (Campbell & Malkus, 2011; Harbour et al., 2021; Kraft et al., 2018). The support that coaches provide is ultimately aimed at improving student learning opportunities so that all students can become powerful mathematics thinkers and doers (NCTM, 2018, 2020a, 2020b), but mathematics leaders need support in parallel. The Proactive Coaching Framework (PCF) provides that support through a reflective protocol to guide mathematics leaders in decision-making. The Framework takes what is known and working in teacher education, integrating teacher practice and research on how people learn mathematics, and connects to research about the design of effective professional learning experiences. The PCF

- is **job-embedded within relevant contexts** to provide sustained and ongoing learning opportunities situated in practice.
- is **focused on improvement of the methods of teaching** rather than focusing solely on individual teachers.
- provides **flexible and tailored implementation** to meet the diverse needs of your context and audience.
- is **grounded in evidence- and research-based teaching and coaching practices** that are coherent and flexible in a variety of contexts.
- allows for **collaborative opportunities** to learn in, from, and for practice among school stakeholders.

The Purpose of the Proactive Coaching Framework 3

Check Out Chapter 1 (pages 3-6)

PART 1

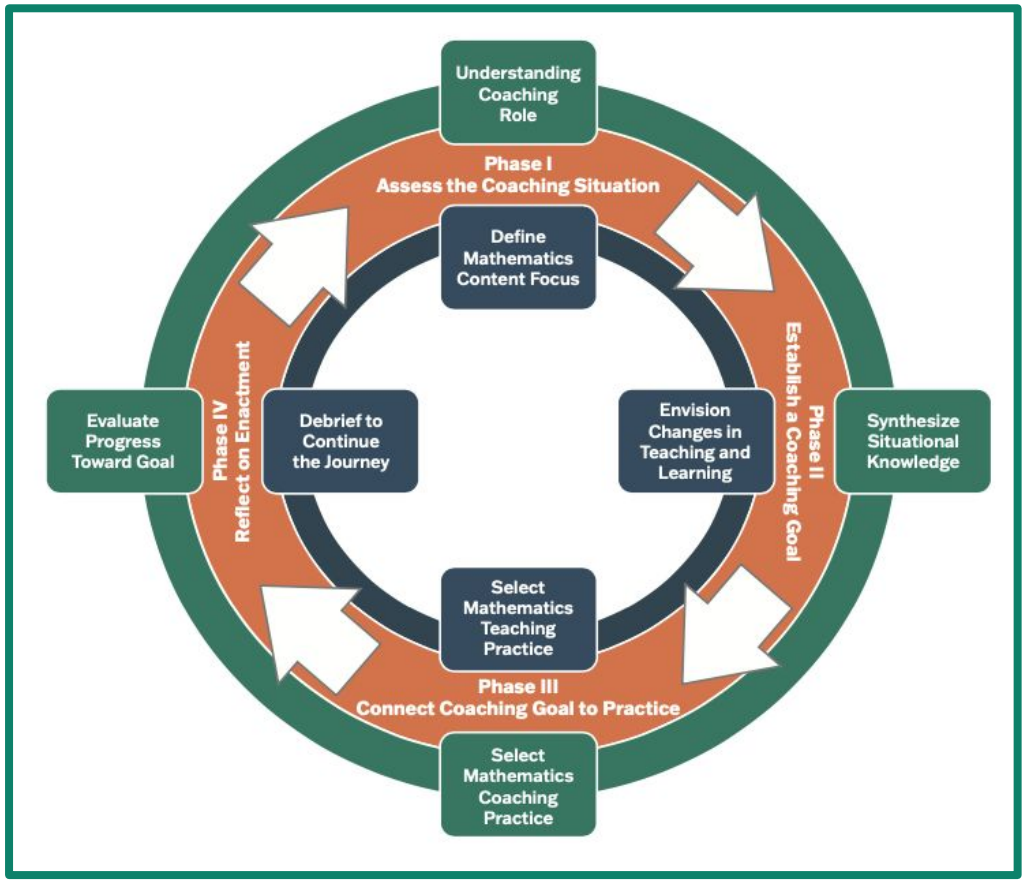
Book Orientation

Chapter 2

Check Out Page 8!

