Model Questions: … we should be asking our students
Now, what questions do we need to ask of this situation?

Whenever we encounter complex situations in our subjects, we pose certain crucial questions:

- What do we know?
- What are the givens?
- What do we need to find out?

Climate of conducive to learning;
We communicate to students the expectation that curiosity and wonder are valued elements in this classroom.
No rules except high expectations
Model questions over and over:

- What are you curious about?
  What do you want to know more about?
- What isn't clear?
- What do you wonder about?

If we wish to foster curiosity, wonder and skepticism, the following questions we can ask ourselves aloud, in front of our students often enough that they can become mental habits for ourselves and our students:

- What I am curious about is….
- What I do not yet understand is…
- I really want to find out..
- The mysteries and puzzles that really intrigue me are..
- If I could be somebody else … or visit another time period, that is what I'd want to discover …
- I really wonder why…
- What intrigues me is…

Questioning for a Range of Thinking

Examples of Questioning for Specific Types of Thinking

- Knowledge: remembering, reciting, recognizing
  Who/what/when/where is _____?
  What do you remember about _____?

- Comprehension: understanding, translating, estimating
  Given _____, what would you predict?
  What is meant by _____?

- Creative thinking: elaborating, taking another point of view, brainstorming
  In what other ways can you _____?
  What details can you add to _____?

- Application: using, demonstrating, solving
  How can you solve this (similar situation)?
  How could you use _____?

- Analysis: comparing and contrasting, inferring, attribute listing
  How is this _____ like/different from this _____?
  What are the characteristics of _____?

- Synthesis: hypothesizing, planning, creating
  How would you create a _____?
  What plan can you develop for solving _____?

- Evaluation: justifying, rating, judging using criteria
  What criteria would you use to _____?
  Why do you agree/disagree with _____?

Adapted from Benjamin Bloom and Donald Treffinger

Examples of "Generic" Questioning

- Questions calling for variety
  What are some different ways you could _____?
  What else might happen if _____?

- Questions calling for clarification or extension
  What do you mean when _____?
  How is your description different from _____?

- Questions calling for reasons or support
  Why do you think that is true for all _____?
  What makes you think so?

- Questions asking students to focus on the task at hand
  What do you think might happen as a result of this (already discussed aspect)?
  What would you do in this _____?

Adapted from Hilda Taba

Friday, May 25, 2012
9:47 AM

Are we asking the right questions?

Questions have surprising power to improve our lives, say a group of thinkers, if only we take the trouble to figure out how they work.

By Leon Neyfakh

MAY 20, 2012

MARTIN GEE/GLOBE STAFF

On a recent Friday morning, a classroom of teenagers at Cambridge Rindge and Latin School broke up into small groups and spent an hour not answering questions about Albert Camus's "The Plague." It wasn't that the students were shy, or bored, or that they hadn't done the reading. They were following instructions: Ask as many questions as they could, and answer none of them.

The kids wrote in rapid fire on sheets of butcher paper. "Why is everyone acting normal when people are dropping dead?" "Are the doctors aware of this great danger?" "Is there any benefit from the plague? Will it help anyone change or grow?" By the end of the exercise, the class had generated more than 100 questions and exactly zero answers.

In the back of the classroom, Dan Rothstein watched approvingly, taking notes. Though the kids didn't know it, Rothstein was the one responsible for the unusual way they were spending their class time.

Rothstein is the cofounder of the Right Question Institute, a Cambridge-based nonprofit that exists to promote an idea he's been nursing for more than a decade—that asking good questions is a life skill far more important than we realize. Rothstein, who has a doctorate in education and social policy from Harvard, believes that learning how to ask questions should be considered as critical as learning how to read, write, and do basic math. He thinks the ability to use questions strategically can make people smarter and better at their jobs, and give them more control when dealing with powerful bureaucracies, doctors, and elected officials.

"It's not deliberately taught because it seems to be a natural part of speech that doesn't require much work," Rothstein says. "It's assumed that anyone can do it."

> *Wielded with purpose and care, a question can become a sophisticated and potent tool to expand minds, inspire new ideas, and give us surprising power at moments when we might not believe we have any.*

There is, as yet, no field of "question studies," but Rothstein and his codirector at the Right Question Institute, Luz Santana, are among a handful of thinkers making a career of taking a close look at how questions work, what our brains are doing when they put a question together, and how questions could drive learning, child development, innovation, business strategy, and creativity.

