Clarity:
Questioning Skills

Questions are the dominant mode of communication in most classrooms (Bellon, Bellon, & Blank, 1992) and the second most dominant teaching method after teacher talk (Cotton, 1988). Teachers spend between 35 to 50 percent of teaching time posing questions (Long & Sato, 1983 as cited in Hattie, 2009). Because questioning is done for many purposes, we could say that it occurs during nearly all the areas of performance described in *The Skillful Teacher*. Consequently, one of a teacher's most important skills is designing and posing worthwhile questions.
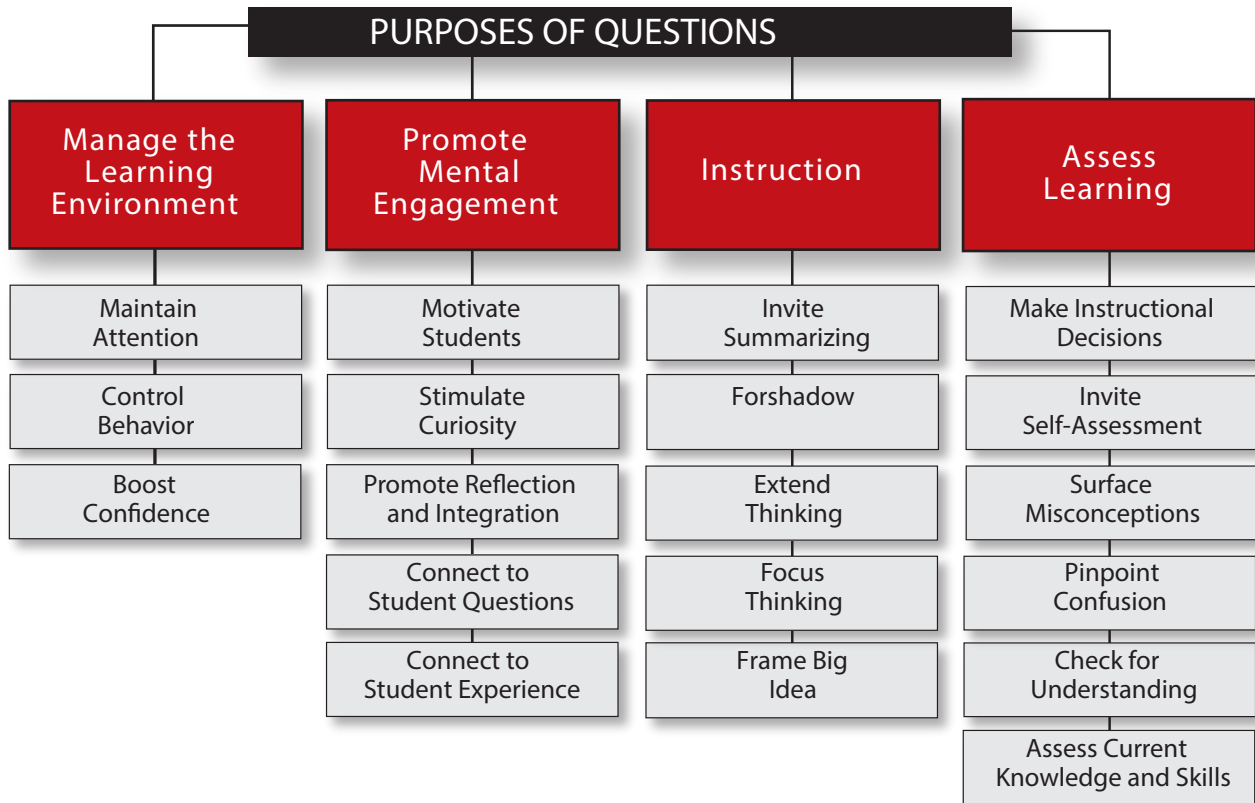
The significance of this topic is reflected in the plethora of books written about questioning. We synthesize what we believe is the most practical and important information on this topic over the last 30 years. There are five main points about questioning that we want to highlight. Each has large implications for practice:

1. Be deliberate about the purpose of your questions.

2. Draw in all students in higher-level thinking questions.

3. Use questioning strategies that maximize student engagement.

4. Plan questions carefully.

5. Develop students capacity to ask questions.

THE PURPOSES OF QUESTIONS

Questions are tools for accomplishing tasks. It is the purpose that matters—being deliberate about what we want to accomplish and having the repertoire of tools to accomplish the intended purpose. Rather than trying to develop "questioning" as a generic skill, it is more productive to ask what sort of mental act (or cognition) we want to activate in students at a given moment and what move (or question) will provoke it.

Figure 1 Purposes of Questions

PURPOSES OF QUESTIONS			
Manage the Learning Environment	**Promote Mental Engagement**	**Instruction**	**Assess Learning**
Maintain Attention	Motivate Students	Invite Summarizing	Make Instructional Decisions
Control Behavior	Stimulate Curiosity	Forshadow	Invite Self-Assessment
Boost Confidence	Promote Reflection and Integration	Extend Thinking	Surface Misconceptions
	Connect to Student Questions	Focus Thinking	Pinpoint Confusion
	Connect to Student Experience	Frame Big Idea	Check for Understanding
			Assess Current Knowledge and Skills

Adapted from Bellon, Bellon, & Blank, (1992)

There are many different purposes for questions. Questioning is not a unitary skill; it is an entire toolbox. The tools we select should match the goal in the moment. Figure 1 shows a variety of purposes for asking questions. Table 1 includes sample questions designed for each purpose.

