

Questioning Techniques for Discussion and Assessment

Framing questions is a key teaching skill and has been for millennia. Socrates honed it to such a fine art that an entire method of questioning is attributed to him. Sound questioning techniques enhance instruction in several ways:

- Questions launch and carry discussion, one of the oldest and most commonly used student-active teaching techniques (see Chapter Thirteen).
- They promote practice in using disciplinary language, principles, algorithms, and conventions.
- They stimulate the exploratory, critical thinking, and insight in which inquiry-based methods, including Socratic questioning, are grounded (see Chapter Eighteen).
- When used for classroom assessment, questions yield answers that help us gauge what students are learning and whether to review a topic or proceed to the next (see Chapter Twenty-Eight).
- Questions are the major means by which we grade students' performance; the more closely our questions reflect our learning outcomes, the fairer and more useful these grading procedures are (see Chapter Twenty-Nine).

The college teaching literature offers several schemas for organizing and categorizing questions, and the most prominent ones are summarized here. They fall into two categories: those that guide students through a more or less orderly process of inquiry and those that classify questions into more or less useful types. This chapter couches questioning in the contexts of discussion, but later chapters return to using questions for assessment.

■ QUESTIONING AS A PROCESS OF INQUIRY

The most engaging discussions are not just a list of loosely connected questions. Rather, they comprise a purposeful sequence of questions that leads students through a process of thinking about a topic more and more deeply.

Using the Socratic Method

The Socratic method is the most spontaneous questioning technique. You may begin with one planned question to open the dialogue on a given topic, but

you frame your succeeding questions according to the answers the students give. In response to your initial question, the student takes a position or point of view. Your next question raises a weakness of or exception to that position, to which the student responds with a defense or a qualification of her original position. The student may also assume a new position. In turn, you respond with another question that reveals a possible weakness of or exception to the defense, the qualified position, or the new position, and the student responds as before. This line of inquiry promotes in students rational thinking, persistence, and pattern recognition across seemingly disparate processes and phenomena (Overholser, 1992). With experience, you should be able to anticipate the blind alleys and misdirections your students will take on specific topics and develop a general discussion plan.

This questioning technique is challenging. Some instructors don't feel comfortable with such a spontaneous, unstructured format for an entire discussion period. Some students don't either; they have a hard enough time taking notes on the most structured discussion. Unless the questions are posed in a light-hearted tone, students can feel as if they are getting hammered and take offense. In addition, questioning one student too long can make the rest of the class tune out. A good situation for the Socratic method is when you are facing a number of students who share the same position. You can then direct each of your questions to a different student. Instructors who play devil's advocate (see Chapter Thirteen) are usually practicing the Socratic method, whether they know it or not (Gose, 2009).

Working Backward from End-of-Class Outcomes

A second strategy, one that has gained the status of a conventional wisdom, is to work backward from one's ultimate learning outcomes for a particular class. It requires advance planning. First, jot down your ultimate outcomes for the class period: the one, two, or three things you want your students to be able to do (classify, explain, analyze, assess, and so on) by

the end of class. For each performance, create one or two key questions that will assess the students' facility. Then for each key question, develop another two or three questions that logically proceed and will prepare the students to answer the key questions intelligently. In other words, work backward from the key questions you want your students to answer well at the end through the questions that will lead them to that facility.

When class begins, launch the discussion with one of the last questions you framed. You can lend structure to the discussion by displaying all the questions (key ones last) on the board, a slide, or an overhead or in a handout, preferably with note-taking space below each question. Still, unless you have framed too many questions, you can afford to be flexible. You can allow the discussion to wander a bit, then easily redirect it back to your list of questions.

The next section on Bloom's hierarchy of questions suggests a logical sequencing scheme for the working-backward strategy.

Guiding Students up Bloom's Hierarchy of Questions

You can view Bloom's (1956) taxonomy of questions as just types or as a hierarchical ladder of cognitive levels for leading your students from knowledge, the lowest-thinking level, to evaluation, the highest. This schema was set out in Chapter Two, where we applied it to developing learning outcomes. The lists of verbs associated with each cognitive operation are just as useful here for framing questions, so refer back to Table 2.1. Also refer to Table 14.1, which furnishes examples of questions at each cognitive level.