All of them are driven by the belief that a question is more than the simple thing we

might think it is—that, in fact, it's a unique instrument that we can get better at using if we try. Wielded with purpose and care, a question can become a sophisticated and potent tool to expand minds, inspire new ideas, and give us surprising power at moments when we might not believe we have any.

***

Given how essential questions are to the way we communicate with each other—"So, how's it going with Sarah?" "Are you going to eat that doughnut?" "How did you get this number?"—there's been a striking lack of scientific research into what our minds are doing when we ask them. "We know next to nothing," said Paul Harris, a developmental psychologist at the Harvard Graduate School of Education. In a new book entitled "Trusting What You're Told," Harris argues that questions occupy a more central role than we realize in childhood cognitive development. Young children, he says, learn a great deal about the world simply by asking questions and listening to others—a position that contradicts the prevailing wisdom in psychology, which says that children are "little scientists" who learn by observing and experimenting with their environments.

Harris cites a study from 2007 in which the psychologist Michele Chouinard analyzed recordings of four children interacting with caregivers for over 200 hours, and found that on average they asked between one and three questions per minute.

Extrapolating from that data, Harris estimates that the four kids Chouinard followed were on pace to ask a total of 40,000 questions between the ages of 2 and 5.

"We're sort of used to the idea that kids ask a lot of questions, but that's a huge number," said Harris. "Even if 90 percent of those bomb, in the sense that they don't receive an adequate answer or whatever, it seems likely that this is an incredibly important engine for cognitive development."

When Harris thinks of children asking questions, he sees them performing a series of complex mental maneuvers. "The child has to first realize that they don't know something…and that other people are information-bearing agents," Harris said. "Then the child has to be able to, somehow or other, realize that language is a tool for shifting stuff from that person to them."

Adults tend to rush through those steps, perhaps because they seem like second nature. But figuring out what makes a good question—or rather, what kind of question will get us the information we want—isn't such a simple thing, even for grownups. It requires stopping to think about what we're trying to find out, what the person we're talking to might know, and what words we should use to coax them into helping us. Donald Rumsfeld infamously said in 2002, in reference to the Iraq war, that there were "known unknowns" as well as "unknown unknowns," or "things we do not know we don't know." The statement was mocked at the time, but in fact it reflects the difficult abstract reasoning we all engage in when we're trying to fill gaps in our knowledge. Being good at asking questions is the art of identifying those gaps, sorting them, and figuring out how to fill them. Considered that way, it is a strange skill: "the ability to organize your thinking around something you know nothing about," said Rothstein.

That can get harder as we get older, in large part because we grow more confident that we understand the world around us, and lose the capacity to see past our own beliefs. This is a particular concern in the business world, where companies hunger

for advice on how to break out of their patterns. Business consultant and former Hewlett-Packard chief technology officer Phil McKinney has styled himself into something of a question specialist for the corporate world, and in his book "Beyond the Obvious," argues that crafting good questions is precisely what allows people to make imaginative leaps. "The challenge is that, as adults, we lose our curiosity over time. We get into ruts, we become experts in our fields or endeavors," McKinney said. Ironically, the tendency to be blinded by our existing knowledge may be at its most extreme among a set of people specifically charged with asking questions: analysts and researchers. Duncan Watts, who studies networks and collective social dynamics at Microsoft Research and is the author of the book "Everything Is Obvious: Once You Know the Answer," said he has noticed that many of the PhD candidates he comes into contact with are essentially taught to answer other people's questions, and can be disconcertingly at sea when trying to ask their own.

"There are students who are incredibly good at answering questions but have no idea how to ask one," Watts said, "and they've never thought about what it means."

For Watts, a good question is one that is both "interesting" and "answerable." "It's relatively easy to come up with an answerable question that is not interesting," he said, "and it's relatively easy to come up with an interesting question that is unanswerable." McKinney describes something similar in his book, writing that good questions are ones that can only be answered through investigation, such as, "What is surprisingly inconvenient about my product?" and "Who is using my product in a way I never intended—and how?"

Of course, for most people, asking questions is usually not just about coming up with innovative ideas—it's about extracting information from others. But even seemingly factual questions can be deployed tactically: In their new book from Harvard Education Press, "Make Just One Change," Rothstein and Santana from the Right Question Institute outline a basic classification system, dividing questions into ones that can be answered with a single word (like "yes" or "no") and ones that require a more discursive response. Choosing the right question is in part a matter of making the right trade-off between clarity and depth: "Does the president support gay marriage?" versus "How have the president's views on gay marriage evolved?" As part of their "Question Formulation Technique," which is what the kids at Cambridge Rindge and Latin were engaged in that Friday morning, they ask people to transform one type of question into the other, in order to demonstrate that the way a question is structured can determine the range of possible answers it can inspire.

