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Framework for Thinking Through Quality Questioning

*In What Ways Can Quality Questioning
Advance Both Student and Teacher Thinking?*



FOCUS QUESTIONS

1. What is our vision for students—the end we have in mind?
2. What are the purposes of quality questioning in today's classrooms?
3. What are the five critical components of quality questioning?
4. What is the relationship between quality questioning and student thinking?
5. How does quality questioning enhance student engagement and student self-efficacy?

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Learning is a consequence of thinking.

—David Perkins (1992, p. 31)

I *magine your classroom being alive with students who confront new academic challenges by accessing and assessing personal knowledge and experiences related to the content at hand. Imagine these students making connections between new information and what they already know and asking questions when they sense a conflict between a preconception and a new concept or idea. These students set appropriate academic targets as they translate learning objectives into personal goals. They are able to articulate both what they are learning and why, and they connect classroom learning objectives to real-life opportunities and challenges.*

These learners demonstrate curiosity, self-reliance, and perseverance, and they interact with their teachers, with one another, and with web-based and other resources as they engage in problem solving and meaning making. They ask questions to establish relationships between academic content and real-world phenomena. They also identify patterns within and across content areas; develop and test their hypotheses to better understand the ideas they encounter; and think deeply as they select and evaluate evidence, draw conclusions, and offer alternative ways of looking at issues.

These students understand that meaningful learning is a process that occurs over time, and they routinely monitor their progress in a variety of ways. For example, they process teacher formative feedback, skillfully use pre-established criteria or rubrics to self-assess and self-monitor, and reflect informally on their progress toward understanding new concepts. They are adept at consolidating their learning. Quite often, they conclude a unit of study with unanswered questions, which they then pursue on their own. These students exemplify learning that is marked by rigor (of thought), relevance (of content), and relationships (between existing and new ideas and among members of the classroom community).

Now, imagine this vision for student learning becoming a reality, this year, in your classroom, with the students you currently teach.

ENGAGING STUDENTS THROUGH QUALITY QUESTIONING

It's not your father's (or mother's) classroom anymore! The demands of our global society require a different type of teaching and learning, and nowhere is the needed change more evident than in the expanded role of classroom questioning. In the not-too-distant past, traditional teachers

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asked questions primarily to find out what students knew—usually, to evaluate whether students had committed to memory what was expected. And as most of us know from firsthand experience, teachers routinely called on one student at a time, expecting other students to observe quietly and wait for their turns. Typically, if a student did not answer correctly, the teacher called on another student, then another, until a “star pupil” (or sometimes the teacher) produced the expected response.

While some remnants of this practice remain, today’s teachers know that this one-dimensional model does not tap the power and potential of quality questioning. Quality questioning, as defined in this book, is not a simple tool for extracting memorized information. Rather, it is a dynamic process through which a teacher intentionally engages students in both cognitive and metacognitive operations. The intended outcomes of such engagement are to help students with the following:

- Focus their thinking on specified content knowledge
- Use cognitive processing strategies to develop deep understandings and long-term retention of content
- Ask academic questions to clarify or extend understandings
- Monitor progress toward learning targets through self-assessment and use of formative feedback
- Develop personal response-ability by using structural supports for thinking
- Contribute positively to the creation of a classroom learning community in which thinking is valued

These student behaviors, like those envisioned in the opening segment of this chapter, exemplify student learning that is characterized by rigor, relevance, and relationships. Is this the reality in most classrooms? No. Do most students develop these cognitive skills and habits of mind automatically? No. Would most teachers welcome these students into their classrooms? Yes! Can teachers coach most students in developing these kinds of cognitive skills and habits of mind? Yes! Will it be challenging? Probably. Will it be worth the effort? Definitely! At least, we think so. But ultimately, that is a question for you, the reader, to explore as you read this book and incorporate its principles into your practice.