Table 1 Sample Questions Matched to Purpose

Purpose of the Question	Example
1. Managing the Learning Environment	
• Boost Confidence	"How would you do it, Tim?" [Tim is not confident of his math ability, but Mrs. Johnson has heard him propose a novel solution in his group. She wants him to present it to the class, knowing it will be appreciated by them and be a validating experience for Tim.]
• Control Behavior	"How would you do it, Tim?" [Tim is starting to distract Millie. Mrs. Johnson moves toward them which asking a question to get him engaged.]
• Maintain Attention	"How would you do it, Tim?" [Tim's attention is wandering. Mrs. Johnson startles him back to focus.]
2. Promoting Cognitive and Emotional Engagement	
• Motivate Students	"What product do you most want to design an ad program for?"
• Stimulate Curiosity	"What do you know about voting and elections in this country?"
• Promote Active Reflection and Integration	"What are three things you've learned, two questions you have, and one thing you don't understand yet?"
• Connection to Students' Own Questions about Deeper Meaning	"What do you think the most important things are about having a family?"
• Connect to Student Experience	"In *Stone Soup*, does the villagers' reaction to the soldiers remind you of anything you've experienced in the neighborhood?" "What do you think the crime movie, *The Negotiator*, might have to do with international affairs?"
3. Instructing	
• Frame Big Ideas	"What makes humans human?"
• Extend Thinking	"Is this similar or different from the situation in Palestine?"
• Deepen Thinking	"Go inside that now and tell me why that position might have made sense from his point of view."
• Foreshadow	"Based on what we've explored today, why do you think the colonists decided to stay?"
• Promote Transfer	"So how could you use this information about evaporation in your every day practical life?"
• Invite Summarizing	"What do you think were the most important points made in the discussion so far?"
4. Assessing Learning	
• Assess Current Knowledge and Skills	"Why do some objects float in water and others sink?"
• Check for Understanding	"Can you tell me in your own words how photosynthesis works?"
• Pinpoint Confusions	'What did you do after you entered the data?"
• Surface Misconceptions	"Why do you think we have winter and summer?"
• Invite Self-assessment	"Which one do you know well, and which ones do you need to practice tomorrow?"
• Make Instructional Decisions	"Do we need more time on this?"

DRAW IN ALL STUDENTS WITH
HIGHER-LEVEL THINKING QUESTIONS

All children need to be engaged in conversation with higher level thinking questions. This is especially important for children who are low in academic proficiency and ELL students who need to be engaged in meaningful discourse. Students who are three or four grade levels behind in literacy skills are still perfectly capable of higher-level thinking (e.g., inference, analysis, connection making). Furthermore, teachers need to activate this kind of thinking if they want to keep these children engaged in school.

Research on the relationship between the cognitive level of a teacher's questions and the achievement of their students has proved frustrating to many in the field of education because it has not produced definitive results. Quite a number of research studies have found higher-level cognitive questions superior to lower ones. However, many have found the opposite, and still others have found no difference. The same is true of the relationship between the cognitive level of teachers' questions and the cognitive level of students' responses (Cotton, 1988).

Perhaps this is because questioning is a complex process consisting not only of the cognitive level of the question, but also the questioning strategy that accompanies it, the student response, and the way a teacher reacts to student responses. All of these factors function in concert when teachers use questioning effectively as illustrated in Figure 2 (Bellon, Bellon, & Blank, 1992).

Here are some interesting statistics about the cognitive level of teacher questions. Quite consistently, studies show that about 60 percent of questions are recall or factual questions requiring literal recall of text content or very basic reasoning. The figure can rise to 80 percent recall in some classrooms (Cotton, 2000). Only 20 percent of the questions are higher level, the remaining 20 percent are procedural. These are not good statistics to prepare students adequately for a 21st century world.

Students who get instruction without higher-order questions score in the 50th percentile on tests compared to the 75th percentile if the same students engage in lessons where there are many higher-order questions—those that call for speculative, inferential, analytic and/or evaluative thinking (Gall et al., 1978). The reason is that higher-order thinking is inherently more interesting and causes cognitive processing and organization of information that builds more elaborate mental structures.

The point that matters is that all students should be brought to high levels of thinking with academic material through an appropriate balance of higher- and

Figure 2
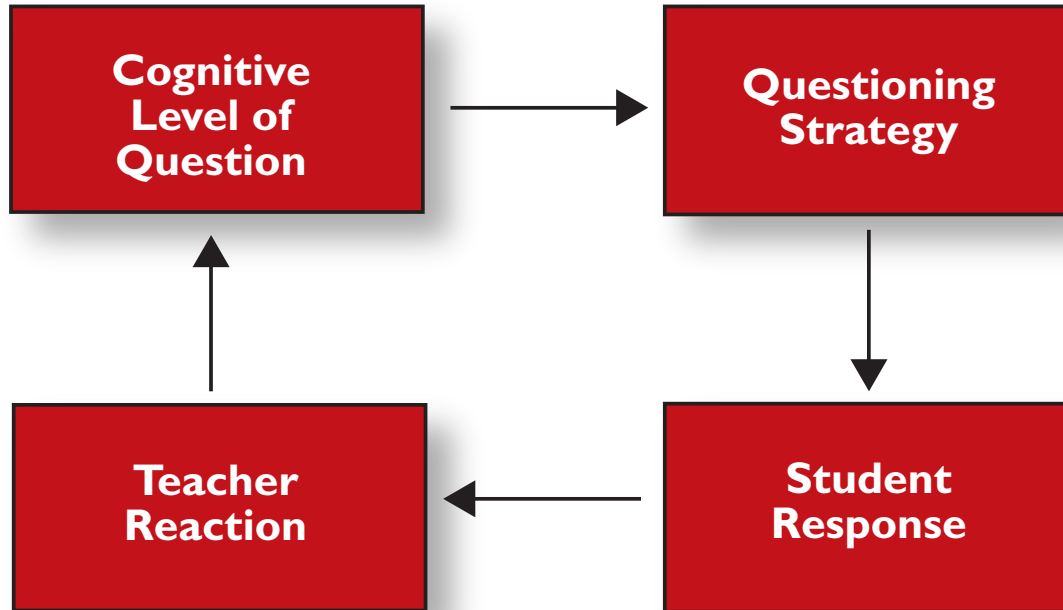
Adapted from Bellon, Bellon, & Blank, 1992, p. 310