To structure a discussion as a process of inquiry, you might start off with knowledge (recitation) questions on the highlights of the previous class or the reading assignment. A factual recall exercise serves as a mental warm-up for the students and gives those who come in unprepared the chance to pick up a few major points and follow along, if not participate later. As you can see in Table 14.1, knowledge questions often ask who, what, where, and when, as well

Table 14.1 Examples of Questions at Each Cognitive Level of Bloom’s Taxonomy/Hierarchy

Cognitive Level	Questions
Knowledge	<ul style="list-style-type: none"> •Who did _____ to _____? •What did you notice about _____? •What do you recall about _____? •What does the term _____ mean? •When did _____ take place? Where did it take place? •How does the process work? (Describe it.)
Comprehension	<ul style="list-style-type: none"> •In your own words, what does the term _____ mean? •How would you explain _____ in nontechnical terms? •Can you show us what you mean? •What do think the author/researcher is saying?
Application	<ul style="list-style-type: none"> •What would be an example of _____? •How would you solve this problem? •What approach would you use? •How would you apply _____ in this situation?
Analysis	<ul style="list-style-type: none"> •How are _____ and _____ alike? How are they different? •How is _____ related to _____? •What are the different parts of _____? •What type of _____ is this? How would you classify it? •What evidence does the author/researcher offer? •How does the author/researcher structure the argument? •What assumptions are behind the argument? •What inferences can you draw about _____?
Synthesis	<ul style="list-style-type: none"> •What conclusions can you come to about _____? •What generalizations can you make about _____? •How would you design (structure, organize) a _____? •How would you adapt (change) the design (plan) for _____? •How can you resolve the differences (paradox, apparent conflict)? •What new model could accommodate these disparate findings?
Evaluation	<ul style="list-style-type: none"> •What would you choose, and why? •What are the relevant data, and why? •Why do you approve or disapprove? •Why do you think the conclusions are valid or invalid? •What is your position (opinion), and how can you justify it? •How would you rank (rate, prioritize) the _____? •How would you judge (evaluate) _____?

as how and why when students have already read or been told the correct answer. Avoid questions that call for one- or two-word answers, however; aim for multisentence responses. But do not spend more than several minutes on this level. The boredom potential aside, students will not answer many recitation questions because they may fear their classmates

seeing them as apple polishers—“bailing you out,” so to speak. Besides, we have more important critical thinking skills to develop in our students.

Therefore, rapidly move the discussion up the hierarchy through *comprehension* so you can find out whether your students correctly understand the material and can put it in their own words. Draw on

the questions in Table 14.1. At this juncture, you can identify and correct any misconceptions they have about the subject matter that might get in the way of their deeper learning. If they do comprehend the material, they should be able to answer *application* questions and think of appropriate examples and use the material to solve problems. If they can do this, they should be ready to progress to *analysis* of the material: distilling its elements; drawing comparisons and contrasts; identifying assumptions, evidence, causes, effects, and implications; and reasoning through explanations and arguments.

Once students have found their way through the material, they are prepared to step outside its confines and attempt *synthesis*. As illustrated in Table 14.1, this type of question calls for integrating elements of the material in new and creative ways: drawing new conclusions and generalizations; composing or designing a new model, theory, or approach; or combining elements from different sources. When students can synthesize material, they have mastered it well enough to address *evaluation* questions. They now can make informed judgments about its strengths and shortcomings, its costs and benefits, and its ethical, aesthetic, or practical merit.

Structured as a hierarchy, Bloom's taxonomy helps rein in students from leaping into issues they aren't yet prepared to tackle. Often students are all too eager to jump to judging material without thoroughly understanding and examining it first. In addition, if you teach the taxonomy to your students, they acquire a whole new metacognitive perspective on thinking processes and levels. If you label the level of your questions, you maximize your chances of obtaining the level of answers you are seeking. Students also quickly learn to classify and better frame their own questions.

The taxonomy should be used flexibly, however. Some discussion tasks, such as debriefing a case (see Chapter Nineteen), may call for an inextricable combination of application, analysis, synthesis, and evaluation. Moreover, a comprehension question in one course may be an analysis task in another. How any question is classified depends on what the

students have previously received as "knowledge" from you and the readings you assign.

■ TYPOLOGIES OF GOOD DISCUSSION QUESTIONS

There is much more to constructing discussion questions than turning around a couple of words in a sentence and adding a question mark. Well-crafted ones take thought and creativity in order to evoke the same from students. But they all have one feature in common: they have multiple respectable answers. Therefore, they encourage broad participation and in-depth treatment. Often, too, multiple-answer questions spark debate. Welcome the conflict, and let students argue it out. Before letting the issue rest, ask for possible resolutions or analyses of the conflict if they don't evolve on their own.

To help you frame thought-provoking, open-ended discussion questions, several scholars have devised typologies of questions.

McKeachie's Categories

McKeachie (2002) suggests four types of fruitful, challenging questions, which vaguely overlap with Bloom's analysis, synthesis, and evaluation questions:

- *Comparative* questions ask students to compare and contrast different theories, research studies, literary works, and so on. Indirectly, they help students identify the important dimensions for comparison.
- *Evaluative* questions extend comparisons to judgments of the relative validity, effectiveness, or strength of what is being compared.
- *Connective and causal effect* questions challenge students to link facts, concepts, relationships, authors, theories, and so on that are not explicitly integrated in assigned materials and might not appear to be related. These questions are particularly useful in cross-disciplinary courses. They can also ask students to draw and reflect on their personal experiences,

connecting these to theories and research findings. When students realize these links, the material becomes more meaningful to them.