Our purpose in this book is twofold—in fact, we intend the title as a double entendre. First, we make a case that quality questioning is *the* primary catalyst for student thinking and learning. In developing this rationale, we elaborate on the components of quality questioning that cognitive scientists and teacher effectiveness researchers connect to increases in student thinking and achievement. Perhaps more important to practitioners, we offer specific tools and strategies that teachers and students can use to achieve the student outcomes described earlier.

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Second, we hope to stimulate readers to “think through” the purposes and potential of quality questioning *and* to reflect on personal practice. To this end, we provide information and prompts to assist in personal reflection and collaborative dialogue focused on quality questioning. Here’s our first prompt:

Thinking Through QQ: Reread and reflect on the vision for students that opened this chapter. Is this a vision that you and your colleagues can embrace? How would your students and their parents react to this vision?



COMPONENTS OF QUALITY QUESTIONING

Figure 1.1 presents a framework for teacher behaviors that promote thinking through quality questioning. This framework contains five functions that teachers execute to nurture and support student thinking.

These five functions are not sequential steps; rather, they are interrelated components of the dynamic process of quality questioning. Their placement in the graphic in Figure 1.1 is, however, intentional, as is their order in this book, which is as follows.

Frame Quality Questions

Quality questioning is not possible without quality questions; hence, the formulation, creation, or framing of the questions themselves is our first consideration. If questions are not aligned with instructional purposes and worthy of student thinking, then we need not bother with the other functions. In Chapter 2, we characterize the types of questions that stimulate student thinking and learning. We advocate for teachers working in teams to formulate focus questions as part of the instructional planning process. The chapter contains guidelines and tools for question formulation.

Strengthen Student Thinking

Even as we frame questions, we need to be thinking about the type and level of student response the question is inviting. What are the qualities of an acceptable response related to both content and cognitive demand? Planning for this function begins during the framing of questions, but selected strategies are executed live during class interactions. The goal is to scaffold students’ thinking about both the question posed and their responses to it. This approach to processing a question differs radically from students’ traditional approach to answering, in which they attempt to guess the teacher’s

Figure 1.1 Framework for Thinking Through Quality Questioning



answers to classroom questions, which is what students learn to do in the “game of school.” In Chapter 3, we review key strategies for supporting cognitive processing, including the use of Wait Times 1 and 2, the sequencing of questions to support students’ thinking and answering, and the development of students’ self-regulatory and metacognitive skills.

Use Formative Feedback

One of the most potent uses of quality questioning is for formative assessment that produces formative feedback for students—and for teachers. Many teachers are not skilled in identifying gaps in student learning revealed by their responses to classroom questions. Additionally, most students do not automatically know how best to use such feedback to manage their learning. Rather, both teachers and students usually think of teacher feedback as a simple evaluation of the correctness of their answers. In Chapter 4, we focus on questioning as formative assessment and provide strategies for using formative feedback to advance student learning and thinking.

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Promote Response-ability

The goal is to engage every student in the classroom in thinking and responding through quality questioning and to build student ownership in this process. Attaining this goal requires a real shift in both teacher and student thinking—a shift from teacher control of student learning to a partnership approach that acknowledges each student’s responsibility for managing his learning. Each of the previously discussed functions contributes to this type of response-ability. In Chapter 5, we examine strategies for developing student ownership for learning and thinking. Included among these are (1) use of various response formats, (2) encouragement of student questions, and (3) tools for assisting students in becoming self-directed learners.

Develop a Culture for Thinking

No matter how carefully teachers execute the technical aspects of quality questioning, student thinking will not thrive absent a culture to nurture and support it. Teachers and students partner to create a classroom culture in which thinking is expected, valued, and celebrated. The teacher and student behaviors featured in Chapters 2 through 5 provide the foundation for this type of culture. Featured in Chapter 6 are the norms and habits of mind that underpin a culture for thinking.

All five components of quality questioning are important; each promotes student thinking and, through it, student learning. Student learning, after all, is our principal focus, both in this book and in the classroom.

Thinking Through QQ: Review the Framework for Thinking Through Quality Questioning. How important to student learning do you believe each of the five components is? To what extent do you think about each of these components as you design lessons or units of study?



