(McKeachie et al., 1985; Weinstein & Mayer, 1986). Suggest that your students

1. Look at topic headings before studying the chapter.
2. Write down questions they would like to answer.
3. Make marginal notes as they read.
4. Underline or highlight important concepts.
5. Carry on an active dialog with the author.
6. Comment on reading in their journals. (See the chapter "How to Enhance Learning by Using High-Stakes and Low-Stakes Writing.")

For a fuller description of ways to help students become better learners, see the chapter "Teaching Students How to Become More Strategic and Self-Regulated Learners."

IN CONCLUSION

1. Reading is an important tool for learning.
2. To facilitate learning, a teacher needs not only to choose appropriate reading materials but also to help students learn how to read them effectively.
3. Despite the availability of photocopies, coursepacks, paperbacks, and the World Wide Web, textbooks are still useful tools for teaching.
4. If material students need to learn is in print, in a form conveniently accessible for them, they may learn more efficiently from reading than from listening to you.

Supplementary Reading

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Chapter 5

Facilitating Discussion: Posing Problems, Listening, Questioning

Active learning is the buzz word (or phrase) in contemporary higher education. The prototypic teaching method for active learning is discussion. Discussion methods are among the most valuable tools in the teacher's repertoire. Often teachers in large classes feel that they must lecture because discussion is impossible. In fact, discussion techniques can be used in classes of all sizes. Generally, smaller classes *are* more effective, but large classes should not be allowed to inhibit the teacher's ability to stimulate active learning—learning experiences in which the students are *thinking* about the subject matter.

Discussion techniques seem particularly appropriate when the instructor wants to do the following:

1. Help students learn to think in terms of the subject matter by giving them practice in thinking.
2. Help students learn to evaluate the logic of and evidence for their own and others' positions.
3. Give students opportunities to formulate applications of principles.

4. Develop motivation for further learning.
5. Help students articulate what they've learned.
6. Get prompt feedback on student understanding or misunderstanding.

Why should discussion be the method of choice for achieving such objectives? The first justification is a very simple extrapolation of the old adage "Practice makes perfect." If instructors expect students to learn how to integrate, apply, and think, it seems reasonable that students should have an opportunity to practice these skills. To help students learn and think, you need to find out what is in their heads. Discussion can help.

A LITTLE BIT OF THEORY

Research in cognitive psychology has found that memory is affected by how deeply we process new knowledge (see the chapter "Teaching Students How to Become More Strategic and Self-Regulated Learners"). Simply listening to or repeating something is likely to store it in such a way that we have difficulty finding it when we want to remember it. If we elaborate our learning by thinking about its relationship to other things we know or by talking about it—explaining, summarizing, or questioning—we are more likely to remember it when we need to use it later. This may help relieve your anxiety about covering the material. In lectures teachers cover more material, but research shows that most of the material covered does not get into the students' notes or memory (Hartley & Davies, 1978). Classic studies over the last five decades have repeatedly shown that, in discussion, students pay attention and think more actively.

Because many students are accustomed to listening passively to lectures, in introducing discussion you need to explain why and how discussion will help them construct knowledge they can find and apply when needed.

PROBLEMS IN TEACHING BY DISCUSSION

In discussion groups the instructor is faced with several problems:

1. Getting participation in the discussion.
2. Making progress (or making the student aware of the progress) toward course objectives.
3. Handling emotional reactions of students.
4. Listening to the students supportively.

This chapter should help you cope with each of these problems.

STARTING DISCUSSION

After a class has been meeting and discussing problems successfully, there is little problem in initiating discussion, for it will develop almost spontaneously from problems encountered in reading, from experiences, or from unresolved problems from the previous meeting. But during the first meetings of new groups, you need to create an expectation that something interesting and valuable will occur.

Starting Discussion with a Common Experience

One of the best ways of starting a discussion is to refer to a concrete, common experience through presentation of a demonstration, film, role play, short skit, or brief reading. It could be a common experience of all students or an issue on campus or in the media, or you can provide the experience. Following such a presentation it's easy to ask, "Why did _____?"