Chapter 2 provides an overview of the four phases of the Framework and two sets of research-informed, high-leverage practices:

- The NCTM **Mathematics Teaching Practices (MTPs)** (2014)
- The **Mathematics Coaching Practices (MCPs)** (adapted from Baker & Knapp, 2019; Gibbons & Cobb, 2017; Teachers Development Group, 2010)

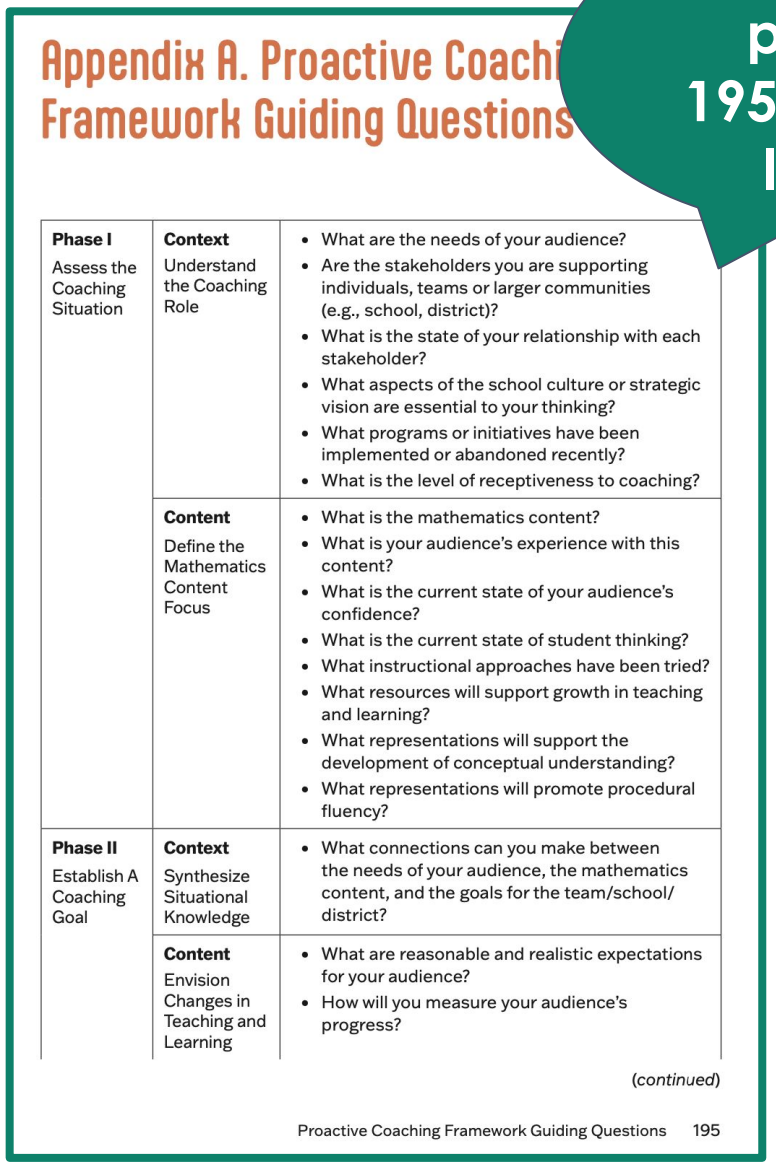


PART 1

Book Orientation

Chapter 3

Chapter 3 highlights the core of the Framework: 33 guiding questions designed to support individuals with articulating, planning, and reflecting on their coaching and leadership actions.



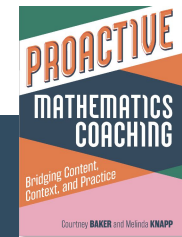
Appendix A. Proactive Coachi
Framework Guiding Questions

Phase I Assess the Coaching Situation	**Context** Understand the Coaching Role	• What are the needs of your audience? • Are the stakeholders you are supporting individuals, teams or larger communities (e.g., school, district)? • What is the state of your relationship with each stakeholder? • What aspects of the school culture or strategic vision are essential to your thinking? • What programs or initiatives have been implemented or abandoned recently? • What is the level of receptiveness to coaching?
	Content Define the Mathematics Content Focus	• What is the mathematics content? • What is your audience's experience with this content? • What is the current state of your audience's confidence? • What is the current state of student thinking? • What instructional approaches have been tried? • What resources will support growth in teaching and learning? • What representations will support the development of conceptual understanding? • What representations will promote procedural fluency?
Phase II Establish A Coaching Goal	**Context** Synthesize Situational Knowledge	• What connections can you make between the needs of your audience, the mathematics content, and the goals for the team/school/district?
	Content Envision Changes in Teaching and Learning	• What are reasonable and realistic expectations for your audience? • How will you measure your audience's progress?

