ETS SIR II™

Listening. Learning. Leading.

STUDENT INSTRUCTIONAL REPORT (SIR II™)

Enhancing Your Teaching Through Use of the SIR II report: Suggestions for Improvement

Compiled by
John A. Centra

TABLE OF CONTENTS

TABLE OF CONTENTS

INTRODUCTION

What follows is a compendium of suggestions for improving college teaching. The suggestions are grouped according to the Student Instructional Report II scales. If you think one of your scores is lower than you would like, or if you simply want to see if you can enhance what you are doing as a teacher, these suggestions should help you.

The suggestions come from two sources: the literature on effective teaching, which generally highlights practices that lead to student learning, and what highly rated teachers are saying themselves about what they have been doing to make them better teachers.

The suggestions are organized under each of the following SIR II scales. You can scan through them and focus on the topic of most interest to you.

Course Organization and Planning
Communication
Faculty/Student Interaction
Assignments, Exams and Grading
Course Outcomes
Student Effort and Involvement
Course Difficulty, Workload and Pace

The comments by highly rated teachers came primarily from these sources:

Marsh, H.W., and Roche, L. A. (1994). The Use of Students' Evaluations of University Teaching to Improve Teaching Effectiveness. Canberra: Department of Employment Education and Training. Also their pamphlets titled: Targeted Teaching Strategies. Improving Academic Teaching Project. (1996). Center for Enhancement of Teaching and Learning, University of Western Sydney Macarthur.

Davis, B. G., Wood, L., and Wilson, R. (1983). ABC's of Teaching with Excellence. Teaching Innovation and Evaluation Services (TIES). University of California, Berkeley. Also from TIES: Wilson, R.(1984). Using Consultation to Improve Teaching.

Many references from the literature on effective teaching were consulted and these are provided at the various websites. You may want to consult them for further information on some of the suggestions.

Two of the major references were:

Davis, B.G., (1993). Tools for Teaching. San Francisco: Jossey-Bass.
McKeachie, W. J. (2002). Teaching Tips. 11th Edition. Lexington, M.A.: Heath.

We want to thank all of these authors and the teachers who provided comments.

A Request

We are interested in how useful you have found this compendium. Also, we are especially interested in teaching practices that you have found to be effective. With your permission we would like to add them to this compendium. Please send your comments to John Centra, at jacentra@syr.edu.

CONSIDERATIONS FOR COMMUNITY COLLEGE TEACHERS

The suggestions for improvement in this compendium most likely apply to teachers at all levels. Teachers at two-year colleges had some additional comments that seemed to apply especially to their students. The following are those comments, in the teachers' own words.

On the first day of class and the syllabus:

1. The first day of class is the most important day. It sets the tone for all other days. Often, community college students have no idea what to expect. They are frequently first-generation college students. Many have very busy lives and believe they can work full-time, have a family, and attend college full-time. Therefore, it is necessary that instructors explain clearly the expectations of the course.
2. Community college students need to know on the first day of class that the instructor is willing to help them succeed. The teacher might tell students that he or she is planning on 100 percent student success and that anyone who withdraws from the course would be letting the whole class down.
3. Community college students are often very anxious. Many were not successful in the past and are worried about the possibility of passing the course. Instructors who teach noncredit math or science courses, in particular, need to have patience and empathize with students. A kind word or smile means the world to these students.
4. It is important to convey a sense of a positive learning experience with the syllabus, along with the course requirements and content. It is also important to mention conduct and acceptable behavior (i.e., no headphones in ears, heads on desk, etc.), either through the syllabus or during the first day of class.

Communicating with students:

1. New instructors frequently have difficulty relating to community college students. Former TAs who have taught at prestigious universities or colleges have the most difficulty. They need to treat students as adults and not as "college freshmen," given the average student age is generally between 26 and 29 years.
2. Instructors should always begin and end class on time. They need to be mindful that their students most likely have other commitments. I like to arrive at least five minutes early to class.
3. While giving notes, I find it useful to provide visual alerts to the level of importance of material being covered. I use stars or asterisks to alert students to certain sections of their notes, with three stars being most important. Students have commented on the value of this approach, noting that it helped them review the material more efficiently.
4. Be sure to give a quiz early in the semester to assess students' abilities, their comprehension of course content, and to familiarize them with your testing style.

5. Encourage students to get assistance early if they feel the need. Inform students of your availability, but also tell them about various types of academic support and assistance available to them (tutoring, writing or study skills assistance, etc.). Essentially, try to remove the stigma and negative connotations sometimes associated with tutoring and other services. Early intervention is critical!
6. Stay consistent in your mood and maintain an even approach to your students. For example, if you have a bad sore throat or cold, let the students know you may not be your usual "teaching self." Students appreciate the honesty and consistency.

Aids to Instruction:

Instructors need to become aware of publisher's electronic materials. They need to contact their textbook representatives and specifically inquire about materials that will improve learning. Many publishers have phenomenal materials which include online interactive multi-media textbooks, electronic classrooms, tutorials, videos, quizzes, tests and more. These materials really do extend learning outside the classroom and help students to become more responsible for their learning. Online discussions can be initiated by the instructor or continued from a class discussion. It is easy to design the discussion forum in a course management system or other website provided by the publisher. Often these materials require a small additional charge for an access code. These materials are especially useful for instructors who are teaching either web-enhanced or hybrid courses. Of course, it is very important that on-campus computers are available for the students.

Online teaching is becoming more common, and guides for developing online courses are increasingly available (e.g., the State University of New York Learning Network). Instructors who teach online often rethink their approach to classroom teaching.

COURSE ORGANIZATION AND PLANNING

This scale speaks to how well the instructor has made requirements clear and is prepared for each class. It also reflects whether students view the instructor as being in command of the subject matter and able to emphasize the important points to be learned. Research has shown that students learn the material better when they perceive the course as well organized.

Some suggestions for this scale:

1. Prepare a detailed course syllabus.
    - Many faculty members state the objectives of their course in a syllabus. One physics professor says, "I like to lay out the course in some detail for my students. I even make projections of the topics and purposes of each class session. I have never yet stuck to the schedule, but laying it out organizes my thinking. I think it helps students feel more organized, too."
    - Another professor says his syllabus runs about 15 pages. "It is organized by class session and each section consists of a major topic, four to eight important study questions, and issues my students are expected to understand or be prepared to discuss."
    - Set high but reasonable expectations for student effort and learning. Be clear about your expectations. Explain them, provide examples and tell students how many hours you expect them to spend on out-of-class course work. If students spend three hours in class, you have between three and six hours of out-of-class time you can claim for your course.

Here are some of the topics that should be in a syllabus. (For more detailed information and references, go to: Creating a Syllabus. Another excellent source is the MIT OpenCourseWare project, where you may log on to the MIT website and obtain the syllabi and course materials for every course offered at MIT.)

- Provide basic course information. Course title, units, location, your name, office hours and location.
- Prerequisites for the course.
- General learning goals or objectives of the course. What abilities or competencies you expect students to master.
- Format or activities of the course. Teaching methods to be used.
- Textbooks and readings.
- Assignments, term papers and exams.
- How students will be evaluated and grades will be assigned.
- Course policies. Class attendance, missed assignments, extra credit and drop dates.
- Course calendar or schedule.
- Estimated student work load.

2. Use "advance organizers" for each class.

   - Write the objectives on the board or put them on an overhead projector before you begin.

   A beginning statement of objectives or directions is one of the most important aspects of teaching. Students need to know where you are going so that they can understand where they are going. One professor explains, "I come to class early and write three to four objectives on the board. As class begins I present my objectives for that day for the class."

   - Begin each class by letting your students know what you are going to talk about and why.

   An engineering professor refers to this as his battle plan. "For example, I tell my students that I'm going to discuss such-and-such for the first twenty minutes, show them how to use it in the next twenty minutes, and then take questions in the last ten minutes. I eliminate a lot of student confusion in this way."

   - The adage, "Tell them what you're going to tell them; tell them; then tell them what you told them, is especially useful for major, complex topics, as well as for an overall lecture.

3. Acknowledge the difficulty of concepts students are likely to find hard to understand.

   - "Acknowledging difficulty avoids the risk of belittling the students' efforts in mastering the concept," says one exceptional chemistry professor. "It is important to admit to the difficulty of understanding material for the first time but not to make that difficulty an excuse."
   - One engineering professor says, "I consciously cue students to the difficult ideas by saying such things as, 'Almost everyone has difficulty with this one, so listen closely.'"

4. Organize your lectures into 10-or 15-minute segments. A great deal of evidence indicates that students' attention spans and ability to retain information decline after 10 or 15 minutes, although this may likely be affected by the quality of lectures.

    - Plan the lecture so you can break it into smaller segments to engage students and regain their attention.
    - One natural science professor at Harvard presents brief segments of information to students and then has them problem-solve or discuss the material in small groups. He does this with as many as 300 students in a class, using handouts or overhead projectors.
    - Another professor believes the advantage of breaking lectures into brief segments is that "the pace can be adjusted during the lecture when it is clear that it is going to be too long. If time is running long, the part to shorten is the middle, where it will be little noticed. The beginning or end must not be hurried."

5. Summarize at the beginning and end of lectures or discussions.

    - The advantage of summarizing the main points covered in the most recent lecture is that, as one teacher states,"students are fresher and, after a brief recapitulation, they are more likely to realize and acknowledge if they have any problems." A variation of this technique is to summarize and call for questions whenever there is a major transition from one topic to another within the same lecture.
    - A history professor finds it helpful to place his watch in full view on the desk or lectern. "I watch the clock carefully to be sure that there is time to summarize the day's discussion. Then at the beginning of the next class session, I sum up the previous lecture once more before moving on to a new topic. Students crave both continuity and a sense of closure."

6. Explicitly call attention to the most important ideas in each lecture.

    - Faculty members in several disciplines stress the need to call students' attention to the most important ideas being presented. Some teachers announce the importance of an idea before presenting it, saying such things as "This is really important so you need to be alert."
    - One professor says, "I began to emphasize the main points about ten years ago when I discovered that you can't rely on undergraduates to intuitively know what the most important points are. You have to tell them."

7. Research suggests that lectures have serious limitations in promoting deep or lasting learning. According to McKeachie, discussion methods are superior to lectures in student retention of information at the end of a course; transfer of knowledge to new situations; development of problem solving, thinking and attitude change; and motivation for further learning.

    Lectures are good for:

    - Presenting up-to-date information (material not available in text or other student reference material).
    - Summarizing or synthesizing material across sources.
    - Adapting material to the background or interest of your students.
    - Helping students read more effectively by providing an orientation and conceptual framework.
    - Focusing on key concepts, principles or ideas.

    For further details about organizing and delivering a lecture go to: Delivering a Lecture.

COMMUNICATION

Making clear and understandable presentations and using examples or illustrations when necessary are important tools for communicating with students. Communication is also facilitated by an instructor's enthusiasm for the material and use of challenging questions or problems in class.

1. Prepare clear, interesting and succinct overheads or other displays to clarify presentations.
    - Highly rated teachers stressed the importance of clear visual displays. Overheads should not contain more than three or four succinct points.
    - A chemistry instructor prefers to prepare overhead transparencies by hand as he lectures, in order to maintain student attention and interest.

2. Use a variety of concrete or memorable examples.
    - Many excellent teachers agree that the choice of examples is very important, and that those that are anecdotal, personal or humorous are the ones that students tend to remember best.

3. Consider preparing handouts of the lecture that include any formulae, derivations or illustrations that will be presented in class.
    - One professor says his handouts are designed to help students follow the main structure of his lectures and to help them from getting bogged down in copying details. "Students could not cut class and rely solely on the notes, however, because they are not self-explanatory."

4. Plan your instruction around a conceptual framework.
    - Research has shown that students begin a course with little organization, but develop conceptual structures during the course that more closely resemble the instructor's.
      Planning a clear framework that students find useful and meaningful is an approach used by many effective lecturers. The framework could be a theme, overall concept, controversial issue or a theory.
    - One professor of physiology points out that "To the uninitiated, our field looks like a mass of facts. By establishing a conceptual framework, I minimize the amount of rote memorization my students have to do."
    - A history professor uses the concept "attitudes toward natural resources" rather than chronology as an organizing principle. A Spanish literature teacher identifies two or three major concepts (e.g., irony or tragedy) and applies them repeatedly. A sociology professor uses a matrix as his conceptual framework, and each day he adds new information, stressing the need to tie basic facts together.
    - One history professor gives students a list of questions that will be addressed in her presentation. "The questions are designed to give them a conceptual framework and guide so they can identify where we are and where we are going in the overall discussion."

5. Demonstrate a concept rather than describing it, when possible.
    - Try to avoid talking about something in a vague or general way. For example, one teacher says, "Don't tell students how to present a logical argument; present a logical argument and help them to analyze it."

- Demonstrations are superior to discussions because they make use of additional senses. Use visual imagery whenever possible. Even if a live demonstration or the use of visual aids is not practical, the use of metaphors and analogies that provide students with a mental image to draw upon can help reinforce their understanding and recall.

6. Use numbering, or "closed lists," whenever possible in your presentations. Students like to take notes with numbered lists to guide them.

    - A political science professor says he makes frequent use of closed lists. "I make a habit of saying things like: 'There are three main implications of X, number one is…'"

7. Learn to vary the pitch or inflection of your voice.

    - If your students complain that your lecture is monotone, you may want to try one of the following: taking speech lessons, joining an organization like Toastmasters, taking acting lessons, joining a poetry or drama reading group, or simply practicing reading aloud to yourself (in front of a mirror, as one professor does) or to a member of your family.
      Each of these methods has been used effectively by teachers.

8. Vary the type of activities in a course.

    - Many excellent teachers use a wide variety of teaching strategies to produce high ratings in communication. Some of these include student panel discussions, role playing and simulations, debates, guest speakers, slides, films, overhead transparencies, case- or problem-based learning and group work/collaborative learning.

    For a detailed discussion of designing group work for students, go to:
    Collaborative Learning: Group Work and Study Teams.

9. Exaggerate everything about your presentation in a large auditorium class.

    - One professor believes that physical exaggeration and a bit of hyperbole are keys to success in large classes. "You will have to remember that 800 students constitute an *audience,* not a class in the normal sense."
    - Another says, "In a very large class, I stride the stage with long steps, I make sweeping gestures, I ask broad rhetorical questions and make ridiculous puns, I pound the lectern and raise and lower my voice, and I make frequent use of simple graphs projected on a movie-size screen."

10. Open the class with a strong attention-getter.

    - The opening should secure students' attention and give them the desired mental jolt.
      Do something to command their attention from the outset.
    - Use some form of attention-getter such as a gadget or costume related to the day's lesson.
    - A lecturer in history says he often begins by reading aloud a short passage from a primary source or a story to illustrate the major theme or point of his lecture.
    - A joke related to the course content, to education or to life in general is another attention-getter— and one that may be especially useful at the beginning of the week. One source for jokes is the students themselves. "I encourage students to bring me jokes I can use. In that way, my bad jokes are theirs as well." Keep in mind that telling jokes will not be comfortable for everyone.

11. End the class on a strong note.

    - Don't let the class session simply fade away. An impressive ending may include asking a question that the class should think about and answer before the next session. You might also give them a brief review of the content covered, or tell them what they need to do before the next class.
    - A strong and useful ending is the so-called "minute paper." Students are asked to write briefly on two questions:
        - What is the most important thing you learned today in this class?
        - What question is foremost in your mind?

    Instructors can review the responses and discuss them at the next class session. The discussion often becomes a useful bridge from one class to the next.

12. Build deliberate pauses and repetition to draw students' attention to the main ideas.

    - A zoology professor says "When I want to emphasize a point, I always pause until the audience is absolutely silent (it makes students uncomfortable). Then when I have their full attention, I proceed to make the point."
    - A history professor says, "I indicate a main point by pausing to get my students' full attention and then saying emphatically, 'This is really important.' Then I pause again to be sure they are prepared to write it down."
    - Several teachers stress the need for repetition, and use different language or examples to communicate the most important points of their lectures.

13. Videotape a segment of your class for feedback.

    - Many professors choose to have their classes videotaped. As one educator puts it, "The first time is often a shattering experience. But it is the most effective kind of feedback you can get. I have found videotape invaluable for getting rid of annoying mannerisms, for learning to vary the speed of my delivery, and to put more expression and clarity into my presentations."

    For more on using videotape for feedback, go to: Watching Yourself on Videotape.

14. Ask a colleague or faculty development consultant to observe your class.

    - A supportive colleague or faculty development consultant, if available, can observe you and offer suggestions about your communication skills, as well as other facets of your teaching.

    For more details on how to plan for observation(s), go to:
    Having Colleagues Observe Your Class.

FACULTY/STUDENT INTERACTION

Students prefer instructors who are helpful, responsive and show concern for their students' progress. Highly rated teachers are available to give students extra help if needed and show a willingness to listen to students' questions and opinions. In general, good scores on this scale reflect teachers who have good rapport with students, and do what they can to help students learn.

1. It is important to know your students as class size permits.

    • Have your students fill out index cards about their backgrounds and interests. Ask for information such as a student's major, related courses taken and career plans. Use this information to understand the students and to call on those who may offer a different perspective. One teacher lays out the cards by seat and row to reflect where each student is sitting.

    For more suggestions go to: The First Day of Class.

    • Knowing your students is important for several reasons. Many outstanding teachers stressed that new learning grows out of knowledge students already have. Assuming too much prior knowledge may cause students to become disinterested or anxious. Giving a diagnostic or ungraded "pre-test" at the beginning of the course is one way to learn about your students' prior knowledge and skills.

    • Use your students' names whenever possible. One teacher says he does a roll call several times during the beginning of the term. Another walks around while students are working on a quiz or problem and tries to match faces and names. Use a seating chart if necessary. You should be able to learn the names of all students in classes of 30 or less.

2. It is also important for students to know each other: this is especially helpful in encouraging class discussions. Students are more likely to participate in class if they feel they are among friends.

    • At the beginning of the term, ask students to introduce themselves and describe their interests or background in the subject.

    • Pair students up and have them introduce themselves, first to each other and then to the class. "I think this approach also helps students feel free to talk," one teacher says.

3. Keep time after class open to talk with your students.

    • Make a habit of staying after class to talk with your students. "The biggest turnoff for students is for a faculty member to gather up his notes immediately and virtually beat his students to the door after class," says one professor. "This suggests you're too busy for students. I have developed a technique of loitering after class, very slowly cleaning the boards and talking with students as they leave. The result is that after the first few days, more and more students linger as well, and I get to know many of them that way."

    • Another strategy is to schedule consulting hours immediately following class. "That way students who have more complicated questions are invited to accompany me back to my office," says another teacher.

    • "Students can be very sensitive to non-verbal messages implying that you are not genuinely interested, and this can quickly turn them off in a course," one physics professor points out. "Some teachers seem to fear that any further encouragement of their students to drop in would leave them inundated. It is actually quite easy to avoid seeming negative to students' requests."

4. Keep your office door open unless you really cannot be disturbed.

    • Many professors do non-teaching work in their offices. One instructor notes, “I tell my students that if the door is open they should feel free to come in and ask whatever questions they have. On the other hand, if the door is closed, it means either I am not in or prefer not to be disturbed.”

    • “My students should have first priority on my time,” one engineering professor says. “I always keep my door open when I’m in, and am willing to stop whatever I am doing if one of my students comes by. It’s important not to appear standoffish, to act put-upon, bored or too busy to spend time with your students out of class.”

5. Ask all of your students who are below passing on assignments or quizzes to see you.

    • One teacher of forestry does this in all his undergraduate courses. “It’s important to find out why students score low, he explains. “If they are having difficulty understanding the material, I offer to help them, or try to get them help. If it’s a question of a student placing less priority on my class, that’s his choice. It helps me as a teacher to know the reasons for poor performance. Showing concern is also a powerful motivator for some students. They begin to do better.”

    • One professor gives an early semester test and asks each student who did not pass to talk with him about the test results. In these meetings, he tries to discover each student’s problem. “I ask questions such as ‘Did I misread anything you gave as an answer?’ or ‘What problems did you have in taking the test?’”

6. Seek students’ questions and opinions.

    • Even in large classes, many teachers are able to elicit students’ opinions and answers to questions. Break up your lectures by posing a thoughtful question to the class as a whole, or to a particular student. Rhetorical questions, in the long run, are not as effective.

    • In discussion and seminar courses, it is easier to obtain student participation, although there still may be challenges. Here are some suggestions:

        • Arrange seating to promote discussion. If your room has movable chairs, haveyour students sit in a semicircle.
        • Limit your comments. Some teachers talk too much and turn discussion classes into lectures.
        • Encourage all students to participate. Give quiet students special consideration. Make sure each student has a chance to talk during the first few classes.
        • Encourage students to e-mail questions or comments.
        • Periodically divide your students into small groups for mini-discussions.
        • Try to discourage students from monopolizing the discussion. Avoid eye contact with those students or say you would like to hear from others in the class.
        • Use nonverbal cues to encourage participation. Smile expectantly and nod as students talk.
        • Keep the discussion focused on the topic at hand.

    For more information on conducting discussions and eliciting student participation go to: Encouraging Student Participation in Discussion.

ASSIGNMENTS, EXAMS AND GRADING

An important aspect of this scale is the quality of feedback students receive from instructors on their assignments, exams and grades. Choose assignments and textbooks that are helpful in understanding course material. Realize that students want exams to be clear and fair. They believe exam questions should reflect the important material in the course, and want to know how they will be graded.

1. Match your tests and assignments to the objectives and content of what you are teaching.

    - To determine how well your tests reflect your objectives, you can construct a grid. Listing your course objectives along the side of the page and content areas across the top.
    - In some cases, assignments may be better measures of the skills and content important for success in the course.

2. Communicate assessment criteria.

    - Clear grading criteria is important. Such criteria should be communicated in the course syllabus. Criteria for a particular assignment can be given when the assignment is made. Providing sample questions or papers helps students know what you expect and prepare appropriately.
    - Using rubrics of other grading scales to define criteria can help students understand your expectations and see where their work meets those expectations.

3. Use a variety of testing methods.

    - Students differ in their preferences for test formats. Using a variety of methods will help students do their best.
    - Students study in ways that reflect how they think they will be tested. If they think they will be tested on facts and specific knowledge, they will memorize details. If they think the test will require integrating or applying knowledge, they will work toward understanding. Thus, a variety of testing methods provides a better learning experience for students.
    - Most teacher-made tests rely too heavily on recall of information. Test should measure higher-level learning as well.
    - Bloom's taxonomy has been used for years as an aid in test development.

    For more information on adapting the taxonomy and a fuller discussion of the pros and cons of different testing modes, go to: Quizzes, Tests and Exams.

4. Prepare exam questions that are balanced in difficulty and similar to what students have seen on previous quizzes and assignments.

    - "A balanced test with easy, moderate and difficult items gives my students an opportunity to show whether they have mastered the fundamentals of my course or have gone beyond the minimum," explains one faculty member. "I try to give my students a feeling of satisfaction at the end of the course by providing them with an opportunity to express what they have learned, rather than frustrating them because what they have studied does not appear on the exam."

    - "I try to generate problems that are similar to my homework problems so there are no surprises," says a mathematics professor. "I also try to include problems everyone should be able to do, as well as questions that require more thought and really make my students go beyond the material."

5. Prepare study and review questions to hand out before the final exams.

    - Several excellent teachers report that they always hand out study and review questions before exams in their undergraduate courses. A professor of Near Eastern studies says, "This helps relieve test anxiety, especially in an undergraduate course where students are less sure what to expect." He adds: "I organize my study questions so that it is apparent not only what is most important, but how the parts of the course fit together. I think this helps them synthesize the material."
    - "Many undergraduate students have not really developed good study skills," says one humanities teacher. "Furthermore, because many of them realize or suspect this, their anxiety level is especially high in the first year. I try to help by giving them study questions for reviewing the content of my course, and by reviewing these questions in the last session of class."

6. Ask students to submit test questions.

    - This technique helps establish good rapport with students, gives you additional information on their sense of what is important in the course, and becomes an excellent source of future exam, quiz or discussion questions for the course. One professor tells students: "Almost inevitably, teachers fail to ask you all the things for which you so carefully prepared. As it happens, writing good questions is almost as difficult as writing adequate answers. Thus, to give you your turn, if you have the time and inclination, write an original exam question. You will receive 0 or 10 points depending upon the quality of your question. Just the question please, don't supply the answer."

7. Take precautions to avoid cheating.

    - For more information go to: Preventing Academic Dishonesty.

8. Provide immediate feedback on exams and assignments.

    - It is an established principle of learning that the learning value of tests and assignments diminishes with each day that elapses before results (feedback) are provided. Return tests and assignments as soon as possible, with adequate reviews, so students have a chance to learn from their mistakes.
    - One engineering teacher says that even if she cannot return graded assignments at the next class meeting, she at least discusses the answers. "I want to correct any misunderstandings and reinforce their learning as soon as possible," she says. "Students are much more receptive to this right after completing an assignment or test."
    - An English professor agrees: "The impact is enormous when you return assignments at the next class meeting. Students are still anxious to know how they are doing. That's a tremendous advantage in maximizing the impact of feedback on their learning."

9. Give frequent assignments and make extensive, constructive comments when returning them.

    - "Students need to know what they are doing well, in addition to what they need to improve," says one educator. "I am always careful to praise their strengths and to be as constructive and helpful as possible in pointing out their weaknesses."
    - "I make a point to write extensively on my students' papers," says one professor. "In fact, I write just as much on the best papers as on the poorest."

10. Use real-world assignments when possible.

- An engineering teacher assigns his students problems based on real cases. “For example, my students are told that a ball bearing failure has occurred in an airplane. They are asked to outline what steps they would take in determining the cause and correcting it.”