Such an opening has a number of advantages. Because everyone in the group has seen it, everyone knows something about the topic under discussion. In addition, by focusing the discussion on the presentation, the instructor takes some of the pressure off anxious or threatened students who are afraid to reveal their own opinions or feelings.

However, you will not always be able to find the presentation you need to introduce each discussion, and you may be forced to turn to other techniques of initiating discussion. One such technique is problem posting, which was discussed in the chapter "Meeting a Class for the First Time."

Starting Discussion with a Controversy

A second technique of stimulating discussion is through disagreement. Experimental evidence is accumulating to indicate that a certain degree of surprise or uncertainty arouses curiosity, a basic motive for learning (Berlyne, 1960). Some teachers effectively play the role of devil's advocate; others are effective in pointing out differences in points of view.

I have some concerns about the devil's advocate role. I believe that it can be an effective device in getting students to think actively rather than accept passively the instructor's every sentence as "Truth." Yet it has its risks, the most important of which is that it may create lack of trust in the instructor. Of course, instructors want students to challenge their ideas, but few want their students to feel they are untrustworthy, lying about their own beliefs.

Two other dangers lurk in the devil's advocate role. One is that it will be perceived as manipulative. Students may feel (with justification) that the instructor "is just playing games with us—trying to show how smart he is and how easily he can fool us." It can also be seen as a screen to prevent students from ever successfully challenging the instructor.

Yet the devil's advocate role can be effective. Its success depends a good deal on the spirit with which it is played. Linc Fisch (2001) handles this problem by donning a T-shirt with "Devil's Advocate" on the front. My own compromise solution is to make it clear when I'm taking such a role by saying, "Suppose I take the position that _____" or "Let me play the role of devil's advocate for a bit."

In any case the instructor should realize that disagreement is not a sign of failure but may be used constructively. When rigid dogmatism interferes with constructive problem solving following a disagreement, the instructor may ask the disagreeing students to switch sides and argue the opposing point of view. Such a technique seems to be effective in developing awareness of the strengths of other positions.

As Maier (1963) has shown in his studies of group leadership, one barrier to effective problem solving is presenting an issue in such a way that participants take sides arguing the apparent solution rather than attempting to solve the problem by considering data and devising alternative solutions. Maier suggests the following principles for group problem solving:

1. Success in problem solving requires that effort be directed toward overcoming surmountable obstacles.
2. Available facts should be used even when they are inadequate.
3. The starting point of the problem is richest in solution possibilities.
4. Problem-mindedness should be increased and solution-mindedness should be delayed.
5. The "idea-getting" process should be separated from the "idea evaluation" process because the latter inhibits the former.

Starting Discussion with Questions

The most common discussion opener is the question, and the most common error in questioning is not allowing students time enough to think. You should not expect an immediate response to every question. If your question is intended to stimulate thinking, give the students time to think. Five seconds of silence may seem an eternity, but a pause for 5 to 30 seconds will result in better discussion. In some cases you may plan for such a thoughtful silence by asking the students to think about the question for a few seconds and then write down one element that might help answer the question. Such a technique increases the chance that the shyer or slower students will participate, since they now know what they want to say when the discussion begins. In fact, you may even draw one in by saying, "You were writing vigorously, Ronnie. What's your suggestion?"

Factual Questions. There are times when it is appropriate to check student background knowledge with a series of brief

factual questions, but more frequently you want to stimulate problem solving. One common error in phrasing questions for this purpose is to ask a question in a form conveying to students the message "I know something you don't know and you'll look stupid if you don't guess right."

Application and Interpretation Questions. Rather than dealing with factual questions, formulate discussions so as to get at relationships, applications, or analyses of facts and materials. Solomon, Rosenberg, and Bezdek (1964) found that teachers who used interpretation questions produced gains in student comprehension. A question of the type "How does the idea that _____ apply to _____?" is much more likely to stimulate discussion than the question "What is the definition of _____?" The secret is not to avoid questions or to lecture in statements, but rather to listen and to reflect on what is heard. Dillon (1982), a leading researcher on questioning, advises that once you have defined the issue for discussion, keep quiet unless you are perplexed or didn't hear a comment. Questions are tools for teaching, but as Dillon demonstrated, they sometimes interfere with, as well as facilitate, achievement of teaching goals. What happens depends on the question and its use.

