PART IV

The Large-Enrollment Course

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Preparing to Teach the Large-Enrollment Course

A sizable portion of the work involved in teaching a large-enrollment course takes place well before the first day of class. In a seminar you can make a spur-of-the-moment assignment, but in large classes you need to distribute and post guidelines. Indeed, every aspect of the large course requires planning and organization. Many of the following suggestions for teaching large classes are also applicable to small classes: good teaching practices are effective in classes of any size.

General Strategies

**Become comfortable with the material.** In an introductory survey course you may be covering topics outside your specialty. As you read up on those topics, try to anticipate questions that beginning students might ask. Review the course materials, assignments, and reading lists of colleagues who have taught the course before. Consider viewing a webcast or sitting in on courses taught by colleagues who are effective teachers of large classes to see what ideas and techniques work well, or ask them about their experiences teaching large courses.

**Capitalize on the strengths of lecturing.** A well-crafted, well-delivered lecture can impart information as well as motivate and inspire students by conveying how an expert thinks about complex content, organizes knowledge, and applies the methods of the discipline. Help your students gain the most from your lectures by explicitly sharing with them the kinds of analysis and arguments that shape your field. (Sources: Brown and Race, 2002; Burgan, 2006; Chanock, 1999; Cooper et al., 2000; deWinstanley and Bjork, 2002; Saroyan and Snell, 1997; Twigg, 2003)

**Recognize the limitations of lecturing.** Research shows that lecturing is as effective as other instructional methods, such as discussion, in imparting information but less effective in encouraging independent thought, developing critical thinking skills, and meeting individual students’ pedagogical needs. (Sources: Bligh, 2000; Laurillard, 2002; Wood and Gentile, 2003)
Don’t plan to lecture for a full period for every class meeting. Studies show that incorporating opportunities for discussion or problem-solving exercises into a lecture—activities that encourage students to make the material their own—will enhance learning and increase long-term retention. Ask students to solve a problem at their seats or in small groups sitting near one another, pose a question to the entire class and have students yell out answers or respond using clickers, or give a demonstration. (Sources: Bridges and Desmond, 2000; Hake, 1998; Huxham, 2005; Leamnson, 1999; Weiner, 2002; Wood and Gentile, 2003)

Manage your own time. Teaching a large-enrollment course takes a great deal of time and energy. Set up weekly work schedules for yourself, and plan how best to handle the onslaught of midterms and finals. Try to scale back other obligations if you can. (Source: Stanley and Porter, 2002)

Decide whether to permit the capture of your lectures for later use. Some faculty worry about declining attendance if their course is webcast or podcast; others dismiss recorded lectures as a crutch for students who lack the motivation or organizational skills to attend class; and others worry about students becoming too dependent on technology as a replacement for meaningful in-class engagement. Defenders of capturing lectures believe it is helpful for students to be able to review and study complex material after the lecture and before exams, and that captured lectures are especially valuable for students who learned English as a second language. In addition, faculty point out that webcasting allows them to view and critique their own lectures.

Research shows that students are most likely to view a webcast right after a lecture or right before an exam. They do not watch the entire lecture but use search tools to locate particular topics. Lecture capture has not depressed attendance and has not shown a measurable effect on students’ grades. Lecture capture does seem to encourage extra review activities, and students value and appreciate this resource. If you are concerned about drops in attendance, consider delaying availability of the recorded lecture until a week after each class session, giving in-class quizzes, or turning off the camera when discussing upcoming exams. (Source: Brotherton and Abowd, 2004; Deal, 2007; Rowe et al., 2001; Young, 2008)

Organizing the Course

Decide what content to include. After reviewing your department’s guidelines or sample curricula, set your broad goals for the course. The goals of an introductory survey course might include stimulating students’ interest in the field and providing
them with the foundation to pursue that interest. Identify specific student learning objectives: What do you want students to know or be able to do?

Next, make a list of topics you feel are important to include. Estimate the amount of time required to address these topics, and then increase your estimate by 50 percent to allow time for taking questions from students and for the inevitable slippage in large groups. For suggestions on how to reduce the number of topics to fit the length of the course, see Chapter 1, “Designing or Revising a Course.” (Sources: Christensen, 1988; Wankat, 2002)

Organize the topics in a meaningful sequence. Arrange the topics chronologically, spatially, by problem and solution, or according to some other scheme:

- **Topical.** A psychology course examines how four groups of theorists approach human behavior: social learning theorists, developmental theorists, psychoanalytic theorists, and cognitive theorists.
- **Causal.** An economics course explores factors that affect the distribution of wealth: the labor market, tax policy, investment policy, and social mobility.
- **Sequential.** A course on education in the United States discusses the school system in five stages: preschool, elementary school, secondary school, college, and graduate school.
- **Symbolic or graphic.** An integrative biologist begins each lecture by projecting the same detailed diagram of the human brain. She then highlights the structural details relevant to that day’s lecture.
- **Structural.** A physiologist uses the same format to discuss each anatomical system: its organs, the functions of the organs, how the organs are regulated, and the relationship of the system to other systems.

Problem-solution. An engineering course looks at a series of structural failures in various types of buildings.

Mention the organizational principle in the syllabus, at the beginning of the course, and throughout the term. Periodically devote a part of your lecture to the broader view.