- A professor of anthropology carefully prepares case study assignments to give her undergraduate students exposure to primary research techniques and strategies.

- A forestry professor assigns weekly thought problems that mirror the questions professional foresters are asked, such as: “What is killing that tree?” instead of “Name the six factors which can kill trees.”

- A history professor gives assignments that put his students in the role of someone else. For example, he asked students to read a collection of the 18th-century speeches on why Louis XVI should be killed, and assigned them the task of writing a speech as if they were living during the French Revolution.
- A political science professor always includes at least one experiential assignment in his courses. “My students are experience-poor and theory-rich,” he explains. So he had students form teams to interview a local politician, as well as the politician’s family, constituents and staff. This gave his students a better understanding of political life and the issues and problems that arise.

COURSE OUTCOMES

The goal of any course is to increase student learning. Making progress toward course objectives and increasing student interest in the subject area are important corollaries to this outcome. This scale measures student perceptions of their learning in the course, as well as to what extent the course helped them think independently. Research indicates that using active learning strategies, reflected in this scale, is an excellent way to engage students and to improve the overall quality of learning.

The course outcomes scale is highly correlated with other scales in SIR II, suggesting that learning, or at least student perception of learning, is most likely to occur with effective teaching practices.

1. Choose the most appropriate teaching methods to facilitate student learning.

    - As one highly rated teacher says, "Traditional lecturing methods are often used by default in situations where the possibility of more effective alternatives either has not been considered, appears to be too radical, or involves too much time and effort to establish." To teach higher levels of learning, such as the ability to apply information, the ability to analyze or synthesize subject content, or the ability to think critically, the following alternatives to lecturing would be appropriate:
        - Application—problem-based learning, case studies, labs, computer applications, projects in which students learn together
        - Critical reflection—logs/journals, discussion-based teaching, role-playing/simulation, collaborative learning
        - Inquiry—small-group discussion, collaborative/cooperative learning, term papers and projects, computer applications
    - Research suggests that a variety of methods is preferable to a single instructional method.
    - Problem-based learning (PBL) is a type of discussion-based learning that centers on a problem to be solved or a dilemma to be considered. Typically, the problem is complicated and requires considerable discussion over more than a single class period. Learners may need to conduct research in order to address the problem. PBL requires creative problem solving, usually by a group of learners working together. Thus, it blends discussion-based teaching with collaborative learning. There are a number of excellent web-based materials devoted to PBL, including:

      http://www.pbl.uci.edu/whatispbl.html

      One physical science teacher uses a briefer application of PBL. He begins by outlining and discussing a major concept. He then gives students a specific short problem and asks them to take 10 minutes to try to apply the concept. "While students are working, I walk up and down the aisles observing. At the end of 10 minutes or so, I summarize some of the common errors they made, why I think they made them, and then give them tips on some of the most fruitful strategies for solving that kind of problem."

- Create opportunities for role playing. For example, an engineering professor makes use of role playing to encourage his students to develop skills they will need in their careers. “I give my students copies of an engineering report. Then one half of the class is asked to assume the role of the authors of that report and prepare an oral presentation for the client or funding agency. The other half of the class is assigned to act as representatives of the client or funding agency, and to prepare questions to be asked of the engineers.”
- Research evidence has supported the use of collaborative learning for promoting deep learning. For information about how to design group work for students, go to: Collaborative Learning: Group Work and Study Teams.
- Effective discussion classes can also promote deep learning. For information on discussion-based teaching, go to: Encouraging Student Participation in Discussion.

2. Promote active learning.

- Active learning occurs when students are involved in the teaching process (as opposed to passive learning, when they simply listen or receive knowledge).

The significance of active learning is not new. Confucius once said:

I hear and I forget.
I see and I remember.
I do and I understand.

Active learning provides opportunities for students to talk, listen, read, write and reflect about the course content. It is relevant for the higher levels of learning listed above and includes the above instructional methods. It is also useful for adult learners, many of whom learn best as active learners.

3. Assess student learning during the course, as well as at the end.

- Have your students keep a journal of their learning experiences during the course. A journal can be a very effective way to help students reflect on their learning during a course and lead to greater understanding and appreciation of the subject. It is important to ensure that students are familiar with the process of journal writing and know what benefits they can expect from it. Some teachers require a journal as an assessable course project.
- Assign “minute papers” at the end of selected classes.

Many teachers have found this popular technique to be an effective way to assess student understanding and what has been achieved in a class session. Students are asked these two questions:

1. What is the most significant thing you learned today?
2. What question is uppermost in your mind at the end of today’s session?

The Berkeley physics professor who invented this process says he can tell if he is getting his points across and identify the problems students are having. “I can clarify difficult points next time we meet. I can identify students in trouble early in the term. If a student gives me off-the-wall responses, I invite him or her to come see me. Furthermore, the minute paper process causes students to listen more actively. All the way along, they are asking themselves if this is the most important thing that I’m going to learn. Responses I get in the last week of the term are more articulate and longer than those at the beginning.”

- Periodic quizzes.

Instead of waiting until the midterm or final to find out how many students understand the material, try handing out a short questionnaire or quiz on the basic concepts covered that day. Concept definitions and applications can be tested.

• Use Classroom assessment techniques.

Classroom assessment assumes that the more you know about what and how students are learning, the better you can plan learning activities. The techniques are mostly simple, non-graded, anonymous, in-class activities that give you and your students useful feedback on teaching and learning. "Minute papers" is one example of this technique. For more examples, go to: Classroom Assessment Techniques.

• Diagnose student learning in the course through test analyses.

To the individual student, a total score on a test indicates how well he or she has learned the course material. It also informs the teacher about how well the class as a whole has done and identifies particular students who perform appreciably higher or lower than their classmates. A particularly useful tool in determining the extent to which specific course objectives have been achieved (as reflected by the test items) is an analysis that involves tabulating—across all students in the class—student responses to each item or each subsection of items. When a majority of students perform successfully on a given item or section, the instructor can be assured that the material has been learned at a satisfactory level. Individual questions or test sections on which the students as a whole score poorly are indicative of course areas or objectives that require more attention.

Various computer programs available at most college or university testing offices simplify post-administration analysis of multiple-choice questions. In addition to the information described above, they provide item-difficulty indices that identify test questions that may be less valid. In the absence of those services, straightforward analysis procedures involving paper-and-pencil mathematics can be used quite effectively.

4. Use department-designed or externally published tests and instruments to assess some of the learning goals of your course.

• Comprehensive department exams.
A few departments use comprehensive senior exams to assess student learning in their programs. If yours does, you should be able to use the results to determine how well students have retained information and other outcomes from your course.

• Major Field Tests.
Another option is to use an external test such as the widely used Major Field Tests, by Educational Testing Service. Designed to measure the basic knowledge and understanding of seniors in a major field of study, tests are currently offered for 15 programs. The advantage of using the tests is that it allows faculty to compare student achievement in their program to a national comparative group (students in the same major from other colleges and universities). It enables you to identify the relevant items on the test and compare your students' performance with other students in your department, as well as with students in the national group. Repeated administration of the tests will allow you to make comparisons over time.

For more information on the Major Field Tests, go to: www.ets.org.

STUDENT EFFORT AND INVOLVEMENT

Student learning is also determined by how much effort is put into the course. How much time students spend studying and completing assignments, how well prepared they are for each class, and their attitudes toward the content itself are only partially under the teacher's control. What teachers can do, however, is motivate, challenge and involve students in the learning process. Here are some suggestions for addressing this scale.

1. Use good teaching practices.

   Good everyday teaching practices can do much to counter student apathy. Most students respond positively to a well-organized course taught by an enthusiastic teacher who has genuine interest in students and what they learn. The practices you undertake to promote learning will generally result in greater student effort. The active learning strategies previously described under Course Outcomes include ways to involve students and increase their effort.

2. Student self-motivation is important.

   To encourage students to become self-motivated, independent learners, you can do the following:
   - Give frequent, early, positive feedback that supports students' beliefs that they can do well.
   - Assign tasks that are challenging but not too difficult.
   - Help students find value and personal meaning in the material.
   - Avoid messages that underline your power as an instructor. Instead of saying "I require," "you must," or "to get a good grade," try saying "I think you will find," or "you will enjoy."

3. Structure the course to motivate students.

   • Tell students what they need to do to succeed in your course. Don't let students struggle to figure out what is expected of them. Say something like, "If you can handle the examples on these problem sheets, you can pass the exam," or, "Those having trouble with these examples can ask me for help."

   • Avoid creating intense competition among students.
   Competition produces anxiety, which can interfere with learning. Reduce students' tendencies to compare themselves with one another. Research tells us that when students work cooperatively in groups, better comprehension and a greater amount of work can be achieved. Refrain from public criticisms of student performance or work.

   • If possible, let students have some say in choosing what will be studied. Give students options on term papers or other assignments, but not on tests. Have them select which topics they wish to explore in greater depth.

   • Increase the difficulty of the material during the semester. Give students opportunities to succeed at the beginning of the semester, and then gradually increase the difficulty level. Some instructors believe they should make a course difficult at the outset so students will establish a higher threshold for effort. This may be counterproductive for many students.

   • Avoid using grades as threats. McKeachie points out that the threat of low grades may prompt some students to work harder, but other students may resort to academic dishonesty, excuses for late work, and other counterproductive behavior. He adds, "Students in classes stressing competition for grades show more tension, self-doubt and anxiety than those in classes structured for cooperative achievement."

- Reward success. Avoid demeaning comments.
  Both positive and negative comments influence student motivation and effort. Research consistently indicates that students are more affected by positive feedback. Praise builds student confidence, competence and self-esteem. Recognize sincere efforts even if the product is less than stellar. Whenever you point out a student's weakness, make it clear that it relates to that specific task or performance, not to the student as a person.

For additional comments on increasing effort and involvement through motivation, go to: Motivating Students.

4. Take into account what your students want to know and what they relate to.

   - Be aware of your students' expectations of the course and their motivation for taking it; this is a critical prerequisite for obtaining their attention, effort and involvement. As one physics teacher explains, "It is important to be seen as aiming to meet their needs, rather than simply following a checklist of things to be taught." One way to do this is to get their suggestions to the list of topics included on the course syllabus. Your topics will dominate but their input will help gain their involvement.
   - Several outstanding teachers stressed that new learning must begin with what students are already familiar with, "Otherwise, they quickly become confused, disinterested or anxious." A physics professor noted that students work harder to solve a problem that appears to be relevant to them. Research suggests that extrinsic rewards (e.g., grades) do not motivate students as well as intrinsic rewards. For many students, finding the course work meaningful and challenging will do more to motivate them than the possibility of a bad grade.

COURSE DIFFICULTY, WORK LOAD AND PACE

Students who feel overwhelmed by a course will find it difficult to experience any feelings of success or reinforcement for their efforts. On the other hand, if they achieve success too quickly and are unchallenged, it is unlikely they will work to their capacity and/or value their learning highly. According to a large-scale study of SIR II results, when the difficulty level, work load and pace of a course are at the right level, student learning in a course is maximized. Here are some suggestions to help you find the right level of difficulty for your course and for otherwise improving performance in this area.

1. Research tells us that students do not typically spend the number of hours reading, studying and preparing that their instructors expect. One large national survey reported that, on average, students spend fewer hours on their coursework outside of class than they do attending class. For a variety of reasons—including other commitments and choices—students spend fewer than three hours a week outside of class for a three-credit course.

    - Make clear what your expectations for work outside of class are. Tell them the amount of time and effort that will be required to complete the readings and assignments. However, don't overload students to the point where they are expected to short-change other courses.
    - Give enticing assignments. Whether outside class work is collaborative or individualized, assignments that are relevant and have a basis in the "real world" are more likely to engage student interest and time.

2. Recognize individual differences among students.

    - Because students read and learn at different speeds, what is a heavy workload or difficult assignment for some will not be for others. Consider using learning contracts in which students contract to do a certain amount of work at a grade level commensurate with the work.
    - Divide your course into levels of conceptual difficulty. One physics professor, for example, uses three levels of topics: basic (should be mastered by every student); recommended (should be mastered by every student seeking a good competence in the subject); and optional (need to be mastered by those students with special interest in the subject).

3. Empathize with students' difficulties in learning the material for the first time.

    - Instructors who become too proficient in their subject frequently fail to remember the pitfalls in learning that subject. A physics professor tries to put himself in his students' shoes: "After I have finished writing up a set of lecture notes, I review them carefully, asking myself: What might my students find hard to follow in that line of reasoning? What example might make that more clear? This has now become the most important part of my lecture preparation."
    - Another teacher noticed he had taught the course better the first time than he did the second time. Although this is not typical of teachers, he realized that when he taught for the first time, he had to work hard to master certain parts of the material in order to explain it to students. "The second time these concepts no longer seemed difficult for me, but unfortunately I forgot that they would still be difficult for students. Now I color code all my lectures, marking the parts that students are likely to find difficult."
    - An engineering professor says, "I consciously cue students to the most difficult ideas by saying such things as: Almost everyone has difficulty with this one, so listen closely. Because the students' level of attention and ability differ, it is important to get everyone listening carefully before introducing a new concept or explaining a difficult point."

4. Encourage students to form small study groups.

- Study groups can be helpful in addressing material that some students may find especially difficult. One humanities teacher who does this says, "Although I encourage the students to come see me about any problems they are having with the course, some are often loathe to do that. By encouraging them to form study groups, I am trying to help them get to know at least some of their classmates and to take advantage of what they can learn from one another. Also, it seems to be easier for some students to come to me for assistance if they represent a group, because the problems are then seen as common to many students, not just the group's representative."

5. Encourage students to use e-mail to address problems or questions.

- Some students may not want to ask you in class about difficult material or ways they can study more efficiently. Students enter college with varying levels of ability and study skills, so become knowledgeable about resources available on your campus to support students who need additional help.

6. Use websites for your course.

- Provide tutorials or explanatory materials on a course website. Students can access these materials from the privacy of their rooms or a computer lab, and can return to them as needed.
- A course website or listserv provides an efficient way for students to communicate with one another and for you to make announcements, answer questions and post reminders.

7. Be prepared to help students learn how to be successful in your course.

- Students may need advice about reading assigned materials, especially if you are not using a textbook. Help them to understand how professionals in the field approach texts and publications.
- Students may be used to a particular mode of learning (e.g., memorization), and may need support as they confront more complicated learning challenges.
- You may find that students who are accustomed to right/wrong answers struggle with assignments that ask them to address questions for which there are no clear-cut solutions. Understanding cognitive or intellectual development theories may be helpful to you and may assist you in planning activities to support student learning.
- Several of the previously listed weblinks contain useful suggestions about how you might deal with students who have problems related to the course difficulty, workload or pace. For more information, go to: Motivating Students, Allaying Students' Anxieties About Tests, or Collaborative Learning: Group Work and Study Teams.

CREATING A SYLLABUS

[From *Tools for Teaching* by Barbara Gross Davis; Jossey-Bass Publishers: San Francisco, 1993. Linking to this book chapter from other websites is permissible. However, the contents of this chapter may not be copied, printed or distributed in hard copy without permission.]

Provide basic information. Include the current year and semester, the course title and number, the number of units, the meeting time and location. Indicate any course meetings which are not scheduled for the assigned room. List your name, office address (include a map if your office is hard to locate), office phone number (and indicate whether you have voice mail), e-mail address, website URL, fax number and office hours. For your office hours, indicate whether students need to make appointments or may just stop in. If you list a home telephone number, indicate any restrictions on its use (for example, "Please do not call after 10 p.m."). Include the names, offices and phone numbers of any teaching or laboratory assistants. (Sources: Altman and Cashin, 1992; Birdsall, 1989)

Describe the prerequisites to the course. Help students realistically assess their readiness for your course by listing the knowledge, skills or experience you expect them to have or the courses they should have already completed. Give students suggestions on how they might refresh their skills if they feel uncertain about their readiness. (Source: Rubin, 1985)

Give an overview of the course's purpose. Provide an introduction to the subject matter and show how the course fits into the college or department curriculum. Explain what the course is about and why students would want to learn the material.

State the general learning goals or objectives. List three to five major objectives that you expect all students to strive for. What will students know or be able to do better after completing this course? What skills or competencies do you want your students to develop? (Source: Johnson, 1988)

Clarify the conceptual structure used to organize the course. Students need to understand why you have arranged topics in a given order and the logic of the themes or concepts you have selected.

Describe the format or activities of the course. Let students know whether the course involves fieldwork, research projects, lectures, discussions with active participation, or other assignments. Which are required and which are recommended?

Specify the textbook and readings by author and edition. Include information on why these particular readings were selected. When possible, show the relationship between the readings and the course objectives, especially if you assign chapters in a textbook out of sequence (Rubin, 1985). Let students know whether they are required to do the reading before each class meeting. If students will purchase books or course readers, include prices and the names of local bookstores that stock these texts. If you will place readings on reserve in the library, you might include the call numbers (McKeachie, 1986). If you do not have access to the call numbers or if it makes the reading list look too cluttered, give students as their first assignment the task of identifying the call numbers for the readings. Let students know this will make it easier for them to locate each week's readings, and more importantly, give them practice in using the library's electronic resources.

Identify additional materials or equipment needed for the course. For example, do students need laboratory or safety equipment, art supplies, calculators, computers or drafting materials? (Source: Altman and Cashin, 1992)

List assignments, term papers and exams. State the nature and format of the assignments, the expected length of essays and their deadlines. Give the examination dates and briefly indicate the nature of the tests (multiple-choice, essay, short-answer or take-home tests). How do the assignments relate to the learning objectives for the course? What are your expectations for written work? In setting up the syllabus, try to keep the workload evenly balanced throughout the term. (Source: Lowther, Stark and Martens, 1989)

State how students will be evaluated and how grades will be assigned. Describe the grading procedures, including the components of the final grade and the weights assigned to each component (for example, homework, term papers, midterms and exams). Students appreciate knowing the weighting because it helps them budget their time (Altman, 1989). Will you grade on a curve or use an absolute scale? Will you accept extra-credit work to improve grades? Will any quiz grades be dropped? (See Grading Practices.)

List other course requirements. For example, are students required to attend an office hour or form study groups?

Discuss course policies. Clearly state your policies regarding class attendance, turning in late work, make-ups, extra credit, requesting extensions, reporting illnesses, cheating and plagiarism, and missing homework, tests or exams. Include a description of students' responsibilities in the learning process and the professor's and graduate student instructors' responsibilities. You might also list acceptable and unacceptable classroom behavior ("Please refrain from eating during class because it is disturbing to me and other students.").

Invite students with special needs to contact you during office hours. Let students know that if they need an accommodation for any type of physical or learning disability, they should set up a time to meet with you to discuss what modifications are necessary.

Provide a course calendar or schedule. The schedule should include the sequence of course topics, the preparations or readings, and the assignments due. For the readings, give page numbers in addition to chapter numbers—this will help students budget their time. Exam dates should be firmly fixed, while dates for topics and activities may be listed as tentative. Provide an updated calendar as needed.

Schedule time for fast feedback from your students. Set a time midway through the term when you can solicit students reactions to the course so far.

List important drop dates. Include on the course calendar the last day students can withdraw from the course without penalty.

Estimate student work load. Give students a sense of how much preparation and work the course will involve. How much time should they anticipate spending on reading assignments, problem sets, lab reports or research?

Include supplementary material to help students succeed in the course. For example, consider providing one or more of the following:

- Helpful hints on how to study, take notes or do well in class
- Glossary of technical terms used in the course
- References on specific topics for more in-depth exploration
- Bibliography of supplemental readings at a higher or lower level of difficulty, in case students find the required text too simple or too challenging
- Copies of past exams so students can see at the beginning of the term what they will be expected to know at the end
- Information on the availability of videotapes of lectures
- A list of campus resources for tutoring and academic support, including computer labs
- Calendar of campus lectures, plays, events, exhibits or other activities relevant to your course
- Helpful online resources

Provide space for names, telephone numbers and e-mail addresses of two or three classmates. Encourage students to identify people in class they can contact if they miss a session or want to study together. (Source: "What Did You Put in Your Syllabus?" 1985)

References

Altman, H. B. "Syllabus Shares 'What the Teacher Wants.'" Teaching Professor, 1989, 3(5), 1-2.

Altman, H. B., and Cashin, W.E. "Writing a Syllabus." *Idea Paper*, no. 27 Manhattan: Center for Faculty Evaluation and Development, Kansas State University, 1992.

Birdsall, M. *Writing, Designing and Using a Course Syllabus*. Boston: Office of Instructional Development and Evaluation, Northeastern University, 1989.

Johnson, G. R. *Taking Teaching Seriously.* College Station: Center for Teaching Excellence, Texas A&M University, 1988.

Lowther, M. A., Stark, J. S., Martens, G. G. *Preparing Course Syllabi for Improved Communication*. Ann Arbor: National Center for Research to Improve Postsecondary Teaching and Learning, University of Michigan, 1989.

McKeachie, W. J. *Teaching Tips*. (8th ed.) Lexington, Mass: Heath, 1986.

Rubin, S. "Professors, Students and the Syllabus." *Chronicle of Higher Education*, Aug. 7, 1985, p. 56.

"What Did You Put in Your Syllabus?" *Teaching at the University of Nebraska, Lincoln*, 1985, 7(1), 2. (Newsletter available from the Teaching and Learning Center, University of Nebraska, Lincoln.)

LEARNER-CENTERED SYLLABUS

Highlights from: *Grunert, Judith (1997) The Course Syllabus: A Learning-Centered Approach.* Bolton, Massachusetts: Anker Publishing Company, Inc.

Your syllabus can be an important point of interaction between you and your students, both in and out of class. The traditional syllabus is primarily a source of information for your students. While including basic information, the learning-centered syllabus can be an important learning tool that will reinforce the intentions, roles, attitudes and strategies you will use to promote active, purposeful, effective learning.

Suggested Steps for Planning Your Syllabus

- **Develop** a well-grounded rationale for your course
- **Decide** what you want students to be able to do as a result of taking your course, and how their work will be appropriately assessed
- **Define** and delimit the course
- **Structure** your students' active involvement in learning
- **Identify** and develop resources
- **Compose** your syllabus with a focus on student learning

Suggested Principles for Designing a Course That Fosters Critical Thinking*

1. Critical thinking can be learned; the instructor and peers are resources in developing critical thinking skills.
2. Problems, questions or issues are the point of entry into the subject and a source of motivation for sustained inquiry.
3. Successful courses balance the challenge to think critically with support tailored to student's developmental needs.
4. Courses are assignment-centered rather than text- and lecture-centered. Goals, methods and evaluation emphasize using content rather than simply acquiring it.
5. Students are required to formulate their ideas in writing or by other appropriate means.
6. Students collaborate to learn and to stretch their thinking, for example, in pair problem-solving and small-group work.
7. Courses that teach problem-solving skills nurture students' metacognitive abilities.
8. The developmental needs of students are acknowledged and used as information in the design of the course. Teachers in these courses make standards explicit and then help students learn how to achieve them.

Syllabus Functions:

1. Establishes an early point of contact and connection between student and instructor
2. Helps set the tone for your course
3. Describes your beliefs about educational purposes
4. Acquaints students with the logistics of the course
5. Contains collected handouts
6. Defines student responsibilities for successful course work
7. Describes active learning
8. Helps students assess their readiness for your course
9. Sets the course in a broader context for learning
10. Provides a conceptual framework
11. Describes available learning resources
12. Communicates the role of technology in the course
13. Can expand to provide difficult-to-obtain reading materials
14. Can improve the effectiveness of student note-taking
15. Can include material that supports learning outside of the classroom
16. Can serve as a learning contract

Checklist for a learning-centered syllabus:

- Title Page
- Table of Contents
- Instructor Information
- Letter to the Student
- Purpose of the Course
- Course Description
- Course and Unit Objectives
- Resources Readings
- Course Calendar
- Course Requirements
- Evaluation Grading Procedures
- How to Use the Syllabus
- How to Study for This Course
- Content Information
- Learning Tools

*Cited in Kurfiss, J. G. (1988) Critical thinking: Theory, research, practice and possibilities. ASHE-ERIC Higher Education Report No. 2. Washington, D.C.: Association for the Study of Higher Education.

Components of a Learning-Centered Syllabus

*Altman & Cashin. (1992). Writing a syllabus***.** IDEA Paper No. 27. Kansas State University.

Grunert, J. (1997). *The course syllabus. A learning-centered approach*. Bolton, MA: Anker Publishing.

Course Information: What do students need and want to know about the course? What prerequisites exist?

Instructor Information: What do I want students to know about me? My interest in the discipline? My teaching philosophy? How can I convey my enthusiasm for teaching the course? Other instructors in the course (e.g., graduate TAs, peer tutors, team teacher)?

Course Description: What content will the course address? How does the course fit in with other courses in the discipline? Why is the course valuable to students? How is the course structured—as a large lecture with discussion sessions, large lecture with laboratory and discussion sessions, or seminar? How are the major topics organized?

Course Objectives: What will students know and be able to do as a result of having taken this course? What levels of cognitive thinking do I want my students to engage in? What learning skills will the students develop in the course?

Instructional Approaches: Given the kind of learning I'd like to encourage and foster, what kinds of instructional interactions need to occur? Teacher-student, student-student, student-peer tutor? What kinds of instructional approaches are most conducive to helping students accomplish the set learning objectives? How will classroom interactions be facilitated (e.g., in-class, out-of-class, online, electronic discussion, newsgroups or chatroom)?

Course Requirements and Assignments: What will students be expected to do in the course? What kinds of assignments and tests most appropriately reflect the course objectives? Do assignments and tests elicit the kind of learning I want to foster (e.g., assignments [frequency, timing, sequence], tests, quizzes, exams, papers, special projects, laboratories, field trips, learning logs, journals, oral presentations, research on the web, web publishing, or electronic databases)? What kinds of skills do the students need to have in order to be successful in the course (e.g., computer literacy, research skills, writing skills, communication skills, conflict resolution skills or familiarity with software)?

