



EFFECTIVE QUESTIONING: INTERACTION SKILLS

Effective use of communication skills by both instructors and students is conducive to the development of positive interaction in the classroom. In order to have successful exchanges between instructors and students:

1. Students should feel free to ask questions of the instructor and their peers.
2. Students should feel free to answer questions.
3. Students should not feel threatened by giving an incorrect response.

In this section we will consider some of the components of successful interactions including:

1. Physical setting.
 2. Instructor attitude.
 3. Hints for calling on students to maximize student participation.
 4. Wait-time after asking questions.
 5. Handling student responses to questions.
 6. Responding to students' questions.
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Physical Setting

The instructor needs to be aware of the acoustics of the room in which he teaches. Can students hear you when you ask a question? Can students hear other students ask and answer questions?

1. If you teach in a large lecture hall and want to foster participation, it is a good idea to move students close to each other and close to the front of the room.
 2. Facilitate interaction in a small seminar group by arranging students in a circle so that they face each other.
 3. In a lab setting make sure students do not begin working on their own until you have finished the lecture/discussion part of the session. It is difficult for students to interact if they are not attentive or if other students are using equipment.
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Instructor Attitude

An important aspect of atmosphere is "attending behavior" or what an instructor does while a student answers a questions. Generally the instructor should be listening to the student, encouraging him to continue, and helping to focus the attention of the class on the student who is responding to the question. This can be accomplished in several ways:

1. Maintain eye contact with the student answering. Some instructors find that they also glance around the room from time to time to determine whether class members are

listening.

2. Use nonverbal gestures to indicate your understanding, confusion, or support--head nodding, facial expression, hand gestures which signal the student to continue, or physical stance which indicate that you are thinking about the student's answer.
3. Listen to the student! Do not interrupt even if you think the student is heading toward an incorrect answer. At times a student may realize his own mistake. On other occasions you may simply have misunderstood where the student was going with his answer. Even on the frequent occasions when a student does reach an incorrect answer the other students may learn as much from the incorrect response as from a correct one. Furthermore, interrupting students does not create an atmosphere which encourages participation. You might try using some of these active listening suggestions:
 - * Wait for a second or two following a student response to be sure that you have listened to everything and that the student has finished talking.
 - * You might wish to paraphrase a long answer and check with the student to be sure your perception of his response is accurate. This technique, when judiciously applied, makes students aware that you are listening.
 - * Use the student response to lead to the next question or to make a point. Again, this demonstrates that you are listening.
 - * While listening to the student try to determine whether you do understand his point. If you don't understand, ask for more information or explanation.
 - * Listen for the content of what the student is saying, not simply for expected jargon or key phrases.
 - * Focus your attention on the student, not on what you intend to do next (i.e., ask a question, or end the class).

Calling on Students to Maximize Participation

1. Call students by their names as opposed to pointing in their general direction. This avoids confusion as to who was called upon and also helps create a positive climate where students feel you know them as individuals.
2. Ask questions of the entire class and try to encourage all students to participate. The advantage of calling on only volunteers is that it may be less threatening. A disadvantage of calling on only volunteers is that a small number of students will be answering all your questions. It is possible to call on nonvolunteers in a nonthreatening manner by:
 - * Speaking in a tone of voice which is friendly.
 - * Using positive nonverbal cues while calling on the person, e.g., smiling, eye contact.
 - * If the nonvolunteer is incorrect or cannot respond, accept his nonresponse without insulting him. Perhaps ask if another student in the class can help him out.

Example:
Kate: I don't know.
Instructor: O. K., can anyone help Kate out?
3. In order to encourage nonparticipants, call on specific students to answer questions. You can phrase a question, then call on the student. If you call the student's name first, the

- rest of the class may not listen to the question.
4. Make an attempt to randomly select students to respond. Try not to follow any set pattern when calling on students. For example, if you call on each student in a row, students learn to listen only when it's close to their turn to answer.
 5. Try to avoid repeating all student responses. Teacher repetition causes students to learn to listen to you, not their fellow students. In addition, hearing each response twice is boring.
 6. Beware of the student who dominates in class by asking or answering all the questions. Try to encourage other students to respond by suggesting others volunteer or by calling on nonvolunteers.
 7. Give students an opportunity to ask questions. Do not use "Any questions?" as your only form of feedback from students. Sometimes students are so confused they cannot even formulate a question. In addition many students will not participate because they do not want to make mistakes in front of their peers.
 8. Avoid asking all of your questions at the end of the session. If a student was lost at the beginning, he has missed an entire session by the time you have asked a question. Students may also be less willing to answer at the end of the session as they are getting ready to leave.
 9. Avoid looking down at notes after asking a question. You should be looking for volunteers and noting confusion or understanding of students.
 10. Your nonverbal reactions should complement your verbal responses. For example, it is usually ineffective to say "good point" while looking away or reading notes.
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Wait-time