lower-level questions supported by questioning strategies. To stretch students academically, we have to make sure all students are invited equally into the thinking club, not just some. Importantly, research on questioning does not conclude that lower-level questions are useless:

> The popular belief that lower-level questions are less effective . . . has not been upheld. Achievement is related to the use of a variety of questions designed to accomplish specific purposes. For example, a pattern of factual questions, student responses, and teacher feedback has been found to be the most functional mechanism for student achievement in basic skills. . . . [Furthermore] successful responding to lower level questions is a prerequisite for higher-level learning. Students need a firm base of factual knowledge when they are engaged in higher level thinking activities. It is impossible to summarize or evaluate information that a person does not know or understand. (Bellon, Bellon, & Blank, 1992, pp. 315–316)

Here is a summary of the research findings on higher and lower cognitive questions (Cotton, 1988, p. 5):

▲ In most classes above the primary grades, a combination of higher and lower cognitive questions is superior to the exclusive use of one or the other.

▲ Students whom teachers perceive as slow or poor learners are asked fewer higher cognitive questions than students perceived as most capable learners.

▲ Increasing the use of higher cognitive questions (to considerably above the 20 percent incidence noted in most classes) produces superior learning gains for students above the primary grades and particularly for secondary students.

▲ For older students, increases in the use of higher cognitive questions (to 50 percent or more) are positively related to increases in on-task behavior, length of student responses, the number of relevant contributions volunteered by students, the number of student-to-student interactions, student use of complete sentences, speculative thinking on the part of students, and relevant questions posed by students.

▲ For older students, increases in the use of higher cognitive questions (to 50 percent or more) are positively related to increased teacher expectations about children's abilities, particularly the abilities of students whom teachers habitually regarded as slow learners.

▲ The degree of improvement resulting from increases in both higher cognitive questions and wait time is greater than an increase in either of these variables by itself. Indeed, those who have examined the relationship between these factors tell us that, in a sense, they cause one another.

▲ Redirection and probing are positively related to achievement when they are explicitly focused on the clarity, accuracy, plausibility, and so on of student responses.

There are several frameworks that identify key words and sentence stems targeted to different types of cognitive processing. Table 2, Thinking Skills Model Categories, shows one such example. For more detail on the most commonly used of these frameworks see Webb's Depth of Knowledge Guide (2009), Anderson and Krathwohl (2001), and the Bloom's Taxonomy document on *The Skillful Teacher* website at www.RBTeach.com/TST7.

Table 2 Thinking Skills Model Categories

Category	Examples of Trigger Questions	Key Words
Knowledge	Define the word _____. What is a _____? Label the following_____. Identify the_____in this_____. Who did_____?	Define, repeat, identify, what, label, when, list, who, name
Organizing	Compare the____before and after_____. Contrast the_____to the_____. Differentiate between_____and_____. Classify_____by_____. Order____by_____.	Compare, differentiate, contrast, order, classify, distinguish, relate
Applying	How is_____an example of _____? How is_____related to____? Why is_____significant? Predict what would happen if _____. Explain. Choose the best statements that apply to _____. Identify the results of _____. Tell how much change there would be when_____.	Apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover, dramatize, sketch
Analyzing	What are the basic elements (ingredients) in a _____? What is/are the functions(s) of____? Inventory the parts of _____. Categorize the _____of _____. Sort the _____. What is the order of steps in _____?	Subdivide, categorize, break down, sort, separate
Generating	Hypothesize what will happen if _____. Predict what would be true if ____. Conclude what the result will be if ____. What if ____had happened instead of ____?	Deduce, anticipate, predict what if, infer, apply, speculate, conclude
Integrating	What would you predict/infer from _____? What ideas can you add to____? How would you create/design a new _____? What might happen if you combined _____? What solutions would you suggest for _____?	Combine, integrate, modify, create, design, invent, compose, theorize, develop, devise, originate, revise, synthesize, conceive, project, hypothesize
Evaluating	What you would do if _____happened? Why? Judge what would be the best way to solve the problem of_____. Why did you select that solution? Evaluate whether you would _____ or____. Why?	Evaluate, argue, judge, recommend, assess, debate, appraise, critique, defend