Course Policies: What is expected of the student? Attendance? Participation? Student responsibility in learning? Contribution to team or group work? Missed assignments? Late work? Extra credit? Academic dishonesty? Makeup policy? Classroom management issues? Laboratory safety?

Grading, Evaluation: How will the students' work be graded and evaluated (e.g., number of tests, in-class, take-home, point value, proportion of each test toward final grade, grading scale)? How is the final grade determined (e.g., drop lowest grade)? How do students receive timely feedback on their performance (e.g., instructor, self-assessment, peer review, peer tutors, opportunities for improvement or ungraded assignments)?

Texts/Resources/Readings/Supplies: What kinds of materials will be used during the course, including electronic databases, electronic course reserve, course webpage, software, simulations, laboratory equipment? What kinds of instructional technologies will be used?

Course Calendar: In what sequence will the content be taught? When are major assignments due? Will there be field trips or a guest speaker?

Study Tips/Learning Resources: Provide information on how the student can be successful in the course, along with what resources are available, such as online quiz generators, study guides, lecture notes online, lecture notes on reserve in library, guest speaker to explain/demonstrate online resources, TA, peer tutors, study groups, Academic Services Center, Writing Center, Discuss the evaluation of online resources as well as citation of web resources?

Student Feedback on Instruction: Consider modes of feedback such as an anonymous suggestion box on the web, e-mail, student feedback at midterm for instructional improvement purposes, end-of-term student feedback or a supplemental student feedback form.

Miscellaneous Information: You may wish to include an instructor biography, personal statement, student information form or other instructor information.

Additional questions to consider: How detailed do you want your syllabus to be? Will there be some flexibility built into the syllabus? How do you wish to word the syllabus so that it is user-friendly?

DELIVERING A LECTURE

Lecturing is not simply a matter of standing in front of a class and reciting what you know. The classroom lecture is a special form of communication in which voice, gesture, movement, facial expression and eye contact can either complement or detract from the content. No matter what your topic, your delivery and manner of speaking immeasurably influence your students' attentiveness and learning. Use the following suggestions, based on teaching practices of faculty and on research studies in speech communication, to help you capture and hold students' interest and increase their retention.

General Strategies for Presenters

Watch yourself on videotape. Often we must actually see our good behaviors in order to exploit them and see our undesirable behaviors in order to correct them. If you want to improve your public speaking skills, viewing a videotape of yourself can be an invaluable way to do so. See "Watching Yourself on Videotape."

Learn how not to read your lectures. At its best, lecturing resembles a natural, spontaneous conversation between instructor and student, with each student feeling as though the instructor is speaking to an audience of one. If you read your lectures, however, there will be no dialogue and the lecture will seem formal, stilted and distant. Even if you are a dynamic reader, when you stick to a script you forfeit the expressiveness, animation and give-and-take spontaneity of plain talking. Reading from notes also reduces your ability to engage your class in conversation and prevents you from maintaining eye contact. On this point all skilled speakers agree: don't read your presentation.

Prepare yourself emotionally for class. Some faculty play rousing music before lecturing. Others set aside fifteen or thirty minutes of solitude to review their notes. Still others walk through an empty classroom gathering their thoughts. Try to identify for yourself an activity that gives you the energy and focus you need to speak enthusiastically and confidently. (Source: Lowman, 1984)

Beginning the Lecture

Avoid a "cold start." Go to class a little early and talk informally with students. Or walk in the door with students and engage them in conversation. Using your voice informally before you begin to lecture helps keep your tone conversational.

Minimize nervousness. A certain amount of nervousness is normal, especially right before you begin to speak. To relax yourself, take deep breaths before you begin, or tighten and then release the muscles of your body from your toes to your jaw. Once you are under way, your nervousness will lessen.

Grab students' attention with your opening. Open with a provocative question, startling statement, unusual analogy, striking example, personal anecdote, dramatic contrast, powerful quote, short questionnaire, demonstration or mention of a recent news event. Here are some sample openings:

- "How many people would you guess are sent to prison each week in the state of California? Raise your hand if you think 50 people or fewer. How about 51 to 100? 101 to 150? Over 150? (Pause) In fact, over 250 people are placed in custody every week." (sociology lecture)

- "Freddie has been with the company for nearly four years and is considered a good worker. Recently, though, he's been having problems. He's late for work, acts brusque and seems sullen. One morning, he walks into the office, knocks over a pile of papers and leaves it lying on the floor. His supervisor says, 'Freddie, could you please pick up the material so that no one trips over it?' Freddie says loudly, 'Pick it up yourself.' If you were the supervisor, what would you do next?" (business lecture)
- "The number-one fear of Americans—more terrifying than the fear of death—is public speaking." (rhetoric lecture)
- An economist shows a slide of farmers dumping milk from trucks or burning cornfields and asks, "Why would people do this?" (economics lecture)
- "Watch what happens to this balloon when the air is released." (physics lecture)
- "Take two minutes to complete the ten true-false items on the questionnaire that I'm distributing. We'll use your answers as part of today's lecture." (psychology lecture)
- "How many of you believe that high-rise housing means high-density housing?" (architecture lecture)
- "Nearly three-quarters of all assaults, two-thirds of all suicide attempts, half of all suicides and half of all rapes are committed by people under the influence of what drug? How many think crack? Heroin? Marijuana? None of the above? The correct answer is alcohol." (social welfare lecture)

Vary your opening. Any dramatic technique loses impact upon repetition.

Announce the objectives for the class. Tell your students what you expect to accomplish during the class, or list your objectives on the board. Place the day's lecture in context by linking it to material from earlier sessions.

Establish rapport with your students. Warmth and rapport have a positive effect on an audience. Students will feel more engaged in the class if the opening minutes are personal, direct and conversational. (Source: Knapper, 1981)

Student Attention and Interest

During class, think about and watch your audience—your students. Focus on your students as if you were talking to a small group. One-on-one eye contact will increase students' attentiveness and help you observe their facial expressions and physical movements for signs that you are speaking too slowly or too quickly, or need to provide another example. A common mistake lecturers make is to become so absorbed in the material that they fail to notice whether students are paying attention.

Vary your delivery to keep students' attention. Keeping students' attention is one of the most important ways to help them learn (Penner, 1984). Studies show that most people's attention lapses after ten minutes of passive listening (Wolvin, 1983). To extend students' attention spans, do the following:

- Ask questions at strategic points or ask for comments or opinions about the subject.
- Play devil's advocate or invite students to challenge your point of view.
- Have students solve a problem individually, or have them break into pairs or four-person groups to answer a question or discuss a topic.
- Introduce visual aids: slides, charts, graphs, videotapes and films.

Make the organization of your lecture explicit. Put an outline on the board before you begin, outline the development of ideas as they occur, or give students a handout of your major points or topics. Outlines help students focus on the progression of the material and also help them take better notes. If their attention does wander, students can more readily catch up with the lecture if they have an outline in front of them.

Convey your own enthusiasm for the material. Think back to what inspired you as an undergraduate or to the reasons you entered the field you are in. Even if you have little interest in a particular topic, try to come up with a new way of looking at it and do what you can to stimulate your students' enthusiasm. If you appear bored with the topic, students will quickly lose interest.

Be conversational. Use conversational inflections and tones, varying your pitch just as you do in ordinary conversation. If you focus on the meaning of what you are saying, you'll instinctively become more expressive. Choose informal language, and try to be natural and direct.

Use concrete, simple, colorful language. Use first and second-person pronouns (I, we, you). Choose dramatic adjectives, for example, *"vital* point" rather than "main point" or *"provocative* issue" rather than "next issue." Eliminate jargon, empty words and unnecessary qualifiers ("little bit," "sort of," "kind of").
(Source: Bernhardt, 1989)

Incorporate anecdotes and stories into your lecture. When you are in a storytelling mode, your voice becomes conversational and your face more expressive, and students tend to listen more closely. Use anecdotes to illustrate your key points.

Don't talk into your notes. If you are not using a lectern and you need to refer to your note cards, raise the cards (rather than lower your head) and take a quick glance downward, keeping your head steady. This movement will be easier if your notes are brief and in large letters. (Source: Bernhardt, 1989)

Maintain eye contact with the class. Look directly at your students one at a time to give them a sense that you are speaking to each individual. Look at a student for three to five seconds—a longer glance will make most students uncomfortable. Beware of aimless scanning or swinging your head back and forth. Mentally divide the lecture hall into three to five sections, and address comments, questions and eye contact to each section during the course of your lecture, beginning in the center rear of the room. Pick out friendly faces, but also try to include non-listeners. However, don't waste your time trying to win over the uninterested; concentrate on the attentive. If real eye contact upsets your concentration, look between two students or look at foreheads.
(Source: Bernhardt, 1989)

Use movements to hold students' attention. A moving object is more compelling than a static one, so occasionally move about the room. Use deliberate, purposeful, sustained gestures: hold up an object, roll up your sleeves. To invite students' questions, adopt an open, casual stance. Beware of nervous foot shifting, however, and aimless, distracting gestures.

Use movements to emphasize an important point or to lead into a new topic. Some faculty move to one side of the table or the lectern when presenting one side of an argument and to the other side when presenting the opposing view. This movement not only captures students' attention but reinforces the opposition between the two points of view (Harris, 1977). Other faculty indicate tangential points by standing off to the side of the room (Weimer, 1988).

Use facial expressions to convey emotions. If you appear enthusiastic to tell students what you know, they are more likely to be enthusiastic about hearing it. Use your facial features: eyes, eyebrows, forehead, mouth and jaw to convey enthusiasm, conviction, curiosity and thoughtfulness. (Source: Lowman, 1984)

Laugh at yourself when you make a mistake. If you mispronounce a word or drop your notes, your ability to see the humor of the situation will put everyone at ease. Don't let your confidence be shaken by minor mistakes.

Keep track of time. How long is it taking you to cover each point? Where should you be in the material halfway through the class period? If you seem to be running out of time, what will you leave out? If time runs short, do not speed up to cover everything in your notes. Have some advance plan of what to omit, such as "If I don't have fifteen minutes left when I reach this heading, I'll give only one example and distribute a handout with the other examples."

Delivery Techniques

Vary the pace at which you speak. Students need time to assimilate new information and to take notes, but if you speak too slowly, they may become bored. Try to vary the pace to suit your own style, your message and your audience. For example, deliver important points more deliberately than anecdotal examples. If you tend to speak quickly, try to repeat your major points so that students can absorb them.

Project your voice or use a microphone. Ask students whether they can hear you, or have a graduate student instructor sit in the back corner to monitor the clarity and volume of your speaking voice. Try not to let the volume of your voice drop at the end of sentences. When using a microphone, speak in a normal voice and do not lean into the microphone.

Vary your voice. Consider the pitch, volume, duration of words, intonation and intensity of your voice. Experiment with vocal techniques by reading aloud. Lowman (1984, chap. 4) describes a series of voice exercises to improve projection, articulation and tone quality

Pause. The pause is one of the most critical tools of public speaking. It is an important device for gaining attention. Pauses can be used as punctuation—to mark a thought, sentence or paragraph—and also for emphasis before or after a key concept or idea. If you suddenly stop mid-sentence, students will look up from their notes to see what happened. Planned pauses also give you and your audience a short rest. Some faculty take a sip of coffee or water after they say something they want students to stop and think about. Other faculty deliberately pause, then announce, "This is the really important consideration," then pause again before proceeding.

Watch out for vocalized pauses. Try to avoid saying "um," "well," "you know," "OK," or "so." Silent pauses are more effective.

Adopt a natural speaking stance. Balance yourself on both feet with your toes and heels on the ground. Beware of shifting movements or unconscious rocking to and from. Keep your knees slightly relaxed. Shoulders should be down and loose, with elbows cocked, and your hands at waist level. If you use a lectern, don't grip the sides or keep your elbows rigid; instead, keep your elbows bent and lightly rest your hands on the lectern ao you can be ready to make purposeful gestures. (Source: Bernhardt, 1989)

Breathe normally. Normal breathing prevents vocal strain that affects the pitch and quality of your speech. Keep your shoulders relaxed, your neck loose, your eyes fully open and your jaw relaxed.

Concluding the Lecture

Draw some conclusion for the class. Help students see that a purpose has been served, that something has been gained during the last hour. A well-planned conclusion rounds out the presentation, ties up loose ends, suggests ways for students to follow up on the lecture and gives students a sense of closure.

Finish forcefully. Don't allow your lecture to trail off or end mid-sentence because the period is over, and avoid the last-minute "Oh, I almost forgot..." An impressive ending will echo in students' minds and prompt them to prepare for the next meeting. End with a thought-provoking question or problem; a quotation that sets an essential theme; a summation of the major issue as students now understand it, having had the benefit of the lecture just delivered; or a preview of coming attractions. For example, a physics professor ended a lecture by asking a volunteer to come up to the front, stand with his back to the wall, and try to touch his toes. She challenged the class to think about why the volunteer was not successful in this task. The topic of the next lecture, center of gravity, was thus introduced in a vivid, memorable way. Don't worry if you finish a few minutes early—explain that you have reached a natural stopping point—but don't make it a habit.

End your lecture with the volume up. Make sure your voice is strong, your chin is lifted, and your eyes are on the audience. Be sure to stay after class for a few minutes to answer students' questions.

Improving Presentation Skills

Make notes to yourself immediately after each lecture. Consider the timing, the effectiveness of your examples and the clarity of your explanations. Jot down questions students asked or any comments they made. These notes will help you to be more effective the next time you give that lecture.

Use a cassette recorder. Record a practice session or an actual lecture. Listen to your pacing, inflection, tone emphasis and use of pauses. Is your tone conversational? Are the transitions clear? Are the vocalized pauses ("um," "well," "you know") at a minimum? Lowman (1984) describes the following procedure for comparing your conversational style and your lecturing style. Ask a friend to meet you in a moderately sized room. Sit down, start the recorder and begin a conversation by stating your name, age and birthplace. Then talk for four or five minutes about a favorite book, movie, restaurant, exhibit or hobby. Have your friend ask you some questions. Now move to a classroom, stand up and give a short lecture (five to eight minutes) to your friend. Several days later listen to the recordings.

- The first time you listen to your recording, do not stop the tape or take notes. What is your overall impression of the voice you are hearing?
- Replay the recording of the conversation, and jot down words that best describe your voice.
- Replay the conversation again, this time focusing on the use of extraneous words, the level of relaxation and fluency in the voice, patterns of breathing, pitch and pace, emphasis and articulation.
- The next day, replay the recording of the lecture and make a set of notes on it.
- Review your notes to identify the differences between the two recorded segments. Consider style, use of language, pacing, volume, fluency and expressiveness. Any differences you note will help you decide how to improve.

Use a video recorder. When reviewing a videotape of yourself lecturing, you can watch the entire tape, watch the tape with the sound turned off or listen to the tape without watching it. Adopt the procedures outlined above for reviewing and analyzing your videotape. Most of the time you will be pleasantly surprised: you may have felt nervous during the lecture, but the videotape will show you that your nervousness was not apparent to your class. Seeing yourself on tape can be a good confidence builder. See Watching Yourself on Videotape.

References

Bernhardt, D. Workshop on Public Speaking, University of California at Berkeley, Aug.1989.

Harris, R. J. "The Teacher as Actor." *Teaching of Psychology,* 1977, 4, 185-187.

Knapper, C. K. "Presenting and Public Speaking." In M. Argyle (ed.), *Social Skills and Work.* New York: Methuen, 1981.

Lowman, J. *Mastering the Techniques of Teaching.* San Francisco: JosseyBass, 1984.

Penner, J. G. *Why Many College Teachers Cannot Lecture.* Springfield, Ill.: Thomas, 1984.

Weimer, M. "Ways and Means of Communicating Structure." *Teaching Professor,*1988, 2(7), 3.

Wolvin, A. D. "Improving Listening Skills." In R. B. Rubin (ed.), *Improving Speaking and Listening Skills.* New Directions for College Learning Assistance, no.12. San Francisco: Jossey-Bass, 1983

COLLABORATIVE LEARNING: GROUP WORK AND STUDY TEAMS

Students learn best when they are actively involved in the process. Researchers report that regardless of the subject matter, students working in small groups tend to learn more of what is taught and retain it longer than when the same content is presented in other instructional formats. Students who work in collaborative groups also appear more satisfied with their classes. (Sources: Beckman, 1990; Chickering and Gamson, 1991; Collier, 1980; Cooper and Associates, 1990; Goodsell, Maher, Tinto and Associates, 1992; Johnson and Johnson, 1989; Johnson, Johnson and Smith, 1991; Kohn, 1986; McKeachie, Pintrich, Lin and Smith, 1986; Slavin, 1980, 1983; Whitman, 1988)

Various names have been given to this form of teaching, and there are some distinctions among these: cooperative learning, collaborative learning, collective learning, learning communities, peer teaching, peer learning, reciprocal learning, team learning, study circles, study groups and work groups. But all in all, there are three general types of group work: informal learning groups, formal learning groups and study teams (adapted from Johnson, Johnson and Smith, 1991).

Informal learning groups are ad hoc temporary clusterings of students within a single class session. Informal learning groups can be initiated, for example, by asking students to turn to a neighbor and spend two minutes discussing a question you have posed. You can also form groups of three to five to solve a problem or pose a question. You can organize informal groups at any time in a class of any size to check on students' understanding of the material, to give students an opportunity to apply what they are learning, or to provide a change of pace.

Formal learning groups are teams established to complete a specific task, such as perform a lab experiment, write a report, carry out a project or prepare a position paper. These groups may complete their work in a single class session or over several weeks. Typically, students work together until the task is finished and their project is graded.

Study teams are long-term groups (usually existing over the course of a semester) with a stable membership whose primary responsibility is to provide members with support, encouragement and assistance in completing course requirements and assignments. Study teams also inform their members about lectures and assignments when someone has missed a session. The larger the class and the more complex the subject matter, the more valuable study teams can be.

The following suggestions are designed to help you set up formal learning groups and study teams. If you have never done group work in your classes, you might want to experiment first with informal learning groups.

Grading Practices

Plan for each stage of group work. When you are writing your syllabus for the course, decide which topics, themes or projects might lend themselves to formal group work. Think about how you will organize students into groups, help groups negotiate among themselves, provide feedback to the groups, and evaluate the products of group work.

Carefully explain to your class how the groups will operate and how students will be graded. As you would when making any assignment, explain the objectives of the group task and define any relevant concepts. In addition to a well-defined task, every group needs a way of getting started, a way of knowing when its task is done and some guidance about the participation of members. Also explain how students will be graded. Keep in mind that group work is more successful when students are graded against a set standard than when they are graded against each other (on a curve). See Grading Practices. (Source: Smith, 1986)

Give students the skills they need to succeed in groups. Many students have never worked in collaborative learning groups and may need practice in skills such as active and tolerant listening, helping one another in mastering content, giving and receiving constructive criticism and managing disagreements. Discuss these skills with your students, and model and reinforce them during class. Some faculty use various exercises that help students gain skills in working in groups (Fiechtner and Davis, 1992).

Consider written contracts. Some faculty give students written contracts that list members' obligations to their group and deadlines for tasks. (Connery, 1988)

Designing Group Work

Create group tasks that require interdependence. The students in a group must perceive that they "sink or swim" together, that each member is responsible to and dependent on all the others and that one cannot succeed unless all in the group succeed. Knowing that their peers are relying on them is a powerful motivator for group work (Kohn, 1986). Strategies for promoting interdependence include specifying common rewards for the group, encouraging students to divide up the labor and formulating tasks that compel students to reach a consensus. (Source: Johnson, Johnson and Smith, 1991)

Make the group work relevant. Students must perceive that the group tasks are integral to the course objectives, and are not just busywork. Some faculty believe that groups succeed best with tasks involving judgment. For example, a faculty member in an engineering class gives groups a problem to solve: Determine whether the city should purchase 25 or 50 buses. Each group prepares a report, and a representative from each group is randomly selected to present the group's solution (Johnson, Johnson and Smith, 1991). The approaches used by the various groups are compared and discussed by the entire class. Goodsell, Maher, Tinto and Associates (1992, pp. 75-79) have compiled a detailed bibliography of discipline-specific efforts in collaborative learning that can be useful for developing tasks and activities.

Create assignments that fit the students' skills and abilities. Early in the term, assign relatively easy tasks. As students become more knowledgeable, increase the difficulty level. For example, a faculty member teaching research methods begins by having students simply recognize various research designs and sampling procedures. Later, team members generate their own research designs. At the end of the term, each team prepares a proposal for a research project and submits it to another team for evaluation. (Source: Cooper and Associates, 1990)

Assign group tasks that allow for a fair division of labor. Try to structure the tasks so that each group member can make an equal contribution. For example, one faculty member asks groups to write a report on alternative energy sources. Each member of the group is responsible for research on one source, and then all the members work together to incorporate the individual contributions into the final report. Another faculty member asks groups to prepare a "medieval newspaper." Students research aspects of life in the Middle Ages, and each student contributes one major article for the newspaper, which includes news stories, feature stories and editorials. Students conduct their research independently and use group meetings to share information, edit articles, proofread and design the pages. (Sources: Smith, 1986; Tiberius, 1990)

Set up "competitions" among groups. A faculty member in engineering turns laboratory exercises into competitions. Students, working in groups, design and build a small-scale model of a structure such as a bridge or column. They predict how their model will behave when loaded, and then each model is loaded to failure. Prizes are awarded to the groups in various categories: best predictions of behavior, most efficient structure and best aesthetics. (Source: Sansalone, 1989)

Consider offering group test taking. On a group test, either an in-class or take-home exam, each student receives the score of the group. Faculty who have used group exams report that groups consistently achieve higher scores than individuals and that students enjoy collaborative test taking (Hendrickson, 1990; Toppins, 1989). Faculty who use this technique recommend the following steps for in-class exams:

- Assign group work at the beginning of the term so that students develop skills for working in groups.
- Use multiple-choice tests that include higher-level questions. To allow time for discussion, present about 25 items for a 50-minute in-class exam.
- Divide students into groups of five.
- Have students take the test individually and turn in their responses before they meet with their group. Then ask the groups to arrange themselves in the room and arrive at a group consensus answer for each question. Score the individual and group responses and prepare a chart showing the average individual score of each group's members, the highest individual score in each group, and the group's consensus score. Ninety-five percent of the time, the group consensus scores will be higher than the average individual scores (Toppins, 1989).

Learning Groups

Decide how the groups will be formed. Some faculty prefer randomly assigning students to groups to maximize their heterogeneity: a mix of males and females, verbal and quiet students, the cynical and the optimistic (Fiechtner and Davis, 1992; Smith, 1986). Some faculty let students choose with whom they want to work, although this runs the risk that groups will socialize too much and that students will self-segregate (Cooper, 1990). Self-selected groups seem to work best in small classes, for classes of majors who already know one another or in small residential colleges (Walvoord, 1986). Still other instructors prefer to form the groups themselves, taking into account students' prior achievements, levels of preparation, work habits, ethnicities and genders (Connery, 1988). They argue for making sure that members of each group are exclusively graded students or exclusively pass/not pass students and that well-prepared students be placed in groups with other well-prepared students.

Other faculty, however, try to sprinkle the more able students evenly among the groups (Walvoord, 1986). A middle ground, proposed by Walvoord (1986), is to ask students to express a preference, if they wish, then make the assignments yourself. You could, for example, ask students to write down the names of three students with whom they would most like to work.

Be conscious of group size. In general, groups of four or five members work best. Larger groups decrease each member's opportunity to participate actively. The less skillful the group members, the smaller the groups should be. The shorter amount of time available, the smaller the groups should be. (Sources: Cooper, 1990; Johnson, Johnson and Smith, 1991; Smith, 1986)

Keep groups together. When a group is not working well, avoid breaking it up, even if the group requests it. The addition of the floundering group's members to ongoing groups may throw off their group process, and the bailed-out troubled group does not learn to cope with its unproductive interactions. (Source: Wolvoord, 1986)

Help groups plan how to proceed. Ask each group to plan who will be doing what and when. Review the groups' written plans or meet with each group to discuss its plan.

Regularly check in with the groups. If the task spans several weeks, you will want to establish checkpoints with the groups. Ask groups to turn in outlines or drafts or to meet with you.

Provide mechanisms for groups to deal with uncooperative members. Walvoord (1986) recommends telling the class that after the group task is completed, each student will submit to the instructor an anonymous assessment of the participation of the other group members: who did extra work and who shirked work. If several people indicate that an individual did less than a fair share, that person could receive a lower grade than the rest of the group. This system works, says Walvoord, if groups have a chance in the middle of the project to discuss whether any members are not doing their share. Members who are perceived as shirkers then have an opportunity to make amends. Here are some other options for dealing with students who are not contributing:

- Keep groups to three students; it is hard to avoid doing one's fair share in a small group.
- Make it clear that each group must find its own way to handle unproductive group behavior.
- Allow the groups, by majority vote, to dismiss a member who is not carrying his or her fair share. Students who are dropped from a group must persuade the group to reconsider, find acceptance in another group or take a failing grade for the project.