Problem Questions. A question may arise from a case, or it may be a hypothetical problem. It may be a problem whose solution the instructor knows; it may be a problem that the instructor has not solved. In any case it should be a problem that is meaningful to the students, and for the sake of morale, it should be a problem they can make some progress on. And even if the teacher knows an answer or has a preferred solution, the students should have a chance to come up with new solutions. The teacher's job is not to sell students on a particular solution, but rather to listen and to teach them how to solve problems themselves. Don't be afraid to express your own curiosity, question, or "what if . . ." wonder about a topic. Ask the students what they think. It is better to be an open-minded, curious questioner than the font of all knowledge.

Suppose you ask a question and no one answers, or the student simply says, "I don't know." Discouraging as this may be, it should not necessarily be the end of the interaction. Usually the student can respond if the question is rephrased. Perhaps you need to give an example of the problem first; perhaps you need to suggest some alternative answer and ask the student what evidence might or might not support it; perhaps you need to reformulate a prior question. More often than not, you can help the students discover that they are more competent than they thought.

Other Types of Questions. *Connective and causal effect questions* involve attempts to link material or concepts that otherwise might not seem related. One might, for example, cut across disciplines to link literature, music, and historical events or one might ask, "What are the possible causes of this phenomenon?"

Comparative questions, as the name suggests, ask for comparisons between one theory and another, one author and another, one research study and another. Such questions help students determine important dimensions of comparison.

Evaluative questions ask not only for comparisons but for a judgment of the relative value of the points being compared; for example, "Which of two theories better accounts for the data? Which of two essays better contributes to an understanding of the issue?"

Critical questions examine the validity of an author's arguments or discussion. Television, magazines, and other media provide opportunities for using critical or evaluative questioning. For example, "An eminent authority states thus and so. Under what conditions might that not be true?" Being so critical that students feel that their reading has been a waste of time is not helpful, but presenting an alternative argument or conclusion may start students analyzing their reading more carefully, and eventually you want students to become critical readers who themselves challenge assumptions and conclusions.

Starting Discussion with a Problem or Case

One of the biggest problems in teaching by discussion is focus. Getting the discussion headed in the right direction and keeping it there requires that both students and the instructor be focused on the same questions. One of the better methods for producing focus is to use a problem or a case study as the main topic of discussion. The chapter "Problem-Based Learning" discusses problem-based learning and the case method in more detail, but

what follows here are some general ideas about working with problem-based discussions more efficiently.

Breaking a Problem into Subproblems

One of Maier's (1952) important contributions to effective group problem solving, as well as to teaching, is to point out that groups are likely to be more effective if they tackle one aspect of a problem at a time rather than skipping from formulation of the problem, to solutions, to evidence, to "what-have-you," as different members of the group toss in their own ideas. In developmental discussion the group tackles one thing at a time.

One of the first tasks is likely to be a *clarification of the problem.* Often groups are ineffective because different participants have different ideas of what the problem is, and group members may feel frustrated at the end of the discussion because "the group never got to the real problem."

A second task is likely to be: *What do we know?* or *What data are relevant?*

A third task may be: *What are the characteristics of an acceptable solution?*—for example: What is needed?

A fourth step could be: *What are possible solutions?* and a fifth step may be to *evaluate these solutions* against the criteria for a solution determined in the previous step.

The developmental discussion technique can be used even in large groups, since there are a limited number of points to be made at each step regardless of the number of participants. Maier and Maier (1957) have shown that developmental discussion techniques improve the quality of decisions compared with freer, more nondirective discussion methods.

Socratic Discussion

The "classic" (and I do mean *classic*) discussion technique is the Socratic method. In television, novels, and anecdotes about the first year of law school it is usually portrayed as a sadistic, anxiety-producing method of eliciting student stupidity, and even when I place myself in the role of slave boy taught by Socrates in the *Meno,* I feel more like a pawn than an active learner.

Perhaps this is why I've never been very good at Socratic teaching; nonetheless I believe that it can be used as an effective method of stimulating student thinking, and it can have the quality of an interesting game rather than of an inquisition. The leading modern student of Socratic teaching is Allen Collins, who has observed a variety of Socratic dialogues and analyzed the strategies used (1977; Collins & Stevens, 1982).