As always in skillful teaching, the balance of higher- to lower-level questions must be a match to the situation. More importantly, it is the sequence in which we ask these questions and the way in which we respond to student's answers that will have even greater impact on the level of thinking students achieve. In the sections that follow on questioning strategies and teacher responses, we address this in more detail. Overall, the objective of our questioning should be to engage all students in high levels of thinking.
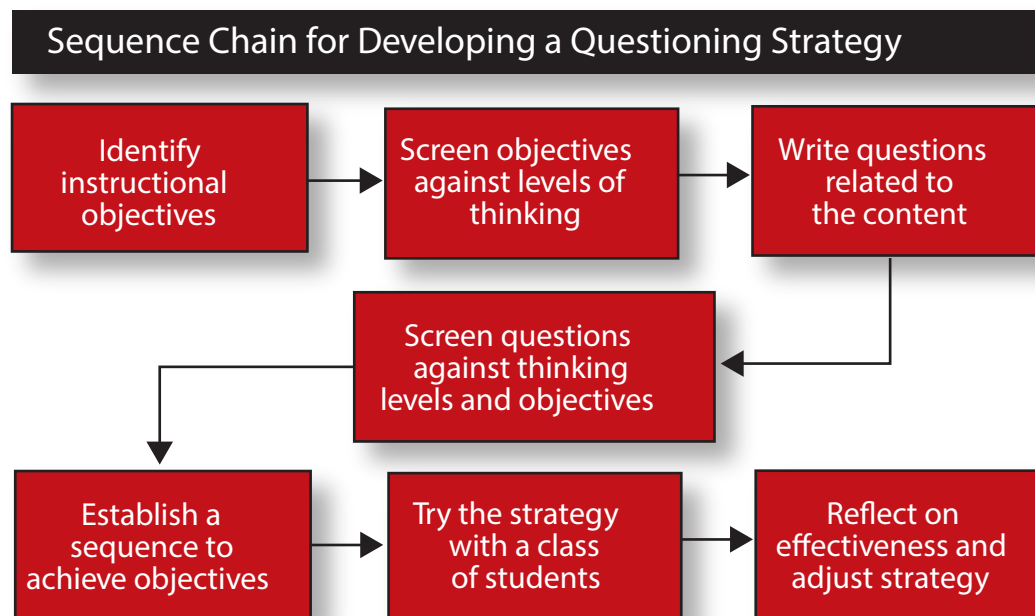
3. QUESTIONING STRATEGIES TO MAXIMIZE STUDENT ENGAGEMENT

The sequence of our questions can offer opportunities for success and failure.

Beyond the cognitive level and balance of the questions we ask, effective questioning is affected by the sequence of our questions. The sequence of our questions can offer opportunities for success and failure. If we ask "Why?" prematurely and without preparation, we can set students up for failure. Instead, we can question purposefully to lead students to higherorder thinking (Costa & Kallick, 2015).

Bellon and colleagues (1992) use the term *questioning strategy* to represent the deliberate sequencing of questions designed to accomplish a specific goal. To guide the planning, they suggest we consider the level, sequence, relation of the question to others in the series, and amount of instructional time it will take to complete the strategy. Figure 3 outlines their process for developing this kind of strategy.

Skilled questioning involves sustaining and building arcs of questions where "simple factual inquiries give way to increasingly interpretive questions until new insights emerge" (Wolf, 1987, p. 4). Marzano and Simms (2014) outline a four-phase questioning sequence (details, categories, elaboration, and evidence) to lead students to higher-order thinking. The detail and category phases are focused on activating students' background knowledge related to the instructional goal and include asking students about important details, to identify examples within a category, describe the general characteristics of a category, or make comparisons within and across categories. The elaboration and evidence phases focus on making and defending claims. The elaboration phase includes asking students to explain reasons for characteristics ("Why?" questions), describe the effects of specific characteristics ("How?" questions), and project what might occur under certain conditions ("What if?" questions). The evidence phase includes asking students to identify sources that support their elaborations, to explain the reasoning they used to construct their elaboration, qualify or restrict some of their conclusions, find errors in the

Figure 3 Developing a Questioning Strategy

Sequence Chain for Developing a Questioning Strategy

Identify instructional objectives → Screen objectives against levels of thinking → Write questions related to the content → Screen questions against thinking levels and objectives → Establish a sequence to achieve objectives → Try the strategy with a class of students → Reflect on effectiveness and adjust strategy

Adapted from Bellon, Bellon, & Blank, 1992, p. 310

reasoning used to construct their elaborations, and examine their elaborations from different perspectives.

Costa and Kallick (2015) cite this routine Social Studies teacher John Mason at William Davies Middle School (Mays Landing, NJ) uses for this purpose:

▲ Begin by asking about basic facts that require recognition and recollection ("What words do you recall related to the U.S. Civil War?");

▲ Follow with descriptions ("Describe what the Civil War was about, where it happened, ...") and comparisons ("Describe each of the sides involved in the conflict.");

▲ Follow-up with questions on predictions and explanations of cause and effect; and

▲ Then, have students make claims and justify their viewpoints with evidence.

Regardless of what sequence we use, if we are to successfully move all students to higher levels of thinking and deep understanding of important concepts, we need to prepare and support them by intentionally sequencing our questions. Good and Brophy (2008) sum it up this way: "Framing the issue in terms of "higher" and "lower" questions imposes a false dichotomy. Guidelines need to focus on sequences of questions designed to help students develop and connect understandings" (p. 378).

Beyond the cognitive level, balance and sequence of our questions, effective questioning is affected by practices we embed in the process. If we want all students to participate, we have to make the process inclusive and safe. Here are some strategies to consider using towards that end.

1. Use Invitational Language

Art Costa and Bena Kallick (2015) investigate the psychological effect of word choice and syntax in the way people frame questions.