Perhaps the best way to assure comparable effort among all group members is to design activities in which there is a clear division of labor, and each student must contribute if the group is to reach its goal. (Sources: Connery, 1988; Walvoord, 1986)

Evaluating Group Work

Ensure that individual student performance is assessed and that the groups know how their members are doing. Groups need to know who needs more assistance in completing the assignment, and members need to know they cannot let others do all the work while they sit back. Ways to ensure that students are held accountable include giving spot quizzes to be completed individually and calling on individual students to present their group's progress. (Source: Johnson, Johnson and Smith, 1991)

Give students an opportunity to evaluate the effectiveness of their group. Once or twice during the group work task, ask group members to discuss two questions: What action has each member taken that was helpful for the group? What action could each member take to make the group even better? At the end of the project, ask students to complete a brief evaluation form on the effectiveness of the group and its members. The form could include items about the group's overall accomplishments, the student's own role and suggestions for changes in future group work. Rau and Heyl (1990) have developed a form that can be used for an interim or final evaluation. (Sources: Johnson, Johnson and Smith, 1991; Walvoord, 1986)

Decide how to grade members of the group. Some faculty assign all students in the group the same grade on the group task. Grading students individually, they argue, inevitably leads to competition within the group and thus subverts the benefits of group work. Other faculty grade the contribution of each student on the basis of individual test scores or the group's evaluation of each member's work. If you assign the same grade to the entire group, the grade should not account for more than a small part of a student's grade in the class (perhaps a few bonus points that would raise a test score from a B-minus to a B). (Sources: Cooper, 1990; Johnson Johnson, and Smith, 1991)

Student and Faculty Concerns About Group Work

"I paid my tuition to learn from a professor, not to have to work with my classmates, who don't know as much." Let students know at the beginning of the term that you will be using some group techniques. Students who are strongly antagonistic can drop your class and select another. Inform students about the research studies on the effectiveness of collaborative learning and describe the role it will play in your course. Invite students to try it before deciding whether to drop the class. (Source: Cooper and Associates, 1990)

"Our group just isn't working out." Encourage students to stick with it. Changing group membership should really be a last resort. Help your students learn how to be effective group members by summarizing for them some of the information in Encouraging Student Participation in Discussion.

"Students won't want to work in groups." Some students may object, in part because most of their education has been based on individual effort, and they may feel uncomfortable helping others or seeking help. The best advice is to explain your rationale, design well-structured meaningful tasks, give students clear directions, set expectations for how team members are to contribute and interact and invite students to try it. (Source: Cooper and Associates, 1990)

"Students won't work well in groups." Most students can work well in groups if you set strong expectations at the beginning of the term, informally check with groups to see how things are going, offer assistance as needed and provide time for groups to assess their own effectiveness. Some groups may indeed have problems, but usually these can be resolved. See Encouraging Student Participation in Discussion for suggestions on how to minimize monopolizers, draw out quiet students and generally engage all students in active participation.

"If I do group work, I won't be able to cover as much material during the semester as I do when I lecture." Yes, adding group work may mean covering fewer topics. But research shows that students who work in groups develop an increased ability to solve problems and show a greater understanding of the material. Some instructors assign additional homework or readings or distribute lecture notes to compensate for less material covered in class. (Source: Cooper and Associates, 1990)

Study Teams

Tell students about the benefits of study teams. Study teams meet regularly outside of class to study together, read and review course material, complete course assignments, comment on each other's written work, prepare for tests and exams and help each other with difficulties that are encountered in class. Study teams are guided by the notions that students can often do as a group what they cannot do by themselves, and that students can benefit from peer teaching-explanations, comments and instruction from their peers.

Explain how study teams work. Study teams can work in a number of ways. In one model, all students read the assignments but each member agrees to provide to the group in-depth coverage of a particular segment of the material and to answer as fully as possible whatever questions other members of the study team might raise. In this model, each member agrees to study all the material, yet each also tries to become an "expert" in a certain area of the material.

In another model, team activities vary from meeting to meeting. For example, at one meeting, teams might review class notes to see whether there is agreement on the most important points of the lecture or discussion. In another session, teams might go over a class quiz or test to ensure that all team members clearly understand each of the questions, especially those that were answered incorrectly by one or more members. Another session might be devoted to reviewing problem sets or exchanging drafts of written papers for peer editing.

In a third model, the main agenda for each study team session is a set of study questions. Early in the term, the study questions are provided by the professor or graduate student instructors. After three or four weeks, each team member must bring a study question related to the week's lecture material to the team meeting. The questions structure the discussion and are modified, discarded, or replaced by the group as the session proceeds. At the session's end, the study questions that the group chooses as the most valuable are turned in for review by the instructor. You can let students decide for themselves how to structure their study teams, or you can offer advice and suggestions. (Sources: Gushy, 1988; Johnson, Johnson and Smith, 1991; Light, 1992; "Study Groups Pay Off," 1991)

If study teams are optional, offer students extra credit for participation. For example, students who are members of an official study team might get bonus points for each assignment based on the average grade received by the individual group members. (Source: "Study Groups Pay Off," 1991)

Let students know what their responsibilities are as a study team member. Students who participate in study teams agree to do the following:

- Prepare before the study team meeting (for example, do all the required reading or problem sets).
- Complete any tasks that the group assigns to its members.
- Attend all meetings and arrive on time.
- Actively participate during the sessions in ways that further the work of the group.
- Help promote one another's learning and success.
- Provide assistance, support and encouragement to group members.
- Be involved in periodic self-assessments to determine whether the study team is working successfully. Is too much work being required? Is the time in study team meetings well spent?

In addition, let students know that they can improve the effectiveness of their study teams by making sure each session has a clearly articulated agenda and purpose. They can also work more efficiently if all logistical arrangements are set for the semester: meeting time, length and location.

Help students locate meeting rooms. Arrange with your department or campus room scheduler to make small meeting rooms available for study teams. If appropriate, consider using group rooms in the residence halls.

Limit groups to no more than six students. Groups larger than six have several drawbacks. It is too easy for students to become passive observers rather than active participants. Students may also not get the opportunity to speak frequently since there are so many people. And a student's sense of community and responsibility may be less intense in larger groups.

Let students select their own study teams unless you have a large class. Since the groups are designed to last the term and will meet outside of class, give students the opportunity to form groups of three to six members. Arrange one or two open groups for students who do not know others in the class. If students will be selecting their own groups, offer several small group activities during the first three weeks of class and rotate the membership of these ad hoc groups so that students can get to know one another's interests and capabilities before forming study teams. See Encouraging Student Participation in Discussion and The First Day of Class for ideas on small group activities and how to help students get to know one another.

If your class is very large and letting students select their own groups seems too difficult, have students sign up for teams scheduled to meet at particular times. This means that students will form groups based solely on when they can regularly attend a study team meeting. Try to form the groups by sections rather than for the overall lecture class. Students in the same section are more likely to know each other and feel a sense of responsibility for their study team. (Source: Walvoord, 1986)

Use a portion of class time for arranging study groups. Announce that study groups will be set up during the third or fourth week of the course. At that time, hand out a description of study teams and student responsibilities, and let students talk among themselves to form groups or to sign up for scheduled time slots. Suggest that all members of the study team exchange phone numbers. Encourage the study teams to select one person as the contact or point person who will let all members know where the group will meet.

Devote a class session to study teams. Ask students to meet in their study teams to review course material or prepare for an upcoming exam or assignment. Use the time to check in with the groups to see how well they are operating. Some faculty regularly substitute study team meetings for lectures. To the extent possible, meet with a study team during an office hour or review the work of a study team sometime during the semester.

References

Beckman, M. “Collaborative Learning: Preparation for the Workplace and Democracy” *College Teaching,* 1990, *38(4),* 128-133.

Chickering, A. W, and Gamson, Z. F (eds.), *Applying the Seven Principles for Good Practice in Undergraduate Education.* New Directions for Teaching and Learning, *no.47.* San Francisco: JosseyBass, 1991.

Collier, K. G. “Peer-Group Learning in Higher Education: The Development of Higher-order Skills.” *Studies in Higher Education,* 1980, *5(1), 55-62.*

Connery, B. A. “Group Work and Collaborative Writing.” *Teaching at Davis,* 1988, *14(1),* 2-4. (Publication of the Teaching Resources Center, University of California at Davis)

Cooper, J. “Cooperative Learning and College Teaching: Tips from the Trenches.” *Teaching Professor,* 1990, *4(5),* 1-2.

Cooper, J., and Associates. *Cooperative Learning and College Instruction.* Long Beach: Institute for Teaching and Learning, California State University, 1990.

Fiechtner, S. B., and Davis, E. A. “Why Some Groups Fail: A Survey of Students’ Experiences with Learning Groups.” In A. Goodsell, M. Maher, V. Tinto, and Associates (eds.), *Collaborative Learning: A Sourcebook for Higher Education.* University Park: National Center on Postsecondary Teaching, Learning, and Assessment, Pennsylvania State University, 1992.

Goodsell, A., Maher, M., Tinto, V, and Associates (eds.). *Collaborative Learning: A Sourcebook for Higher Education.* University Park: National Center on Postsecondary Teaching, Learning, and Assessment, Pennsylvania State University, 1992. Guskey, *T* R. *Improving Student Learning in College Classrooms.* Springfield, Ill: Thomas, 1988.

Hendrickson, A. D. “Cooperative Group Test-Taking.” *Focus,* 1990,5(2), 6 (Publication of the Office of Educational Development Programs, University of Minnesota) Johnson, D. W, and Johnson, R. T. *Cooperation and Competition: Theory and Research.* Edina, Minn.: Interaction Books, 1989.

Johnson, D. W., Johnson, R. T., and Smith, K. A. *Cooperative Learning:Increasing College Faculty Instructional Productivity.* ASHE-FRIC Higher Education Report No.4. Washington, D.C.: School of Education and Human Development, George Washington University, 1991.

Kohn, A. *No Contest: The Case Against Competition.* Boston: Houghton Mifflin, 1986.

Light, R. J. *The Havard Assessment Seminars: Second Report.* Cambridge, Mass.: Harvard University, 1992.

McKeachie, W. J., Pintrich, P R., Lin, Y.-G., and Smith, D.A.F. *Teaching and Learning in the College Classroom: A Review* of *the Research Literature.* Ann Arbor: National Center for Research to Improve Postsecondary Teaching and Learning, University of Michigan, 1986.

Rau, W., and Heyl, B. S. “Humanizing the College Classrooms: Collaborative Learning and Social Organization Among Students.” *Teaching Sociology,* 1990, *18(2),* 141-155.

Sansalone, M. “Teaching Structural Engineering Through Case Studies and Competitions.” *CUE,* 1989, 2(2), 7. (Newsletter available from Cornell University, Ithaca, N.Y)

Slavin, R. F. “Cooperative Learning.” *Review of Educational Research,* 1980, *50(2), 315-342.*

Slavin, R. E. “When Does Cooperative Learning Increase Student Achievement?” *Psychological Bulletin,* 1983, 94(3), 429-445.

Smith, K. A. “Cooperative Learning Groups.” In S. F. Schmoberg (ed.), *Strategies for Active Teaching and Learning in University Classrooms.* Minneapolis: Office of Educational Development Programs, University of Minnesota, 1986.

“Study Groups Pay Off.” *Teaching Professor,* 1991, 5(7), 7.

Tiberius, R. G. *Small Group Teaching: A Trouble-Shooting Guide.* Toronto: Ontario Institute for Studies in Education Press, 1990.

Toppins, A. D. “Teaching by Testing: A Group Consensus Approach.” *College Teaching,* 1989, 37(3), 96-99.

Walvoord, B. F *Helping Students Write Well: A Guide for Teachers in All Disciplines.* (2nd ed.) New York: Modern Language Association, 1986.

Whitman, N. A. *Peer Teaching: To Teach Is to Learn Twice.* Washington, D.C.: ASHE-ERIC Higher Education Report No. 4. Washington, D.C.: Association for the Study of Higher Education, 1988.

WATCHING YOURSELF ON VIDEOTAPE

Watching a videotape of yourself is an extremely valuable experience. Videotaping allows you to view and listen to the class as your students do. It also allows you to scrutinize your students' reactions and responses to your teaching. By analyzing a videotape of the dynamics in your classroom, you can check the accuracy of your perceptions of how well you teach and identify those techniques that work and those that need improvement.

Faculty members at all levels and in all disciplines have benefited from seeing videotapes of themselves. The suggestions below are designed to help you use videotape to gain insights that will help you improve your teaching.

General Strategies

Arrange for videotaping through your campus media office. Many colleges and universities offer free classroom videotaping services to faculty members. Contact the media office to find out what services are available. If your campus does not offer such services, ask a colleague to observe you in the classroom. See Having Colleagues Observe Your Class.

Select a typical class. Choose a class in which you are teaching as you generally do, using the chalkboard, overheads, handouts or other aids as usual. If possible, try to pick a class that is a mixture of lecture and discussion.

Let students know in advance that the class will be videotaped. Explain that the taping is a way for you to review your performance—not theirs—and improve your teaching. Assure them that the tape will not be preserved.

Ask the camera operator to tape the students as well as you. The cameraperson will know not to disrupt the class in any way. But feel free to remind the camera operator to break away from focusing on you in order to show your students' reactions to you and to each other. (Source: Krupnick, 1987)

While you are being videotaped, try to focus on your teaching, not on the camera. Video equipment is not intrusive, and no extra lighting is required. Though you may feel uncomfortable and awkward at the beginning of taping, these feelings wear off quickly. Keep in mind that no one will see the tape except you, unless you choose to invite others to view it with you. Remember, too, you can erase the tape whenever you wish.

Viewing the Videotape

View the videotape as soon as possible. Plan to view the tape on the day it is made or the next day, while your memory is fresh and you can readily recall what you were thinking or feeling during class. Run the tape through once or twice just to get used to seeing yourself on tape. During these first viewings, be prepared for a dose of "video-induced despair" (Krupnick, 1987), a common ailment brought about by the visual distortions of the medium. Most people tend to notice their voice, appearance, gestures and mannerisms. (Do I really sound like that? Is my hair always this disheveled? Why didn't I notice that my shirt was untucked?) It is important to realize that these details are exaggerated on tape and are far less noticeable and distracting in real life. In any case, a wrinkled blouse or a crooked tie has nothing to do with effective teaching. (Source: Krupnick, 1987)

Plan to spend twice as long analyzing the tape as it took to tape your class. Once you've adjusted to seeing yourself on tape, set aside sufficient time to analyze it, about two hours to review a one-hour class session. As you start to analyze the tape, remember to focus on your strengths, as well as any aspect needing improvement.

The problem areas are likely to jump out at you, but don't overlook things that you are doing well, such as talking to the class and not the board, or answering questions clearly.

View the tape with a supportive consultant. Many campuses have offices of faculty development or instructional improvement whose staff members can assist you in identifying your strengths and areas for improvement. In addition to providing helpful suggestions, the consultant can help you temper your natural tendency to be hypercritical.

Go for the gestalt. Run the tape straight through and answer the following questions:

- What are the specific things I did well?
- What are the specific things I could have done better?
- What do students seem to enjoy most?
- What do students seem to enjoy least?
- If I could do this session over again, what three things would I change?
- How could I go about making those three changes?

(Source: Fuhrmann and Grasha, 1983)

Focus on selected aspects of your performance the next time you view the tape. For example, review the tape looking only at the kinds of questions you pose or solely for voice characteristics or presentation style. Identify your strengths and weaknesses. (Source: Acheson, 1981)

Chart the frequencies and types of classroom interactions. One simple method for analyzing classroom talk in discussion classes is called Contracted BIAS (Brown's Interaction Analysis System). As you watch a segment of the tape, stop every five seconds to make a tic mark in one of three columns: Teacher Talk, Student Talk, Silence. The totals will show you how much time was devoted to your comments and to students' comments. For a more detailed analysis, record a "Q" for question each time you or a student poses a question. (Source: Brown and Atkins, 1988)

Write down verbatim comments of a given type. Useful types of comments to copy down include teacher's questions, students' responses to teacher's questions, students' questions, teacher's responses to students' questions, teacher's responses to students' statements, teacher's reward and praise statements and teacher's criticism. For example, if you are concerned about your use of questions, view the tape and write down all the questions you asked. Then you can examine such issues as:

- How many questions actually requested a response from students?
- Did all the questions start with the same phrase?
- Did they all require yes/no or short answers?
- What level of thinking was required in the responses?
- Did you allow sufficient time between questions for students to respond?

In reviewing your videotape, you may find that you are asking too many questions or not pausing to give students time to answer. You can then work on improving your questioning skills. (Source: Acheson, 1981)

Use checklists to focus your analysis. Create checklists that reflect your particular areas of interest or select items relevant to your teaching style and subject matter from the following checklists (adapted from Davis, 1988, based on questionnaires from the University of California, Berkeley, University of California, Los Angeles, University of Illinois, Urbana-Champaign, University of Texas at Austin and Northwestern University).

Organization and Preparation
Do you:

- State the purpose of the class session and its relationship to the previous class?
- Present, on the board or in a handout, a brief overview or outline of the content at the beginning of the session, or state the problem to be solved or discussed?
- Emphasize or restate the most important ideas?
- Make smooth transitions from one topic to another?
- Restate, at the end of the class, what students are expected to gain from the session?
- Summarize the main points or ask students to do so?
- Relate the day's session to upcoming presentations?
- Include neither too much nor too little material in a class period?
- Seem at ease with the material?
- Begin and end class promptly?

Style of Presentation
Do you:

- Speak in a clear, strong voice that can be easily heard?
- Speak neither too quickly nor too slowly?
- Speak at a rate that allows students to take notes?
- Talk to the class, not to the board or windows?
- Listen carefully to students' comments and questions without interruption?

Clarity of Presentation
Do you:

- Define new terms, concepts and principles?
- Give examples, illustrations or applications to clarify abstract concepts?
- Explicitly relate new ideas to familiar ones?
- Seem to know whether the class is understanding you?
  Whether students are puzzled or confused?
- Use alternate explanations when students do not understand?
- Slow down when discussing complex or difficult ideas?

- Refrain from needlessly digressing from the main topic?
- Use handouts and audiovisual aids effectively?
- Write legibly and clearly on the chalkboard?

Questioning Skills
Do you:

- Ask questions to determine what students know about the topic?
- Ask different levels and kinds of questions to challenge and engage students?
- Periodically ask questions to gauge whether students need more or less information on a topic?
- Pause sufficiently after all questions to allow students time to respond?
- Encourage students to answer difficult questions by providing cues or rephrasing?
- When necessary, ask students to clarify their questions?
- Ask follow-up questions if a student's answer is incomplete or superficial?
- Request that difficult, time-consuming questions of limited interest be discussed during office hours?

Student Interest and Participation
Do you:

- Encourage students to ask questions?
- Accept other points of view?
- Provide opportunities for students to practice what they are learning?
- Engage students' intellectual curiosity?

Classroom Climate
Do you:

- Address some students by name (and with the correct pronunciation)?
- Call on men and women students in equal numbers?
- Call on students of different ethnic groups in equal numbers?
- Listen attentively and respond to students' comments and questions impartially?
- Give balanced and objective feedback, encouragement, criticism and praise?
- Avoid language patterns or case examples that exclude or belittle any groups?

Discussion
Do you

- Encourage all students to participate in the discussion?
- Draw out quiet students and prevent other students from dominating or monopolizing the discussion?
- Refrain from monopolizing the discussion yourself?
- Encourage students to challenge one another?
- Mediate conflicts or differences of opinion?
- Bring closure to the discussion?

Having Colleagues Observe Your Class

Invite a faculty development consultant or a colleague to observe you teach. If your campus has an office of faculty development or instructional improvement, one of the staff members can observe you teach. If your campus has no faculty development office, ask a supportive colleague to sit in on your class. If possible, try to select someone who is familiar with the course content. If no single class is representative of your course, ask the observer to attend two sessions. Let the students know in advance that you have invited an observer to sit in.

Plan for the observation. You and the observer should meet before the visit to discuss class goals, students and teaching strategies. Offer the observer a copy of your course syllabus and an outline of topics for the class period, and mention which particular features you would like the observer to focus on during class. At this initial meeting, you and the observer can also decide on the method of observation (checklist, rating form or open-ended comments). Some researchers recommend limiting the observation form to six or eight open-ended questions that will provide a narrative description of aspects of your teaching, such as organization of presentation, instructor/ student rapport and clarity of explanations (Millis, 1992).

Meet with the observer within a week or so of the visit. A good way to begin the session is for you to identify your impressions about the class and those aspects that went well and those that did not. Then ask the observer to comment on various aspects. It is sometimes helpful if the observer has prepared a brief written report that includes examples. Ask the observer to be concrete and specific and focus on behavior and actions. You and the observer can also discuss the degree to which your goals for the class were accomplished. At the conclusion of the session, you may want to ask the observer to offer suggestions for improvement in two or three specific areas. (Source: Davis, 1988)

References

Acheson, K. A. "Classroom Observation Techniques." *Idea Paper,* no. 4. Manhattan: Center for Faculty Evaluation and Development, Kansas State University, 1981.

Brown, G., and Atkins, M. *Effective Teaching in Higher Education.* London: Methuen, 1988.

Davis, B. G. *Sourcebook for Evaluating Teaching.* Berkeley: Office of Educational Development, University of California, 1988.

Fuhrmann, B. S., and Grasha, A. E A *Practical Handbook for College Teachers.* Boston: Little, Brown, 1983.

Krupnick, C. G. "The Uses of Videotape Replay" In C. R. Christensen with A. J. Hansen (eds.), *Teaching and the Case Method.* Boston: Harvard Business School, 1987.

Millis, B. J. "Conducting Effective Peer Classroom Observations." In D. H. Wulff and J. D. Nyquist (eds.), To *Improve the Academy. Vol. 11.* Stillwater, Okla: New Forums Press, 1992.

THE FIRST DAY OF CLASS

The first day of class sets the tone for the rest of the term. It is natural for both students and instructors to feel anticipation, excitement, anxiety and uncertainty. To pique student interest and anticipation, convey your enthusiasm for the material and stimulate students' curiosity about topics that will be covered during the term. To reduce anxiety and uncertainty, try to create a relaxed, open classroom environment conducive to inquiry and participation, and let students know what you will expect from them and what they can expect from you and the course. The following suggestions, intended to help you get your class off to a good start, address the three important tasks of the first day: handling administrative matters, creating an open friendly classroom environment and setting course expectations and standards.

Visit the classroom before the first meeting. Locate and know how to work the lights, the blinds and the ventilation. Check any audiovisual equipment (microphone, slide or overhead projector) you will be using. Find out how to obtain help if a bulb burns out or a piece of equipment malfunctions. Become comfortable speaking in the room and see how well your voice carries. Make sure your handwriting on the chalkboard is legible from the back row. (Source: Johnson, 1988)

Build a sense of community in the classroom. In general, students learn more and work harder in classes that spark their intellectual curiosity and allow for active involvement and participation. For the first day, plan an activity that provides opportunities for students to speak to one another or solve problems. Students also tend to work harder and respond more positively if they believe the instructor sees them as individuals rather than as anonymous faces in the crowd (Wolcowitz, 1984). Make an effort to get to know your students and express your interest in working with them during the semester.

Address students' concerns. Students enter a new class with several questions: Is this the right course for me? Does the teacher seem competent and fair? How much work will be required? How will I be evaluated? Use the first day to help your students understand how the class will serve their needs, and demonstrate your commitment to help them learn.

Set the tone for the rest of the semester. Greet students when they enter the classroom. Start and finish class on time. Encourage questions and give students the opportunity to talk. Stay after class to answer questions, or invite students to walk with you back to your office.

Make the time worthwhile. Once administrative tasks are completed, plunge into substantive material. This signals to students that you are serious about making your time together worthwhile and that you expect progress to be made at each session.

Expect some awkwardness. All teachers, especially beginning instructors, feel a twinge of apprehension before the first class. Do your best to assume a confident attitude. Keep in mind that your nervousness is likely to be perceived by your students as energy and enthusiasm. Arriving early on the first day of class and talking informally to students may help you relax. (Source: Marincovich and Rusk, 1987)

Taking Care of Administrative Tasks

Write the course name and number on the board. This message will alert any students who are in the wrong classroom to leave before you begin. (Source: Hilsen, 1988)

Take attendance. Call the roll or ask students to sign in. Have a contingency plan if more students than you can accommodate want to enroll. Check with your department to see whether policies exist for preferential

enrollment. Some faculty give preference to graduating seniors. Others make certain that students have the necessary prerequisites and then select enrollment by lottery. If your course is an elective, plan on admitting a few more students than you can comfortably accommodate; a small number will end up dropping your course.

Mention department course policies. Explain procedures for wait lists, adding and dropping courses and other important policies. Know where to refer students who experience problems in these areas.

Explain the procedures for the course's sections. If your course has sections, make sure that all students know which section they are enrolled in, who their graduate student instructor is, and when and where the section meets. Describe the relationship between the course and its sections and how sections will be run. Have the graduate student instructors introduce themselves.

Review any prerequisites for the course. Let students know what skills or knowledge they are expected to have and whether alternate experience or course work will be accepted. Is help available for those who do not have all the prerequisite skills? If computer work is part of the course, will training be provided?

Define your expectations for student participation. Besides turning in all written assignments and taking exams, outline other expectations you have of students during class.

Tell students about campus policies on academic honesty. State your expectations, and let students know what you regard as cheating and impermissible collaboration. See Preventing Academic Dishonesty.

Hand out and discuss the course syllabus. One faculty member has students read the syllabus and then form groups to identify questions about the course or the instructor (Serey, 1989). Hearing these questions on the first day lets a professor know immediately what concerns are uppermost in students' minds.

Invite students to visit you during your office hours. Be sure students know where your office is and encourage them to stop by with questions and course-related problems. Make a special point of asking students who feel they may need academic accommodations for a physical or learning disability to see you so that appropriate arrangements can be made.

Review safety precautions. If your course requires laboratory work or field work, review safe practices for using equipment and supplies and discuss emergency procedures. Show students how to use equipment safely and appropriately. (Source: Johnson, 1988)

Review emergency procedures. Let students know what to do in case of fire, tornado, earthquake, evacuation or other emergency.

Bring copies of the required texts to the first class meeting. Know which stores other than the campus bookstore stock these texts. Are used copies available? Is the textbook on reserve in the library?