Basically, most Socratic teachers attempt to teach students to reason to general principles from specific cases. Collins (1977) gives 23 rules, such as the following:

1. Ask about a known case. For example, if I were trying to teach a group of teaching assistants about student cheating, I might say, "Can you describe a situation in which cheating occurred?"

2. Ask for any factors. "Why did the cheating occur?"

3. Ask for intermediate factors. If the student suggests a factor that is not an immediate cause, ask for intermediate steps. For example, if a teaching assistant says, "Students feel a lot of pressure to get good grades," I might say, "Why did the pressure for grades result in cheating in this situation?"

4. Ask for prior factors. If the student gives a factor that has prior factors, ask for the prior factors. For example, "Why do students feel pressure to get good grades?"

5. Form a general rule for an insufficient factor. For example, "Do all students who feel pressure cheat?"

6. Pick a counterexample for an insufficient factor. For example, "Do you think these students cheat on every test?"

7. Form a general rule for an unnecessary factor. For example, if a teaching fellow suggests that cheating occurs when tests are difficult, I might say, "Probably the pressure to cheat is greater when tests are difficult, but does cheating occur only on difficult tests?"

8. Pick a counterexample for an unnecessary factor. For example, "Is cheating likely to occur on college admissions tests, such as the SAT?"

9. Pick a case with an extreme value. For example, "Why is cheating minimized on SAT tests?"

10. Probe for necessary or sufficient factors.

11. Pose two cases and probe for differences. For example, "Why is there more cheating in large classes than in small ones?"

12. Ask for a prediction about an unknown case.

13. Trace the consequences of a general rule. For example, if the teaching assistants conclude that cheating will occur when tests are difficult and are not well proctored, I might say, "Engineering classes are considered difficult, and I understand that there is little cheating even though tests are unproctored." (The school has an honor code.)

In general, the rules involve formulating general principles from known cases and then applying the principles to new cases. Even if one does not use the Socratic method to its fullest, the questioning strategies described in Collins's rules may be generally useful in leading discussions.

BARRIERS TO DISCUSSION

One of the important skills of discussion leaders is the ability to appraise the group's progress and to be aware of barriers or resistances that are blocking learning. This skill depends on attention to such clues as inattention, hostility, or diversionary questions.

Barriers to Discussion: Why Students Don't Participate

- Student habits of passivity
- Failure to see the value of discussion
- Fear of criticism or of looking stupid
- Push toward agreement or solution before alternative points of view have been considered
- Feeling that the task is to find the answer the instructor wants rather than to explore and evaluate possibilities

A primary barrier to discussion is the students' feeling that they are not learning. Occasional summaries during the hour not only help students chart their progress but also help smooth out communication problems. A summary need not be a statement of conclusions. In many cases the most effective summary is a restatement of the problem in terms of the issues resolved and those remaining. Keeping a visible record on the chalkboard of ideas, questions, data, or points to explore helps maintain focus and give a sense of progress. Asking students to summarize progress and what now needs to be done helps them develop as learners.

Another common barrier to good discussion is the instructor's tendency to tell students the answer before the students have developed an answer or meaning for themselves. Of course, teachers can sometimes save time by tying things together or stating a generalization that is emerging. But all too often they do this before the class is ready for it.

When you oppose a student's opinions, you should be careful not to overwhelm the student with the force of the criticism. Your objective is to start discussion, not smother it. Give students an opportunity to respond to criticisms, examining the point of view that was opposed. Above all, avoid personal criticism of students.

And perhaps the most common barrier is our own discomfort. We are not dispensing knowledge and not in control. It is all too easy to slip back into our old methods of teaching.

WHAT CAN I DO ABOUT NONPARTICIPANTS?*

In most classes some students talk too much, and others never volunteer a sentence. What can the teacher do?