CONNECTIONS: DEVELOPING LEARNER CAPACITY

When students are given opportunities to engage actively in a curriculum that provides them with opportunities to be problem solvers, to make important decisions, to be creative, to broaden their knowledge base, to communicate their ideas, to consider alternatives, to be thoughtfully reflective, they flourish, not only in schools but beyond school as well.

—Craig Kridel & Robert V. Bullough Jr.
(quoted in Wassermann, 2009, p. 5)

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Each component of the Framework for Thinking Through Quality Questioning embodies a set of behaviors, skills, and strategies that promotes mastery of content. Standards-based learning and achievement, after all, are the outcomes for which teachers and schools are accountable. Research-based practice can optimize the conditions for student learning. Ultimately, however, it is the student who learns or not. The sum of the performances of each individual student is society's measure of teacher and school effectiveness.

Not all students arrive in our classrooms equally prepared for academic learning. As we know, environmental factors give some an edge on their classmates. An often-referenced variable is existing background knowledge. We do not diminish its importance; however, the learner capacities explored in this book relate to thinking skills—both cognitive and metacognitive.

Specifically, we focus on these three powerful engines for student learning: (1) student metacognitive behaviors, (2) student engagement, and (3) student self-efficacy. The research and literature base for each one is massive, and it is increasing daily. Our purpose here is to encourage you to think about how you can use quality questioning behaviors to leverage all three.

Student Metacognition

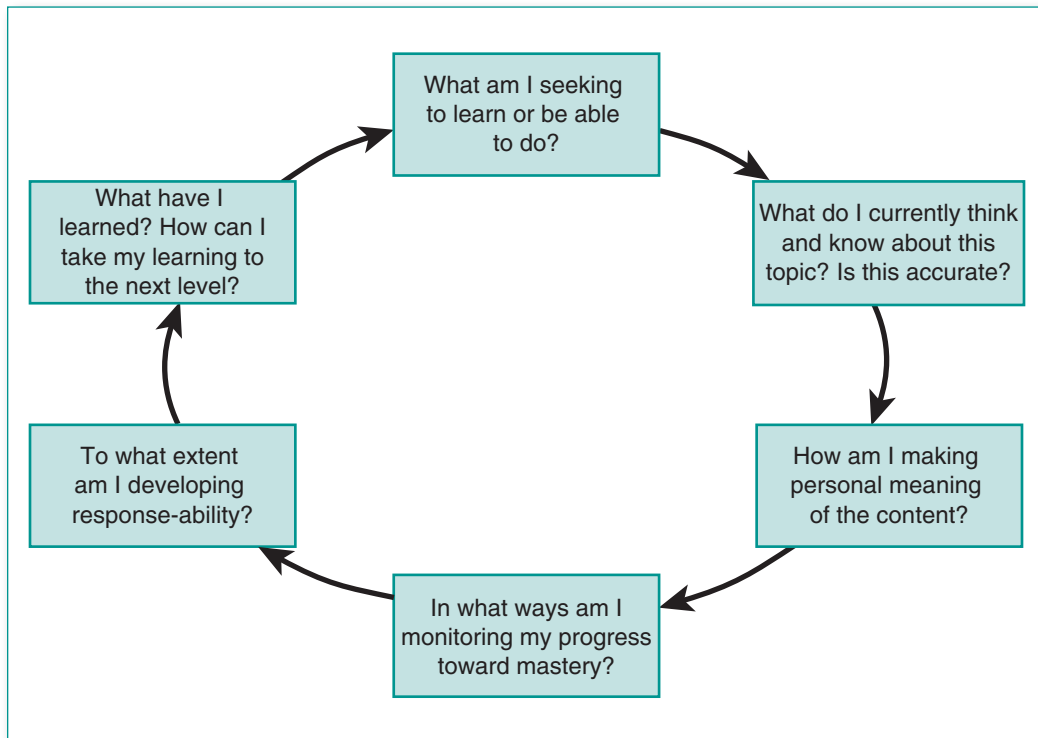
So what are the elements of student thinking that we expect to create as we attend to the components and principles of quality questioning? What behaviors or competencies are we seeking to develop in our students? And how do these thinking behaviors result in increased levels of learning and achievement? Our vision for student learning, presented earlier, is one response to these questions. It embodies six discrete elements of student thinking, each of which is presented below (and in Figure 1.2) as a question in the cycle of student thinking.