Tape the session, if appropriate. For students who miss the first day of class, make a videotape or audiotape available for them to review on their own. This way, you do not have to keep repeating the material as new students join your class. If taping is impractical, ask students who enroll after the first day to obtain notes from someone who attended that session.

Creating a Positive Classroom Environment

Introduce yourself to your class. In addition to telling students how you wish to be addressed, say something about your background, such as how you first became interested in the subject, how it has been important to you, and why you are teaching this course. Convey your enthusiasm for the field and the subject. For many students, the instructor's enthusiasm about the course material is a key motivator for learning. (Sources: "The First Day of Class," 1989; Wolcowitz, 1984)

Ask students to fill out an introduction card. Have students indicate their name, campus address, telephone number, e-mail address, year in school and major course of study. You might also ask them to list related courses they have taken, prerequisites they have completed, other courses they are taking this semester, their reasons for enrolling in your course, what they hope to learn in the course, tentative career plans and something about their outside interests, hobbies or current employment. Make sure that students who later enroll also complete an introduction card.

Begin to learn each student's name. By learning your students' names, you can create a comfortable classroom environment that will encourage student interaction. Knowing your students' names also tells them that you are interested in them as individuals. As you call roll, ask for the correct pronunciation and how the student prefers to be addressed. If your course enrolls fewer than 40 students, call the roll for several class meetings to help you learn names. During the term, call students by name when you return homework or quizzes, and use names frequently in class. Ask students who are not called upon by name to identify themselves. Here are a variety of other strategies for learning names:

> *Photographs:* Consider grouping students for Polaroid pictures during the second week of class. In a single shot you may be able to photograph four or five people. The act of posing for a picture breaks the ice and creates an informal, relaxed environment. Circulate the photographs and have students write their name underneath their picture. If you do not have access to a camera, ask students to submit a small photograph of themselves (such as those taken in penny arcade photo booths or from their driver's license or student photo ID). Photocopies of photographs are fine. Place these photos on students' information sheets or introduction cards. Photographs are helpful in recalling a student before an appointment. Later on in the semester, when you are asked to write a recommendation for a student, you can refer back to the picture to jog your memory.
>
> *Name cards:* For a seminar class, use the United Nations model of place cards in front of each student. In a studio or laboratory course, post students' names above their workstations.
>
> *Seating chart:* Ask students to sit in the same seats for the first few weeks and prepare a seating chart. You may also block out, on a piece of paper, general locations within the room and write the names of students inside the appropriate blocks instead of labeling exact seats. Try to memorize four or five names at each class session.
>
> *Name game:* In small classes, ask the first person to give her name. The second person gives the name of the first person and his own name, and the third person gives the names of the first two people followed by her own name. The chain continues until it returns to the first person, with the instructor preferably near the end. (Source: Scholl-Buckwald, 1985)
>
> *Introductions:* For large lecture classes, at the beginning of each class period, ask six or eight students to introduce themselves.

Give students an opportunity to meet each other. Ask students to divide themselves into groups of three to five and introduce themselves. You may also have students group themselves by residence halls or living groups so that they can identify nearby classmates to study with (Heine et al, 1981). Or go around the room and ask all students to respond to a question, such as "What's the one thing you really want to learn from this course?" or "What aspect of the course seems most appealing to you?" Such questions are more interesting than those about students' majors or year in college.

Ask students to interview each other outside of class. If your course has a writing component, you might ask students to write a brief description of their partner. The class could agree on the interview questions beforehand, or each student could devise his or her own items. (Source: Scholl-Buckwald, 1985)

If your class is small, conduct a "people search." Students receive a sheet of paper with five to 10 statements and a space for a signature near each statement. The statements should be relevant to students in your class and

can be a mix of personal and academic attributes: “Someone who works and goes to school,” “Someone who has taken (a related course),” “Someone who has already purchased the textbooks,” “Someone who is left-handed,” “Someone who knows the order of the planets” (or other content-related question). Students are given 10 minutes to obtain as many signatures as possible. You can spend a few minutes debriefing to generate a class profile. Or you can compile the information for distribution at the next class meeting so students have a written record about their classmates. (Sources: Erickson and Strommer, 1991; Weisz, 1990)

Break students into small groups. An English professor divides the class into groups of six and gives each member of the group one line of a six-line poem. Students are asked to reassemble the poem and discuss what the poem means. A sociology professor asks groups of students to come up with a list of the 10 most important events (or people) in history. After 10 or 15 minutes, the groups’ responses are placed on the board for discussion and interpretation. (Source: Erickson and Strommer, 1991)

Encourage students to exchange phone numbers. If all students agree, ask them to write their name, telephone number and e-mail address on a plain sheet of paper and make copies of this roster for them. Encourage students to call their classmates about missed classes, homework assignments and study groups. Or have students complete their information on 3” x 5” index cards and exchange cards with two or three classmates. (Source: “The First Day of Class,” 1989)

Setting Course Expectations and Standards

Discuss the objectives of the course. As specifically as possible, tell your students what you wish to accomplish and why, but also ask about what they want to learn from you and what sorts of problems they would like to tackle. Be sure to acknowledge all contributions—your attentiveness to students’ ideas will encourage student participation throughout the semester. (Source: McKeachie, 1986)

Ask students to list the goals they hope to achieve by taking the course. Have students, in small groups or individually, list three to five goals in the form of statements about knowledge, skills, appreciations, interests or attitudes. Students can also rank their goals according to difficulty. Use these lists to identify class interests and anticipated problem areas. (Source: Angelo and Cross, 1993)

Describe how you propose to spend class time. How will sessions be structured? How will discussions be organized? Will a specific time be set aside for questions, or may students ask questions as they arise? Should questions requiring a lengthy response be saved for office hours?

Give your students ideas about how to study and prepare for class. Study strategies are especially important in an introductory class. Give examples of questions students might wish to think about or strategies for approaching the material. Tell students how much time they will need to study for the course, and let them know about academic support services available on campus.

If appropriate, give a brief diagnostic pretest. Explain that this “test” will not be graded, but is designed to give you information on topics students have mastered and areas that may need additional review. You could present a list of key concepts, facts and figures, or major ideas and ask students to indicate their familiarity with each. In a writing course, you might assign a short essay that will allow you to identify students’ strengths and weaknesses.

Ask students to do a group exercise. Select a key word from the course title and have students generate word associations or related ideas. Put their responses on the board and use the list to give a thematic overview of the course. (Source: Wright, 1989)

Work through a problem or piece of material that illustrates the course content. Begin to teach students how to participate in your class. Engaging students in actual work during the first class session gives them an idea of what your class will be like. You might make a brief presentation of a core idea, pose a typical problem or ask students to form working subgroups. (Source: Scholl-Buckwald, 1985)

Give an assignment for the next class session. By moving immediately into the first topic, you are indicating

to students that the course is worthwhile, well organized and well paced—But make sure that the assignment is ungraded, because students may be adding or dropping your course during the first week or so. (Sources: Johnson, 1988; Povlacs, 1986)

Ask students to write their reactions to the first day. Take two minutes at the end of class to have students jot down unsigned comments about what went well and what questions they have about the course. (Source: McKeachie, 1986)

References

Angelo, T. A., and Cross, K. P. *Classroom Assessment Techniques: A Handbook for College Teachers.* (2nd ed.) San Francisco: Jossey-Bass, 1993.

Erickson, B. L., and Strommer, D. W. *Teaching College Freshmen.* San Francisco: Jossey-Bass, 1991.

"The First Day of Class: Advice and Ideas." *Teaching Professor,* 1989, 3(7), 1-2.

Heine, H., and others. *The Torch or the Firehose? A Guide to Section Teaching.* Cambridge: Undergraduate Academic Support Office of the Dean for Student Affairs, Massachusetts Institute of Technology, 1981.

Hilsen, L. "A Helpful Handout: Establishing and Maintaining a Positive Classroom Climate." In E. C. Wadsworth, L. Hilsen, and M. A. Shea (eds.), *A Handbook for New Practitioners from the Professional and Organizational Development Network in Higher Education.* Stillwater, Okla.: New Forums Press, 1988.

Johnson, G. R. *Taking Teaching Seriously.* College Station: Center for Teaching Excellence, Texas A & M University, 1988.

McKeachie, W. J. *Teaching Tips.* (8th ed.) Lexington, Mass.: Heath, 1986.

Marincovich, M., and Rusk, L. *Excellence in Teaching Electrical Engineering.* Stanford, Calif.: Center for Teaching and Learning, Stanford University, 1987.

Povlacs, J. T. "101 Things You Can Do the First Three Weeks of Class." *Teaching at the University of Nebraska, Lincoln,* 1986, 8(l), 1-4. (Newsletter available from the Teaching and Learning Center, University of Nebraska, Lincoln)

Scholl-Buckwald, S. "The First Meeting of Class." In J. Katz (ed.), *Teaching as Though Students Mattered.* New Directions for Teaching and Learning, no. 21. San Francisco: Jossey-Bass, 1985.

Serey, T. "Meet Your Professor." *Teaching Professor,* 1989, 3(l), 2.

Weisz, E. "Energizing the Classroom." *College Teaching,* 1990, 38(2), 74-76.

Wolcowitz, J. "The First Day of Class." In M. M. Gullette (ed.), *The Art and Craft of Teaching.* Cambridge, Mass.: Harvard University Press, 1984.

Wright, D. L. "The Most Important Day: Starting Well." *Teaching at the University of Nebraska, Lincoln,* 1989, 11(l), 1-3. (Newsletter available from the Teaching and Learning Center, University of Nebraska, Lincoln)

ENCOURAGING STUDENT PARTICIPATION IN DISCUSSION

Students' enthusiasm, involvement and willingness to participate affect the quality of class discussion. Your challenge is to engage all students, keep them talking to each other about the same topic, and help them develop insights into the material. Roby (1988) warns against falling into quasi-discussions— encounters in which students talk but do not develop or criticize their own positions, and fail to reflect on the process and outcomes of the session. Two common forms of quasi-discussion are "quiz shows" (where the teacher has the right answers) and "bull sessions" (characterized by cliches, stereotypes, empty generalizations, lack of standards for judging opinions and aimless talking). The following suggestions are intended to help you create a classroom where students feel comfortable, secure, willing to take risks and ready to test and share ideas.

General Strategies

Encourage students to learn each other's names and interests. Students are more likely to participate in class if they feel they are among friends rather than strangers, so at the beginning of the term, ask students to introduce themselves and describe their primary interests or background in the subject (Tiberius, 1990). These introductions may also give you some clues about framing discussion questions that address students' interests. See The First Day of Class for ideas on helping students get to know one another.

Get to know as many of your students as class size permits. In classes of 30 or less, learn all of your students' names. (The First Day of Class lists several ways to do this.) If you require students to come to your office once during the first few weeks of class, you can also learn about their interests. Class participation often improves after students have had an opportunity to talk informally with their instructor.

Arrange seating to promote discussion. If your room has movable chairs, ask students to sit in a semicircle so they can see one another. At a long seminar table, seat yourself along the side rather than at the head. If appropriate, ask students to print their names on name cards and display them on their desk or table. Research reported by Beard and Hartley (1984) shows that people tend to talk to the person sitting opposite them, that people sitting next to each other tend not to talk to one another, that the most centrally placed member of a group tends to emerge as leader and that leaders tend to sit in the least crowded parts of a room.

Allow the class time to warm up before you launch into the discussion. Consider arriving two to three minutes early to talk informally with students, or open class with a few minutes of conversation about relevant current events, campus activities or administrative matters. (Sources: Billson, 1986; Welty, 1989)

Limit your own comments. Some teachers talk too much and turn a discussion into a lecture or a series of instructor-student dialogues. Brown and Atkins (1988) report a series of studies by various researchers that found that most discussion classes are dominated by instructors. In one study (p. 53) faculty spoke 86 percent of the time. Avoid the temptation to respond to every student's contribution. Instead, allow students to develop their ideas and respond to one another.

Tactics to Increase Student Participation

Make certain that each student has an opportunity to talk in class during the first two or three weeks. The longer a student goes without speaking in class, the more difficult it becomes to contribute. Devise small group or pair work early in the term so that all students can participate and hear their own voices in anon-threatening environment.

Plan an icebreaker activity early in the semester. For example, a professor teaching plant domestication in cultural geography asks students to bring in a fruit or vegetable from another culture or region. The discussion focuses on the countries of origin and the relationship between food and culture. At the end of class, students eat what they have brought. See The First Day of Class for other suggestions.

Ask students to identify characteristics of an effective discussion. Ask students individually or in small groups to recall discussions and seminars in which they have participated, and to list the characteristics of those that were worthwhile. Then ask students to list the characteristics of poor discussions. Write the items on the board, and tally the items mentioned by more than one student or group. With the entire class, explore ways that class members can maximize the qualities that make for a good discussion and minimize those that make for a poor one.

Periodically divide students into small groups. Students find it easier to speak to groups of three or four than to an entire class. Divide students into small groups, have them discuss a question or issue for five or ten minutes, and then return to a full class discussion. Choose topics that are focused and straightforward. “What are the two most important characteristics of goal-free evaluation?” or “Why did the experiment fail?” Have each group report orally and record the results on the board. Once students have spoken in small groups, they may be less reluctant to speak to the class as a whole.

Assign roles to students. Ask two or three students to lead a discussion session sometime during the term. First, meet with the student leaders to go over their questions and proposed format. Then, have the leaders distribute three to six discussion questions to the class a week before the discussion. During class, the leaders assume responsibility for generating and facilitating the discussion. For discussions you lead, assign one or two students per session to be observers who are responsible for commenting on the discussion. Other student roles include periodic summarizer (to summarize the main substantive points two or three times during the session), recorder (to serve as the group’s memory), timekeeper (to keep the class on schedule) and designated first speaker. (Source: Hyman, 1980)

Use poker chips or comment cards to encourage discussion. One faculty member distributes three poker chips to each student in her class. Each time a student speaks, a chip is turned over to the instructor. Students must spend all their chips by the end of the period. The professor reports that this strategy limits students who dominate the discussion and encourages quiet students to speak up. Another professor hands out a comment card each time a student provides a strong response or insightful comment. Students turn back the cards at the end of the period, and the professor notes on the course roster the number of cards each student received. (Source: Sadker and Sadker, 1992)

Use e-mail to start a discussion. One faculty member in the biological sciences poses a question through e-mail and asks the students to respond with their comments. He then hands out copies of all the responses to initiate class discussion.

Tactics to Keep Students Talking

Build rapport with students. Simply saying that you are interested in what your students think and that you value their opinions may not be enough. In addition, comment positively about a student's contribution and reinforce good points by paraphrasing or summarizing them. If a student makes a good observation that is ignored by the class, point this out: "Thank you, Steve. Karen also raised that issue earlier, but we didn't pick up on it. Perhaps now is the time to address it. Thank you for your patience, Karen" (Tiberius, 1990). Clarke (1988) suggests tagging important assertions or questions with the student's name (For example, the "Amy argument" or the "Haruko hypothesis"). Tiberius (1990) warns against overdoing this, however, because a class may get tired of being reminded that they are discussing a certain student's point.

Bring students' outside comments into class. Talk to students during office hours, in hallways and around campus. If they make a good comment, check with them to see if they are willing to raise the idea in class. Say: "Jana, you were made a good point about that in the hall yesterday. Would you repeat it for the rest of the class?"

Use nonverbal cues to encourage participation. For example, smile expectantly and nod as students talk. Maintain eye contact with students. Look relaxed and interested.

Draw all students into the discussion. You can involve more students by asking whether they agree with what has just been said, or whether someone can provide another example to support or contradict a point: "How do the rest of you feel about that?" or "Does anyone who hasn't spoken care to comment?" Moreover, if you move away from—rather than toward—a student who makes a comment, the student will speak up and outward, drawing everyone into the conversation. The comment will be "on the floor," and open for other students to respond to.

Give quiet students special encouragement. Quiet students are not necessarily uninvolved, so avoid excessive efforts to draw them out. Some quiet students, though, are waiting for a non-threatening opportunity to speak. To help these students, consider the following strategies:

- Arrange small group discussions (two to four students).
- Pose casual questions that don't call for a detailed correct response, for example, "What are some reasons why people may not vote?" or "What do you remember most from the reading?" or "Which of the articles did you find most difficult?" (McKeachie, 1986).
- Assign a small specific task to a quiet student: "Carrie, would you find out for next class session what Chile's GNP was last year?"
- Reward infrequent contributors with a smile.
- Bolster students' self-confidence by writing their comments on the board (Welty, 1989).
- Stand or sit next to someone who has not contributed. Your proximity may draw a hesitant student into the discussion.

Discourage students who monopolize the discussion. As reported in "The One or Two Who Talk Too Much" (1988), researchers Karp and Yoels found that in classes with fewer than 40 students, four or five students accounted for 75 percent of the total interactions per session. In classes with more than 40 students, two or three students accounted for 51 percent of the exchanges. Here are some ways to handle dominating students:

- Break the class into small groups or assign tasks to pairs of students.
- Ask everyone to jot down a response to your question and then choose someone to speak.
- If only the dominant students raise their hands, restate your desire for greater student participation: "I'd like to hear from others in the class."

- Avoid making eye contact with the talkative students.
- If one student has been dominating the discussion, ask other students whether they agree or disagree with that student.
- Explain that the discussion has become too one-sided and ask the monopolizer to help by remaining silent: "Larry, since we must move on, would you briefly summarize your remarks, and then we'll hear the reactions of other group members."
- Assign a specific role to the dominant student that limits participation (for example, periodic summarizer).
- Acknowledge the time constraints: "Jon, I notice that our time is running out. Let's set a 30-second limit on everybody's comments from now on."
- If the monopolizer is a serious problem, speak to him or her after class or during office hours. Tell the student that you value his or her participation and wish more students contributed. If this student's comments are good, say so; but point out that learning results from give-and-take and that everyone benefits from hearing a range of opinions and views.

Tactfully correct wrong answers. Any type of put-down or disapproval will inhibit students from speaking up and from learning. Say something positive about those aspects of the response that are insightful or creative and point out those aspects that are off base. Provide hints, suggestions or follow-up questions that will enable students to understand and correct their own errors. Billson (1986) suggests prompts such as “Good—now let’s take it a step further,” “keep going,”and “not quite, but keep thinking about it.”

Reward but do not grade student participation. Some faculty members assign grades based on participation or reward student participation with bonus points when assigning final grades. Melvin (1988) describes a grading scheme based on peer and professor evaluation: Students are asked to rate the class participation of each of their classmates as high, medium or low. If the median peer rating is higher than the instructor’s rating of that student, the two ratings are averaged. If the peer rating is lower, the student receives the instructor’s rating. Other faculty members believe that grading based on participation is inappropriate, because it is subjective and not defensible if challenged. They also note that such a policy may discourage free and open discussion, and may make students hesitant to talk for fear of revealing their ignorance or being perceived as trying to gain grade points. In addition, faculty argue, thoughtful silence is not unproductive, and shy students should not be placed at a disadvantage simply because they are shy.

There are means other than grades to encourage and reward participation: verbal praise of good points, acknowledgment of valued contributions, or even written notes to students who have added significantly to the discussion. One faculty member uses lottery tickets to recognize excellent student responses or questions when they occur. He doesn’t announce this in advance but distributes the first ticket as a surprise. Tickets can be given to individuals or to small groups. Over the term, he may hand out 15 to 20 lottery tickets. In a small class, you maybe able to keep notes on students’ participation and devote some office hours to helping students develop their skills in presenting their points of view and listening to their classmates (Hertenstein, 1991).

References

Beard, R. M., and Hartley, J. *Teaching and Learning in Higher Education.* (4th ed.) New York: Harper & Row, 1984.

Billson, J. M. "The College Classroom as a Small Group: Some Implications for Teaching and Learning." *Teaching Sociology,* 1986, *14(3), 143–151.*

Brown, G., and Atkins, M. *Effective Teaching in Higher Education.* London: Methuen, 1988.

Clarke, J. H. "Designing Discussions as Group Inquiry." *College Teaching,* 1988, *36(4),* 140–143.

Hertenstein, J. H. "Patterns of Participation." In C. R. Christensen, D. A.

Garvin, and A. Sweet (eds.), *Education for Judgment: The Artistry of Discussion Leadership.* Boston: Harvard Business School, 1991.

Hyman, R. T. *Improving Discussion Leadership.* New York: Teachers College Press, 1980.

McKeachie, W J. *Teaching Tips.* (8th ed.) Lexington, Mass.: Heath, 1986.

Melvin, K. B. "Rating Class Participation: The Prof/Peer Method." *Teaching of Psychology,* 1988, *15(3),* 137–139. "The One or Two Who Talk Too Much." *Teaching Professor,* 1988, 2(7), *5.*

Roby, T. W "Models of Discussion." In J. T. Dillon (ed.), *Questioning and Discussion: A Multidisciplinary Study.* Norwood, N.J.: Ablex, 1988.

Sadker, M., and Sadker, D. "Ensuring Equitable Participation in College Classes." In L.L.B. Border and N.VN. Chism (eds.), *Teaching for Diversitv. New Directions for Teaching and Learning, no.* 49. San Francisco: Jossey-Bass, 1992.

Tiberius, R. G. *Small Group Teaching: A Trouble-Shooting Guide.* Toronto: Ontario Institute for Studies in Education Press, 1990.

Welty, W. M. "Discussion Method Teaching." *Change,* 1989, *21(4),* 40–49.

QUIZZES, TESTS AND EXAMS

Many teachers dislike preparing and grading exams, and most students dread taking them. Yet tests are powerful educational tools that serve at least four functions. First, tests help you evaluate students and assess whether they are learning what you are expecting them to learn. Second, well-designed tests serve to motivate and help students structure their academic efforts. Crooks (1988), McKeachie (1986), and Wergin (1988) report that students study in ways that reflect how they think they will be tested. If they expect an exam focused on facts, they will memorize details; if they expect a test that will require problem solving or integrating knowledge, they will work toward understanding and applying information. Third, tests can help you understand how successfully you are presenting the material. Finally, tests can reinforce learning by providing students with feedback on what topics or skills they have not yet mastered and should concentrate on. Despite these benefits, testing is also emotionally charged and may produce anxiety. The following suggestions can enhance your ability to design tests that are effective in motivating, measuring and reinforcing learning.

A note on terminology: instructors often use the terms *tests, exams* and *quizzes* interchangeably. Test experts Jacobs and Chase (1992), however, make distinctions among them based on the scope of content covered and their weight or importance in calculating the final grade for the course. An examination is the most comprehensive form of testing, typically given one or two times during the semester (as midterms) and at the end of the term (as a final). A test is more limited in scope, and focuses on particular aspects of the course material. A course might have three or four tests. A quiz is even more limited and usually is administered in 15 minutes or less. Though these distinctions are useful, the terms *test* and *exam* will be used interchangeably throughout the rest of this section because the principles in planning, constructing and administering them are similar.

General Strategies

Spend adequate amounts of time developing your tests. As you prepare a test, think carefully about the learning outcomes you wish to measure, the type of items best suited to those outcomes, the range of difficulty of items, the length and time limits for the test, the format and layout of the exam and your scoring procedures.

Match your tests to the content you are teaching. Ideally, the tests you give will measure students' achievement of your educational goals for the course. Test items should be based on the content and skills that are most important for your students to learn. To keep track of how well your tests reflect your objectives, you can construct a grid listing your course objectives along the side of the page and content areas along the top. For each test item, check off the objective and content it covers. (Sources: Ericksen, 1969; Jacobs and Chase, 1992; Svinicki and Woodward, 1982)

Try to make your tests valid, reliable and balanced. A test is *valid* if its results are appropriate and useful for making decisions about an aspect of students' achievement (Gronlund and Linn, 1990). Technically, validity refers to the appropriateness of the interpretation of the results and not to the test itself, though colloquially we speak about a test being valid. Validity is a matter of degree and considered in relation to specific use or interpretation (Gronlund and Linn, 1990). For example, the results of a writing test may have a high degree of validity for indicating the level of a student's composition skills, a moderate degree of validity for predicting success in later composition courses, and essentially no validity for predicting success in mathematics or physics. Validity can be difficult to determine. A practical approach is to focus on *content validity,* or the extent to which the content of the test represents an adequate sampling of the knowledge and skills taught in the course. If you design the test to cover information in lectures and readings in proportion to their importance in the course, then the interpretations of test scores are likely to have greater validity. An exam that consists of only a few difficult items, however, will not yield valid interpretations of what students know.

A test is *reliable* if it accurately and consistently evaluates a student's performance. The purest measure of reliability would entail having a group of students take the same test twice and receive the same scores each time (assuming that we could erase their memories of test items from the first administration). This is impractical, of course, but there are other technical procedures for determining reliability. In general, ambiguous questions, unclear directions and vague scoring criteria threaten reliability. Very short tests are usually highly unreliable. It is also important for a test to be balanced and to cover most of the main ideas and important concepts in proportion to the emphasis they received in class.

If you are interested in learning more about psychometric concepts and the technical properties of tests, here are some books you might review:

Ebel, R. L., and Frisbie, D. A. *Essentials of Educational Measurement.* (5th ed.) Englewood Cliffs, N.J.: Prentice-Hall, 1990.

Gronlund, N. E., and Linn, R. *Measurement and Evaluation in Teaching.* (6th ed.) New York: Macmillan, 1990.

Mehrens, W. A., and Lehmann, *I.* J. *Measurement and Evaluation in Education and Psychology.* (4th ed.) New York: Holt, Rinehart & Winston, 1991.