- *Critical* questions invite students to examine the validity of a particular argument, research claim, or interpretation. Such questions foster careful, active reading. If the class has trouble getting started, you can initiate the discussion by presenting an equally plausible alternative argument. Asking for comments on what a student has just said is also a critical question. Used in this content, it fosters good listening skills.

Brookfield and Preskill's "Momentum" Questions

Brookfield and Preskill (1999) propose seven types of questions that serve the express purpose of sustaining the momentum of a discussion. These questions are designed to make students probe into issues more deeply, reconsider positions in novel and more critical ways, and stay intellectually stimulated:

- *Questions requesting more evidence.* As the name states, such a question asks a student to defend his position, especially when it comes out of nowhere or another student challenges it as unsupported. The instructor should pose the question in a matter-of-fact way as a simple request for more information—data, facts, passages from the text—so as not to alienate the student.

- *Clarification questions.* This type of question invites the student to rephrase or elaborate on her ideas to make them more understandable to the rest of the class. It may include a request for an example, an application, or a fuller explanation.

- *Cause-and-effect questions.* These questions make students consider the possible causal relationship between variables or events and, in effect, formulate hypotheses. Instructors can use them to challenge a conventional wisdom or introduce the scientific method.

- *Hypothetical questions.* These are “what-if” inquiries that require students to think creatively, to make up plausible scenarios, to explore how changing

the circumstances or parameters of a situation might alter the results. They can induce imaginative thinking and even send a discussion off on fanciful tangents, but students still have to use their prior knowledge and experience to come up with supportable extrapolations. Hypothetical questions can extend cause-and-effect questions. If, for example, the class established the impact of education on income, an instructor could pose this hypothetical scenario to help students define the limits of the relationship: What if everyone in the society got a bachelor's degree? Does that mean that everyone would make the same income?

- *Open questions.* These questions represent the best kind of discussion questions: those with multiple respectable answers. They invite risk taking and creativity in problem solving and have the greatest potential for expanding students' intellectual and affective horizons. No matter how they are phrased, they are truly open only if the instructor welcomes all well-meaning responses and isn't fishing for a preferred answer. She can accept the weaker contributions as opportunities for the students to build and expand on them and follow up with clarification questions, requests for more evidence, cause-and-effect questions, and hypothetical questions.

- *Linking or extension questions.* A high-quality discussion depends on students' actively listening to each other's contributions. Linking or extension questions encourage this by asking students to think about the relationships between their responses and those of their classmates. Often students are building on or bouncing off the previous comments of others, and an instructor can ask questions that help them see and acknowledge the connections. These questions require using students' names. Ideally, they can set off engaging conversations among classmates that don't go through the instructor. They can also launch a collaborative discussion in which students must refer to the previous comments of their classmates when making their own contributions. The resulting discussion is a community product of everyone's ideas cooperatively woven together. Not only does this exercise

give students practice in careful listening and collaborative thinking, but it can also serve as the model of the kind of community-based discussion an instructor may want.

- *Summary and synthesis questions.* To enhance the learning value of discussion, an instructor should end with a few wrap-up questions that ask students to summarize or synthesize the important ideas shared during the exchange. Students have to review and reflect on the discussion, identifying and articulating the intellectual highlights. These questions can take a variety of forms. They can ask outright for the one or two most important ideas that emerged or for some key concept that best encapsulates the exchange. They can ask what points the discussion clarified, what issues remain unresolved, or what topics should be addressed next time to advance the group's understanding.

Gale and Andrews's "High-Mileage" Types

Gale and Andrews (1989) developed categories of questions from classroom observations of discussions and tallied the average number of responses each type evoked. They called this average the "mileage" of each type. Using their results, we can ensure our discussions are lively. Here are the top mileage types, all of which can be pitched at high cognitive levels:

- *Brainstorming questions,* found to yield 4.3 student responses per question, invite students to generate many conceivable ideas on a topic or many possible solutions to a problem—for example: "What issues does Hamlet question in the play?" "What trends starting in the 1960s may have had a negative impact on American public education?" "How might the public be convinced to care about ecological imbalances?" At the start of a brainstorming session, the instructor tells the class to withhold judgment and criticism for the time being and records all the responses on the board, an overhead, a slide, or a flip chart. Only after all brains stop storming do the students begin editing, refining, combining, eliminating,

grouping, and prioritizing, using criteria they generate themselves.

