Coach's Toolkit

These tools are a menu from which you can select any that make sense for your setting/context. They can be used independently or as part of a coaching cycle. You may start with the self-assessment, which can guide you in deciding which of the other tools may be most useful. If using these tools for a coaching cycle, mix and match as you like or use one of the combinations we suggest in the diagrams that follow. The tools in this chapter include instructions to the coach and the teacher. You can download copies of the tools that only have instructions for the teacher at **resources.corwin.com/mathematicscoaching.**

Self-Assess

5.1 Connecting *Shifts* to Questioning and Discourse Self-Assessment

Gather Data

5.5 Bloom's Taxonomy (Revised) and Mathematical Knowledge

5.6 Questioning Patterns

5.7 Wait Time

5.8 Productive Discussion and Talk Moves

Plan

5.2 High-Level Thinking Questions

5.3 Questioning Across Lesson Phases

5.4 Questioning Across Lesson Phases (Focus on Productive Struggle)

Reflect

5.9 Question and Discourse Discussion Prompts

5.10 Reflecting on Bloom's Taxonomy (Revised) and Mathematical Knowledge

Topic: **High-Level Questions**

Plan
5.2

Gather
Data
5.5

Reflect
5.10
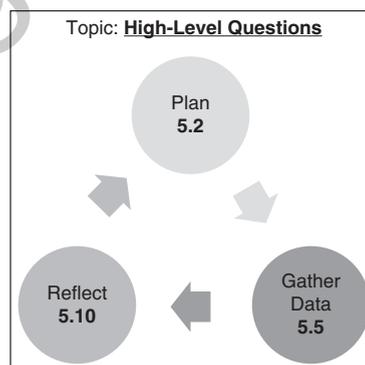
Additional Tools in Other Chapters

High-level thinking is also a focus in Chapter 2 (Implementing Effective Instruction; see Tool 2.5); Chapter 3 (Content Knowledge and Worthwhile Tasks; see Tools 3.2 and 3.5); Chapter 4 (Engaging Students; see Tool 4.2); Chapter 6 (Formative Assessment; see Tools 6.2 and 6.3); and Chapter 7 (Analyzing Student Work; see Tool 7.4).

online resources
To download the coaching tools for Chapter 5 that only have instructions for the teacher, go to **resources.corwin.com/mathematicscoaching.**

5.1 Connecting *Shifts* to Questioning and Discourse
Self-Assessment

Instructions to Coach: Ask teachers (individually or as part of a PLC activity) to self-assess where they position themselves on each of these Shifts in Classroom Practice *related to questioning and discourse. Use the questions that follow during a coaching conversation or in a PD setting to support teachers (and to help you decide which tools may be most useful from this chapter). A one-page version of this tool without this note is available for download.*

Instructions: The following *Shifts in Classroom Practice* have specific connections to questioning and discourse. Put an *X* on the continuum of each *Shift* to identify where you currently see your practice.

Tool 5.1 Shifts

Shift 4: From *show-and-tell* toward *share-and-compare*

Teacher has students share their answers. →

Teacher creates a dynamic forum where students share, listen, honor, and critique each other's ideas to clarify and deepen mathematical understandings and language; teacher strategically invites participation in ways that facilitate mathematical connections.

Shift 5: From *questions that seek expected answers* toward *questions that illuminate and deepen student understanding*

Teacher poses closed and/or low-level questions, confirms correctness of responses, and provides little or no opportunity for students to explain their thinking. →

Teacher poses questions that advance student thinking, deepen students' understanding, make the mathematics more visible, provide insights into student reasoning, and promote meaningful reflection.

Shift 7: From *mathematics-made-easy* toward *mathematics-takes-time*

Teacher presents mathematics in small chunks so that students reach solutions quickly. →

Teacher questions, encourages, provides time, and explicitly states the value of grappling with mathematical tasks, making multiple attempts, and learning from mistakes.

Shift 8: From *looking at correct answers* toward *looking for students' thinking*

Teacher attends to whether an answer or procedure is (or is not) correct. →

Teacher identifies specific strategies or representations that are important to notice; strategically uses observations, student responses to questions, and written work to determine what students understand; and uses these data to inform in-the-moment discourse and future lessons.

Tool 5.1 Reflection Questions

1. What do you notice, in general, about your self-assessment of these *Shifts in Classroom Practice*?
2. What might be specific teaching moves that align with where you placed yourself on the *Shifts*?
3. What might be specific teaching moves that align *to the right of* where you placed yourself on the *Shifts*?
4. What might be some professional learning opportunities to help you move to the right for one or more of these *Shifts*?

5.2 High-Level Thinking Questions

Instructions to the Coach: This tool is a three-step process and can be used in professional learning or a coaching cycle. In a coaching cycle, a teacher could complete it prior to or during a planning conversation.

Instructions: First, identify high-level thinking questions for each learning target in a lesson or unit. Second, consider anticipated challenges or misconceptions related to the learning goals and related questions. Third, add any additional questions that will address these challenges.

Learning Goal/Objective	*High-Level Thinking Questions to Promote Discourse*

Anticipated Student Challenges and/or Misconceptions

Additional High-Level Questions to Address Student Challenges and/or Misconceptions

5.5 Bloom's Taxonomy (Revised) and Mathematical Knowledge

Instructions to the Coach: Gather data for a teacher about high-level questions asked in each phase of a lesson. This tool can be used in connection with Tools 5.4 or 5.5. Script the questions and during a reflecting conversation, let the teacher identify the level of thinking from Bloom's Revised Taxonomy (Krathwohl, 2002) and the mathematical knowledge for each question.

Mathematical Knowledge Key	*Question Level of Thinking Key*	
CO: *Conceptual* P: *Procedural*	CR: *Creating* E: *Evaluating* AN: *Analyzing*	AP: *Applying* U: *Understanding* R: *Remembering*
Launching the Task		
Monitoring the Task		
Summarizing the Task		

Source: Previously published by Bay-Williams, J., McGatha, M., Kobett, B., and Wray, J. (2014). Mathematics Coaching: Resources and Tools for Coaches and Leaders, K–12. *New York, NY: Pearson Education, Inc.*

5.10 Reflecting on Bloom's Taxonomy (Revised) and Mathematical Knowledge

Instructions to the Coach: This tool can be used for a one-on-one reflecting conversation, lesson study debrief, or PLC activity (using data from a video or the teacher's own lessons). For a coaching cycle, share the data you collected during the lesson (Tool 5.6). Allow the teacher time to identify the level of thinking from Bloom's Revised Taxonomy (Krathwohl, 2002) and the mathematical knowledge for each question. Using the question grid that follows, invite the teacher to indicate with tallies how many questions were in each cell. Use the questions as a guide to a reflecting conversation about the data.

Instructions: Use this grid to categorize questions from a lesson; then, discuss the follow-up questions.

		Level of Thinking (Bloom's Taxonomy—Revised)					
		Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
Mathematical Knowledge	Conceptual						
	Procedural						

Questions about the coding of questions from the data-gathering tool:

1. What do you notice about the *mathematical knowledge of questions* posed in each phase of an inquiry lesson?

2. What do you notice about the *level of thinking of questions* posed in each phase of an inquiry lesson?

3. Which questions were most effective? Why?

Questions about the question grid:

4. What patterns do you notice in the question grid?

5. What questions might have strengthened the lesson? In other words, are there cells in the question grid that could have been asked (e.g., a conceptual question that involved application)?

6. What new questions might be developed in any of the cells in the question grid in preparing for the next lesson?

7. What might be some connections between particular levels of thinking questions and conceptual, procedural, or factual knowledge?