

Asking Questions to Improve Learning

When you prepare for class, office hours, and help sessions, compose specific questions that you will ask your students (or that you anticipate they will ask you). Doing so will help you increase student participation and encourage active learning. The strategies below will also help you formulate questions for exams and paper assignments.

Active learning extends beyond the classroom.

When you ask questions in the classroom, you are modeling a process that students can and should use themselves; encourage your students to use the following questioning strategies to assess what they have learned, to develop their thinking skills, and to study for exams.

General Strategies for Asking Questions

- **When planning questions, keep in mind your course goals.** For example, do you want students to master core concepts? To develop their critical thinking skills? The questions you ask should help them practice these skills, as well as communicate to them the facts, ideas, and ways of thinking that are important to their learning in your course. (For more information about course goals, see [Designing a Course](#)).
- **Avoid asking “leading questions.”** A leading question is phrased in such a way that it suggests its own answer and therefore discourages students from thinking on their own.
- **Follow a “yes-or- no” question with an additional question.** For example, follow up by asking students to explain why they answered the way they did, to provide evidence or an example, or to respond to a yes-or-no answer given by another student.
- **Aim for direct, clear, specific questions.** During class discussions, rather than beginning with a single question that is multilayered and complex, use a sequence of questions to build depth and complexity. Essay questions on exams or paper assignments, on other hand, often provide an appropriate opportunity to ask multi-layered questions. If your exam will include multi-layered questions, use questions during class time to walk students through the process of answering multi-layered questions.

In class discussions, do not ask more than one question at once.

When you ask more than one question, students often do not respond because they are unsure which question you want them to answer. When you plan each class session, include notes of when you will pause to ask and answer questions. Asking questions throughout the class will not only make the class more interactive, but also help you measure and improve student learning. Do not save the last two minutes of class for questions. Students are unlikely to ask questions when they know that only a few minutes remain. (See [Increasing Student Participation](#) and [Teaching with Lectures](#).)

Ask a mix of different types of questions.

You should use “closed” questions, or questions that have a limited number of correct answers, to test students’ comprehension and retention of important information. You should also ask managerial questions to ensure, for example, that your students understand an assignment or have access to necessary materials. “Open” questions, which prompt multiple and sometimes conflicting answers, are often the most effective in encouraging discussion and active learning in the classroom. For examples of “open” questions and the purposes they can serve, see below.

Responding Effectively

Wait for students to think and formulate responses.

Waiting 5-10 seconds will increase the number of students who volunteer to answer and will lead to longer, more complex answers. If students do not volunteer before 5 seconds have passed, refrain from answering your own question, which will only communicate to students that if they do not answer, you will do their thinking for them. If the students are unable to answer after sufficient time for thinking has passed, rephrase the question.

Do not interrupt students' answers.

You may find yourself wanting to interrupt because you think you know what the student is going to say, or simply because you are passionate about the material. Resist this temptation. Hearing the students' full responses will allow you to give them credit for their ideas and to determine when they have not yet understood the material.

Show that you are interested in students' answers, whether right or wrong.

Encourage students when they are offering answers by nodding, looking at them, and using facial expressions that show you are listening and engaged. Do not look down at your notes while they are speaking.

Develop responses that keep students thinking.

For example, ask the rest of the class to respond to an idea that one student has just presented, or ask the student who answered to explain the thinking that led to her answer.

Follow up with a question instead of a correction.

If a student gives an incorrect or weak answer, point out what is incorrect or weak about the answer, but ask the student a follow-up question that will lead that student, and the class, to the correct or stronger answer. For example, note that the student's answer overlooks the most important conclusion of the study you are discussing, then ask that same student to try to recall what that conclusion is. If he or she does not recall the conclusion, open this question up to the class.

Why Ask "Open" Questions? Twelve Objectives, with Sample Questions

- 1. To assess learning.**
 - What is the most important idea that was generated in today's discussion?
 - Can you explain this concept in your own words?
 - Can you draw a diagram to illustrate this idea?
- 2. To ask a student to clarify a vague comment.**
 - Could you elaborate on that point?
 - Can you explain what you mean?
- 3. To prompt students to explore attitudes, values, or feelings (when appropriate).**
 - What are the values or beliefs that inform this argument?
 - What is your initial reaction to this argument?