Use a variety of testing methods. Research shows that students vary in their preferences for different formats, so using a variety of methods will help students do their best (Jacobs and Chase, 1992). Multiple-choice or short answer questions are appropriate for assessing students' mastery of details and specific knowledge, while essay questions assess comprehension, a student's ability to integrate and synthesize information, and a student's ability to apply information to new situations. A single test may have several formats. Try to avoid introducing a new format on the final exam: if you have given all multiple-choice quizzes or midterms, don't ask students to write an all-essay final. (Sources: Jacobs and Chase, 1992; Lowman, 1984; McKeachie, 1986; Svinicki, 1987)

Write questions that test skills other than recall. Research shows that most tests administered by faculty rely too heavily on students' recall of information (Milton, Pollio and Eison, 1986). Bloom (1956) argues that it is important for tests to measure higher learning as well. Fuhrmann and Grasha (1983, p. 170) have adapted Bloom's taxonomy for test development. Here is a summary of their list:

- To measure *knowledge* (common terms, facts, principles, procedures), ask these kinds of questions: define, describe, identify, label, list, match, name, outline, reproduce, select and state. (e.g., "List the steps involved in titration.")

- To measure *comprehension* (understanding of facts and principles, interpretation of material), ask these kinds of questions: convert, defend, distinguish, estimate, explain, extend, generalize, give examples, infer, predict and summarize. (e.g., "Summarize the basic tenets of deconstructionism.")

- To measure *application* (solving problems, applying concepts and principles to new situations), ask these kinds of questions: demonstrate, modify, operate, prepare, produce, relate, show, solve and use. (e.g., "Calculate the deflection of a beam under uniform loading.")

- To measure *analysis* (recognition of unstated assumptions or logical fallacies, ability to distinguish between facts and inferences), ask these kinds of questions: diagram, differentiate, distinguish, illustrate, infer, point out, relate, select, separate and subdivide. (e.g., "In the president's State of the Union Address, which statements are based on facts and which are based on assumptions?")

- To measure *synthesis* (integrate learning from different areas or solve problems by creative thinking), ask these kinds of questions: categorize, combine, compile, devise, design, explain, generate, organize, plan, rearrange, reconstruct, revise and tell. (e.g.,"How would you restructure the school day to reflect children's developmental needs?")

- To measure *evaluation* (judging and assessing), ask these kinds of questions: appraise, compare, conclude, contrast, criticize, describe, discriminate, explain, justify, interpret and support. (e.g., "Why is Bach's Mass in B Minor acknowledged as a classic?")

Many faculty members have found it difficult to apply this six-level taxonomy, and some educators have simplified and collapsed the taxonomy into three general levels (Crooks, 1988):

1. Knowledge (recall or recognition of specific information)

2. A combination of comprehension and application

3. Problem solving, or transferring existing knowledge and skills to new situations

If your course has graduate student instructors (GSIs), involve them in designing exams. At the least, ask your GSIs to read your draft of the exam and comment on it. Better yet, involve them in creating the exam. Not only will they have useful suggestions, but their participation in designing an exam will help them grade it.

Take precautions to avoid cheating. See "Preventing Academic Dishonesty"

Types of Tests

Multiple-choice tests. Multiple-choice items can be used to measure simple knowledge and complex concepts. Since multiple-choice questions can be answered quickly, you can assess students' mastery of many topics on an hour exam. In addition, the items can be easily and reliably scored. Good multiple-choice questions are difficult to write.

True-false tests. Because random guessing will produce the correct answer half the time, true-false tests are less reliable than other types of exams. However, these items are appropriate for occasional use. Some faculty who use true-false questions add an "explain" column in which students write one or two sentences justifying their response.

Matching tests. The matching format is an effective way to test students' recognition of the relationships between words and definitions, events and dates, categories and examples and more.

Essay tests. Essay tests enable you to judge students' abilities to organize, integrate, interpret material and express themselves in their own words. Research indicates that students study more efficiently for essay-type examinations than for selection (multiple-choice) tests. Students preparing for essay tests focus on broad issues, general concepts, and interrelationships rather than on specific details, and this studying results in somewhat better student performance regardless of which type of exam they are given (McKeachie, 1986). Essay tests also give you an opportunity to comment on students' progress, the quality of their thinking, the depth of their understanding and any difficulties they may be having. However, because essay tests pose only a few questions, their content validity may be low. In addition, the reliability of essay tests is compromised by subjectivity or inconsistencies in grading. (Sources: Ericksen, 1969, McKeachie, 1986)

A variation of an essay test asks students to correct mock answers. One faculty member prepares a test that requires students to correct, expand or refute mock essays. Two weeks before the exam date, he distributes 10 to 12 essay questions, which he discusses with students in class. For the actual exam, he selects four of the questions and prepares well-written but intellectually flawed answers for the students to edit, correct, expand and refute. The mock essays contain common misunderstandings, correct but incomplete responses or absurd notions. In some cases, the answer has only one or two flaws. He reports that students seem to enjoy this type of test more than traditional examinations.

Short-answer tests. Depending on your objectives, short-answer questions can call for one or two sentences or a long paragraph. Short-answer tests are easier to write, though they take longer to score than multiple-choice tests. They also give you some opportunity to see how well students can express their thoughts, although they are not as useful as longer essay responses for this purpose.

Problem sets. In courses in mathematics and the sciences, your tests can include problem sets. As a rule of thumb, allow students 10 minutes to solve a problem you can do in two minutes.

Oral exams. Though common at the graduate level, oral exams are rarely used for undergraduates except in foreign language classes. In other classes, they are usually time-consuming, too anxiety-provoking for students and difficult to score unless the instructor tape-records the answers. However, a math professor has experimented with individual 30-minute oral tests in a small seminar class. First, students receive the questions in advance and are allowed to drop one of their choosing. Then, during the oral exam, the professor probes the student's level of understanding of the theory and principles behind it. He reports that about eight students per day can be tested.

Performance tests. Performance tests ask students to demonstrate proficiency in conducting an experiment, executing a series of steps in a reasonable amount of time, following instructions, creating drawings, manipulating materials or equipment or reacting to real or simulated situations. Performance tests can be administered individually or in groups. They are seldom used in colleges and universities because they are logistically difficult to set up, hard to score and the content of most courses does not necessarily lend itself to this type of testing. However, performance tests can be useful in classes that require students to demonstrate their skills (for example, health fields, the sciences and education). If you use performance tests, Anderson (1987, p. 43) recommends that you do the following (Anderson's list has been slightly modified):

- Specify the criteria to be used for rating or scoring (for example, the level of accuracy in performing steps in sequence, or completing the task within a specified time limit).
- State the problem so that students know exactly what they are supposed to do (if possible, conditions of a performance test should mirror a real-life situation).
- Give students a chance to perform the task more than once or to perform several task samples.

"Create-a-game" exams. For one midterm, ask students to create either a board game, word game or trivia game that covers the range of information relevant to your course. Students must include the rules, game board, game pieces and whatever else is needed to play. For example, students in a history of psychology class created "Freud's Inner Circle," where students move tokens such as small cigars and toilet seats around a board each time they answer a question correctly. They also created "Psychogories," a card game where players select and discard cards until they have a full hand of theoretically compatible psychological theories, beliefs or assumptions. (Source: Berrenberg and Prosser, 1991)

Alternative Testing Modes

Take-home tests. Take-home tests allow students to work at their own pace with access to books and materials. Take-home tests also permit longer and more involved questions without sacrificing valuable class time for exams. Problem sets, short answers and essays are the most appropriate kinds of take-home exams. Be wary, though, of designing a take-home exam that is too difficult or an exam that does not include limits on the number of words or time spent (Jedrey, 1984). Also, be sure to give students explicit instructions as to what they can and cannot do. (For example, are they allowed to talk to other students about their answers?) A variation of a take-home test is to give students the topics in advance, but ask them to write their answers in class. Some faculty hand out 10 or 12 questions the week before an exam and announce that three of those questions will appear on the exam.

Open-book tests. Open-book tests simulate the situations professionals face every day when they use resources to solve problems, prepare reports or write memos. Open-book tests tend to be inappropriate in introductory courses where facts must be learned and skills thoroughly mastered before the student can progress to more complicated concepts and techniques in advanced courses. On an open-book test, students who are lacking basic knowledge may spend too much of their time consulting their references instead of writing. Open-book tests appear to reduce stress (Boniface, 1985; Liska and Simonson, 1991), but research shows that students do not necessarily perform significantly better on them (Clift and Imrie, 1981; Crooks, 1988). Open-book tests also seem to reduce students' motivation to study. A compromise between open- and closed-book testing is to let students bring an index card or a page of notes to the exam, or to distribute appropriate reference material such as equations or formulas, as part of the test.

Group exams. Some faculty have successfully experimented with group exams, either in class or as take-home projects. Faculty report that groups outperform individuals, and students respond positively to group exams (Geiger, 1991; Hendrickson, 1990; Keyworth, 1989; Toppins 1989). For example, for a 50-minute in-class exam, use a multiple-choice test of about 20 to 25 items. For the first test, the groups can be randomly divided. Groups of three to five students seem to work best. For subsequent tests, you may want to assign students to groups in ways that minimize differences between group scores and balance talkative and quiet students. Or you might want to group students who are performing at or near the same level (based on students' performance on individual tests). Some faculty have students complete the test individually before meeting as a group. Others just let the groups discuss the test, item-by-item. In the first case, if the group score is higher than the individual score of any member, bonus points are added to each individual's score. In the second case, each student receives the score of the group. Faculty who use group exams offer the following tips:

- Ask students to discuss each question fully and weigh the merits of each answer rather than simply vote on an answer.
- If you assign problems, have each student work a problem and then compare results.
- If you want students to take the exam individually first, consider devoting two class periods to tests, one for individual work and the other for group.
- Show students the distribution of their scores as individuals and as groups. In most cases group scores will be higher than any single individual score.

A variation of this idea is to have students first work on an exam in groups outside of class. Students then complete the exam individually during class time and receive their own score. Some portion of the test items are derived from the group exam, the rest are new questions. You may also let students know in advance that you will be asking them to justify a few of their responses. This will keep students from relying on their work group for all of the answers. (Sources: Geiger, 1991; Hendrickson, 1990; Keyworth, 1989; Murray, 1990; Toppins, 1989)

Paired testing. For paired exams, two students work on a single essay exam and turn in one paper. Some students may be reluctant to share a grade, but good students will most likely earn the same grade they would have by working alone. Pairs can be self-selected or assigned. For example, pairing a student who is doing well in the course with one who is not doing well allows for some peer teaching. A variation is to have students work in teams but submit individual answer sheets. (Source: Murray, 1990)

Portfolios. A portfolio is not a specific test but rather a cumulative collection of a student's work. Students decide what examples to include that characterize their growth and accomplishment over the term. While most common in composition classes, portfolios are beginning to be used in other disciplines to provide a fuller picture of students' achievements. A student's portfolio might include sample papers (first drafts and revisions), journal entries, essay exams and other work representative of the student's progress. You can assign portfolios a letter grade or a pass/not pass. If you do grade portfolios, you will need to establish clear criteria. (Source: Jacobs and Chase, 1992)

Constructing Effective Exams

Prepare new exams each time you teach a course. Though it is time-consuming to develop tests, a past exam may not reflect changes in how you have presented the material or which topics you have emphasized in the course. If you do write a new exam, you can make copies of the old exam available to students.

Make up test items throughout the term. Don't wait until a week or so before the exam. One way to make sure the exam reflects the topics emphasized in the course is to write test questions at the end of each class session and place them on index cards or computer files for later sorting. Software that allows you to create test banks of items and generate exams from the pool is now available.

Ask students to submit test questions. Faculty who use this technique limit the number of items a student can submit and receive credit for. Here is an example (adapted from Buchanan and Rogers, 1990, p. 72):

Students may submit up to two questions per exam. Each question must be typed or legibly printed on a separate 5" x 8" card. The correct answer and the source (that is, page of the text, date of lecture) must be provided for each question. Questions can be short-answer, multiple-choice or essay.

Students receive a few points of additional credit for each question they submit that is judged appropriate. Not all students will take advantage of this opportunity. You can select or adapt student's test items for the exam. If you have a large lecture class, tell your students that you might not review all items, but will draw randomly from the pool until you have enough questions for the exam. (Sources: Buchanan and Rogers, 1990; Fuhrmann and Grasha, 1983)

Cull items from colleagues' exams. Ask colleagues at other institutions for copies of their exams. Be careful, though, about using items from tests given by colleagues on your own campus. Some of your students may have already seen those tests.

Consider making your tests cumulative. Cumulative tests require students to review material they have already studied, thus reinforcing what they have learned. Cumulative tests also give students a chance to integrate and synthesize course content. (Sources: Crooks, 1988; Jacobs and Chase, 1992; Svinicki, 1987)

Prepare clear instructions. Test your instructions by asking a colleague (or one of your graduate student instructors) to read them.

Include a few words of advice and encouragement on the exam. For example, give students advice on how much time to spend on each section, or offer a hint at the beginning of an essay question or wish students good luck. (Source: "Exams: Alternative Ideas and Approaches," 1989)

Put some easy items first. Place several questions that all your students can answer near the beginning of the exam. Answering easier questions helps students overcome their nervousness and may help them feel confident about succeeding on the exam. You may also use the first few questions of the test to identify students who are experiencing serious academic difficulty. (Source: Savitz, 1985)

Challenge your best students. Some instructors like to include at least one very difficult question—not a trick question or a trivial one—near the end of the exam to challenge their best students.

Try out the timing. No purpose is served by creating a test too long for even well-prepared students to finish and review before turning it in. As a rule of thumb, allow about one-half minute per item for true-false tests, one minute per item for multiple-choice tests, two minutes per short-answer requiring a few sentences, ten or fifteen minutes for a limited essay question and about thirty minutes for a broader essay question. Allow another five or 10 minutes for students to review their work, and factor in time to distribute and collect the tests. Another rule of thumb is to allow students about four times as long as it takes you (or a graduate student instructor) to complete the test. (Source: McKeachie, 1986)

Give some thought to the layout of the test. Use margins and line spacing that make the test easy to read. If items are worth different numbers of points, indicate the point value next to each item. Group similar types of items, such as all true-false questions, together. Keep in mind that the amount of space you leave for short-answer questions often signifies to the students the length of the answer expected of them. If students are to write on the exam rather than in a blue book, leave space at the top of each page for the student's name (and section, if appropriate). If each page is identified, the exams can be separated so that each graduate student instructor can grade the same questions on every test paper.

References

Anderson, S. B. "The Role of the Teacher-Made Test in Higher Education." In D. Bray and M. J. Blecher (eds.), *Issues in Student Assessment.* New Directions for Community Colleges, no. 59. San Francisco: Jossey-Bass, 1987.

Berrenberg, J. L., and Prosser, A. "The Create-a-Game Exam: A Method to Facilitate Student Interest and Learning." *Teaching of Psychology,* 1991, 18(3), 167-169.

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

Boniface, D. "Candidates' Use of Notes and Textbooks During an Open Book Examination." *Educational Research,* 1985, 27(3), 201-209.

Brown, I. W. "To Learn Is to Teach Is to Create the Final Exam." *College Teaching, 1991,* 39(4), 150-153.

Buchanan, R. W., and Rogers, M. "Innovative Assessment in Large Classes." *College Teaching, 1990,* 38(2), 69-73.

Clift, J. C., and Imrie, B. W. *Assessing Students, Appraising Teaching.* New York: Wiley, 1981.

Crooks, T. J. "The Impact of Classroom Evaluation Practices on Students." *Review of Educational Research,* 1988, 58(4), 438-481.

Ericksen, S. C. "The Teacher-Made Test." *Memo to the Faculty,* no. 35. Ann Arbor: Center for Research on Learning and Teaching, University of Michigan, 1969.

"Exams: Alternative Ideas and Approaches." *Teaching Professor,* 1989, 3(8), 3-4.

Fuhrmann, B. S., and Grasha, A. F. *A Practical Handbook for College Teachers.* Boston: Little, Brown, 1983.

Geiger, T. "Test Partners: A Formula for Success." *Innovation Abstracts,* 1991, 13 (l1). (Newsletter published by College of Education, University of Texas at Austin)

Gronlund, N. E., and Linn, R. *Measurement and Evaluation in Teaching.* (6th ed.) New York: Macmillan, 1990.

Hendrickson, A. D. "Cooperative Group Test-Taking." Focus, 1990, 5(2), 6. (Publication of the Office of Educational Development Programs, University of Minnesota)

Jacobs, L. C., and Chase, C. I. *Developing and Using Tests Effectively: A Guide for Faculty.* San Francisco: Jossey-Bass, 1992.

Jedrey, C. M. "Grading and Evaluation." In M. M. Gullette (ed.), *The Art and Craft of Teaching.* Cambridge, Mass.: Harvard University Press, 1984.

Keyworth, D. R. "The Group Exam." *Teaching Professor,* 1989, 3(8), 5.

Liska, T., and Simonson, J. "Open-Text and Open-Note Exams." *Teaching Professor,* 1991, 5(5), 1-2.

Lowman, J. *Mastering the Techniques of Teaching.* San Francisco: Jossey-Bass, 1984.

McKeachie, W. J. *Teaching Tips*. (8th ed.) Lexington, Mass.: Heath, 1986.

Milton, O., Pollio, H. R., and Eison, J. A. *Making Sense of College Grades: Why the Grading System Does Not Work and What Can Be Done About It.* San Francisco: Jossey-Bass, 1986.

Murray, J. P. "Better Testing for Better Learning." *College Teaching,* 1990, 38(4), 148-152.

Savitz, F. "Effects of Easy Examination Questions Placed at the Beginning of Science Multiple-Choice Examinations." *Journal of Instructional Psychol*ogy, 1985, 12(l), 6-10.

Svinicki, M. D. "Comprehensive Finals." *Newsletter,* 1987, 9(2), 1-2. (Publication of the Center for Teaching Effectiveness, University of Texas at Austin)

Svinicki, M. D., and Woodward, P. J. "Writing Higher-Level Objective Test Items." In K. G. Lewis (ed.), *Taming the Pedagogical Monster.* Austin: Center for Teaching Effectiveness, University of Texas, 1982.

Toppins, A. D. "Teaching by Testing: A Group Consensus Approach." *College Teaching,* 1989, 37(3), 96-99.

Wergin, J. F. "Basic Issues and Principles in Classroom Assessment." In J. H. McMillan (ed.), *Assessing Students' Learning.* New Directions for Teaching and Learning, no. 34. San Francisco: Jossey-Bass, 1988.

PREVENTING ACADEMIC DISHONESTY

Between 40 and 70 percent of all college students have reported cheating sometime during their academic career (Aiken, 1991; Davis, Grover, Becker and McGregor, 1992). Researchers have begun to identify the factors that influence academic dishonesty (Aiken, 1991; Barnett and Dalton, 1981; Davis, Grover, Becker and McGregor, 1992; Roberts and Rabinowitz, 1992). These include competition and pressures for good grades, instructional situations that are perceived as unfair or excessively demanding, faculty who are perceived as uncaring or indifferent to their own teaching or to their students' learning, lax attitudes on the part of faculty toward academic dishonesty, peer pressure to support a friend, and a diminishing sense of academic integrity and ethical values among students. Not all these factors are under an instructor's control, but there are specific steps you can take to prevent academic dishonesty:

- Inform students of academic standards for scholarship and conduct.
- Explain how cheating harms students and describe campus sanctions.
- Minimize the opportunities for cheating and plagiarism.
- Take visible actions to detect dishonesty so that students know you will not tolerate cheating. (Even if you don't actually carry out all the actions you say you will take, honest students will appreciate knowing that you care enough about academic integrity to take precautions.)
- If cheating occurs, respond swiftly with disciplinary measures and formal action.

The following ideas are designed to help you impart the values of academic honesty and set policies that encourage academic integrity.

General Strategies

Spend time at the beginning of the term discussing standards of academic scholarship and conduct. Cheating may mean different things to faculty and students ("Academic Dishonesty in our Classrooms," 1990). For example, students are often unclear about how much they can work with other students and under what circumstances. Describe for your students acceptable and unacceptable behavior, giving examples of plagiarism, impermissible collaboration and other practices relevant to your class. Explain that cheating will not be tolerated, and discuss university policies, procedures and penalties for academic violations. Some departments hand out written materials that define cheating and plagiarism and require students to sign a statement that they have read and understood the material. Here is an example of material that is distributed to students:

> *Cheating* means getting unauthorized help on an assignment, quiz, or examination. (1) You must not receive from any other student or give to any other student any information, answers, or help during an exam. (2) You must not use unauthorized sources for answers during an exam. You must not take notes or books to the exam when such aids are forbidden, and you must not refer to any book or notes while you are taking the exam unless the instructor indicates it is an "open book" exam. (3) You must not obtain exam questions illegally before an exam or tamper with an exam after it has been corrected.

Plagiarism means submitting work as your own that is someone else's. For example, copying material from a book or other source without acknowledging that the words or ideas are someone else's and not your own is plagiarism. If you copy an author's words exactly, treat the passage as a direct quotation and supply the appropriate citation. If you use someone else's ideas, even if you paraphrase the wording, appropriate credit should be given. You have committed plagiarism if you purchase a term paper or submit a paper as your own that you did not write.

Make sure students know the criteria for evaluating their performance. Review students' work throughout the term so that they know you know their abilities and achievement levels. (Source: Malehorn, 1983)

Develop a climate and group norms that support honesty. For example, you may wish to take a vote in class to conduct the exams under the honor system (without proctors). (Source: McKeachie, 1986)

Learn to recognize signs of stress in students. Make students aware of campus resources that they can turn to for help if their grades are low or if they feel too pressured. Familiarize yourself with the services of your campus's student learning center and counseling center, as well as tutoring provided by student honor societies.

Ensure equal access to study materials. Establish a file in the library or department office of old homework assignments, exams and papers, or attach a sample of past exam questions to the syllabus. (Source: Singhal and Johnson, 1983)

Make students feel as though they can succeed in your class without having to resort to dishonesty. Give more rather than fewer tests. Encourage students to come talk with you if they are having difficulties. Minimize the threat of exams and grades. See "Allaying Students Anxieties About Tests" and "Grading Practices." (Source: Eble, 1988)

If you suspect students of cheating or plagiarizing material, confront them directly. Deal with the problem immediately. Don't join the 20 percent of faculty members who tend to ignore evidence of cheating (Tabachnick, Keith-Spiegel, and Pope, 1991). Talk with a student about your suspicions and listen carefully to the student's response. Here is some specific advice (adapted from "Handling a Plagiarism Interview," 1987, p. 10):

- If you have qualms or hesitations, talk with an experienced colleague or your department chair before you meet with the student.
- Consult your campus student conduct office for specific guidelines and due process procedures.
- When you meet with the student, objectively explain the problem as you see it.
- Describe why this is a problem in grading or evaluating the student's work.
- Avoid using the words cheating or plagiarism.
- Project an air of concern for the student as an individual, but communicate the seriousness of the situation.
- Listen to the student's explanation.
- If a student denies any wrongdoing, question him or her about specific aspects of the paper by asking for definitions of terms, interpretations or restatements.
- Be prepared for pleas, excuses and tales of hardship and extenuating circumstances.
- Show some sympathy if a student is distraught or upset. Suggest a referral to the counseling center, if appropriate.

- Explain what will happen next to the student.
- Take whatever official action your institution prescribes for handling student academic dishonesty.

Plagiarism

Clarify the distinctions between plagiarism, paraphrasing and direct citation. Provide students with instances of correct and incorrect ways to use the ideas and words of others. You might want to seek permission to distribute the following example from *The Random House Handbook,* 6th ed., by Frederick Crews (New York: McGraw-Hill, 1992, pp. 181-183):

Consider the following source and three ways that a student might be tempted to make use of it:

Source: The joker in the European pack was Italy. For a time hopes were entertained of her as a force against Germany, but these disappeared under Mussolini. In 1935 Italy made a belated attempt to participate in the scramble for Africa by invading Ethiopia. It was clearly a breach of the covenant of the League of Nations for one of its members to attack another. France and Great Britain, as great powers, Mediterranean powers, and African colonial powers, were bound to take the lead against Italy at the league. But they did so feebly and half-heartedly because they did not want to alienate a possible ally against Germany. The result was the worst possible: the league failed to check aggression, Ethiopia lost her independence, and Italy was alienated after all. (J. M. Roberts, *History of the World* (New York: Knopf, 1976), p. 845.)

Version A: Italy, one might say, was the joker in the European deck. When she invaded Ethiopia, it was clearly a breach of the covenant of the League of Nations; yet the efforts of England and France to take the lead against her were feeble and half-hearted. It appears that those great powers had no wish to alienate a possible ally against Hitler's rearmed Germany.

Comment: Clearly plagiarism. Though the facts cited are public knowledge, the stolen phrases aren't. Note that the writer's interweaving of his own words with the source's does not render him innocent of plagiarism.

Version B: Italy was the joker in the European deck. Under Mussolini in 1935, she made a belated attempt to participate in the scramble for Africa by invading Ethiopia. As J. M. Roberts points out, this violated the covenant of the League of Nations. (J. M. Roberts, *History of the World* (New York: Knopf, 1976), p. 845.) But France and Britain, not wanting to alienate a possible ally against Germany, put up only feeble and half-hearted opposition to the Ethiopian adventure. The outcome, as Roberts observes, was "the worst possible: the league failed to check aggression, Ethiopia lost her independence, and Italy was alienated after all." (Roberts, p. 845.)

Comment: Still plagiarism. The two correct citations of Roberts serve as a kind of alibi for the appropriating of other, unacknowledged phrases. But the alibi has no force: some of Roberts' words are again being presented as the writer's.

Version C: Much has been written about German rearmament and militarism in the period 1933-1939. But Germany's dominance in Europe was by no means a foregone conclusion. The fact is that the balance of power might have been tipped against Hitler if one or two things had turned out differently. Take Italy's gravitation toward an alliance with Germany, for example. That alliance seemed so very far from inevitable that Britain and France actually muted their criticism of the Ethiopian invasion in the hope of remaining friends with Italy. They opposed the Italians in the League of Nations, as J. M. Roberts observes, "feebly and half-heartedly because they did not want to alienate a possible ally against Germany." (J. M. Roberts, *History of the World* (New York: Knopf, 1976), p. 845.) Suppose Italy, France, and Britain had retained a certain common interest. Would Hitler have been able to get away with his remarkable bluffing and bullying in the later thirties?