Unfortunately, most students are used to being passive recipients in class. Some of your students may come from cultures

*Some students who are reluctant to participate orally will participate in a computer conference or by e-mail. Mano Singham of Case Western Reserve University asked students to identify themselves as talkers or listeners and then to discuss in each group how they could develop the skills of the other group. See *The National Teaching and Learning Forum*, February 2004, *8*(2).

whose norms discourage speaking in class. To help students become participants I try to create an expectation of participation in the discussion section. You can start to do this in the first meeting of the course by defining the functions of various aspects of the course and explaining why discussion is valuable. In addition to this initial structuring, however, you must continually work to increase the students' awareness of the values of participation. Participation is not an end in itself. For many purposes widespread participation may be vital; for others it may be detrimental. But you want to create a climate in which an important contribution is not lost because the person with the necessary idea did not feel free to express it.

What keeps a student from talking? There are a variety of reasons—boredom, lack of knowledge, general habits of passivity, cultural norms—but most compelling is a fear of being embarrassed. When one is surrounded by strangers, when one does not know how critical these strangers may be, when one is afraid of the teacher's response, when one is not sure how sound one's idea may be, when one is afraid of stammering or forgetting one's point under the stress of speaking—the safest thing to do is keep quiet.

What can reduce this fear? Getting acquainted is one aid. Once students know that they are among friends, they can risk expressing themselves. If they know that at least one classmate supports an idea, the risk is reduced. For both these reasons the technique of subgrouping helps; for example, you can ask students to discuss a question in pairs or small groups before asking for general discussion.

Asking students to take a couple of minutes to write out their initial answers to a question can help. If a student has already written an answer, the step to speaking is much less than answering when asked to respond immediately. Even the shy person will respond when asked, "What did you write?"

Rewarding infrequent contributors at least with a smile helps encourage participation even if the contribution has to be developed or corrected. Calling students by name seems to encourage freer communication. Seating is important too. Rooms with seats in a circle help tremendously.

Getting to know the nonparticipant is also helpful. For example, I have found that it is helpful to ask students to write a brief

life history indicating their interests and experiences relevant to the course. These autobiographies help me to gain a better knowledge of each student as an individual, to know what problems or illustrations will be of particular interest to a number of students, and to know on whom I can call for special information. One of the best ways of getting nonparticipants into the discussion is to ask them to contribute in a problem area in which they have special knowledge.

The technique of asking for a student's special knowledge deals directly with one of the major barriers to class discussion—fear of being wrong. No one likes to look foolish, especially in a situation where mistakes may be pounced upon by a teacher or other students. One of the major reasons for the deadliness of a question in which the teacher asks a student to fill in the one right word—such as, "This is an example of what?"—is that it puts the student on the spot. There is an infinity of wrong answers, and obviously the teacher knows the one right answer; so why should the student risk making a mistake when the odds are so much against the student? And even if the answer is obvious, why look like a pawn of the teacher?

One way of putting the student in a more favorable position is to ask general questions that have no wrong answers. For example, you can ask, "How do you feel about this?" or "How does this look to you?" as a first step in analysis of a problem. Students' feelings or perceptions may not be the same as yours, but as reporters of their own feelings, they can't be challenged as being inaccurate. While such an approach by no means eliminates anxiety about participation (for an answer involves revealing oneself as a person), it will more often open up discussion that involves the student than will questions of fact. Problem posting, the technique discussed in an earlier chapter as a method for establishing objectives during the first day of class, is an example of a discussion technique minimizing risk for students. It can be useful in introducing a new topic at the conclusion of a topic, or for analysis of an experiment or a literary work. An added advantage is that it can be used in large as well as small groups.

Another technique for reducing the risk of participation for students is to ask a question a class period before the discussion and ask students to write out answers involving an example from their

own experience. Similarly, one can ask students to bring one question to class for discussion. This helps participation, helps students learn to formulate questions, and also provides feedback for you.

Finally remember that out-of-class learning is often more important than that in class. E-mail, computer conferencing, and other interactive technologies can support active learning, discussion, and debate.

All of these techniques will still not make every student into an active, verbal participant. Two group techniques can help. One is buzz groups; the other is the inner circle technique.