> Embedded in the language we use are cues from which listeners interpret meaning and make inferences. These inferences might be positive or negative . . . teachers can deliberately load their questions with empowering assumptions that build the student's self esteem, efficacy, and growth mindset. (Costa & Kallick, 2015, p. 67)

The point is that certain language forms in questions invite students to engage with the question and other forms intimidate or close down thinking. These are three guidelines they recommend for making questions invitational:

▲ Use plurals to signal that there is more than one possible right answer: "What are some of your insights?" or "What ideas do you have?"

▲ Express tentativeness to invite exploration of ideas and possibilities: "What inferences might you draw?" or "How might you address the problem?"

▲ Embed positive presuppositions to accentuate the positive and the possibilities, "As you think about the project, what will be some indicators you are progressing and succeeding?" or "What are some of the benefits you will derive from engaging in this activity?" Notice the embedded assumptions that the student is thinking about the project, there will be indicators of success, you will derive benefits, you will succeed.

2. Avoid Miscuing, Confusing, or Limiting Student Thinking Levels

Here are some examples of questions to avoid:

▲ Verification questions: The teacher or students already know the answers. "What is the name of . . .?"

▲ Closed questions: These can be answered "yes," "no," or "I can." "Can you recite the poem . . .?" "Who can remember . . .?"

▲ Rhetorical questions: The answers are given within the question or the teacher is not expecting an answer.

▲ Defensive questions: The questions lead to justification, resistance, and self-protection: "Why didn't you complete your homework?" or "Why would you do a thing like that?"

▲ Agreement questions: The intent is to invite others to agree with an opinion or answer: "This is really the best solution, isn't it?" or "Let's do it my way. Okay?"

3. Call on All Students

This means making it clear to students that everyone is expected to participate, everyone's thinking is valued and important, and the goal is to hear their thinking whether it is correct or incorrect, complete or incomplete in the moment. There are many different strategies to accomplish this: from having all students respond simultaneously to a question on individual slates or electronic response systems to establishing random ways of calling on students (calling sticks, calling cards, choose names of three students at once, and let them decide who will start to respond while the other two wait their turn to share; track participation and aim for getting all voices in the conversation at some point; have students call on one another to continue where they leave off with an idea). This questioning practice is explained further in Making Students Thinking Visible in Chapter 11, "Clarity."

4. Use Wait Time – Think Time

The research is extensive on the importance of inserting a silent pause for a minimum of 3 to 5 seconds between posing a question to a whole group and

inviting students to respond. This rationale has to be explained to students. Once a student volunteers or is called on, we need to stay out of the way, at least momentarily, while they start responding and thinking through what they want to say. Even more powerful than the initial wait time, is silence for a few seconds after a student responds so that we break the pattern of them looking to us for instant affirmation and instead leave space for them to elaborate on or modify their initial response. When this is a pattern established over time, students will also get into the habit of paying attention to one another's responses and commenting on what has been said without our interference.

5. Have Students Answer in Complete Sentences

For language development purposes and to get students into the habit of connecting their response to the question posed, teach students to respond in complete sentences by turning the question into a statement that includes the focus of the question. In response to the question, "Why might someone act this way?" a student responds, "One reason someone might act this way is…"

6. Turn to a Partner (Turn and Talk)

This strategy is used after posing a question but before students start to speak. This practice engages all of the students in constructing responses, and offers an opportunity for a response rehearsal before speaking in a larger group. This also works well when a student is struggling with a response in a large group and a teacher says, "Everyone, turn to a partner and share what your response would be if you were up next."

7. Stick with Students Who Don't Have It Yet

When a student attempts to respond to a question and doesn't quite have it yet, it is critical that we stick with them at least for a few exchanges in order to communicate the expectation that they are fully capable of contributing. This might be a time to use a series of scaffolding questions to temporarily lower the cognitive challenge level of the question until we can build back up to the level of thinking embedded in the initial question. If we move on to another student the minute a student struggles, that sends the message (to the individual and to the rest of the class) that we don't believe they are capable of working through a response.

8. Ask a follow-up question that invites the student to explain or elaborate on a response

Explain to students that you will frequently hear an answer and ask the same student a follow-up question, not because their answer is incorrect but because you would like to hear the thinking behind their response. Use prompts like "Tell us more…", "What do you know that leads you to think that?", or "What might be an example of that?" to pursue the students' line of reasoning whether the initial answer appears to be correct or incorrect.

9. Use the 24 Operating Principles for Making Student Thinking Visible

We have identified 24 moves teachers can make to uncover student thinking, engage more students in classroom dialogue, and put students at the center of the classroom discourse. These operating principles, described in the "24 Operating Principles" document available on *The Skillful Teacher* website (www.RBTeach.com/TST7), offer a whole repertoire of strategies we can use to engage all students in higher-level thinking and exploration of ideas.

10. Use Thinking Routines

Another approach to higher-level questioning is the one captured by Ron Ritchart and colleagues (Ritchart, Church, & Morrison, 2011). Here the goal is not only a classroom where thinking is always present, but a deliberate approach to teaching all the students explicit thinking routines—for example, "What do you see?" "What do you think about that?" and "What does it make you wonder?"

The teacher takes charge of making sure that these patterns of questions are regularly present in classroom discourse and seep into the culture of daily life. Thus students slowly learn the habits of mind of good inquirers and active thinkers. These are the qualities of "intellectual character" that Ritchart (2012) writes about. We recommend these thinking routines as a clear and accessible way to make questioning for higher-level thinking an organic part of classroom life. Quite different from using Bloom's taxonomy as the guide (see *The Skillful Teacher* website at www.RBTeach.com/TST7), teachers use a set of routines that can be conceptualized as powerful packages for provoking worthwhile thinking and engaging student interaction (for details visit the Project Zero website at www.pz.harvard.edu/visiblethinking).