(*continued*)

Proactive Coaching Framework Guiding Questions 195

Bookmark pages 195-196 for later!



PART 2

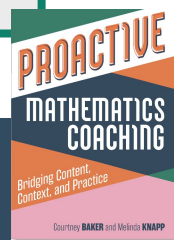
Book Orientation

Chapter 4

Chapter 4 explains the elements and organization embedded in each of the cases in Chapters 5-11.

Case Elements

- Meet the Mathematics Leader
- The Problem of Practice
- Goals & Leadership Agenda
- Enacting the *Proactive Coaching Framework*



PART 2

Book Orientation

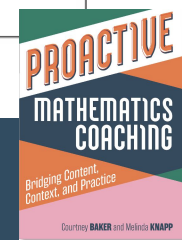
Chapters 5-11

Check Out Pages 197-199

The 9 Cases

- Part-Time Leaders
- Leaders at Multiple Schools
- District Leaders
- Classroom Teachers
- Department Chair
- STEM Coach
- …

Case Summary			People		Practices		Context In Brief	
Chapter	PCF Phases Emphasized	Big Idea	Mathematics Leader and Role	Involved School Stakeholders	Mathematics Coaching Practice	Mathematics Teaching Practice	Grade-Level and Grade Band	Content Topic
5	Phase II Phase III	Balancing two roles while implementing a modified coaching cycle	*Michelle* Part-time Grade 8 classroom teacher; part-time school-based mathematics coach	*Mrs. Lee* Grade 8 teacher	Coteaching	Facilitate meaningful mathematical discourse	Middle school (Grade 8)	Counting cubes task: linear growth model
6	Phase I Phase II Phase III	A high school teacher working to reframe deficit views of students	*Kamala* High school mathematics teacher	*Mr. Singh* School-based mathematics coach	Modeling instruction	Support productive struggle in learning mathematics	High school (Grades 9–12)	A mathematics task to promote productive struggle and launch the school year
7	Phase I Phase II Phase III Phase IV	Creating opportunities for partnering with administrators to dismantle ability grouping	*Laila* School-based mathematics coach	*Ms. Martin* School principal	Examining student work	Implement tasks that promote reasoning and problem-solving	Elementary (Grades K–6)	K–6 fraction concepts and computation



PART 2

Book Orientation

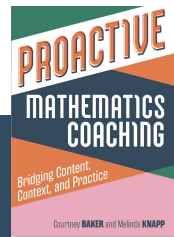
Chapters 5-11

The Book
Centered On Cases

Provides opportunities to learn about each of the Mathematics Coaching Practices and see how a mathematics leader uses the **Proactive Coaching Framework**

Our Book Study
Centered On Coaching Practices

Affords opportunity to delve immediately and deeply into the **Mathematics Coaching Practices**