Buzz Groups—Peer Learning

One of the popular techniques for achieving student participation in groups is the buzz session. In this procedure, classes are split into small subgroups for a brief discussion of a problem. Groups can be asked to come up with one hypothesis that they see as relevant, with one application of a principle, with an example of a concept, or with a solution to a problem. In large classes I march up the aisles saying, "Odd," "Even," "Odd," "Even" for each row and ask the "odd" row to turn around to talk to the "even" row behind, forming themselves into groups of four to six. I tell them to first introduce themselves to one another and then to choose a person to report for the group. Next they are to get from each member of the group one idea about the problem or question posed. Finally they are to come up with one idea to report to the total class. I give the group a limited time to work, sometimes five minutes or less, occasionally ten minutes or more, depending on the tasks. Peer-led discussions need not be limited to five or ten minutes or even to the classroom (see the chapter "Active Learning").

The Inner Circle or Fishbowl

In using the inner circle technique I announce that at the next class meeting we are going to have a class within a class, with several of the students (6 to 15) acting as the discussion group and the others as observers. If the classroom has movable chairs, I then arrange the seating in the form of concentric circles. I am

impressed that students who are normally silent will talk when they feel the increased sense of responsibility as members of the inner circle.

THE DISCUSSION MONOPOLIZER*

If you have worked on nonparticipation effectively, the discussion monopolizer is less likely to be a problem, but there will still be classes in which one or two students talk so much that you and the other students become annoyed. As with nonparticipation, one solution is to raise with the class the question of participation in discussion—"Would the class be more effective if participation were more evenly distributed?"

A second technique is to have one or more members of the class act as observers for one or more class periods, reporting back to the class their observations. Perhaps assigning the dominant member to the observer role would help sensitivity.

A third possibility is to audiotape a discussion, and after playing back a portion, ask the class to discuss what might be done to improve the discussion.

A fourth technique is to use buzz groups with one member chosen to be reporter.

Finally, a direct approach should not be ruled out. Talking to the student individually outside class may be the simplest and most effective solution.

HOW CAN WE HAVE A DISCUSSION IF THE STUDENTS HAVEN'T READ THE ASSIGNMENT?

It's hard to have a discussion if students haven't studied the material to be discussed. What to do?

One strategy is to give students questions at the end of one class, asking them to get information on the questions before the

*Be sensitive to the fact that the most common monopolizer is the teacher. In our research, our observers reported that in a typical discussion class the teacher talked 70 to 80 percent of the time. Have an observer check your percentage.

next class. You can ask students to evaluate the validity of different Internet sources providing relevant information. You might even give different assignments to teams of students. Another strategy is to ask students to bring one or more questions on the assignment to be turned in at the beginning of the next class.

If there are extenuating circumstances, you (or a student who is prepared) can summarize the needed points. Alternatively, you can give students a few minutes to scan the material before beginning the discussion. If used often, however, such strategies may discourage out-of-class preparation.

If the problem persists, present it to the students. What do they suggest? One likely proposal is a short quiz at the beginning of class—which usually works. However, you'd like to have students motivated to study without the threat of a quiz. Usually the quiz can be phased out once students find that discussion really requires preparation and that the assignments are more interesting as they develop competence.

HANDLING ARGUMENTS AND EMOTIONAL REACTIONS

In any good discussion conflicts will arise. If such conflicts are left ambiguous and uncertain, they, like repressed conflicts in the individual, may cause continuing trouble. You can focus these conflicts so that they may contribute to learning.

- Reference to the text or other authority may be one method of resolution, if the solution depends on certain facts.
- Using the conflict as the basis for a library assignment for the class or a delegated group is another solution.
- If there is an experimentally verified answer, this is a good opportunity to review the method by which the answer could be determined.
- If the question is one of values, your goal may be to help students become aware of the values involved.
- Sometimes students will dispute your statements or decisions. Such disagreements may often be resolved by a comparison of the evidence for both points of view, but since teachers are human, they are all too likely to become drawn into an argument in which they finally rest on their own authority. To give yourself time to think, as well as to indicate understanding and acceptance of the students' point, I suggest listing the objections on the board. (Incidentally, listing evidence or arguments is also a good technique when the conflict is between two members of the class.) Such listing tends to prevent repetition of the same arguments.
- In any case it should be clear that conflict may be an aid to learning, and the instructor need not frantically seek to smother it.
- If you're having problems with a particular student, check the chapter "Dealing with Student Problems and Problem Students."