4. **To prompt students to see a concept from another perspective.**
 - How do you think that this issue is viewed by those with whom you disagree?
 - How does that concept apply to this new problem?
5. **To ask a student to refine a statement or idea.**
 - When does that principle apply? Always? Only under certain conditions?
 - Would you say, then, that you disagree with the author?
6. **To prompt students to support their assertions and interpretations.**
 - How do you know that?
 - Which part of the text led you to that conclusion?
7. **To direct students to respond to one another.**
 - What do you think about the idea just presented by your classmate?
 - Do you agree or do you see the issue differently? Explain.
 - Can you think of another way to solve that problem?
8. **To prompt students to investigate a thought process.**
 - What are the assumptions that informed the design of this experiment?
 - What are the assumptions that these two arguments share?
9. **To ask students to predict possible outcomes.**
 - What might happen if this practice were to be outlawed?
 - What would be the result if a different set of assumptions were used to set up this experiment?
 - Would you get a different result?
10. **To prompt students to connect and organize information.**
 - How does this article shed light on the concept we studied last week?
 - Can you develop a graph or table that organizes this information in a helpful way?
11. **To ask students to apply a principle or formula.**
 - How does this principle apply to the following situation?
 - Who can suggest how we might use this new formula to solve the problems we examined at the start of class today?
 - Under what conditions is this equation not valid?
12. **To ask students to illustrate a concept with an example.**
 - Can you think of an example of this phenomenon, drawn from your research?
 - Can you point us to a specific part of the novel that led you to that conclusion?
 - Can you identify a painting or design that exemplifies that idea?

Use Bloom's Taxonomy

Benjamin Bloom's *Taxonomy of Educational Objectives* (1956) provides another useful way to think about when and how to use questions in teaching. As the following table shows, Bloom identified six types of cognitive processes and ordered these according to the level of complexity involved. Ideally, you should combine questions that require "lower-order thinking" (often "closed" questions) to assess students' knowledge and comprehension with questions that require "higher-order thinking" (often "open" questions) to assess students' abilities to apply, analyze, synthesize, and evaluate.

Bloom's Taxonomy

Category	Representative Skills	Sample Verbs to Use
1. Knowledge (memorization)	Recall, remember, or recognize information.	Define, identify, recall, recognize.
2. Comprehension (understanding)	Relate discrete facts, summarize or rephrase ideas.	Describe, compare, contrast (in your own words).
3. Application (problem-solving)	Apply rules, laws, concepts, principles, and theories to answer or solve a problem. Apply material to a new and concrete situation.	Apply, classify, illustrate with an example.
4. Analysis (dissection)	Identify the component parts of a complex whole (e.g., a phenomenon or problem). Identify the relationships between the parts.	Analyze, support, draw conclusions.
5. Synthesis (creation)	Combine two or more elements into a new (for the students) combination or set of relationships.	Predict, develop, design.
6. Evaluation (judgment)	Critically assess the quality or judge the work based on internal consistency and external criteria.	Evaluate, assess, judge.

Refine your Questions

After teaching a class session, leading a help-session, collecting an assignment, or administering an exam, take brief notes on which questions were most effective at achieving the goals you had set out and which questions led to answers that you did not expect. Keep these notes with your lecture notes or lesson plan and use them to refine your questions for the next time you will teach or meet with students.

Links and References for Asking Questions to Improve Learning

Bloom, Benjamin (ed). *Taxonomy of Educational Objectives. Vol. 1: Cognitive Domain*. New York: McKay, 1956.

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“Questioning Strategies.” Center for Teaching Excellence. University of Illinois at Urbana-Champaign. <http://cte.illinois.edu/resources/topics/methods/strateg.html>.

McKeachie, Wilbert, et al. *McKeachie's Teaching Tips: Strategies, Research, and Theory for College and University Teachers*. 12th ed. Boston: Houghton Mifflin, 2005.