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## Teaching Students to Ask Their Own Questions

One small change can yield big results

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Students in Hayley Dupuy's sixth-grade science class at the Jane Lathrop Stanford Middle School in Palo Alto, Calif., are beginning a unit on plate tectonics. In small groups, they are producing their own questions, quickly, one after another: What are plate tectonics? How fast do plates move? Why do plates move? Do plates affect temperature? What animals can sense the plates moving? They raise questions "that we never would have thought of if we started to answer the first question we asked," says one of the students. "And just when you think you already know the question you want to focus on, you realize: 'Oh, wow, here's this other question that is so much better, and that's really what you need to think about.'"

Far from Palo Alto, in the Roxbury neighborhood of Boston, Mass., Sharif Muhammad's students at the Boston Day and Evening Academy (BDEA) have a strikingly similar experience. Many of them had transferred to BDEA for various reasons from other schools and had not always experienced much success as students. But working individually, they find that formulating their own questions engages them in a new way. One of the students observes: "When you ask the question, you feel like it's your job to get the answer, and you want to figure it out."

These two students—one in Palo Alto, the other in Roxbury—are discovering something that may seem obvious: When students know how to ask their own questions, they take greater ownership of their learning, deepen comprehension, and make new connections and discoveries on their own. However, this skill is rarely, if ever, deliberately taught to students from kindergarten through high school. Typically, questions are seen as the province of teachers, who spend years figuring out how to craft questions and fine-tune them to stimulate students' curiosity or engage them more effectively. We have found that teaching students to ask their own questions can accomplish these same goals while teaching a critical lifelong skill.

### The Question Formulation Technique

Dupuy, Muhammad, and many other teachers are using a step-by-step process that we and our colleagues at the Right Question Institute have developed called the Question Formulation Technique (QFT). This technique helps students learn how to produce their own questions, improve them, and strategize on how to use them (see sidebar "Question Formulation Technique").

#### Question Formulation Technique

##### Produce Your Questions

*Four essential rules for producing your own questions:*

- Ask as many questions as you can.
- Do not stop to discuss, judge, or answer the questions.
- Write down every question exactly as it is stated.
- Change any statement into a question.

##### Improve Your Questions

- Categorize the questions as closed- or open-ended.
- Name the advantages and disadvantages of each type of question.
- Change questions from one type to another.

##### Prioritize the Questions

- Choose your three most important questions.
- Why did you choose these three as the most important?

##### Next Steps

- How are you going to use your questions?

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The origins of the QFT can be traced back 20 years to a dropout prevention program for the city of Lawrence, Mass., that was funded by the Annie E. Casey Foundation. As we worked together to increase parent involvement in education, we heard parents state the same problem over and over again: "We're not going to the schools because we don't even know what to ask." Eventually,

this problem led us to create a simple but powerful process that has been used effectively in a wide range of fields across the country and beyond. In health care, for example, research funded by the National Institutes of Health has shown that the QFT produces dramatic increases in levels of patient activation and improved patient-provider communication. In the classroom, teachers have seen how the same process manages to develop students' divergent (brainstorming), convergent (categorizing and prioritizing), and metacognitive (reflective) thinking abilities in a very short period of time.

Teachers can use the QFT at different points: to introduce students to a new unit, to assess students' knowledge to see what they need to understand better, and even to conclude a unit to see how students can, with new knowledge, set a fresh learning agenda for themselves. The technique can be used for all ages.

Students have used the QFT to develop science experiments, create their own research projects, begin research on a teacher-assigned topic, prepare to write an essay, analyze a word problem, think more deeply about a challenging reading assignment, prepare an interview, or simply get themselves "unstuck."

The QFT has six key steps:

*Step 1: Teachers Design a Question Focus.* The Question Focus, or QFocus, is a prompt that can be presented in the form of a statement or a visual or aural aid to focus and attract student attention and quickly stimulate the formation of questions. The QFocus is different from many traditional prompts because it is not a teacher's question. It serves, instead, as the focus for student questions so students can, on their own, identify and explore a wide range of themes and ideas. For example, after studying the causes of the 1804 Haitian revolution, one teacher presented this QFocus: "Once we were slaves. Now we are free." The students began asking questions about what changed and what stayed the same after the revolution.