- **What am I seeking to learn or be able to do?** This question is the essential springboard for student entry into each new lesson or unit of study. If students are to manage and self-regulate their learning, they must know what they are attempting to master and why. And they need to be able to explain this in their own words—to formulate learning targets. This is key to students taking ownership

In general, students are becoming more aware of their own thinking if they are able to describe what goes on in their heads when they are thinking. They can identify the kind of thinking they are doing, list any steps or procedures they are using to do it with skill, and can tell the pathways they took and the dead ends they met before they got to where they are in the sequence of steps.

—Swartz, Costa, Beyer, Reagan,
& Kallick (2008, p. 112)

Figure 1.2 Cycle of Student Learning and Thinking



of their learning. Once they adopt learning targets, students are then able to establish interim goals for reaching these targets and to understand and use formative feedback from teachers.

- **What do I currently think and know about this topic? Is this accurate?** When students consider the first of these two questions, they activate prior knowledge, calling to mind experiences and understandings that they can then connect to new learning. When students consider the second question, they become more teachable; they open the door to the possibility that some of what they know may be inaccurate or incomplete. Effective teachers use diagnostic questions not only (1) to uncover misconceptions that need to be corrected before formal instruction begins and (2) to surface prior, accurate knowledge and understandings that students can tap into, but also (3) to assist students in learning how to manage self-assessment.
- **How am I making personal meaning of the content?** Thinking is the process of meaning making. To the extent that students connect to a topic under study in a personal way, they will find relevance and motivation for learning. Additionally, as they pursue learning about

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a new topic, they will engage in making connections with existing knowledge and experiences. Cognitive scientists are finding that these behaviors are at the core of moving information from short-term to long-term memory. As David Perkins (1992) writes, “Learning is a consequence of thinking” (p. 185).

- **In what ways am I monitoring my learning and progress toward mastery? Where am I along the path to reaching my learning targets?** This is the formative assessment question. Students answer it, in part, by receiving and processing teacher feedback; thinking students are also constantly self-assessing and self-monitoring. They have learned to self-regulate their learning.
- **To what extent am I developing response-ability?** Teachers who hold high expectations for student response-ability help students understand their role in using quality questioning to advance their learning and thinking. As students monitor their progress in this area, they are actually monitoring their development as lifelong, independent learners. This is a goal of many schools today: to create lifelong learners. Sometimes, however, neither teachers, students, nor parents know exactly what this means or what skills are involved. During this stage of student thinking, students are intentional in identifying and assessing behaviors that are associated with this outcome.
- **What have I learned? How can I take my learning to the next level?** This is the summative assessment for students. At the end of a unit of study (and at the end of a lesson), students need time and structures to bring some closure to a learning sequence, to consolidate their learning on the topic, and to set goals for future learning. Students, like teachers, need time for reflection if they are to improve their performance. Sometimes, these learning goals will foreshadow the next unit of study in the curriculum; at other times, they may point students to areas for individual and independent learning outside of school.

Most students do not come to school with these thinking skills, nor do they develop them automatically as they progress through school. However, research findings are clear that (1) students with these skills learn and achieve at higher levels than their peers, (2) students can learn these behaviors and skills, and (3) most students require direct instruction to develop these skills (Darling-Hammond et al., 2008; Holyoak & Morrison, 2005; National Research Council, 2001). Baker (2005) summarizes another important feature of metacognition: It is developmental, beginning in the early grades and maturing over time. Quality questioning can help develop and nurture the behaviors and skills of quality thinking.