Comment: No plagiarism. The writer has been influenced by the public facts mentioned by Roberts, but he hasn't tried to pass off Roberts' conclusions as his own. The one clear borrowing is properly acknowledged.

Watch out for electronic plagiarism. With the growth of electronic bulletin boards, information servers and e-mail, students can obtain papers from students at other universities or have online access to encyclopedias, Monarch notes or other source material. While there is little you can do to prevent abuse, letting students know you are aware of the possibility may deter potential cheaters. (Source: Bulkeley, 1992)

Tell students that resubmitting their previous academic work as a new product for your course is inappropriate. Ask students to check with you if they have a paper or project they submitted for another course that may be appropriate for yours. Some faculty work with students who wish to use a recycled research paper by allowing students to use a different statistical method to analyze data already collected or by letting students use the conclusions of their previous papers as springboards for topics for new papers. (Source: "About Plagiarism," 1990)

Paper Topics

Assign specific topics. Design topics that are likely to require new research, stress thought and analysis more than recall of facts, and are challenging but not overwhelming. Topics that are too difficult invite cheating, as do boring, trivial and uninteresting topics. (Sources: Eble, 1988; "Preventing Plagiarism," 1987; Singhal and Johnson, 1983)

Limit students' choices of broad paper topics. If given complete freedom, students may flounder and turn to commercially produced term papers or "file" papers as an easy out. (Source: "Preventing Plagiarism," 1987)

Change the assignments for each offering of a course. Changing the topics or assignments prevents students from simply appropriating an essay from someone who has already taken your course. (Source: "Preventing Plagiarism," 1987)

Writing Demystified

Give a short lecture on how to research and write a paper. Let students know what you expect of them and how they may proceed. Some campus libraries offer consultation services to students on developing research skills.

Discuss in class the difficulties of writing. Help students understand that the anxieties or blocks they face are a normal part of the writing process. "If, in the classroom, you emphasize the stages of the composing process and the normal tribulations of every writer, your students may be less likely to conclude that cheating is the only feasible way of getting from an assigned topic to a finished paper" *(Handbook for TAs,* p. 18*)*.

During the term, schedule a variety of short in-class papers. In-class assignments help students develop their writing skills and help you determine their abilities. Instructors who assign only one paper a term have a hard time judging whether that assignment is the student's own work. (Source: Malehorn, 1983*)*

Early in the course, require students to come in to discuss their paper topics. Again, later in the course, ask them to share outlines and to discuss how they plan to organize and present their ideas and findings. This approach not only helps students write better papers but also allows you to see students' ideas develop. (Source: "Preventing Plagiarism," 1987*)*

Preparation and Submission of Papers

Require students to submit first drafts. Quick comments on first drafts can help students improve their writing skills.

Request that final versions of papers be handed in with drafts. Ask for note cards and outlines as well. Also ask students to turn in the original version and one duplicate. Keep the copies for your files so you can use them to identify pirated or previously submitted papers the next time you teach the course. (Source: Malehorn, 1983*)*

If possible, collect papers from students during class. This will only work if your course size is not too large. If

papers are turned in at a department or faculty office, consider using locked mailboxes with slots for collection.

Consult the catalogue descriptions of term paper firms. If you suspect a student has purchased a term paper, you may wish to review the catalogues of paper factories. Ask your campus office of student conduct for any catalogues on file.

Exam Questions

Change exam questions as often as practical. Ask students and graduate student instructors, if you have them, to submit prospective questions. With judicious editing, some will be appropriate for the exam and others could form the basis of an item pool. See "Quizzes, Tests, and Exams."

For multiple-choice exams, use alternate forms. Scramble the order of questions and color code the different exams. Some researchers suggest rearranging both test questions and answers (Aiken, 1991). Or collate the pages a different order, if possible. (Source: Singhal and Johnson, 1983)

Create individualized tests for students, if appropriate. Using a computer, a faculty member in business creates customized assignments for students. In a tax accounting course, he varies the sales price and monthly payment amounts to generate unique problems for each student (using four sales prices and four monthly payment amounts yields 64 different problems, and increasing each of these variables to six results in 216 different problems). Using software with word-processing, spreadsheet and mail-merge capabilities makes it possible to create unique problems and solutions for each so that scoring can be readily handled. (Source: Burns, 1988)

Keep exams, grade books and rosters safe. Store all exam materials in locked cabinets, desks or file drawers in your office. Make copies of computer grade files. (Source: "Preventing Cheating on Exams," 1985)

Test Administration

Make certain that you (or proctors) are in the room at all times. During an exam, arrange for proctoring or plan to monitor the test yourself, unless your class is run on an honor system. Periodically walk up and down the aisles to observe students. Students have developed ingenious ways of cheating during exams, such as using systems of hand and feet positions, tapping corners of the desk to represent responses to multiple-choice questions, surreptitiously opening books or trading papers and using tiny cassette recorders filled with information. (Source: Davis, Grover, Becker, and McGregor, 1992)

Seat students randomly in alternate chairs. Have students place personal belongings on the floor rather than in empty seats. If needed, schedule an additional room.

In large classes, check students' photo IDs. Check photo IDs displayed on desks against class lists to be certain that each student takes his or her own exam. If you do this, let students know in advance you will be checking IDs. You may also seat students in pre-assigned groups. For example, students could sit by section so that graduate student instructors can determine whether all of their students are in attendance and that "ringers" are not taking the test. (Source: "Preventing Cheating on Exams," 1985)

In rooms with seat numbers, keep a seating chart. Hand out blue books or exams with prerecorded seat numbers. In rooms without seat numbers, pick up the exams in the sequence of rows. (Source: Singhal and Johnson, 1983)

Make certain that students have cleared the memories on their calculators. Before you distribute the exam or as students enter the room, check all calculators to ensure their memories have been erased. Also make sure that crib notes are not concealed in a calculator's cover. (Source: Putka, 1992)

Supply scratch paper. Do not permit students to use their own paper or pages of their blue books. One intrepid student reported writing answers on a paper flower and pinning it to her blouse. (Sources: Davis, Grover, Becker and McGregor, 1992; Singhal and Johnson, 1983)

Take action if you observe "wandering eyes." If you notice "wandering eyes," go up to the offending student unobtrusively and ask that he or she move to another seat where it is less crowded. If the student seems reluctant, whisper in his or her ear that you would prefer that the student move. If you observe cheating, position yourself near the offenders to discourage them. Or make a general public announcement: "Please do your own work." If you have suspicions about students, allow them to complete the exam, but take notes on what you have observed. (Source: McKeachie, 1986)

Spend some time in the back of the room. Students who are thinking about cheating will have to turn around in their seats to see where you are. (Source: Singhal and Johnson, 1983)

Do not allow students to rush chaotically to turn their bluebooks in at the end of the period. Require students to sign an attendance sheet when they turn in their exams, or collect exams from each student. Count those present at the exam to make certain that the number of examinees matches the number of exams. This will prevent students from claiming their exam was lost or misplaced when in reality, they took it. (Source: "Preventing Cheating on Exams," 1985)

Blue Books

Have students turn blue books in prior to the exam. Collect blue books at an earlier class meeting or as students enter the exam room, and then redistribute the blue books at random. (Source: "Preventing Cheating on Exams," 1985)

Require students to write only on the left-hand pages. Or ask students to leave a certain number of pages blank at the beginning of their blue books. (Source: "Preventing Cheating on Exams," 1985)

Examine all of the blue books before leaving the classroom. One scam for cheating described by Moore (cited in Flint, 1992) involves a student pretending to take the test, but then submitting a blank blue book without his name. The student then completes the test at home in a spare blue book using notes and materials. The completed blue book, with the student's name, course and professor's name on the front, is then dropped outside the classroom, in the hallway, or outside the professor's office. The student depends on someone finding the blue book and returning it to the faculty member, who is supposed to think that it slipped out of the pile.

Scoring and Returning Exams

Clearly mark incorrect answers. Use an inked X or slash mark to indicate wrong answers or blank spaces.

Let students know that you will be using computer programs to detect cheating on multiple-choice tests. Programs such as "Cheat-l" and "Cheat-2" compare students' responses and determine probabilities that pairs of students by chance will show the same distribution of answers (Aiken, 1991). Even if you do not actually use the software, telling students you may use it, is often a sufficient deterrent to cheating.

If you permit re-grading of exams, take precautions. Throughout the term, photocopy the exams or quizzes of students who initially ask for re-grading, or photocopy exams before returning them to students. (Source: "Preventing Cheating on Exams," 1985)

Return exams and assignments to students in person. This will work only if your course is small enough. Do not leave exams in the department office or on your desk for students to pick up. For large courses with GSIs, distribute exams in each section.

Fraudulent Excuses

Distinguish between fraudulent, legitimate, and unacceptable excuses. A legitimate excuse is based on events beyond a student's control, a fraudulent excuse is one fabricated solely to avoid an academic responsibility. In one study, researchers found that over two-thirds of college students admitted to using at least one fraudulent excuse to postpone an exam, turn in a paper late, not turn it in at all or miss class. An unacceptable excuse, such as forgetting when a paper was due, may be truthful but is not a justifiable reason for failure to do the assigned task. (Source: Caron, Whitbourne, and Halgin, 1992)

Clearly state your policies about accepting excuses. Let students know at the beginning of the term what you consider acceptable and unacceptable excuses. Tell students that no excuse will be accepted without some type of proof of its validity. While it is clearly impossible to obtain evidence that all excuses are legitimate, just saying you will ask for documentation may discourage potential excuse makers. Better yet, try to structure your course so that students are not placed in situations where they might be tempted to lie. For example, allow students to miss a quiz without penalty (Source: Caron, Whitbourne, and Halgin, 1992).
See "Allaying Students' Anxieties About Tests."

Recognize that the excuse "my grandmother died" is more likely to be valid than fraudulent. Research shows few significant distinctions between the content of fraudulent excuses and legitimate excuses. Don't become so cynical that you dismiss every family emergency as an invention. (Source: Caron, Whitbourne, and Halgin, 1992)

References

"About Plagiarism." *Instructional Exchange,* 1990, 2(l), 3. (Newsletter available from the Office of University Assessment and Intellectual Skills Program, Western Michigan University)

"Academic Dishonesty in Our Classrooms." *Instructional Exchange,* 1990, 2(2), 1-4. (Newsletter available from the Office of University Assessment and Intellectual Skills Program, Western Michigan University)

Aiken, L. R. "Detecting, Understanding, and Controlling for Cheating on Tests." *Research in Higher Education,* 1991, 32(6), 725-736.

Barnett, D. C., and Dalton, J. C. "Why College Students Cheat." *Journal of College Student Personnel,* 1981, 22(6), 545-551.

Bulkeley, W. M. "High Tech Aids Make Cheating in School Easier." Wall *Street Journal,* Apr. 28, 1992, pp. B1, B6.

Burns, J. G. "Computers in Class." *Teaching Professor,* 1988, 2(7), 2.

Caron, M. D., Whitbourne, S. K., and Halgin, R. P. "Fraudulent Excuse Making Among College Students." *Teaching of Psychology,* 1992, 19(2), 90-93.

Davis, S. F., Grover, C. A., Becker, A. H., and McGregor, L. N. "Academic Dishonesty: Prevalence, Determinants, Techniques, and Punishments." *Teaching of Psychology,* 1992, 19(l), 16-20.

Eble, K. E. *The Craft of Teaching.* (2nd ed.) San Francisco: Jossey-Bass, 1988.

Flint, A. "'Cheating 101' Becomes a Campus Best-Seller." *San Francisco Examiner,* Feb. 23, 1992, p. B-6.

Handbook for TAs. Berkeley: English Department, University of California.

"Handling a Plagiarism Interview." *The TA at UCLA Newsletter,* 1987, no. 20, p. 10. (Available from the Office of Instructional Development, University of California at Los Angeles)

McKeachie, W. J. *Teaching Tips.* (8th ed.) Lexington, Mass.: Heath, 1986.

Malehorn, H. "Term Papers for Sale and What to Do About It." *Improving College and University Teaching,* 1983, 31(3), 107-108.

"Preventing Cheating on Exams." *The TA at UCLA Newsletter,* 1985, no. 15, p. 2. (Available from the Office of Instructional Development, University of California at Los Angeles)

"Preventing Plagiarism: Some Tips." *The TA at UCLA Newsletter,* 1987, no. 20, p. 6. (Available from the Office of Instructional Development, University of California at Los Angeles)

Putka, G. "A Cheating Epidemic at a Top High School Teaches Sad Lessons." *Wall Street Journal,* June 29, 1992, pp. Al, A4-A5.

Roberts, D., and Rabinowitz, W. "An Investigation of Student Perceptions of Cheating in Academic Situations." *Review of Higher Education,* 1992, 15(2), 179-190.

Singhal, A., and Johnson, P. "How to Halt Student Dishonesty" *College Student Journal,* 1983, 17(l), 13-19.

Tabachnick, B. G., Keith-Spiegel, P., and Pope, K. S. "Ethics of Teaching: Beliefs and Behaviors of Psychologists as Educators." *American Psychologist,* 1991, 46(5), 506-515.

ALLAYING STUDENTS' ANXIETIES ABOUT TESTS

Anxiety can interfere with a student's performance on tests. You can reduce students' anxiety and enhance their performance by paying attention to how you prepare students for an exam, administer and return the test, and handle makeup tests. All students (but especially freshmen and sophomores) can benefit from knowing what they will be asked to do on an exam and under what conditions. Students will also feel more relaxed and less intimidated if you provide reassurance and encouragement rather than dire warnings about a test's difficulty. The suggestions below are designed to help you prepare your students to do their best on exams.

General Strategies

Make the first exam relatively easy. Research on motivation indicates that early success in a course increases students' motivation and confidence (Lucas, 1990). In particular, students who do well on the first test generally improve their grades on subsequent tests (Guskey, 1988).

Give more than one exam. The length of the school term, the difficulty level of the course and the amount of course material all determine the number of exams an instructor gives. Periodic testing during the term has been shown to improve students' performance on the final exam (Lowman, 1984). Giving two or more midterm exams also spreads out the pressure, allows students to concentrate on one chunk of material at a time and helps students and instructors monitor progress.

Avoid "pop" quizzes. Unannounced or surprise quizzes may penalize students who are unable to prepare for every single class meeting. (Source: Jacobs and Chase, 1992)

Give students advice on how to study. Help students develop appropriate study strategies to organize and understand information from the assigned readings and class notes. Consult with your student learning center for information. (Source: Mealey and Host, 1992)

Encourage students to study in groups. According to researchers, students who study in groups recall more information than students working alone, and are better able to overcome their feelings of academic inadequacy and isolation (Mealey and Host, 1992).

Schedule extra office hours before a test. Some instructors schedule extra office hours for the week or so before an exam to give students a chance to ask questions or go over difficult aspects of the material. Many encourage study groups to visit during office hours.

Schedule review sessions before major exams.

Ask students how you can help them feel less anxious. Students often make requests that faculty can easily accommodate, such as providing information about the test format, offering a review session or refraining from walking around during the exam. (Source: Mealey and Host, 1992)

Preparing Students for an Exam

Give a diagnostic test early in the term. An early diagnostic test alerts students to the prerequisite skills and knowledge they need to succeed in your class. Some faculty give diagnostic tests throughout the term to identify which students are keeping up, which need help and what specific areas students need to work on. These diagnostic tests provide students with quick and frequent feedback and typically do not count heavily in the final grade. (Sources: Ericksen, 1969; Svinicki, 1976)

Attach a pool of final exam questions to the course syllabus and distribute both on the first day of class. A faculty member who uses this technique attaches fifty essay questions to the syllabus. All of the essay questions are discussed during the term. The final exam is then composed of five essay questions from the list. Under this system, students need not spend the semester worrying about what will be on the final. If the exam is too long to attach to the syllabus, bind it to the course reader so that every student has a copy. (Source: "Exams: Alternative Ideas and Approaches," 1989)

Put old exams on file in the department office or library. Reviewing past exams gives students guidance on what to study. Students can analyze old exams for format (length of test, number of points for each type of question), types of questions and level of difficulty. If your campus is networked, you may enter exams onto a file server and students can retrieve them when needed.

Distribute practice exams. Practice tests with answers help students gauge what is expected of them. You can use practice exams as the basis for review sessions or student study groups. If you will be administering a multiple-choice test, you could distribute the stems of multiple-choice questions but not the response choices (e.g., "Which of the following statements best characterizes Melanie Kleins view of the first year of life?"). (Source: Erickson and Strommer, 1991)

Before an exam, explain the format to students. Let students know the number of questions, format of questions (multiple-choice or essay) and whether they can bring in notes (open or closed book).

Give students advice on how to prepare for an exam. For example, remind them to allocate their study time in proportion to the relative importance of various topics.

To lessen students' tension before a test, give the following recommendations:

- Avoid cramming by studying over several weeks.
- Eat sensibly the night before a test and get a good night's sleep.
- Arrive early for the test.
- Take deep relaxing breaths as the test begins.

Administering Tests

Make extra copies of the exam. Have extra copies on hand to replace copies that have blank pages or are collated incorrectly. (Source: McKeachie, 1986)

Administer the test yourself. You will want to be present to announce any corrections (e.g., typographical errors) or changes in the exam. Your presence can also motivate and reassure students, and alert them to the importance of the test. Arrive early on the day of the test to answer questions and stay later to talk with students. (Sources: Jacobs and Chase, 1992; Lowman, 1984)

Read the instructions aloud at the beginning of class. Even if you write the clearest of instructions, it is helpful to read them aloud to the class. Ask students whether they have any questions about what they are supposed to do. Be brief. Students want to use their time to take the test.

Plan for contingencies. Decide how you will respond to questions such as "What if we don't finish?" or "What if we think two answers are correct?"

Minimize the temptations to cheat. Unless your institution is on the honor system, actively proctor exams. See "Preventing Academic Dishonesty" for advice on ways to reduce cheating during exams.

Don't hover over the class. Bring a book or work that will occupy you so that you will not be looking over students' shoulders, but be alert to discourage cheating. (Source: Mealey and Host, 1992)

If there is no clock in the room, keep students apprised of the time. At the start of the exam, write the beginning time, the finishing time, and the time remaining on the board. Once or twice, update students onthe time remaining and announce the last segment ("You have five minutes left"). Some faculty give students prompts during the test ("If you are not yet on question 5, you need to work a little more quickly"). Keep to the finishing time—it is not fair to allow some students to go on working when others must leave to go to another class.

Devote part of the session to reviewing the answers with students. One faculty member gives a 30-minute midterm in a 50-minute class. Students turn in their answer sheets after 30 minutes, but they keep the question sheet. The remaining class time is devoted to going over the correct answers and answering questions (Friedman, 1987). A variation on this technique is to divide the class into small groups and have them review answers and then reconvene as a class to discuss areas of disagreement or confusion. Another option is to ask for student volunteers who will meet with you immediately after the test to identify any specific problems with the exam. You may also set up a student exam review committee.

Make one copy of the answer sheet available at the end of the test period. One faculty member described by Jacobs and Chase (1992) places a corrected test copy (for multiple-choice items) on his desk so that students can review it after they have turned in their own exam. This is usually only possible in small classes.

Letting Students Show What They Know

Give students the opportunity to comment on the test. Researchers report that giving students space on the test itself to explain their responses to multiple-choice items helped relieve students' anxiety and reduced post-test complaints from students. Students were directed to write a short justification for any answer they felt needed more explanation or for questions they perceived to be tricky. The instructors added a point for a "good explanation of a wrong answer" and subtracted a point for "a bad explanation of a right answer" (Dodd and Leal, 1988; Nield and Wintre, 1986). The researchers noted that students averaged less than one explanation per test over four tests. You may choose to ignore the comments on those items for which a student selected the correct multiple-choice option. Some faculty opt to offer students extra credit for rewriting multiple-choice items (limit two items per test).

Include a blank question on the exam. Ask students to write a question or pose a problem that they were well prepared to answer. Grade students on the quality of the question (level of difficulty, appropriateness) and their answer. (Source: "Exams: Alternative Ideas and Approaches," 1989)

Include one or more extra-credit questions on the exam. Give students the opportunity to answer additional questions for extra credit at the end of the test. Add these points to their scores and to offset items they answered incorrectly.

Let students "buy" information from you during the exam. Tell students that midway through the exam (say, between 20 and 30 minutes of a 60-minute test) they can ask you questions for a price. The price is losing points from their total score. For example, a student might ask whether an answer is right or wrong at a cost of one penalty point; an equation or formula may cost two penalty points; a diagram setup, four penalty points; and so on. A faculty member in mathematics who uses this technique reports that half of a typical class takes

advantage of this approach to help them "unfreeze" on difficult problems. A chemistry professor uses a similar strategy but makes the option available to all students. He distributes a "test insurance page," in a lottery scratch-off format, to students along with their exams. The page contains clues to answers; each time students scratch off a clue, points are deducted from their total score. (Sources: Ellis, 1992; Gordon, 1988)

Let students bring in "crib sheets." As reported in "Exams: Alternative Ideas and Approaches" (1989) and Janick (1990), some faculty have had success by asking students to prepare a 5" x 8" index card that they may consult during the exam. According to the faculty, this technique helps students make decisions about what material is most important, and it can alleviate pretest anxiety. Vessey and Woodbury (1992) report negative effects of using crib sheets. Students, they believe, become "crib sheet focused" and fail to answer the exam questions appropriately—instead, they look for key words on the test question to match to key terms on their crib sheet. When a match is found, students simply end up transcribing their crib sheet to their test.

Encourage students to evaluate the exam. If you want a sense of how students felt about the exam, ask them to complete an unsigned evaluation form that poses questions such as the following (adapted from "Let Students Grade the Exam," 1987):

- Did content you expected to see appear on this exam?
- Identify the questions you never expected to see.
- Were the questions clear enough that, even though you may not have known the answer, you knew what was being asked?
- What questions confused you?
- What letter grade would you give the test for content, format and fairness?

Give students "a second chance to learn." After students turn in their in-class, closed-book exam, they receive a second copy to take home and complete as an open-book exam. Both exams are then scored, and students may earn up to one-half of the points lost on the in-class exam back. A variation of this technique is to schedulea repeat test containing equivalent items a few days after the initial exam. Grading is handled by weighting the two exams differently: the lower score counts 25 percent and the higher score 75 percent. (Sources: Davidson, House and Boyd, 1984; Murray, 1990)

Returning Examinations

Return test papers promptly. Since students are anxious to know how they have done, and a quick turnaround also encourages relearning or corrective learning, most experts recommend that tests be returned within five days. Laws governing the privacy and confidentiality of student records forbid the posting of grades by name, initials or student numbers; confidentiality and concerns about security also dictate that exams should not be left in a pile in the department office for students to pick up. If you cannot return papers to your students during class or office hours (using photo IDs if necessary), arrange for a staff member in the department to return the tests. For example, let students know that they can pick up their own test from the department secretary between 3 and 5 p.m. in the department office. (Sources: Lowman, 1984; Unruh, 1990)

Use some class time to discuss the overall results. After making some general comments on how the class performed as a whole, you can show the general distribution of scores, note items missed by many people and correct widespread misunderstandings. For essay tests, describe what you expected in a good answer and the most common problems you saw. Some faculty read or distribute unsigned excerpts from outstanding papers. Smith (1992) returns graded multiple-choice exams to students and then divides them into groups to discuss the answers among themselves. Ambiguous or problematic questions are referred to the instructor for discussion by the entire class. The professor reports that having students review exams in groups often takes less time than her own reviews, and students report enjoying it more. (Source: McKeachie, 1986; Smith, 1992)

Schedule extra office hours after returning a test. Students who come to see you may be angry or may try to have their grades changed.

- Request that students wait 24 hours before coming to see you. This gives them a chance to reread the exam, cool down and prepare specific questions.
- Let students know that if they request a review of the grading of their test, you reserve the right to change the grade either positively or negatively.
- Ask students to come with specific questions (not "Why is my grade so low?"). Some faculty request that students prepare a brief paragraph expressing their complaint and justifying the correctness of their answer.
- When a student comes to see you, listen carefully. Do not interrupt the student to rebut each point.
- Try to shift the focus of the discussion from grades to problem-solving. Ask, "What can we do to help you do better next time?" Help the student shift his or her attitude from blaming you or the test toward gaining motivation to work more effectively.
- Don't change a grade out of sympathy or compassion. Only change a grade if you have made a clerical error or mistakenly evaluated a response.

(Sources: Jacobs and Chase, 1992; Jedrey, 1984, McKeachie, 1986)

Arranging Makeup Tests

Avoid the need to arrange for makeup tests by giving frequent exams. Makeup tests are problematic. If you devise a new test, it might not be comparable to the original test. But if you use the same test, some students may have talked to others who took the original test. Scheduling a makeup test also poses logistical problems. One way to avoid using makeup tests is to give four exams, for example, and count the grades of only three. Students who take all four tests can drop their lowest score. Students who miss an exam will be graded on the three they have taken. Some faculty who give two midterms give double weight to one if a student misses the other. (Source: McKeachie, 1986)

Give students options on the number of tests they take. Buchanan and Rogers (1990) offer students the following options: (1) four multiple-choice tests, (2) four multiple-choice tests and a final, or (3) three multiple-choice tests and a final. In options one and three, each test is worth 25 percent of the course grade; in option two, each test is worth 20 percent. Students who miss one of the multiple-choice tests must elect option three. Students who miss two tests are handled on a case-by-case basis. The researchers report that about 5 percent of the students elect to miss any given test.