- *Focal questions* elicit an even higher 4.9 responses per question. They ask students to choose a viewpoint or position from several possible ones and support their choice with reasoning and evidence. Students may develop and defend their own opinions, adopt those of a particular author, or assume a devil's advocate stance—for example: "Do you think that Marx's theory of capitalism is still relevant in today's postindustrial societies? Why or why not?" "To what extent is Ivan Illich a victim of his own decisions or of society?" "Is the society in *Brave New World* a utopia, a nightmare of moral degeneration, something between the two?" A variation on a focal question is for you to play devil's advocate on an issue or to make a contentious, controversial statement and invite your students to react against it. But as recommended in Chapter Thirteen, be sure to let your class know exactly what you are doing.

- *Playground questions* hold the mileage record, with an average of 5.1 responses per question. They challenge students to select or develop their own themes and concepts for exploring, interpreting, and analyzing a piece of material—for example, "What do you think the author is saying in this particular passage?" "What underlying assumptions about human nature must this theorist have?" "What might happen if [present a counterfactual]?" When posing such open-ended questions, however, be aware that this type of question can veer the discussion into other topics.

■ POOR QUESTIONS FOR DISCUSSION PURPOSES

It is difficult to fully appreciate highly effective discussion questions without examining the less effective types as well. Gale and Andrews's categories and the classroom research they conducted on discussions provide valuable insight and information on this latter kind too (Gale & Andrews, 1989). Some of

these questions have their place, but they tend not to encourage broad participation or higher-order thinking.

Questions Good for Recitation

Some types of questions may flop for discussion but serve the purposes of recitation—that is, knowledge recall and review—quite well:

- *Analytical convergent questions* may elicit complex thought, but they have only one correct answer. So they make students edgy and cut the discussion short as soon as someone gives the right or complete answer. It makes sense that they evoke only 2.0 answers per question. Typically 1.0 of the attempts isn't exactly right or complete. Analytical convergent questions are best used sparingly as knowledge and comprehension warm-ups to get students talking.

- *Quiz show questions* have a short correct answer, such as a person, a place, a date, or a title. They elicit only factual recall and serve poorly as warm-up questions for genuine discussion. Their average mileage is 1.5 responses per question, suggesting that the first “contestant” guesses wrong about half the time. Still many a delightful review session has imitated a quiz show game format, such as *Jeopardy* or *Millionaire*, using exactly this kind of question (Kaupins, 2005).

Questions Good for Nothing

Some types of questions serve no purpose well and can confuse and alienate students. These should be avoided:

- *Fuzzy questions* are too vague and unfocused for students to know how to approach them. They may be phrased unclearly, such as, “Who else knows what else doesn't fall into this category?” Or they may be too global, like, “What about the breakdown of the family?” Students resist taking the risk required to attack such grand questions. Other common fuzzy questions represent well-meaning attempts to help: “Does everyone understand this?” and “Any

questions?” You may occasionally get an honest response, but all too often you find out later that not everyone understood and quite a few students must have had questions. It is usually better to use classroom assessment techniques (see Chapter Twenty-Nine) to answer such concerns.

- *Chameleon* and *shotgun questions* are both a series of weakly related questions fired off one after the other in hopes that one will hit with the students. Chameleons change their topical focus through the series until the last one barely resembles the first, leaving students not knowing which one to try to answer. Shotgun questions may all go off in the same general direction, but they make the instructor look like a “bad shot”—either desperate for a response or confused about the issues. Students become confused and disoriented in the murk of the inquisition, not knowing which in the series to dodge and which to address. The average series yields only 2.3 responses.

- *Programmed-answer questions* sound like open-ended questions on the surface, and indeed they have more than one appropriate answer. But between the lines, the instructor conveys, perhaps unconsciously, having only one specific answer in mind. Students regard this type of question as an unwelcomed challenge to read the instructor's mind. Some even consider it manipulative.

- *Put-down* and *ego-stroking questions* are two sides of the same bad attitude. The former type of question implies that students ought to know the answer or shouldn't have any more questions—for example, “Now that I have explained this topic thoroughly, are there any more questions?” The latter type assumes the superiority of the instructor to the discouragement of the students. An implicit request to “rephrase the answer the way I would say it” douses students' creativity, self-expression, and often their motivation to answer at all.

- *Dead-end questions* are quiz show questions with a yes or no answer. Students simply place their bets. But these questions can easily be transformed into useful types in one of two ways. First, you can often change them into true-false items, having students rephrase false statements to make them true.

Better yet, you can rephrase them by beginning the sentence with a why or a how. With thought now required, students are more likely to participate.

■ TURNING THE TABLES

The person posing the discussion questions need not always be the instructor. If you model good questioning techniques and spend a little time teaching

your favorite questioning schema, you can have your students develop discussion and even test questions as homework assignments. You can use the best ones in class and in actual tests and even grade them if you choose. The quality of these questions also tells you how diligently your students are doing their reading (see Chapter Twenty-Three).

The next chapter offers other teaching formats that put the spotlight and the responsibility for learning on students.