PART 2

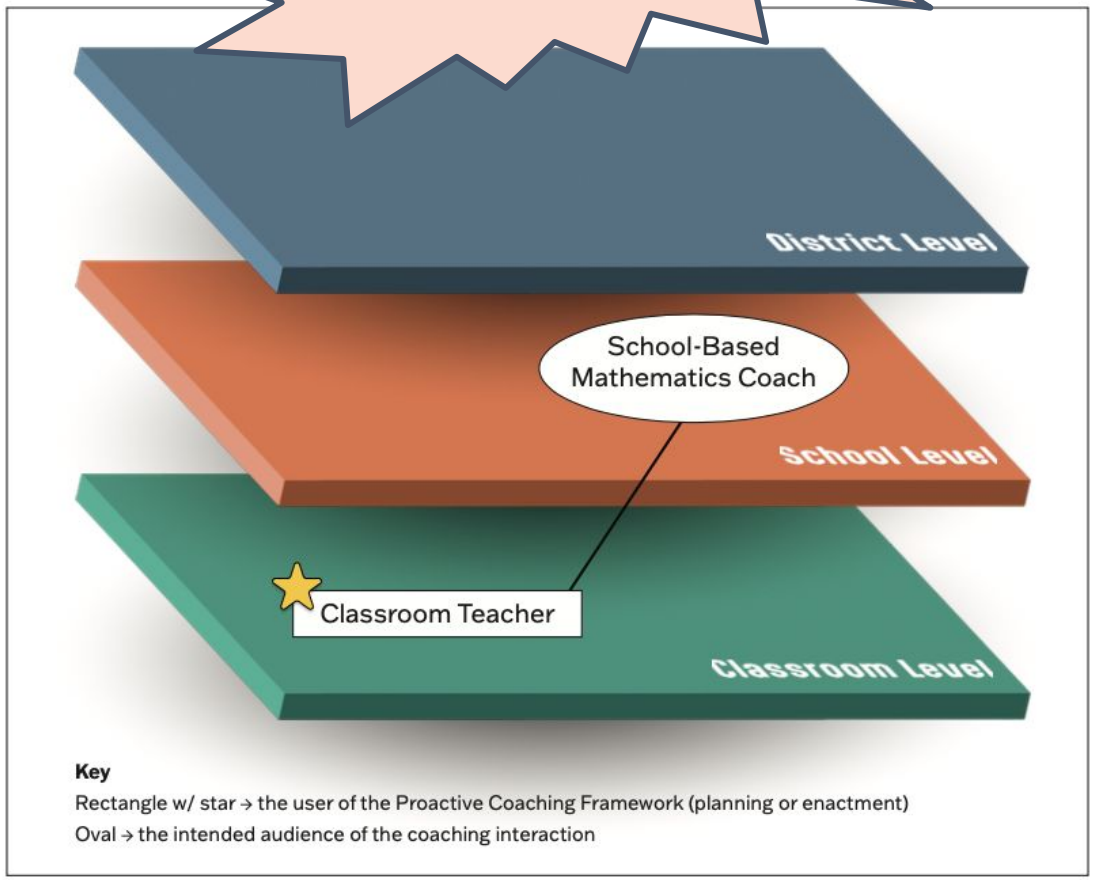
Book Orientation

Case Elements

Long- & Short-Term Goals

Coteaching for a classroom teacher's professional learning in an after-school meeting for the purpose of increasing student-to-student dialogue connected to facilitating meaningful mathematical discourse	
Long-Term Goal	Increase student discourse within all mathematics classrooms.
Short-Term Goal	Implement, through coteaching, talk moves in Mrs. Lee's classroom.