One factor which can have powerful effects on student participation is the amount of time an instructor pauses between asking a question and doing something else (calling on a student or rewording the question).

Research on classroom questioning and information processing indicates that students need at least three seconds to comprehend a question, consider the available information, formulate an answer, and begin to respond. In contrast, the same research established that on the average a classroom teacher allows less than one second of wait-time.

After teachers were trained to allow three to five seconds of wait-time the following significant changes in their classrooms occurred:

- * The number of students who failed to respond when called on decreased.
- * The number of unsolicited but appropriate responses increased.
- * The length of student responses increased.
- * The number of student statements where evidence was used to make inferences increased.
- * The number of responses from students identified by the teacher as less able increased.
- * The number of student-to-student interactions increased.
- * The number of student questions increased. (Rowe, 1974)

Allowing wait-time after a student response or question also produced significant changes in classroom interaction. The most notable change was that the instructor made fewer teaching

errors characterized by responding illogically or inappropriately to a student comment.

On the other hand, too much wait-time can also be detrimental to student interaction. When no one seems to be able to answer a question, more wait-time will not necessarily solve the problem. Experts say that waiting more than 20-30 seconds is perceived as punishing by students. The amount of wait-time needed in part depends upon the level of question the instructor asks and student characteristics such as familiarity with content and past experience with the thought process required.

Generally lower-level questions require less wait-time, perhaps only three seconds. Higher-level questions may require five seconds or more. With particularly complex higher-level questions some instructors tell student to spend two or three minutes considering the question and noting some ideas. Other instructors allow five to ten seconds of thinking time and then ask students what processes they are using to investigate the questions; this strategy makes students aware that thought process is at least as important as an answer and that alternative processes can be applied to arrive at an answer to the same question.

Handling Student Responses

An important aspect of classroom interaction is the manner in which the instructor handles student responses. When an instructor asks a question, students can either respond, ask a question, or give no response. If the student responds or asks a question, the instructor can use one of the following recommended questioning strategies: reinforce, probe, refocus, redirect. If the student does not respond the instructor can use either a rephrase or redirecting strategy. A description of each strategy follows:

1. **Reinforcement.** The instructor should reinforce in a positive way student responses and questions in order to encourage future participation. The instructor can reinforce by making positive statements and using positive nonverbal communication. Proper nonverbal responses include smiling, nodding, and maintaining eye contact, while improper nonverbal responses include looking at notes while students speak, looking at the board or ruffling papers.

The type of reinforcement provided will be determined by:

- * The correctness of the answer. If a student gives an answer which is off target or incorrect, the instructor may want to briefly acknowledge the response but not spend much time on it and then move to the correct response.
- * The number of times a student has responded. Instructors may want to provide a student who has never responded in class with more reinforcement than someone who responds often.

CAUTION: Vary reinforcement techniques between various verbal statements and nonverbal reactions. Try not to overuse reinforcement in the classroom by overly praising every student comment. Students begin to question the sincerity of reinforcement if every response is reinforced equally or in the same way.

2. Probe. Probes are based on student responses. The initial response of students may be superficial. The instructor needs to use a questioning strategy called probing to make students explore initial comments. Probes are useful in getting students more involved in critical analysis of their own and other students' ideas.

Probes can be used in different ways. Probes can be used to:

* Analyze a student's statement, make a student aware of underlying assumptions, or justify or evaluate a statement.

Example:

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

Student: I would like to see a greater movement to peak-load pricing by utility companies.

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

* Help students deduce relationships. Instructors may ask student to judge the implications of their statements or to compare and contrast concepts.

Example:

Instructor: What are some advantages and disadvantages of having grades given in courses?

Student 1: Grades can be a motivator for people to learn.

Student 2: Too much pressure on grades causes some students to stop learning, freeze, go blank.

