“Did you learn anything in school today?” asked many Brooklyn, New York, mothers when their children came home in the afternoon. But this was not the case for the mother of young Isidore I. Rabi, who would become a future Nobel laureate in physics. Instead she always asked, “Did you ask a good question today?” (Sheff, 1988, p. A26). Rabi credits this difference [asking good questions] as the reason he became a scientist.

What is a good question to ask in class? This matter has been the subject of debate and discussion by educators and psychologists for years (Graesser, 2012).

For many years, I have also been interested in this issue. As a middle and high school teacher I have attempted through action research and classroom practices to teach my students how to ask a good question. While working on a social studies unit project in which my students were trained to ask cognitive and metacognitive questions related to primary and secondary sources on the Great Depression, my high school students gave me some insights (1998). Below is an extract from two of these students.

**Student 1:**
Ever since I was small I always liked to ask questions. In class I’m always raising my hand. In school, you’re always used to answering questions instead of writing them. Here [during the training sessions] you have opportunities to write questions. There’s always questions—everything. There will never stop being questions with anything. Why is something named after that? How did it get its name? Is God really there? There are questions that have no answers. You still ask them. You want to know even though you can’t know but you still want to find out.

**Student 2:**
(Responding to a probe about manifesting a plan in generating questions from written documents)
I tried to write questions of each type [referring to cognitive and metacognitive]. When I was thinking about one (question) another came up so I would try to write it as fast as I could. After I finished, I tried to put them in order. Usually when I write them the most simple would go first, the hardest would go last.

**Cognitive and Metacognitive Dimensions of Questioning**
For student 1, good questioning is the result of an ongoing process of deep thinking. I consider this the cognitive dimension of questioning because it demonstrates an inquiring mind that searches for novel ideas and extends understanding and comprehension. For student 2, good questioning requires a process of self-checking and comprehension monitoring. I consider this the metacognitive dimension of questioning because self-questioning is a process for aiding comprehension and decision-making (Rosenshine, Meister, & Chapman, 1996). Question generation involves a dual function by getting the reader to concentrate on the material itself while constantly checking to see that she has performed the necessary thinking processes to learn the new material (Palincsar & Brown 1984). The results of my research and classroom practice over two decades have led me to believe that “good” questions can be generated through a strategy that contains cognitive and metacognitive dimensions (Ciardiello, 1990, 1998, 2007).

**Flexible Thinking, Self-Questioning, and the Common Core**
Recent research about “what the best college students do” indicates that these students use cognitive and metacognitive strategies while reading their texts and other print, non-print, and digital resources (Bain, 2012). Some of these strategies include monitoring themselves about how well they understand the material, confirming how any new information either supports or changes something they already believe, considering multiple solutions to problems, and
The Common Core State Standards recognize the importance of asking questions in the cognitive and metacognitive dimensions. Indeed, the very first standard for reading literature and informational text recommends that students need to be taught with prompting and support to ask and answer questions about key ideas and details in literature and informational text. The standards also require that students ask questions to confirm understanding of silent reading, read aloud texts, and information presented orally or through other media.

**Asking Good Questions Requires Explicit and Sustained Teaching**

As a former middle school and high school teacher, I recognized early in my career that middle and high school students do not know how to generate good questions related to literature and informational text without explicit and direct instruction. Indeed, they require direct training at each academic level and across curricular disciplines. This is particularly the case when students are required to conduct a research project in order to answer a self-generated question as stated in Common Core Writing Standard #7 (2010).

I have learned also that asking good questions is not a natural result of schooling nor does it occur as a by-product of learning content knowledge. Nor for that matter do I believe that it requires just one small change in traditional teaching methodologies as some educators have maintained (Rothstein & Santana, 2011). I have developed a model of cognitive and metacognitive questioning behavior that consists of five stages of mentorship. In the first stage, the mentor explicitly introduces and describes each of the question types. In the second stage, the mentor demonstrates how to write cognitive and metacognitive questions through signal words and generic question starters. (See Figure 1.) In the next stage, she guides student practice creating the question types using the prompts and provides immediate corrective feedback. In the fourth stage, students continue to develop these skills through independent practice. Lastly, through continuous practice and patience, students develop

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**Figure 1: COGNITIVE AND METACOGNITIVE SIGNAL WORDS AND QUESTION STARTERS**

**Cognitive Signal Words and Thinking Operations:** identify, explain, analyze, synthesize, draw conclusions, infer new ideas, predict, compare/contrast, cause/effect, categorize

**Cognitive Question Starters:**
- What is the meaning of . . . ?
- What conclusions can be drawn from . . . ?
- What evidence is there to support . . . ?
- How can . . . be compared to . . . ?
- What is another way to interpret . . . ?
- What are other ways to think about . . . ?
- Can it be inferred that . . . ?
- What predictions can be made from . . . ?
- In what ways does . . . influence . . . ?

**Metacognitive Signal Words and Thinking Operations:** confirm understanding, make connections, develop an awareness, regulate one’s thinking, reflect on ideas, monitor comprehension, justify decision-making, think aloud (make thinking visible), testing assumptions

**Metacognitive Question Starters:**
- Can I confirm my understanding of . . . ?
- Am I able to make connections between . . . and . . . ?
- How has . . . made me aware of . . . ?
- Have I found sufficient evidence to support . . . ?
- What other ways can I interpret . . . ?
- Do I have enough information to . . . ?
- Do I need to pause and ponder before . . . ?
- How can I justify my belief that . . . ?
- How can I assess my ability to . . . ?
- Can I make the assumption that . . . ?
the ability to independently generate cognitive and metacognitive questions. In order to provide successful transfer of these questioning skills, it is important to note that this procedure needs to be learned concurrently with content area knowledge. In other words, training students to ask generic cognitive and metacognitive question starters provides a guided pathway for developing content-specific cognitive and metacognitive questions. (See Figure 2.)

Learning to ask good Common Core questions requires a cognitive and metacognitive strategy that is taught directly and progressively throughout the grade levels as students read increasingly complex and challenging texts. It is a daunting task, but one that is worth pursuing to get K–12 students ready for future college assignments and career-oriented practices.

References

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