The components and principles of quality questioning apply to instruction at all levels, pre-K through 16, and to all content areas. The cycle of student learning also applies to students of all ages in all learning settings.

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Metacognition develops gradually throughout childhood and into adulthood. It cannot simply be asserted that a child “has” or “does not have” metacognitive knowledge or control. Metacognition differs in degree and kind, and its relations with achievement change over time. The evidence is clear that children begin to use simple rehearsal strategies early in elementary school, but complex strategies for understanding text may not develop until middle or high school.

—Baker (2005, p. 63)

However, the behaviors and skills comprising the student cycle develop over the course of a child’s education.

Student Engagement

Quality questioning is a powerful vehicle for student engagement. This is particularly the case if we consider meaningful learning to be an acid test for authentic engagement. Phil Schlechty (2002) stipulates that authentic engagement results when the “task, activity, or work the student is assigned or encouraged to undertake is associated with a result or outcome that has clear meaning and relatively immediate value to the student” (p. 1).

Linda Darling-Hammond (Darling-Hammond et al., 2008) reports that authentic engagement and learning include the following:

- Involving students in “*active learning, so that they apply and test what they know*”
- Making “*connections to students’ prior knowledge and experiences*”
- “*Diagnosing student understanding in order to scaffold the learning process step by step*”
- “*Assessing student learning continuously*” and modifying teaching to meet student needs
- Connecting to “*clear standards, constant feedback, and opportunities for work*”
- “*Encouraging strategic and metacognitive thinking so that students can learn to evaluate and guide their own learning*” (p. 5)

Quality questions and questioning strategies support each of the previous in ways that we will elaborate on throughout this book. Unfortunately, not all educators can give a clear explanation of student engagement (City, Elmore, Fiarman, & Teitel, 2009, p. 11). This is true, in part, because we do not possess shared understandings of some of the critical concepts embedded in Darling-Hammond’s (2008) listing.

The search for meaning is at the very heart of motivation. Students must be inspired to wonder, develop intellectual curiosity, and desire to understand and find answers for themselves.

—Hopkins (2010, p. 19)

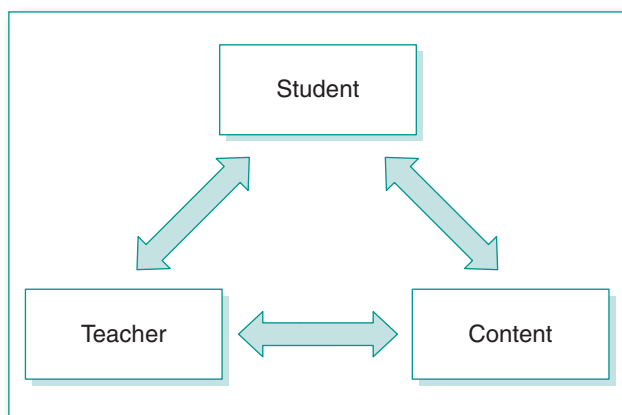
To help readers reflect on the connections between questioning and engagement, we offer a schema that has been popularized by Richard Elmore (City et al., 2009, pp. 22–37) and colleagues at

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the Harvard Graduate School of Education—the instructional core. Based on the work of Cohen and Ball (Cohen, Raudenbush, & Ball, 2003) at the University of Michigan, this schema (see Figure 1.3) consists of three fundamental elements of teaching and learning: (1) the student, (2) the teacher, and (3) the content. According to the theory, effective teaching and learning result from meaningful interactions between and among these three elements—and increases in student learning occur only as a result of improvement in these elements and in the relationships between and among them.

We argue that quality questioning activates and sustains interactions and relationships between students and teachers, between students and the content, and between teachers and the content in ways that increase both student engagement and achievement.

Figure 1.3 The Instructional Core



Source: City, Elmore, Fiarman, & Teitel (2009).

Thinking Through QQ: Speculate as to how quality questioning supports improvements in the instructional core. More specifically, how do you think quality questioning strengthens the relationships between and among the three components of the core?