*Step 2: Students Produce Questions.* Students use a set of rules that provide a clear protocol for producing questions without assistance from the teacher. The four rules are: ask as many questions as you can; do not stop to discuss, judge, or answer any of the questions; write down every question exactly as it was stated; and change any statements into questions. Before students start generating their questions, the teacher introduces the rules and asks the students to think about and discuss possible challenges in following them. Once the students get to work, the rules provide a firm structure for an open-ended thinking process. Students are able to generate questions and think more broadly than they would have if they had not been guided by the rules.

*Step 3: Students Improve Their Questions.* Students then improve their questions by analyzing the differences between open- and closed-ended questions and by practicing changing one type to the other. The teacher begins this step by introducing definitions of closed- and open-ended questions. The students use the definitions to categorize the list of questions they have just produced into one of the two categories. Then, the teacher leads them through a discussion of the advantages and disadvantages of both kinds of questions. To conclude this step, the teacher asks the students to change at least one open-ended question into a closed-ended one, and vice versa, which leads students to think about how the phrasing of a question can affect the depth, quality, and value of the information they will obtain.

*Step 4: Students Prioritize Their Questions.* The teacher, with the lesson plan in mind, offers criteria or guidelines for the selection of priority questions. In an introduction to a unit, the instruction may be, "Choose the three questions you most want to explore further." When designing a science experiment, it may be, "Choose three testable questions." An essay related to a work of fiction may require that students select "three questions related to the key themes we've identified in this piece." During this phase, students move from thinking divergently to thinking convergently, zero in on the locus of their inquiry, and plan concrete action steps for getting information they need to complete the lesson or task.

*Step 5: Students and Teachers Decide on Next Steps.* At this stage, students and teachers work together to decide how to use the questions. One teacher, for example, presented all the groups' priority questions to the entire class the next day during a "Do Now" exercise and asked them to rank their top three questions. Eventually, the class and the teacher agreed on this question for their Socratic Seminar discussion: "How do poverty and injustice lead to violence in *A Tale of Two Cities*?"

*Step 6: Students Reflect on What They Have Learned.* The teacher reviews the steps and provides students with an opportunity to review what they have learned by producing, improving, and prioritizing their questions. Making the QFT completely transparent helps students see what they have done and how it contributed to their thinking and learning. They can internalize the process and then apply it in many other settings.

When teachers deploy the QFT in their classes, they notice three important changes in classroom culture and practices. Teachers tell us that using the QFT consistently increases participation in group and peer learning processes, improves classroom management, and enhances their efforts to address inequities in education. As teachers see this happen again and again, they realize that their traditional practice of welcoming questions is not the same as deliberately teaching the skill of question formulation. Or, as one teacher put it: "I would often ask my students, 'Do you have any questions,' but, of course, I didn't get much back from them." In his seven years of teaching, Muhammad also encouraged his Roxbury students to ask questions but had seen just how difficult that could be for them. After using the six-step process outlined above, he was struck by "how the students went farther, deeper, and asked questions more quickly than ever before."

### One Significant Change

For teachers, using the QFT requires one small but significant shift in practice: Students will be asking all the questions. A teacher's

role is simply to facilitate that process. This is a significant change for students as well. It may take a minimum of 45 minutes for students to go through all the steps the first time it is introduced in a classroom; but as they gain experience using the QFT, teachers find that the students can run through the process very quickly, in 10 to 15 minutes, even when working in groups.

The QFT provides a deliberate way to help students cultivate a skill that is fundamentally important for all learning. Teaching this skill in every classroom can help successful students to go deeper in their thinking and encourage struggling students to develop a new thirst for learning. Their questions will have much to teach us.

*Dan Rothstein and Luz Santana, codirectors of the Right Question Institute, are the authors of the forthcoming book [Make Just One Change: Teach Students to Ask Their Own Questions](#) to be published in September 2011 by Harvard Education Press.*