11. Use prompts or statements in place of questions

Many of the cognitive acts, we are setting as tasks of questioning, can be stimulated by statements and other prompts just as well as by questions. "Tell me how this is like something you read in *Cry the Beloved Country*" accomplishes

the same thing cognitively as the question, "Does this remind you of anything in *Cry the Beloved Country?"*

Dillon (1990) established long ago that statements can sometimes be more powerful than questions in stimulating student intellectual engagement with material. These statements could be positions that would stimulate student responses.

PLANNING QUESTIONS

Questions should be developed when we are planning lessons, not on the fly while teaching, and they should include more specificity and detail than many of us are used to.

> Knowing that questions are the gateway into students' thinking, masterful teachers don't just ask a lot of questions; they purposefully design and pose questions that are appropriate for each learning goal—questions that will bring about the specific kinds of student learning they are aiming for. (Costa & Kallick, 2015, p. 66)

Thus it is as important to plan questions we intend to ask as it is to plan the activities and discussion topics. At the conclusion of an exhaustive review of the research on questioning, Bellon, Bellon, and Blank (1992) concluded that teachers should plan questions and write them down in advance as part of the planning process to ensure they support accomplishment of the learning objective. Ideally, most lesson objectives are related to higher-level thinking and deep understanding of important concepts. This underscores the need to strategically identify what questions we want to ask students and what sequence of questions will lead students to successfully respond and participate.

Sequencing and Developing Student Thinking

Good planning considers the kind of thinking we want students to engage in as well as the sequence of factual and higher-order questions. Suppose a teacher is doing a lesson with eighth graders on the separation of powers in the U.S. Constitution. Last night, the students read the chapter in the textbook explaining how the Constitution sets this separation up and why the founding fathers wanted it. This morning, the class will begin a discussion of this topic. The teacher is planning questions to meet the objective: students will be able to explain the founding fathers' rationale for the separation of powers across the three branches of the U.S. government. Let's eavesdrop on the teacher planning her questions to meet this objective:

Let's see. This is an objective at the comprehension level in Bloom's taxonomy. To understand the reason for the separation of powers, however, they need to have a clear idea of what powers the different branches have to begin with. So maybe the clearest way to start is with some factual questions about the nature of each branch and then its powers. I'll ask:

1. What is the purpose of the legislative branch of the U.S. government? (recall question).

2. What are its powers? (recall question: enumerate the powers).

3. I should repeat this for the judicial and executive branches too, probably recording or having students record the powers on charts as we go. This is review, but I better be sure they are all clear on the differences (recall question: enumerate the powers of . . .).

4. What are the similarities and differences between the judicial and the legislative branch powers? (Understanding [comprehension] question: compare and contrast) This question will allow me to highlight how both the judicial and legislative branches deal with legislation, but one branch makes it, while the other reviews it if it is challenged . . .

5. I should run similar comparisons for other pairs.

6. What do you think the phrase *checks and balances* means? (understanding [comprehension] question: interpret). It might be good to have a visual here.

7. What are some examples of how one branch checks the power of another? (application question). If they can't give good examples, we may have to stop here and use current events to go deeper. We'll see. I think I'll bring in newspapers from the past few days to have as a resource here.

8. Is checking different from balancing? (analysis question: differentiate)

9. Once we get understanding here, I think I can ask them, "What do you think the founding fathers' rationale was for setting it up this way?" (analyzing/inferring question: explain).

10. If we get this far I'd like to move them into application, like: "How do you think the separation of powers will play out with the current bill

before the state legislature to legalize . . . ?" (understanding question: prediction; also, evaluate: conclude). We'll get that far tomorrow.

11. It would be good to go beyond the text and compare our system of checks and balances to other countries. Let's see, which countries might they know enough about? Oh . . . I can ask them to each pick one they're interested in and research it for the way checks and balances are present there, if at all, and then compare it to the United States. That will make a nice follow-up project and check for understanding (application question; comprehension question calling for compare and contrast).

This teacher has planned a series of questions that establish the factual background students need to ask the higher level questions later. Then, she has deliberately alternated between comparison and contrast questions and analysis questions. Next, she's asked an application question, and finally, she has asked a large comparison question in the follow-up assignment that also invites evaluation.

Planning questions specifically, in detail, make a big difference in the quality of a class discussion and the development of student understanding and higher-level thinking. In fact, it's the only way to ensure those things happen.

Student Responses

Questioning is a complex process comprised of four factors that function in concert: 1) the cognitive level of the question, 2) the questioning strategies that accompany it, 3) the student responses, and 4) the way teachers react to students' responses.

It is one thing to ask good questions, but one also has to listen for the answers . . . . Good questions, that is, questions that drive learning, don't come from a prescribed list or set of guidelines; they arise in response to students' contributions. If we don't listen to those thoughts, we rob ourselves of the information we need to be able to ask good questions. If we don't first "catch" students' meaning we will be hard pressed to "toss" back a question that pushes them to elaborate or clarify their thinking. (Ritchart, Church, & Morrison, 2011, p. 36)

As well as we might plan our questions in advance, student responses are obviously going to dictate how we navigate the lesson and the learning with our questions, and they are often difficult to predict. The most important things to keep in mind are that we:

▲ Allow at least a 3 to 5 second silent pause between the student's response and stepping in to comment or ask another question so that we and the other students can digest the response while the speaker also has a chance to initiate follow-up comments or explanations. This buys us time to decide what our next move will be.