Math Leader Positioning



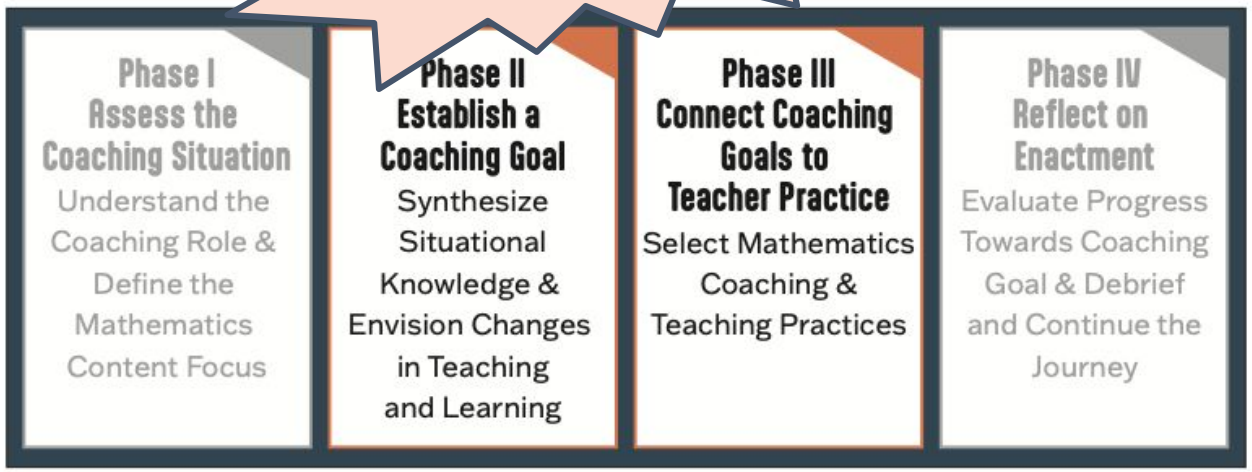
PART 2

Book Orientation

Case Elements

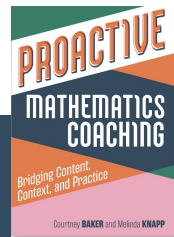
Connections to *Catalyzing Change*

Enacted Phases



Connections to Catalyzing Change

The case of Michelle highlights a part-time mathematics teacher and part-time mathematics coach who has regularly used coaching cycles to support equity-focused instructional shifts in her school. When mathematics classrooms are not student-centered and inclusive, they fail to support high-quality, deep mathematical learning experiences for all students that can impact the development of a positive mathematical identity. Michelle uses the PCF to make a plan that honors the goal her colleague has identified to increase student-to-student discourse knowing that this has the potential to foster students' positive mathematical identities.



PART 2

Book Orientation

Case Elements

The Problem of Practice

Michel s Problem of Practice

Mrs. Lee, a Grade 8 mathematics teacher, has asked to coteach a mathematics lesson so that she can increase student discourse in her classroom. Although excited for this opportunity, Michelle, a part-time mathematics coach and part-time classroom teacher, is wary of the short timeline because there is not enough time to do a full coaching cycle with in-depth planning beforehand. How can Michelle engage in a modified coaching cycle that honors the process of the coaching cycle, meets the realistic time constraints of this situation, and moves past the barriers to implementation?

Planning

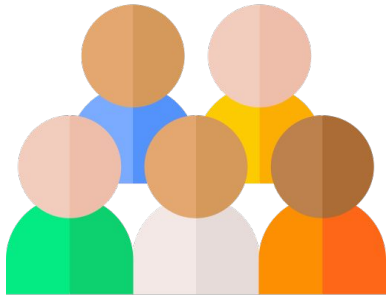
Planning Guide: Phase III	
Context *Select Mathematics Coaching Practice*	**How will you negotiate and justify the choice of one or more MCPs?** Mrs. Lee requested that we coteach together, but we have a limited amount of time to prep together. She can meet for 15 minutes after school and the rest of our coordination and planning can be through email. **Which MCP best aligns with your coaching situation and your coaching goals?** Coteaching, because it was requested by the teacher, but I'm not sure which model we will use during the lesson.

Perspective

Michelle: I think I have found a way to honor many of the aspects of the coaching cycle, while trying to honor both Mrs. Lee's learning as well as her time. I am hoping that Mrs. Lee will appreciate the efforts that I have put into planning for our meeting so that we can be focused on tasks like taking the time to research and draft out some ideas for each of the ta and considering ways she can be involved in either observing or s lesson. I hope she feels that this is beneficial t move forward from there. We might end up with a sh lesson or even trying this a few more time work that results might be data I could collect in t Mrs. Lee is ready to continue or if she needs mor going to look for in terms of her ability to implement a partic ove

Using the PCF to Catalyze Change

Breakout Session



Breakout Rooms

Reflect on and discuss the question(s) below. Use the Jamboard to record your groups' ideas.

What obstacles or barriers do you face when trying to catalyze change in your community?

- What actions have you taken?
- What results have you experienced/observed?

Using the PCF to Catalyze Change

Group Discussion

What ideas did you have?

What ideas did you hear?

