

experiment to show the effect of receiving the Distinguished Teaching Award on a faculty member's subsequent career progress?" "How would you reorganize Bloom's taxonomy in light of new research in cognitive science?"

- Evaluation skills (using a set of criteria to arrive at a reasoned judgment of the value of something): "To what extent does the proposed package of tax increases resolve the budget deficit?" "If cocaine were legalized, what would be the implications for public health services?"

Also include questions that ask for hunches, intuitive leaps, and educated guesses. Stimulate students' thinking by varying the intellectual approach of your questions.

Tactics for Effective Questioning

Ask one question at a time. Sometimes, in an effort to generate a response, instructors attempt to clarify a question by rephrasing it. But often the rephrasing constitutes an entirely new question. Keep your questions brief and clear. Long complex questions may lose the class. For example, "How is the theory of Jacques Lacan similar to Freud's?" rather than "How are Lacan and Freud alike? Are they alike in their view of the unconscious? How about their approach to psychoanalysis?" (Sources: Hyman, 1982; "Successful Participation Strategies," 1987)

Avoid yes/no questions. Ask "why" or "how" questions that lead students to try to figure out things for themselves. Not "Is radon considered a pollutant?" but "Why is radon considered a pollutant?" You cannot get a discussion going if you ask questions that only require a one-syllable or short-phrase response.

Pose questions that lack a single right answer. A history professor includes questions for which a number of hypotheses are equally plausible—for example, "Why did the birthrate rise in mid-eighteenth-century England?" or "Why did Napoleon III agree to Cavour's plans?" She emphasizes to students that the answers to these questions are matters of controversy or puzzlement to scholars and asks the class to generate their own hypotheses. She embellishes what students suggest by adding historians' theories and by showing how different answers to the questions lead in very different directions. She concludes by stressing that the answer to the question remains unresolved.

Ask focused questions. An overly broad question such as “What about the fall of the Berlin Wall?” can lead your class far off the topic. Instead ask, “How did the reunification of Germany affect European economic conditions?”

Avoid leading questions. A question such as “Don’t you all think that global warming is the most serious environmental hazard we face?” will not lead to a free-ranging discussion of threats to the environment. Similarly, avoid answering your own question: “Why can’t we use the chi-square test here? Is it because the cells are too small?”

After you ask a question, wait silently for an answer. Do not be afraid of silence. Be patient. Waiting is a signal that you want thoughtful participation. Count to yourself while your students are thinking; the silence rarely lasts more than ten seconds. If you communicate an air of expectation, usually someone will break the silence, even if only to say, “I don’t understand the question.” If a prolonged silence continues, ask your students what the silence means: “Gee, everyone has been quiet for a while—why?” Or encourage students by saying, “It’s not easy to be the first one to talk, is it?” Someone will jump in with a comment or response. Don’t feel you have to call on the first person who volunteers. You might want to wait until several hands are raised to let students know that replies do not have to be formulated quickly to be considered. Consider choosing the student who has spoken least. After the first student is finished, call on the other students who had raised their hands, even if their hands are down. (Sources: Kasulis, 1984; Lowman, 1984; Swift, Gooding, and Swift, 1988)

Search for consensus on correct responses. If one student immediately gives a correct response, follow up by asking others what they think. “Do you agree, Hadley?” is a good way to get students involved in the discussion.

Ask questions that require students to demonstrate their understanding. Instead of “Do you understand?” or “Do you have any questions about evaluation utilization?” ask, “What are the considerations to keep in mind when you want your evaluation results to be used?” Instead of “Do you understand this computer software?” ask, “How would we change the instructions if we wanted to sort numbers in ascending rather than descending order?” Instead of “Does everybody see how I got this answer?” ask, “Why did I substitute the value of delta in this equation?” If you want to ask, “Do you have any questions?” rephrase it to “What questions do you have?” The latter implies that you expect questions and are encouraging students to ask them.

Structure your questions to encourage student-to-student interaction.

“Sam, could you relate that to what Molly said earlier?” Be prepared to help Sam recall what Molly said. Students become more attentive when you ask questions that require them to respond to each other. (Source: Kasulis, 1984)

Draw out reserved or reluctant students. Sometimes a question disguised as an instructor’s musings will encourage students who are hesitant to speak. For example, instead of “What is the essence or thesis of John Dewey’s work?” saying, “I wonder if it’s accurate to describe John Dewey’s work as learning by doing?” gives a student a chance to comment without feeling put on the spot.

Use questions to change the tempo and direction of the discussion.

Kasulis (1984) identifies several ways to use questions.

- To lay out perspectives: “If you had to pick just one factor . . .” or “In a few words, name the most important reason . . .” This form of questioning can also be used to cap talkative students.
- To move from abstract to concrete, or general to specific: “If you were to generalize . . .” or “Can you give some specific examples?”
- To acknowledge good points made previously: “Sandra, would you tend to agree with Francisco on this point?”
- To elicit a summary or give closure: “Beth, if you had to pick two themes that recurred most often today, what would they be?”

Use probing strategies. Probes are follow-up questions that focus students’ attention on ideas or assumptions implicit in their first answer. Probes can ask for specifics, clarifications, consequences, elaborations, parallel examples, relationship to other issues, or explanations. Probes are important because they help students explore and express what they know, even when they aren’t sure they know it (Hyman, 1980). Here are some examples of probing from Goodwin, Sharp, Cloutier, and Diamond (1985, pp. 15–17):

Instructor: What are some ways we might solve the energy crisis?

Student: Peak-load pricing by utility companies.

Instructor: What assumptions are you making about consumer behavior when you suggest that solution?

Instructor: What does it mean to devalue the dollar?

Student: I’m not really sure, but doesn’t it mean, that, um, like say last year the dollar could buy a certain amount of goods and this year it could buy less—does that mean devalued?

Instructor: Well, let's talk a little bit about another concept, and this is inflation. Does inflation affect the dollar in that way?

Instructor: What is neurosis?

Students: [no response].

Instructor: What are the characteristics of a neurotic person?

Instructor: How far has the ball fallen after three seconds, Christi?

Student: I have no idea.

Instructor: Well, Christi, how would we measure distance?

Move around the room to include students in the discussion. When a student asks a question, it is natural for an instructor to move toward that student without realizing that this tends to exclude other students. To draw others into the conversation, look at the student who is speaking but move away from that student.

Tactics for Handling Students' Responses to Your Questions

Listen to the student. Do not interrupt a student's answer, even if you think the student is heading toward an incorrect conclusion. Interrupting signals your impatience and hinders participation. Instead, wait a second or two after a student responds to be sure that the student is finished speaking.

Use nonverbal gestures to indicate your attention. Maintain eye contact with the student who is speaking. Nod your head, use facial expressions or hand gestures to prompt the student to continue, or adopt a physical stance that signals you are ready to move on.

Vary your reactions to students' answers. When a student has spoken, you can respond in the following ways:

- Restate what the speaker has said to reinforce the point.
- Ask for clarification: "Could you be more specific about . . ."
- Invite the student to elaborate: "We'd like to hear more about . . ."
- Expand the student's contribution: "That's absolutely correct, and following up on what you said . . ."