▲ Collect responses from all of our students either simultaneously (whenever possible) or as a pattern over time in the lesson.

▲ Ensure that students speak loud enough for everyone to hear (or ask the student to repeat) to avoid a private conversation between the teacher and student.

Finally, to quote Ron Ritchart (2011) again, "Listening and responding develops the core of relationships between teacher and students and students and students."

Teacher Reactions

Art Costa (Costa & Kallick, 2015) points out that the way we respond to student answers is probably more important than the questions themselves. We addressed this aspect of instructional practice in Chapter 14, "Expectations." Here are a few additional strategies to keep in mind:

▲ Make it a habit to ask a follow-up question that gets a student to expand, elaborate, or clarify and reinforce the notion that you want to know not just what they think but why.

▲ Use the 24 Operating Principles for Making Thinking Visible (available on *The Skillful Teacher* website at www.RBTeach.com/TST7) to engage students in digging deep into their thinking, and developing real understanding of important concepts; shifting the interplay of questions and responses from a pattern of teacher-student to a more student-student activity (see Chapter 11, "Clarity").

TEACH STUDENTS TO ASK QUESTIONS

"Perhaps of more importance than teacher questioning is analyzing the questions that students ask" (Hattie, 2009, p. 183). Of course, teacher questions are important. They regulate the level of thinking in class discourse. However, it may be more important to teach students to ask good questions themselves, not just be good at answering the ones their teachers pose.

Working with low income families in a dropout prevention program in the late 1980s, Dan Rothstein and Luz Santana (2014) became acutely aware of the need to teach people how to generate and use their own questions to advocate for themselves and partner effectively with organizations and institutions (hospital care, schools) that have direct impact on their lives. Twenty years of continuing work on this issue led them to the development of the Question Formulation Technique (QFT), an easy to use protocol that teaches adults and students at all age levels how to generate and prioritize many closed- and open-ended questions about a topic, issue, or personal concern. The protocol has been used in K-12 classrooms to help students "write essays, read challenging texts, identify and refine research questions, design experiments, unpack mathematical formulas, plan Socratic seminars, and even create homework assignments for themselves" (Rothstein & Santana, 2014, p. 5). As students use the protocol, they practice and develop divergent thinking skills (generating a wide range of ideas, options, hypotheses, and possibilities), convergent thinking skills (synthesis, analysis, and making meaning), and metacognition (learning to think about thinking). The QFT process has the following six core components:

1. A *question focus* usually developed by the teacher and used as a jumping off point.

2. A process for students to produce questions using a set of four simple rules.

3. An exercise where students differentiate open- and closed-ended questions.

4. Student selection of priority questions.

5. A teacher and student developed plan for next steps—how they will use the priority questions.

6. A reflection activity for students to name what they have learned, how they learned it, and how they will use what they have learned.

There are numerous resources available that detail how to guide students through the QFT process. The website www.rightquestion.org or the references for this chapter are good starting points. John Barell (2003) argues that making students inquisitive and giving them the opportunity and the intellectual tools to be so is one of the central purposes of education. As an example of how student inquisitiveness can be supported in students, Barell borrows from Matthew Lipman (1980) and asks students to identify what they find most interesting in their reading. Their thinking is elicited by these statements:

▲ What I find most interesting here is . . .

▲ The big ideas here are . . .

▲ I wonder why . . .

▲ What confuses me is . . .

▲ I can relate this episode/segment to . . .

▲ This makes me feel . . . (Barell, 2003, p. 107)

Barell goes on to point out that teachers would assess students on their ability to be inquisitive, that is, their ability to ask questions, if they truly valued that. He presents a set of criteria for doing so.

Inquisitiveness *looks* like the following:

▲ Students look closely at things, they explore.

▲ Students observe using a variety of senses (touch, smell).

▲ Students show enthusiasm in their facial expressions.

▲ Students seek out new ways of learning or things to learn about and create their own problems to solve.

Inquisitiveness *sounds* like the following:

▲ Students ask a variety of questions: "Why?"; "How come?"; "What if?"

▲ Students seek additional information: "Tell me more"; "Where else can I get information?"

▲ Students make analogies: "This reminds me of . . ."; "It's like . . ."

▲ Students reflect an "I enjoy" attitude: "This is fun!"; "I'd like more time to learn more."; "How exciting!"

Barell's book contains many scenarios, at various grade levels and subject areas, that show how teachers can set up conditions for students to develop these indicators of inquisitiveness. The emphasis is on the intellectual, the cognitive, and the curious. The examples are drawn from a fine collection of ideas and

strategies for developing curious minds and a particular class environment to go with it. It's an environment that combines psychological safety—so students risk asking questions—with the stimulation of fascinating phenomena students want to explore on their own terms. Barell (2003) writes:

> Many teachers start the year with a declaration of what's expected in the classroom . . . . This is an opportunity to tell students, "I expect that you will become experts at asking good questions about what we are studying. Don't ever fear asking a question. Please don't sit there puzzling over some idea thinking everybody else understands it!" They don't. (p. 44)

Bringing Out Students' Basic Questions About Meaning and Purpose

When students can ask questions and discuss issues that matter deeply to them, the people and the place where those conversations happen is a place of power and influence in their lives.

There are lots of other questions that students bring to school with them regardless of what questions teachers choose to pose: questions from their inner life—and important questions about meaning, purpose, and making one's way in the world. We think this should prompt us all to ponder: is there a place in school for those questions to surface and be respected, encouraged, and supported?