The Two-Column Method

Another of Maier's (1952) techniques, the two-column method, is a particularly effective use of the board in a situation in which there is a conflict or where a strong bias prevents full consideration of alternative points of view. Experimental studies (Hovland, 1957) suggest that when people hear arguments against their point of view, they become involved in attempting to refute the arguments rather than listening and understanding. Disagreement thus often tends to push the debaters into opposite corners, in which every idea is right or wrong, good or bad, black or white. The truth is often more complex and not in either extreme.

The two-column method is designed to permit consideration of complications and alternatives. As in problem posting, before the issues are debated, all the arguments on each side are listed on the board. The leader heads two columns "Favorable to A" and "Favorable to B" or "For" and "Against" and then asks for the facts or arguments that group members wish to present. The instructor's task is to understand and record in brief the arguments presented. If someone wishes to debate an argument presented for the other side, the instructor simply tries to reformulate the point so that it can be listed as a positive point in the

debater's own column. But even though an argument is countered or protested it should not be erased, for the rules of the game are that the two columns are to include all ideas that members consider relevant. Evaluation can come later.

When the arguments have been exhausted, discussion can turn to the next step in problem solving. At this point the group can usually identify areas of agreement and disagreement, and in many cases it is already clear that the situation is neither black nor white. Now the issue becomes one of *relative* values rather than good versus bad. When discussion is directed toward agreements, some of the personal animosity is avoided, and some underlying feelings may be brought to light. The next stages of the discussion are thus more likely to be directed toward constructive problem solving.

Challenges and disagreements may be an indication of an alert, involved class. But the instructor should also be aware of the possibility that they may be symptoms of frustration arising because the students are uncertain of what the problem is or how to go about solving it.

Emotional Reactions

Although conflicts may arouse emotions, emotions may also arise because a topic touches a particular student in a vulnerable spot. You may notice during a discussion that one student is near tears or that a student is visibly flushed and angry. This poses a dilemma for you. You want to be helpful, but you also must have respect for the student's feelings. What should you do?

A lot depends on your knowledge of the student. If you say, "Joe (Jo), you seem to have some feelings about this," will the student be embarrassed?

If you don't wish to call attention to the student at the moment, you might say before the end of the class period, "Joe (Jo), would you stop by for a moment after class?" You could then say, "You seemed to be upset when we discussed _____. Would you like to come to my office to talk about it?"

Sometimes the best thing to do is simply wait to see if the student brings the feelings out in the discussion. If the student seems angry, I wouldn't ordinarily say, "Why are you so angry?" but if you know the student well and the class is a small one in which there is a good deal of acceptance of one another, that might be appropriate. So what will work depends on the student, the class, and your relationship with the student. Whatever the case, try to be understanding and nonconfrontational. Keep cool. This, too, will pass.

TEACHING STUDENTS HOW TO LEARN THROUGH DISCUSSION

I have already implied that classes don't automatically carry on effective discussions. To a large extent students have to learn how to learn from discussions just as they have to learn how to learn from reading. How can this occur?

First, they need to understand the importance of discussion for learning. Expressing one's understanding or ideas and getting reactions from other students and the teacher makes a big difference in learning, retention, and use of knowledge.

What skills need to be learned? One skill is clarification of what the group is trying to do—becoming sensitive to confusion about what the group is working on and asking for clarification.

A second attribute is the students' development of a willingness to talk about their own ideas openly and to listen and respond to others' ideas. It is important for students to realize that it is easy to deceive themselves about their own insights or understandings and that verbalizing an idea is one way of getting checks on and extensions of it. Teachers can encourage development of listening skills by asking one group member to repeat or paraphrase what another said before responding to it, and repeatedly pointing out the purpose and values students gain from discussion.

A third skill is planning. Discussions are sometimes frustrating because they are only getting under way when the end of the class period comes. If this results in continuation of the discussion outside the class, so much the better, but often learning is facilitated if students learn to formulate the issues and determine what out-of-class study or follow-up is necessary before the group breaks up.

A fourth skill is building on others' ideas in such a way as to increase their motivation rather than make them feel punished or

forgotten. Often students see discussion as a competitive situation in which they win by tearing down other students' ideas. As Haines and McKeachie (1967) have shown, cooperative discussion methods encourage more effective work and better morale than competitive methods.