Next Time [March 14, 2024]

Chapter 6: The Case of Kamala

Check Out Chapter 6 Pages 57-74

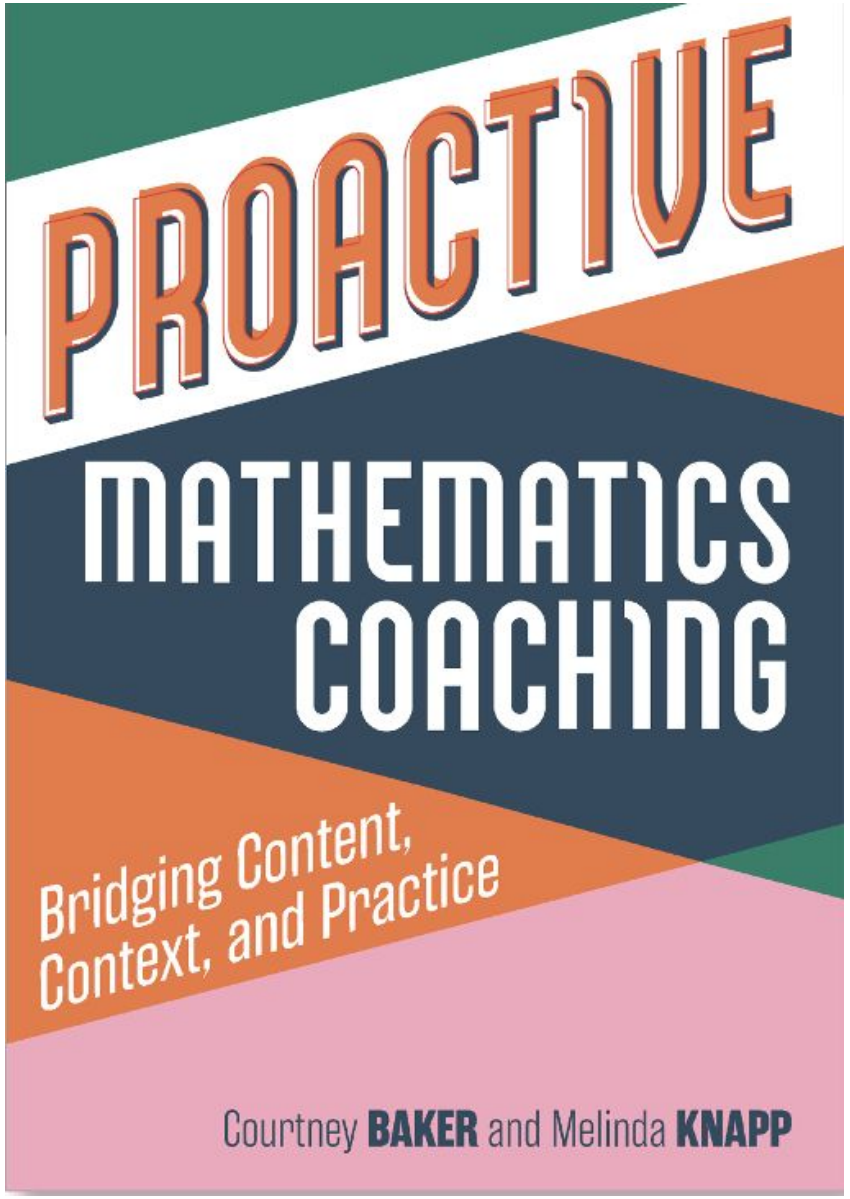
The Case

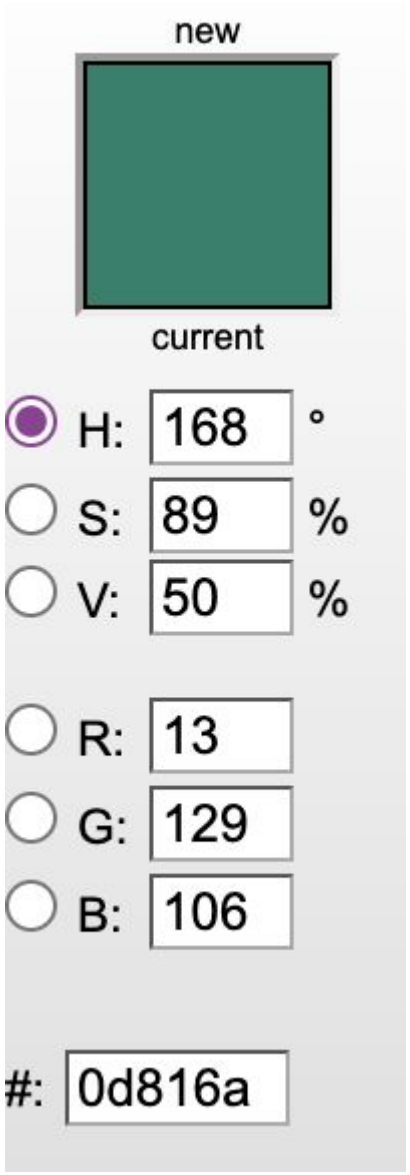
The **Case of Kamala** explores how a high school mathematics teacher worked to interrupt deficit views of students prevalent in her school while also advocating for reframing students as capable doers of mathematics.