It is our view that deliberately opening the space for such questions is a skill based on a personal commitment to the growth of students as people and that this skill is part of good teaching. When students can ask questions and discuss issues that matter deeply to them, the people and the place where those conversations happen is a place of power and influence in their lives. The classroom can be such a place, and this can be done within the curriculum.

Space for questions like, "Why am I here?", "Does my life have a purpose?", or "What does my future hold?" need not be present in a curriculum, it needs to be present in the heart of the teacher. When it is, there are spontaneous discussions that arise, from time to time, in the regular curriculum material. The result of honoring these deepest student thoughts, feelings, and questions is engagement in the regular curriculum and a commitment to learning beyond what you could otherwise expect. In other words, honoring what is deep and meaningful to students and inviting their engagement with it pays off in academic learning in ways teachers could never engineer otherwise with the best planning and the best cognitive science.

Parker Palmer's highly successful "Courage to Teach" program of retreats rests partially on its commitment to help adult teachers explore these questions for themselves and in a supportive community of professional companions. "This

experience improves their classroom practice in significant ways through the development of genuine connections with their students and a growing capacity to 'teach from the heart,' and most feel that their students benefit tangibly from these changes" (as cited in Lantieri, 2001, p. 146). It is our view that honoring students' questions about meaning is especially important in schools serving children of poverty.

REFERENCES

Anderson, L. M. & Krathwohl, D. R. (eds.). (2001). *A taxonomy for learning, teaching and assessing: A revision of bloom's taxonomy of educational objectives.* New York: Longman.

Barell, J. (2003). *Developing more curious minds.* Alexandria, VA: ASCD.

Bellon, Bellon, & Blank. (1992). *Teaching from a research knowledge base.* NY: Macmillan Publishing Co.

Bloom, B. (1956). *Taxonomy of educational objectives, handbook I.* New York: David McKay.

Costa, A. & Kallick, B. (2008). *Learning and leading with habits of mind: 16 characteristics for success.* Alexandria VA:ASCD.

Costa, A. & Kallick B. (2015). Five strategies for questioning with intention. *Educational Leadership, Questioning for Learning, 73*:1, 66-69.

Cotton, K. (1988). *Classroom questioning.* Northwest Regional Educational Library. Retrieved from http://www.learner.org/workshops/socialstudies/pdf/session6/6.ClassroomQuestioning.pdf.

Cotton, K. (2000). *The schooling practices that matter most.* Alexandria, VA: ASCD. Retrieved from http://files.eric.ed.gov/fulltext/ED469234.pdf.

Carem, C. A. & Davis, P. B. (2005, Fall). Kappa Delta Pi Record, Kappa Delta Pi, International Honor Society in Education.

Dillon, J. T. (1990). *The practice of questioning.* Taylor & Francis.

Gall, M. D., Ward, B. A., Berliner, D. C., Cahen, L. S., Winne, P. H., Elashoff, J. D., & Stanton, G. C. (1978). Effects of questioning techniques and recitation on student learning. *American Educational Research Journal, 15*(2), 175-199.

Good, T. L., & Brophy, J. E. (2008). *Looking in classrooms* (10th ed.). Pearson Education, Inc.

Hattie, J. (2008). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.

Hess, K. (2013). *A guide for using Webbs depth of knowledge with common core state standards*. The Common Core Institute: Center for College & Career Readiness. Retrieved from http://education.ohio.gov/getattachment/Topics/Teaching/Educator-Evaluation-System/How-to-Design-and-Select-Quality-Assessments/Webbs-DOK-Flip-Chart.pdf.aspx.

Lantieri, L. (ed.). (2001). *Schools with Spirit*. Boston: Beacon Press.

Lipman, M. (1980). *Philosophy in the Classroom*. Philadelphia: Temple University Press.

Marzano, R. J. & Simms, J. A. (2012). *Questioning sequences in the classroom*. Solution Tree Press.

Marzano Center Staff. (2015, February 06). Four types of questions that increase rigor. Learning Sciences Marzano Center [Blog Post] http://www.marzanocenter.com/blog/article/four-types-of-questions-that-increase-rigor/.

Ritchhart, R. (2012). The power of questions. *Creative Teaching and Learning, 2*(4), 8-12. Retrieved from http://www.ronritchhart.com/ronritchhart.com/Papers_files/The%20Power%20of%20Questions.pdf.

Ritchhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible: How to promote engagement, understanding, and independence for all learners*. John Wiley & Sons.

Rothstein, D. & Santana, L. (2014). *Make just one change: Teach students to ask their own questions*. Cambridge, MA: Harvard Educational Press.

Rothstein, D. & Santana, L. (2011). Teaching students how to ask their own questions. *Harvard Education Letter, 27*(5). Retrieved from http://hepg.org/hel-home/issues/27_5/helarticle/teaching-students-to-ask-their-own-questions_507#home.

Webb's depth of knowledge guide (2009). Retrieved from http://www.aps.edu/re/documents/resources/Webbs_DOK_Guide.pdf.

Wiggins, G. & McTighe, J. (2013). *Essential questions: Opening doors to student understanding.* Alexandria, VA:ASCD.

Wiggins, G. & Mctighe, J. (2014). Essential Questions. [video]. Retrieved from http://www.youtube.com/watch?v=lsx1tsuEm6k.

Wiggins, G., & Wilbur, D. (2015). How to make your questions essential. *Educational Leadership, 73*(1), 10-15.

Wiliam, D. (2015). Designing Great Hinge Questions. *Educational Leadership*, *73*(1), 40-44.

Wolf, D. P. (1987). The art of questioning. *Journal of State Government, 60*(2), 81-85.