***

For their part, Rothstein and Santana have grander ambitions than simply enlivening class discussions of Camus. They also see questions as having broader power in people's lives. Most of us are regularly faced with situations in which someone is making a decision that affects us, and when that happens, asking questions—the right kind of questions—is a way to capture a measure of control.

"For example, doctors makes decisions all the time—they change your medication, they give you referrals, they decide what kind of treatment you are going to get—and very often…people leave the office without really knowing what's happening," said Santana.

This is where appreciating the mechanics of questions can come into play. In this

case, they say, it's important to avoid the impulse to ask questions merely about the consequences, but to ask instead about the process: how the decision was made, based on what, and with whose input. And that's true not just in the doctor's office, but when you're picking up your car from the mechanic, applying for a job, settling a claim with your insurance company, or talking to your child's teacher at a parent-teacher conference.

"Years ago I was a welfare recipient, and at the welfare office they used to make a bunch of decisions that affected me—the kind of grant I was getting, whether I was getting one or not, for how long, whether I qualified for a child-care voucher," said Santana. "Very often in those situations you are denied of services, and if you don't know what questions to ask, it is likely that you won't get what you need."

In other words, the simple childhood habit of asking "What's that?" and "Why?" takes on far more importance when it affects real life power dynamics. In the adult world, when a question shifts information from one person to the other, things can actually change.

"It's essential to democracy," said Rothstein. "You want citizens to be able to ask good questions."

Pasted from <http://www.bostonglobe.com/ideas/2012/05/19/just-ask/k9PATXFdpL6ZmkreSiRYGP/story.html?camp=id>

Question Formulation Technique

Rationale:

The Question Formulation Technique helps students articulate, refine and prioritize questions they have about ideas raised in a text, a problem they hope to solve, or any topic they are studying. This strategy was designed by the Right Question Project (**www.rightquestion.org**). This simple strategy can be easily integrated into the classroom. It can be used as a brainstorming technique at the beginning of a unit or as a synthesis activity at the end of the unit, or any where in between. As students get better at formulating questions, they not only have a tool to help them better understand class material, but a tool that can serve them well as citizens in a democracy.

Procedure:

Step One: Create a prompt

The most effective prompts for this activity are statements that are focused clearly enough so that there is a direct link to the purpose of the lesson and are neutral enough so that students feel freely respond to the prompt. Many teachers use prompts that begin with stems such as "Your role/task is to…" or "You want to / A group wants to." A prompt could also be a description of a class project.

Examples:

- You want to prevent genocide from happening never again.
- Your role is to draft a class contract - a list of rules or expectations that we will follow this year.
- After World War II, the Allies want to achieve justice for the crimes committed by the Nazis.
- You will design a way to teach other students about media literacy.

You can also use visual prompts – a movie or a series of images – as a prompt. After students view the visual prompt, proceed to step two.

Step Two: Students generate questions

In groups, give students a fixed amount of time (5-10 minutes) to generate a list of questions, adhering to these rules:

1) Write down the questions exactly as they are said
2) Do not stop to discuss or answer the questions
3) Write down as many questions as you can
4) Statements should be rephrased as questions.

Step three: Students identify open and closed questions

Ask students to look at their lists and put an "O" by all of the open-ended questions (questions with many possible answers) and a "C" by questions that elicit one answer (a "yes/no" question or a question with a factual answer). Then, have students change one of their open questions into a closed question and one closed question into an open question.

Step four: Students prioritize questions

Have groups select 3 questions from their list. It could be the three questions they find most interesting or important or the three questions that they think need to be addressed first.

Step five: Groups share questions

When groups present their questions, ask them to share why they selected these three. The questions that the class generates can be used as the focus of a class discussion, a writing assignment, a research project, or as a tool to help you plan future lessons.

Step six: Reflections

Give students the opportunity to reflect on this process by writing in a journal and/or through a brief discussion. What did they learn about formulating questions? About the content? About their own priorities? About working with others? What challenges did they encounter? How did they manage these challenges? You might also give students the opportunity to select one or two questions, from their own list or from another group's list, that they would most like to pursue and then write about why they selected this question.

Volume 27, Number 5
September/October 2011

Teaching Students to Ask Their Own Questions

One small change can yield big results

By DAN ROTHSTEIN *and* LUZ SANTANA

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").

Read Sidebar

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."

Teaching Students to Ask Their Own Questions, continued

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.*