Give an additional exam for the entire class at the end of the semester. The grade on this extra test can replace a missed exam or replace a lower grade. This procedure frees you from policing excuses on exam days. This option also helps the student who has an “off day,” or underperformed, on a test. (Source: Shea, 1990)

Hand out essay questions in advance. If you distribute a list of essay questions from which the midterm questions will be taken in advance, you will not have to write a makeup test. (Source: Lewis, 1982)

Give a two-hour rather than a three-hour final exam and use the last hour for makeup tests. By administering makeup tests during the time block reserved for the final exam, you can avoid the complexities of special scheduling.

Give an oral exam as a substitute. Oral exams are a practical alternative only in small classes, and are more effective in advanced courses, where higher levels of learning can be assessed. Oral exams typically cover less material but are more in-depth than written exams.

References

Buchanan, R. W., and Rogers, M. "Innovative Assessment in Large Classes." *College Teaching, 1990,* 38(2), 69-73.

Davidson, W. B., House, W. J., and Boyd, T. L. "A Test-Retest Policy for Introductory Psychology Courses." *Teaching of Psychology, 1984,* 11(3), 182-184.

Dodd, D. K., and Leal, L. "Answer justification: Removing the 'Trick' from Multi-Choice Questions." *Teaching of Psychology,* 1988, 15(1) 37-38.

Ellis, A. "Scratching for Grades." *National Teaching and Learning Forum,* 1992, 1(5), 4-5.

Ericksen, S. C. "The Teacher-Made Test." *Memo to the Faculty,* no. 35. Ann Arbor: Center for Research on Learning and Teaching, University of Michigan, 1969.

Erickson, B. L., and Strommer, D. W. *Teaching College Freshmen.* San Francisco: Jossey-Bass, 1991.

"Exams: Alternative Ideas and Approaches." *Teaching Professor,* 1989, 3(8), 3-4.

Friedman, H. "Immediate Feedback, No Return Test Procedure for Introductory Courses." *Teaching of Psychology,* 1987, 14(4), 244.

Gordon, L. "Cost-Benefit Testing." *Academic Leader,* 1988, 4(4), 1-2.

Guskey, T. R. *Improving Student Learning in College Classrooms.* Springfield, Ill.: Thomas, 1988.

Jacobs, L. C., and Chase, C. I. *Developing and Using Tests Effectively: A Guide for Faculty.* San Francisco: Jossey-Bass, 1992.

Janick, J. "Crib Sheets." *Teaching Professor,* 1990, 4(6), 2.

Jedrey, C. M. "Grading and Evaluation." In M. M. Gullette (ed.), *The Art and Craft of Teaching.* Cambridge, Mass.: Harvard University Press, 1984.

"Let Students Grade the Exam." *Teaching Professor,* 1987, 1(5), 4.

Lewis, K. G. *Taming the Pedagogical Monster.* Austin: Center for Teaching Effectiveness, University of Texas, 1982.

Lowman, J. *Mastering the Techniques of Teaching.* San Francisco: Jossey-Bass, 1984.

Lucas, A. F. "Using Psychological Models to Understand Student Motivation." In M. D. Svinicki (ed.), *The Changing Face of College Teaching.* New Directions for Teaching and Learning, no. 42. San Francisco: Jossey-Bass, 1990.

McKeachie, W. J. *Teaching Tips.* (8th ed.) Lexington, Mass: Heath, 1986.

Mealey, D. L., and Host, T. R, "Coping with Test Anxiety." *College Teaching,* 1992, 40(4), 147-150.

Murray, J. P. "Better Testing for Better Learning." *College Teaching,* 1990., 38(4), 148-152.

Nield, A. F., and Wintre, M. "Multiple Choice Questions with an Option to Comment: Students' Attitude and Use." *Teaching of Psychology,* 1986, 13(4), 196-199.

Shea, M. A. *Compendium of Good Ideas on Teaching and Learning.* Boulder: Faculty Teaching Excellence Program, University of Colorado, 1990.

Smith, M. A. “How to Make the Most of the ‘Test Post-Mortem.’” *Teaching Professor,* 1992, 6(5), 5-6.

Svinicki, M. D. “The Test: Uses, Construction and Evaluation.” *Engineering Education,* 1976, 66(5), 408-411.

Unruh, D. *The Teacher’s Guide.* Los Angeles: Office of Instructional Development, University of California, 1990.

Vessey, J. K., and Woodbury, W. “Crib Sheets: Use with Caution.” *Teaching Professor,* 1992, 6(7), 6-7.

CLASSROOM ASSESSMENT TECHNIQUES

What is classroom assessment?

Classroom assessment refers to a wide variety of strategies employed by teachers to get feedback from students about how they are experiencing the learning environment. Tom Angelo and Pat Cross, the teacher-scholars most often associated with classroom assessment, define it as a “learner-centered, teacher-directed approach designed to improve student learning in individual classrooms.” Their 1988 publication, *Classroom Assessment Techniques: A Handbook for Faculty,* includes a wide variety of strategies that can be adapted to individual course contexts.

The intent of classroom assessment is to gather information from students about what they know and how they are experiencing their learning and then develop strategies to improve teaching and learning based on this information. The purpose of such information is to improve the learning experience of students. Classroom assessment techniques can be used at every class, weekly or at check-points throughout the semester. While end-of-course evaluations elicit student feedback that may influence a teacher’s choices next time she teaches a course, classroom assessment provides the instructor with feedback she can act on immediately. Classroom assessment has no other purpose than to improve teaching and learning. According to Angelo and Cross, classroom assessment works best when students are actively involved in the process of developing feedback strategies, and when instructors share results with them and respond to their concerns. In this way, classroom assessment can provide a continuous feedback loop within the learning environment.

How do I use Classroom Assessment Techniques (CAT)?

- Decide what you want to learn from a classroom assessment.
- Choose a CAT that will provide this feedback.
- Explain the purpose of the activity to students, then conduct it.
- After class, review the results and decide what changes, if any, to make.
- Let your students know what you learned from the CAT and how you will use this information now or in the future.

What are the benefits of CATs?

- Teachers become more systematic about testing their assumptions and intentions against student perceptions or understandings—they regularly check out how well their plans for student learning are working.
- Teachers become more sensitive observers of students and become more knowledgeable about student learning.
- Students become more engaged in the process of learning and more reflective about themselves as learners—they come to see themselves as contributing to the learning environment.
- Classroom assessment improves cooperation between teachers and students and communicates to students that instructors are committed to their academic success.

For instructors, frequent use of CATs can:

- Provide short-term feedback about the day-to-day learning and teaching process at a time when it is still possible to make mid-course corrections.
- Help foster good rapport with students and increase the efficacy of teaching and learning.
- Encourage the view that teaching is a formative process that evolves over time with feedback.

For students, frequent use of CATs can:

- Help them become better monitors of their own learning.
- Help break down feelings of anonymity, especially in larger courses.
- Point out the need to alter study skills.
- Provide evidence that the instructor cares about learning.

More information on sample CATs?

If the following short summaries interest you, check out these two Web sites for more information on CATs.

- Penn State's Schreyer Institute for Teaching Excellence—*An Introduction to Classroom Assessment Techniques*
- Southern Illinois University Edwardsville's *Classroom Assessment Techniques*
- University of Illinois Center for Teaching Excellence—*Effectively Using Informal Early Feedback*

The minute paper

In this technique, the instructor stops the class 2-3 minutes early and asks students to write a response to a probe such as *"What was the most interesting (troubling, problematic, confusing, important) concept (idea, position, proposal) we discussed in class today*?" This strategy helps identify problem areas for students and provides a quick reality check.

The muddiest point

Students are asked to jot down a response to the prompt "What was the muddiest point (or most confusing point) in the reading for today's class (today's lecture, the book, article or film)?" This strategy pinpoints the places where students are struggling so the instructor can respond appropriately.

The one-sentence summary

Students are asked to describe a given topic and to summarize the information in one sentence (e.g., Who does what to whom, when, where, how, and why?). This strategy quickly identifies what students understand and helps them practice writing summaries.

Background knowledge probe

The instructor identifies a set of questions to determine what students already know about a new course topic, theory or idea. Such questions might take the form of an ungraded short quiz or two or three open-ended prompts.. The purpose of this CAT is to assess students' current level of awareness and knowledge and plan accordingly.

References

Angelo, T.A. & Cross, P.K. (1993). *Classroom Assessment Techniques* (2nd ed.).
San Francisco: Jossey-Bass.

Davis, B.G. (1993). *Tools for Teaching*. San Francisco: Jossey-Bass.

MOTIVATING STUDENTS

Some students seem naturally enthusiastic about learning, but many need or expect their instructors to inspire, challenge and stimulate them: "Effective learning in the classroom depends on the teacher's ability...to maintain the interest that brought students to the course in the first place" (Ericksen, 1978, p. 3). Whatever level of motivation your students bring to the classroom will be transformed, for better or worse, by what happens in that classroom.

Unfortunately, there is no single formula for motivating students. Many factors affect a student's motivation to work and learn (Bligh, 1971; Sass, 1989), including interest in the subject matter, perception of its usefulness, general desire to achieve self-confidence and self-esteem and patience and persistence. Of course, not all students are motivated by the same values, needs, desires or wants. Some of your students will be motivated by receiving the approval of others, some by overcoming challenges.

Researchers have begun to identify the aspects of a teaching situation that enhance students' self-motivation (Lowman, 1984; Lucas, 1990; Weinert and Kluwe, 1987; Bligh, 1971). To encourage students to become self-motivated, independent learners, instructors can do the following:

- Give frequent, early, positive feedback that supports students' beliefs that they can do well.
- Ensure there are opportunities for student success by assigning tasks that are neither too easy nor too difficult.
- Help students find personal meaning and value in the material.
- Create an atmosphere that is open and positive.
- Help students feel they are valued members of a learning community.

Research has also shown that good everyday teaching practices can do more to counter student apathy than special efforts to attack motivation directly (Ericksen, 1978). Most students respond positively to a well-organized course taught by an enthusiastic instructor who has a genuine interest in students and what they learn. Thus activities you undertake to promote learning will also enhance students' motivation.

General Strategies

Capitalize on students' existing needs. Students learn best when the incentives for learning in a classroom satisfy their own motives for enrolling in the course. Some of the needs your students may bring to the classroom include the need to:

• learn something in order to complete a particular task or activity
• seek new experiences
• perfect skills
• overcome challenges
• become competent
• succeed and do well
• feel involved
• interact with other people

Satisfying such needs is rewarding in itself, and such rewards sustain learning more effectively than do grades.

Design assignments, in-class activities, and discussion questions to address these kinds of student needs. (Source: McMillan and Forsyth, 1991)

Make students active participants in learning. Students learn by doing, making, writing, designing, creating and solving. Passivity dampens students' motivation and curiosity. Pose questions. Don't tell students something when you can ask them. Encourage students to suggest approaches to a problem or to guess the results of an experiment. Use small group work. See Collaborative Learning for methods that stress active participation. (Source: Lucas, 1990)

Ask students to analyze what increases or decreases motivation. Sass (1989) asks his classes to recall two recent class periods, one in which they were highly motivated and one in which their motivation was low. The, he has each student make a list of specific ways the two classes influenced his or her level of motivation. Students then meet in small groups to reach consensus on which characteristics contribute to high and low motivation. In over twenty courses, Sass reports, the same eight characteristics emerged as major contributors to student motivation:

- instructor enthusiasm
- relevance of the material
- organization of the course
- appropriate difficulty level of the material
- active involvement of students
- variety
- rapport between teacher and students
- use of appropriate, concrete and easily understood examples

Incorporating Instructional Behaviors That Motivate Students

Hold high but realistic expectations for your students. Research has shown that a teacher's expectations have a powerful effect on a student's performance. If you act as though you expect your students to be motivated, hardworking and interested in the course, they are more likely to be so. Set realistic expectations for students when you make assignments, give presentations, conduct discussions and grade examinations. In this context, "realistic" means that your standards are high enough to motivate students to do their best work but not so high that students are inevitably be frustrated when trying to meet those expectations. To develop the drive to achieve, students need to believe that achievement is possible, and that means you need to provide early opportunities for success. (Sources: American Psychological Association, 1992; Bligh, 1971; Forsyth and McMillan, 1991; Lowman, 1984)

Help students set achievable goals for themselves. Failure to attain unrealistic goals can disappoint and frustrate students. Encourage students to focus on their continued improvement, not just on their grade on any one test or assignment. Help students evaluate their progress by encouraging them to critique their own work, analyze their strengths and work on their weaknesses. For example, consider asking students to submit self-evaluation forms with one or two assignments. (Sources: Cashin, 1979; Forsyth and McMillan, 1991)

Tell students what they need to do to succeed in your course. Don't let your students struggle to figure out what is expected of them. Reassure students that they can do well in your course, and tell them exactly what they must do to succeed. Try saying something such as "If you can handle the examples on these problem sheets, you can pass the exam. People who have trouble with these examples can ask me for extra help." Instead of saying, "You're way behind," tell the student, "Here is one way you could go about learning the material. How can I help you?" (Sources: Cashin, 1979; Tiberius, 1990)

Strengthen students' self-motivation. Avoid messages that reinforce your power as an instructor or emphasize extrinsic rewards. Instead of saying, "I require," "you must," or "you should," try"I think you will find... " or "I will be interested in your reaction." (Source: Lowman, 1990)

Avoid creating intense competition among students. Competition produces anxiety, which can interfere with learning. Reduce students' tendencies to compare themselves to one another. Bligh (1971) reports that students are more attentive, display better comprehension, produce more work and are more receptive to the teaching method when they work cooperatively in groups rather than compete as individuals. Refrain from public criticisms of a student's performance or comments or activities that pit students against each other. (Sources: Eble, 1988; Forsyth and McMillan, 1991)

Be enthusiastic about your subject. An instructor's enthusiasm is a crucial factor in student motivation. If you become bored or apathetic, students will too. Typically, an instructor's enthusiasm comes from confidence, excitement about the content and genuine pleasure in teaching. If you find yourself uninterested in the material, think back to what attracted you to the field and bring those aspects of the subject matter to life for your students. Or challenge yourself to devise the most exciting way to present the material, however dull it may seem to you.

Structuring the Course to Motivate Students

Work with your students' strengths and interests. Find out why students enrolled in your course, how they feel about the subject matter and what their expectations are. Then, try to devise examples, case studies or assignments that relate the course content to students' interests and experiences. For instance, a chemistry professor might devote some lecture time to examining the contributions of chemistry to resolving environmental problems. Explain how the content and objectives of your course will help students achieve their educational, professional or personal goals. (Sources: Brock, 1976; Cashin, 1979; Lucas, 1990)

When possible, let students have some say in choosing what will be studied. Give students options on term papers or other assignments (but not on tests). Let students decide between two locations for the field trip, or have them select which topics to explore in greater depth. If possible, include optional or alternative units in the course. (Sources: Ames and Ames, 1990; Cashin, 1979; Forsyth and McMillan, 1991; Lowman, 1984)

Increase the difficulty of the material as the semester progresses. Give students opportunities to succeed at the beginning of the semester. Once students feel they can succeed, you can gradually increase the difficulty level. If assignments and exams include both easy and difficult questions, every student will have a chance to experience success as well as challenge. (Source: Cashin, 1979)

Vary your teaching methods. Variety helps spark student involvement in the course and increases their motivation. Break the routine by incorporating a variety of teaching activities and methods in your course such as role playing, debates, brainstorming, discussion, demonstrations, case studies, audiovisual presentations, guest speakers, or small group work. (Source: Forsyth and McMillan, 1991)

De-emphasizing Grades

Emphasize mastery and learning rather than grades. Ames and Ames (1990) report on two secondary school math teachers. One teacher graded every homework assignment and counted homework as 30 percent of a student's final grade. The second teacher told students to spend a fixed amount of time on their homework (30 minutes a night) and to bring questions to class about problems they could not complete. This teacher graded homework as satisfactory or unsatisfactory, gave students the opportunity to redo their assignments and counted homework as 10 percent of the final grade. Although homework was a smaller part of the course grade, this second teacher was more successful in motivating students to turn in their homework. In the first class, some students gave up rather than risk low evaluations of their abilities. In the second class, students were not risking their self-worth each time they did their homework, but instead were attempting to learn. Mistakes were viewed as acceptable and as a learning experience.

Researchers recommend de-emphasizing grades by eliminating complex systems of credit points. They also advise against trying to use grades to control nonacademic behavior (for example, lowering grades for missed classes) (Forsyth and McMillan, 1991; Lowman 1990). To downplay grades, you may wish to, assign ungraded written work, stress the personal satisfaction of doing assignments and help students measure their progress.

Design tests that encourage the kind of learning you want students to achieve. Many students will learn whatever is necessary to get the grades they desire. If you base your tests on memorizing details, students will focus on memorizing facts. If your tests stress the synthesis and evaluation of information, students will be motivated to practice those skills when they study. (Source: McKeachie, 1986)

Avoid using grades as threats. As McKeachie (1986) points out, the threat of low grades may prompt some students to work hard, but other students may resort to academic dishonesty, excuses for late work and other counterproductive behavior.

Motivating Students by Responding to Their Work

Give students feedback as quickly as possible. Return tests and papers promptly, and reward success publicly and immediately. Give students some indication of how well they have done and how they can improve. Rewards can be as simple as saying a student's response was good, with an indication of why it was good, or mentioning the names of contributors: "Cherry's point about pollution really synthesized the ideas we had been discussing." (Source: Cashin, 1979)

Reward success. Both positive and negative comments influence motivation, but research consistently indicates that students are more affected by positive feedback and success. Praise builds students' self-confidence, competence and self-esteem. Recognize sincere efforts even if the product is less than stellar. If a student's performance is weak, let the student know that you believe he or she can improve and succeed over time. (Sources: Cashin, 1979; Lucas, 1990)

Introduce students to the good work done by their peers. Share the ideas, knowledge and accomplishments of individual students with the class as a whole:

- Pass out a list of research topics chosen by students so they will know whether others are writing papers of interest to them.
- Make copies of the best papers and essay exams available.
- Provide class time for students to read papers or assignments submitted by classmates.
- Have students write a brief critique of a classmate's paper.
- Schedule a brief talk by a student who has experience or who is doing a research paper on a topic relevant to your lecture.

Be specific when giving negative feedback. Negative feedback is very powerful and can lead to a negative class atmosphere. Whenever you identify a student's weakness, make it clear that your comments relate to a particular task or performance, not to the student as a person. Try to cushion negative comments with a compliment about aspects of the task in which the student succeeded. (Source: Cashin, 1979)

Avoid demeaning comments. Many students in your class may be anxious about their performance and abilities. Be sensitive to how you phrase your comments and avoid offhand remarks that might trigger feelings of inadequacy.

Avoid giving in to students' pleas for "the answer" to homework problems. When you simply give struggling students the solution, you rob them of the chance to think for themselves. Use a more productive approach (adapted from Fiore, 1985):

- Ask the students for one possible approach to the problem.
- Gently brush aside students' anxiety about not getting the answer by refocusing their attention on the problem at hand.
- Ask the students to build on what they know about the problem.
- Resist answering the question "is this right?" Suggest to the students a way to check the answer for themselves.
- Praise the students for small, independent steps.

If you follow these steps, your students will learn that it is alright not to have an instant answer. They will also learn to develop greater patience and to work at their own pace. And, by working through the problem, students will experience a sense of achievement and confidence that will increase their motivation to learn.

Motivating Students to Do the Reading

Assign the reading at least two sessions before it will be discussed. Give students ample time to prepare and try to pique their curiosity about the reading: "This article is one of my favorites, and I'll be interested to see what you think about it." (Sources: Lowman, 1984; "When They Don't Do the Reading," 1989)

Assign study questions. Hand out study questions that alert students to the key points of the reading assignment. To provide extra incentive for students, tell them you will base exam questions on the study questions. (Source: "When They Don't Do the Reading," 1989)

If your class is small, have students turn in brief notes on the day's reading that they can use during exams. At the start of each class, a professor in the physical sciences asks students to submit a 3" x 5" card with an outline, definitions, key ideas or other material from the day's assigned reading. After class, he checks the cards and stamps them with his name. He returns the cards to students at a class session prior to the midterm. Students can then add any material they would like to the cards but cannot submit additional cards. The cards are again returned to the faculty member who distributes them to students during the test. This faculty member reports that the number of students completing the reading jumped from 10 percent to 90 percent and that students especially valued these "survival cards." (Source: Daniel, 1988)

Ask students to write a one-word journal or one-word sentence. Angelo (1991) describes the one-word journal as follows: students are asked to choose a single word that best summarizes the reading and then write a page or less explaining or justifying their word choice. This assignment can then be used as a basis for class discussion. A variation reported by Erickson and Strommer (1991) involves asking students to write one complex sentence in answer to a question you pose about the readings, and provide three sources of supporting evidence: For example, "In one sentence, identify the type of ethical reasoning Singer uses in his article 'Famine, Affluence, and Morality.' Quote three passages that reveal this type of ethical reasoning." (p. 125)

Ask nonthreatening questions about the reading. Initially pose general questions that do not create tension or feelings of resistance: "Can you give me one or two items from the chapter that seem important?" "What section of the reading do you think we should review?" "What item in the reading surprised you?" "What topics in the chapter can you apply to your own experience?" (Source: "When They Don't Do the Reading," 1989)

Use class time as a reading period. If you are trying to lead a discussion and find that few students have completed the reading assignment, consider asking students to read the material for the remainder of class time. Have them read silently or call on students to read aloud and discuss the key points. Make it clear to students that you are reluctantly taking this unusual step because they have not completed the assignment.

Prepare an exam question on undiscussed readings. One faculty member asks her class whether they have done the reading. If the answer is no, she says, "You'll have to read the material on your own. Expect a question on the next exam covering the reading." The next time she assigns reading, she reminds the class of what happened the last time, and the students come to class prepared. (Source: "When They Don't Do the Reading," 1989)

Give a written assignment to those students who have not done the reading. Some faculty ask their students at the beginning of class whether they have completed the reading. Students who have not read the material are given a written assignment and dismissed. The students who have read the material stay and participate in class discussion. The written assignment is not graded but merely acknowledged. This technique should not be used more than once a term. (Source: "When They Don't Do the Reading," 1989)

References

American Psychological Association. *Learner-Centered Psychological Principles: Guidelines for School Redesign and Reform.* Washington, D.C.: American Psychological Association, 1992.

Ames, R., and Ames, C. "Motivation and Effective Teaching." In B. F. Jones and L. Idol (eds.), *Dimensions of Thinking and Cognitive Instruction.* Hillsdale, N. J.: Eribaum, 1990.

Angelo, T. A. "Ten Easy Pieces: Assessing Higher Learning in Four Dimensions." In T. A. Angelo (ed.), *Classroom Research: Early Lessons from Success.* New Directions for Teaching and Learning, no. 46. San Francisco: Jossey-Bass, 1991.

Bligh, D. A. *What's the Use of Lecturing?* Devon, England: Teaching Services Centre, University of Exeter, 1971.

Brock, S. C. *Practitioners' Views on Teaching the Large Introductory College Course.* Manhattan: Center for Faculty Evaluation and Development, Kansas State University, 1976.

Cashin, W. E. "Motivating Students." *Idea Paper,* no. 1. Manhattan: Center for Faculty Evaluation and Development in Higher Education, Kansas State University, 1979.

Daniel, J. W. "Survival Cards in Math." *College Teaching,* 1988, 36(3), 110.

Eble, K. E. *The Craft of Teaching.* (2nd ed.) San Francisco: Jossey-Bass, 1988.

Ericksen, S. C. "The Lecture." *Memo to the Faculty,* no. 60. Ann Arbor: Center for Research on Teaching and Learning, University of Michigan, 1978.

Erickson, B. L., and Strommer, D. W. *Teaching College Freshmen.* San Francisco: Jossey-Bass, 1991.

Fiore, N. "On Not Doing a Student's Homework." *Chemistry TA Handbook.* Berkeley: Chemistry Department, University of California, 1985.

Forsyth, D. R., and McMillan, J. H. "Practical Proposals for Motivating Students." In R. J. Menges and M. D. Svinicki (eds.), *College Teaching: From Theory to Practice.* New Directions in Teaching and Learning, no. 45. San Francisco: Jossey-Bass, 1991.

Lowman, J. *Mastering the Techniques of Teaching.* San Francisco: Jossey-Bass, 1984.

Lowman, J. "Promoting Motivation and Learning." *College Teaching,* 1990, 38(4), 136-39.

Lucas, A. F. “Using Psychological Models to Understand Student Motivation. “ In M. D. Svinicki (ed.), *The Changing Face of College Teaching.* New Directions for Teaching and Learning, no. 42. San Francisco: Jossey-Bass, 1990.

McKeachie, W. J. *Teaching Tips.* (8th ed.) Lexington, Mass.: Heath, 1986.

McMillan, J. H., and Forsyth, D. R. “What Theories of Motivation Say About Why Learners Learn.” In R. J. Menges and M. D. Svinicki (eds.), *College Teaching: From Theory to Practice.* New Directions for Teaching and Learning, no. 45. San Francisco: Jossey-Bass, 1991.

Sass, E. J. “Motivation in the College Classroom: What Students Tell Us.” *Teaching of Psychology,* 1989, 16(2), 86-88.

Tiberius, R. G. *Small Group Teaching: A Trouble-Shooting Guide.* Toronto: Ontario Institute for Studies in Education Press, 1990.

Weinert, F. E., and Kluwe, R. H. *Metacognition, Motivation and Understanding.* Hillsdale, N.J.: Erlbaum, 1987.

“When They Don’t Do the Reading.” *Teaching Professor,* 1989, 3(10), 3-4.

Listening. Learning. Leading.

www.ets.org