Case Summary			People		Practices		Context In Brief	
Chapter	PCF Phases Emphasized	Big Idea	Mathematics Leader and Role	Involved School Stakeholders	Mathematics Coaching Practice	Mathematics Teaching Practice	Grade-Level and Grade Band	Content Topic
5	Phase II Phase III	Balancing two roles while implementing a modified coaching cycle	*Michelle* Part-time Grade 8 classroom teacher; part-time mathematics coach	*Mrs. Lee* Grade 8 teacher	Coteaching	Facilitate meaningful mathematical discourse	Middle school (Grade 8)	Counting cubes task: linear growth model
6	Phase I Phase II Phase III	A high school teacher working to reframe deficit views of students	*Kamala* High school mathematics teacher	*Mr. Singh* School-based mathematics coach	Modeling instruction	Support productive struggle in learning mathematics	High school (Grades 9–12)	A mathematics task to promote productive struggle and launch the sch
7	Phase I Phase II Phase III Phase IV	opportunities for partnering with administrators to dismantle ability grouping	*Laila* School-based mathematics coach	*Ms. Martin* School principal	Examining	Implem tasks that promote reasoning and problem-solving	ementary (Grades K–6)	K–6 fraction concepts and computation

Next Time

March 14th

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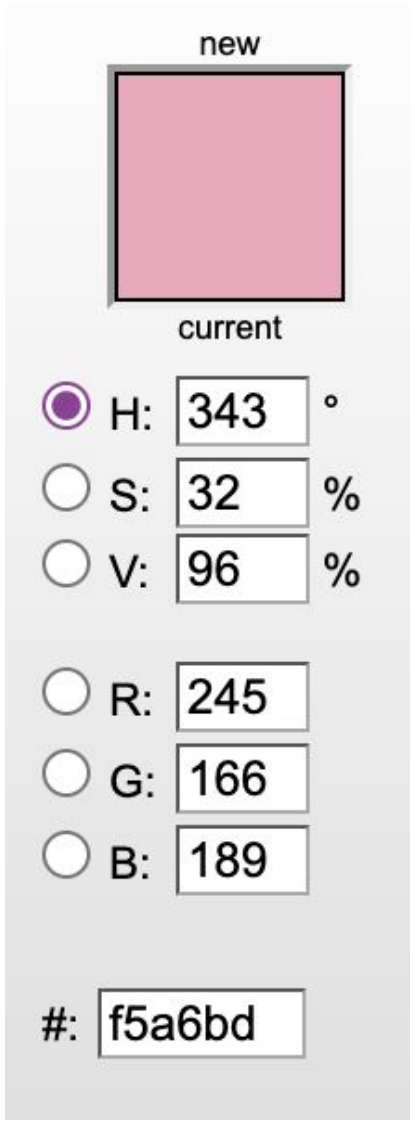
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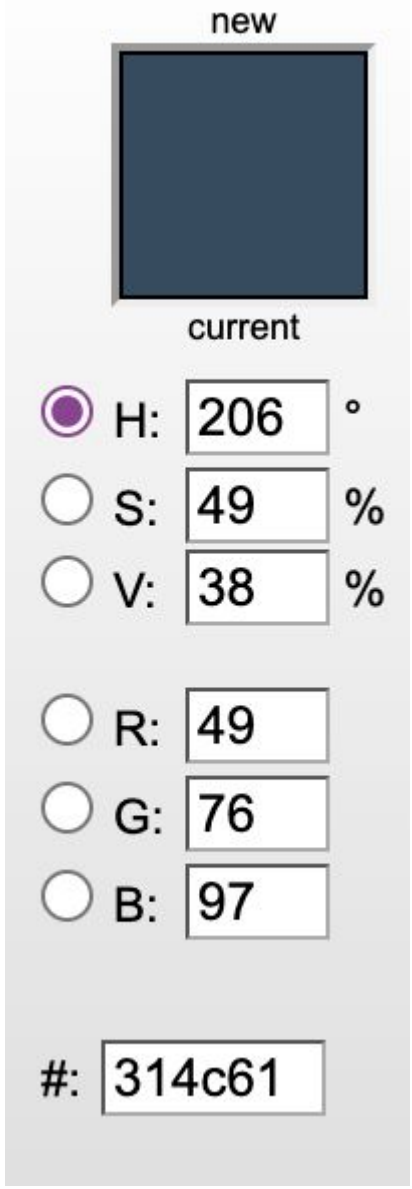
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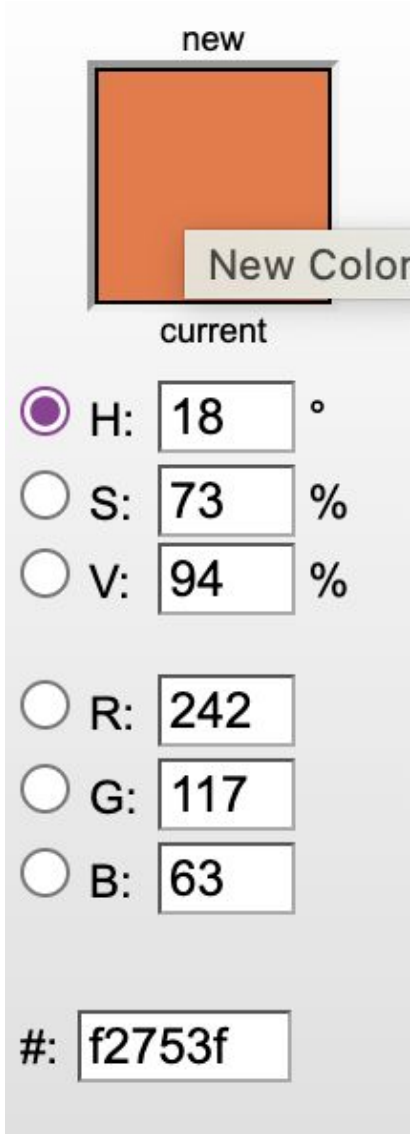
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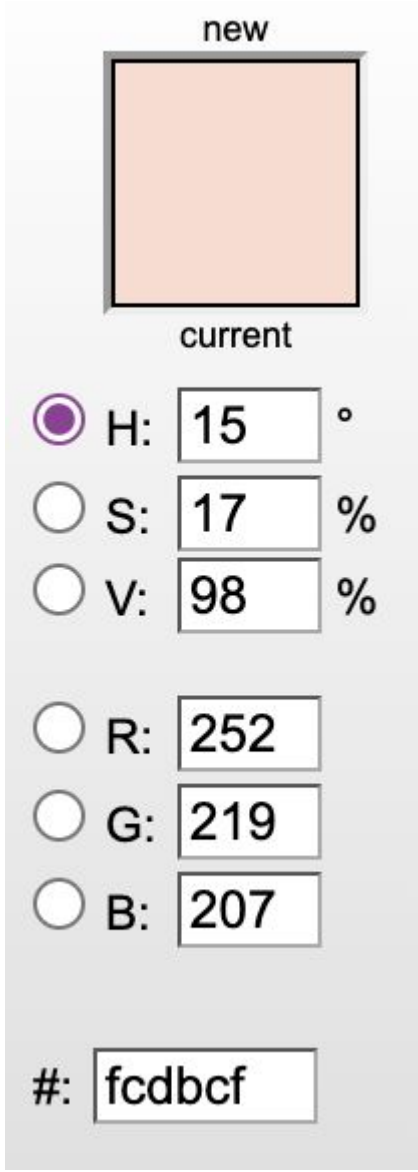
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Maximize Your Experience

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?