A fifth attribute is skill in evaluation. If classes are to learn how to discuss issues effectively, they need to review periodically what aspects of their discussion are proving to be worthwhile and what barriers, gaps, or difficulties have arisen. Some classes reserve the last five minutes of the period for a review of the discussion's effectiveness.

A sixth attribute is sensitivity to feelings of other group members. Students need to become aware of the possibility that feelings of rejection, frustration, dependence, and so on may influence group members' participation in discussion. Sometimes it is more productive to recognize the underlying feeling than to focus on the content of an individual's statement. One way of helping students develop these skills is to use student-led discussions preceded by a training meeting with the student leader.

STUDENT-LED DISCUSSIONS

In pioneering experiments in educational psychology and general psychology, Gruber and Weitman (1962) found that students taught in small, student-led discussion groups without a teacher not only did at least as well on a final examination as students who heard the teacher lecture, but also were superior in curiosity (as measured by question-asking behavior) and in interest in educational psychology.

TAKING MINUTES OR NOTES, SUMMARIZING

One of the problems with discussion is students' feeling that they have learned less than in lectures where they have taken voluminous notes. Thus I like to summarize our progress at the end of the period or ask students to contribute to a summary. Better yet, use the last five to ten minutes for getting feedback. For example, ask students to write a summary of the issues discussed, the pros and cons, and their conclusions.

ONLINE DISCUSSIONS

E-mail, listservers, computer conferences, and other online experiences extend the opportunities for discussion. They also provide practice in writing. They can facilitate cooperative learning. The impersonality of e-mail may reduce the inhibitions of those who are shy in the classroom, but research suggests that it may also reduce inhibitions against rudeness. Thus, in initiating an online discussion, remind your students that respect for others and rational support for arguments are just as important online as in the classroom.

You also need to be clear about your expectations for participation. I have used online discussions off and on since it first became possible to do so, but my success has been variable. If I simply recommend use of the opportunity, a few students who love computers participate, but their discussions often have little to do with the course. I tried posting questions, topics, or problems, and that helped some, but many students still did not participate. One of my teaching assistants, Richard Velayo, tackled this problem for his dissertation. He found that what worked best was to require discussion of a question each week.

IN CONCLUSION

Teaching by discussion differs from lecturing because you never know what is going to happen. At times this is anxiety-producing, at times frustrating, but more often exhilarating. It provides constant challenges and opportunities for both you and the students to learn. When you can listen for several minutes without intervening, you will have succeeded.

Supplementary Reading

- C. C. Bonwell and T. E. Sutherland, "The Active Learning Continuum: Choosing Activities to Engage Students in the Classroom," in T. E. Sutherland and C. C. Bonwell (eds.), "Using Active Learning in College Classes: A Range of Options for Faculty," *New Directions for Teaching and Learning*, no. 67, October 1996, 3–16.
- S. D. Brookfield and S. Preskill, *Discussion as a Way of Teaching: Tools and Techniques for Democratic Classrooms* (San Francisco: Jossey-Bass, 1999).
- A. Collins, "Different Goals of Inquiry Teaching," *Questioning Exchange*, 1988, 2(1), 39–45.
- J. T. Dillon, *Teaching and the Art of Questioning* (Bloomington, IN: Phi Delta Kappa Educational Foundation, 1983).
- B. S. Fuhrmann and A. F. Grasha, *A Practical Handbook for College Teachers* (Boston: Little, Brown, 1983), Chapter 6.

Chapter 6

How to Make Lectures More Effective

The lecture is probably the oldest teaching method and still the method most widely used in universities throughout the world. Through the ages a great deal of practical wisdom about techniques of lecturing has accumulated. Effective lecturers combine the talents of scholar, writer, producer, comedian, entertainer, and teacher in ways that contribute to student learning. Nevertheless, it is also true that few college professors combine these talents in optimal ways and that even the best lecturers are not always in top form. Lectures have survived despite the invention of printing, television, and computers.

Is the lecture an effective method of teaching? If it is, under what conditions is it most effective? I will tackle these questions not only in light of research on the lecture as a teaching method but also in terms of analyses of the cognitive processes used by students in lecture classes.