Student Self-Efficacy

“I think I can; I think I can; I think I can.” This refrain echoes from Mrs. Gaines’ first-grade classroom, where Jackie began her school career, and from the pages of *The Little Engine That Could* (Piper, 1930), one of her favorite books from childhood. We all have stories that illustrate the power of believing in one’s ability to accomplish a challenging task and in persevering to that end. Albert Bandura, a psychologist and researcher at Stanford University, focused on this phenomenon in his pioneering research. Bandura (2005) defines self-efficacy as “beliefs in one’s capabilities to organize and execute the courses of action required to manage prospective situations,” and says, “Efficacy beliefs influence how people think, feel, motivate themselves, and act” (p. 2).

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Individuals with a strong sense of efficacy have a can-do attitude: They approach difficult tasks as challenges to be mastered rather than as threats to be avoided.

More specifically, individuals with a strong sense of self-efficacy are more likely to do the following:

- Approach threatening situations with confidence that they can exercise control over them. (These individuals are very different from those who lack this quality and seem to have acquired a sense of “learned helplessness” or a victim mentality.)
- Set challenging goals for themselves and maintain a strong commitment to them.
- Attribute failure to insufficient effort or a lack of knowledge or skills that can be acquired—rather than to a lack of ability, inferiority, bad luck, or other such factors.
- Increase and sustain their efforts in the face of failure.
- Quickly recover their sense of self-efficacy after a failure or setback.

Self-efficacy is positively associated with self-regulated learning, an important component of student metacognition. Researchers report that students who are self-efficacious establish higher goals for themselves and are more likely to select effective learning strategies than are their peers who are less self-efficacious (Schunk & Zimmerman, 1998, p. 3).

Bandura (2005, pp. 2–4) identifies four contributors to self-efficacy, all of which can be positively impacted by quality questioning:

- *Goal mastery.* When students set and attain challenging goals, they increase their feelings of efficacy. On the other hand, when students experience failure or do not have a clear view of learning goals or progress toward attainment, their feelings of efficacy suffer.
 - *Potential impact of quality questioning:* When teachers use questions to communicate clear expectations for student thinking and learning, students are better able to set short-term and long-term learning goals. Chapter 2, Frame Quality Questions, includes tools for the development of questions that promote this end.
- *Vicarious experience provided by social models.* Bandura writes that “seeing people similar to themselves succeed by perseverant effort raises observers’ beliefs that they, too, possess the capabilities to master comparable activities” (p. 3).
 - *Potential impact of quality questioning:* In Chapter 5, Developing Response-Ability, we argue for intentional use of collaborative social contexts for student responding. When teachers plan for students’ scaffolding of one another’s thinking and responding, they are promoting and encouraging self-efficacy through social modeling.

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- *Social persuasion.* Teachers and peers can influence a student's perception of self-efficacy by providing encouragement and meaningful feedback.
 - *Potential impact of quality questioning:* When teachers communicate to students that every student's answer is important and is a stepping-stone toward learning and mastery, students become more confident in thinking and answering. Chapter 3, Strengthen Thinking-to-Learn Behaviors, and Chapter 4, Use Formative Feedback, examine the ways in which a range of questioning behaviors encourage and reinforce students' belief in their abilities to learn standards-based content.
- *Physiological and social states.* According to Bandura's (2005) findings, one's feelings of comfort in a particular climate and with a given challenge can contribute to the development of self-efficacy.
 - *Potential impact of quality questioning:* Essential to classrooms where quality questioning promotes thinking and learning is a culture in which students (1) feel comfortable making mistakes, (2) exercise responsibility for supporting one another's learning, (3) demonstrate respect and trust for all in their learning community, and (4) cultivate habits of mind that support rigorous, relevant learning. Chapter 6, Create a Culture for Thinking, explicates these cultural qualities and connects them to student success.

Thinking Through QQ: Reflect on your experiences with students who may have been tentative or reticent about responding to questions. Identify one student whom you helped become a more forthcoming responder. What did you do to convey to this student that he or she possessed the capability to form responses to your questions?