Instructor: If both of those statements are true, what generalizations can you make about the relationship between motivation and learning?

* Have students clarify or elaborate on their comments by asking for more information.

Examples:

Instructor: Could you please develop your ideas further?

Instructor: Can you provide an example of that concept?

Student: It was obvious that the crew had gone insane.

Instructor: What is the legal definition of insane?

Student: It was a violation of due process.

Instructor: Can you explain why?

3. Adjust/Refocus. When a student provides a response which appears out of context the instructor can refocus to encourage the student to tie her response to the content being discussed. This technique is also used to shift attention to a new topic.

Example:

Instructor: What does it mean to devalue the dollar?

Student 1: Um--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 it devalued?

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

4. Redirect. When a student responds to a question, the instructor can ask another student to comment on his statement. One purpose of using this technique is to enable more students to participate. This strategy can also be used to allow a student to correct another student's incorrect statement or respond to another student's question.

Examples:

Instructor: Bill, do you agree with Mark's comment?

Instructor: From your experience, Roger, does what Carol said seem true?

Instructor: Blake, can you give me an example of the concept that Pat mentioned?

5. Rephrasing. This technique is used when a student provides an incorrect response or no response. Instead of telling the student she is incorrect or calling upon another student, the instructor can try one of three strategies:

- * The instructor can try to reword the question to make it clearer. The question may have been poorly phrased.

Example:

Instructor: What is neurosis?

Student 1: (No response).

Instructor: What are the identifying characteristics of a neurotic person?

- * The instructor can provide some information to help students come up with the answer.

Example:

Instructor: How far has the ball fallen after 3 seconds, Ann?

Student: I have no idea.

Instructor: Well, Ann, how do we measure distance?

- * The instructor can break the question down into more manageable parts.

Example:

Instructor: What is the epidemiology of polio?

Student: I'm not sure.

Instructor: What does "epidemiology" mean?

Responding to Student Questions

There are many ways in which an instructor can respond to questions from students. However, all strategies begin with this important step:

LISTEN TO THE STUDENT'S QUESTION.

This is another time to use your active listening skill. (See Instructor Attitude, p.1.)

After you are certain you understand the question, be sure that other students have heard and understood the question. Strategies from this point include:

1. Answer the question yourself. This strategy is best when you have little time remaining in class. The disadvantage of this approach is that you do not encourage student-to-student interaction or independent learning.
2. Redirect the question to the class. This strategy helps to encourage student-to-student interaction and to lessen reliance on the instructor for all information.
3. Attempt to help the student answer his own question. This may require prompting through reminders of pertinent previously learned information. Or this strategy may require you to ask the student a lower level question or a related question to begin his thought process. The advantage of this strategy, as in redirecting, is that the student may learn the process of searching for answers to his own questions rather than relying on the teacher. The risk is that the process can be embarrassing or so threatening that the student will be too intimidated to ask questions in the future. Obviously some human compassion is called for when using this strategy.
4. Ask the student to stop after class to discuss the question. This strategy is most appropriate when a student raises complicated tangential questions or when a student is obviously the only one who does not understand a point and a simple answer does not clarify the point. Even in these situations there are risks in using this strategy. Students may be intimidated from raising questions in class. The instructor may think that only the questioning student does not understand when actually a number of students are having the same problem.
5. Refer the student to a resource where she can find the answer.
6. Defer the question until a more appropriate time but **NOT THE QUESTION AND THE STUDENT; RETURN TO THE QUESTION** at an appropriate time.

No matter which strategy you use you should return to the student after addressing the questions and determine whether the response has satisfied the student.

If you don't know the answer to a student question **NEVER FAKE AN ANSWER**. Admit that you cannot answer the question and then select one of these strategies or others you find appropriate:

1. Ask whether someone in the class can answer the question. Most times after class you should follow this with an attempt to determine whether the information provided was accurate or based on sound reasoning and credible sources.
2. Either propose a plan for obtaining evidence for answering the question or ask the students to suggest how the question could be investigated.
3. If possible, suggest a resource where the student can find information. The resource may be written material, another faculty or staff member, a student, or someone from the community.
4. Volunteer to find the answer yourself and report back to the class. Make sure you actually do return with the answer if you choose this option.

Source: University of Illinois, <http://www.oir.uiuc.edu/did/docs/questioning.htm>