Vary the types of lectures you deliver. Choose formats that suit the content:

- The **expository lecture** treats a single question or problem, typically with a hierarchical organization of major and minor points. This approach is useful for efficiently presenting broad concepts and foundational information.
- In the **participatory lecture,** the speaker intersperses one or more activities. This type of lecture is variously called interactive, spaced, punctuated, feedback, change-up,
modified, mediated, responsive, engaged, or enhanced, with nuanced distinctions among them. In a participatory lecture, the speaker may begin with a question to the class (“Call out what you know about DNA”) and then sort the responses into categories, with the flow of examples and counterexamples, generalizations and specifics, or rules and exceptions encouraging students to grapple with the topic. Or a lecturer may initiate a period of small-group work, a quick writing task, or individual or paired problem solving—any activity that lets students shift from listeners to actors. Some faculty use these breaks at the same time each session, others incorporate them as appropriate, and still others alternate class periods of lecture with class periods of small-group work.

- **In interteaching**, the instructor presents a series of questions that students use to prepare for the next class period. At that session, students form pairs or trios and discuss the questions. The instructor moves down the aisles, answering questions and monitoring students’ understanding. At the end of the session, students fill out an interteaching record that states which questions were difficult to answer, which questions they would like reviewed in lecture, and other comments that might be useful to the instructor in preparing a clarifying lecture for the next class period. Some instructors schedule interteaching sessions on a regular basis, and others use it for almost every class, with students forming new groups each session.

- **Problem solving, demonstrations, proofs, and mysteries** begin with the instructor posing a question, paradox, mystery, or enigma—some provocative problem that whets students’ interest. The answer unfolds during the class period, with students actively or passively anticipating or pointing toward solutions.

- **In the case study method**, the lecture follows a realistic situation step-by-step to illustrate a general principle or problem-solving strategy. Depending on the level of the students, either the instructor takes the lead or the students direct the solution. See Chapter 24, “Case Studies.”

- **The structured lecture** begins with a short presentation that sets the stage and then poses a problem, task, or question (“What causes lake acidification?”). Students work in trios or small groups to come up with an answer; the instructions they are given include guidance on how to proceed and a time limit. The class closes with another short lecture that pulls together the major themes or issues.

(Sources: Bligh, 2000; Bonwell, 1996; Boyce and Hinckle, 2002; Chaney, 2005; Frederick, 1986; Jenkins, 1992; Lowman, 1995; Middendorf and Kalish, 1996; Saville and Zinn, 2006)

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**In each lecture, incorporate at least one example or demonstration that excites you.** Students respond to an instructor’s enthusiasm, and they can often tell when a lecturer is bored. Try to insert into each lecture at least one moment that you
genuinely look forward to: a riveting example, a clever experiment, or a humorous anecdote. One faculty member begins a difficult lecture on policy and regulation with this mystery: “After a three-year slide of 10 percent in tobacco consumption in the United States during the late 1960s, Big Tobacco did something that had the extraordinary effect of ending the decline, boosting consumption, and slashing advertising expenditures by a third. What was it?” (They voluntarily agreed to stop advertising on television.) Another faculty member begins a dense lecture on mollusks by projecting an image of a brownish blob and asking, “What is this thing? Is it alive? Is it a plant, animal, alien, or forgotten leftovers from the fridge?” (The object is a clam.) (Sources: Gialdini, 2005; Jones, 2003; Schwartz and Bransford, 1998)

Consider the abilities and interests of your students. In preparing your course, ask yourself, How much will students know about the subject matter? How interested will they be in the material? What experiences or attitudes might students have that I can use to draw them into the subject?

Prepare a detailed syllabus for students. The more information you give your students, the fewer problems you are likely to have later on; see Chapter 2, “The Comprehensive Course Syllabus.” During the term, try to stick to the schedule contained in the syllabus. If you must deviate, make it clear when and why you are departing from the schedule.

Meet with your graduate student instructors before the term begins. Discuss course procedures, their responsibilities, grading, and the most effective ways for them to conduct sections. See Chapter 58, “Guiding, Training, Supervising, and Mentoring Graduate Student Instructors.”

Visit the classroom before the first meeting. Notice the instructor’s area, the location of light switches and technology controls, and other features. Make arrangements for any instructional equipment you will need. When you visit the classroom, stand where you will lecture, practice using the equipment, and write on the board. Check whether your board work can be seen from the back of the room.

Preparing Lecture Notes

Carefully prepare your lectures. Thorough preparation can prevent last-minute headaches. Take time to arrange your points, develop your examples, write out definitions, and solve equations. No matter how well you know the topic, you
will want to have a set of notes to remind you of the sequence of points, the best examples, or alternative solutions. Some faculty prepare their lectures well in advance and revise them during the term to take into account students’ responses to previous lectures. Other faculty emphasize the value of the preparation done immediately after class, when the experience of what worked and what didn’t is still fresh. New faculty typically complete the bulk of preparatory reading before the course starts and then keep about one or two weeks ahead of their students. Faculty report spending anywhere from two to ten hours to prepare a lecture. Some faculty recommend working under a strict self-imposed time limit. (Sources: Eble, 1988; Heppner, 2007; Wankat, 2002)

Avoid reading a prepared text. If you stand at a lectern and read from a script or set of slides, you will be unable to maintain eye contact with your students, your voice will be cast down toward your notes instead of out toward the lecture hall, and you run the risk of your students becoming disengaged. Writing out lectures is also extremely time-consuming; a script for a fifty-minute lecture might run twenty-five or thirty double-spaced pages. If you do feel the need to write out a draft of a lecture, reduce that draft to an outline of key words and phrases, and lecture from this outline; see Chapter 15, “Delivering a Lecture” and Chapter 51, “PowerPoint Presentations.”

Experiment with different formats for your lecture notes. Some topics lend themselves to the traditional outline, with headings and subheadings. If you are very familiar with the material, a list of major points or key terms may suffice. Some instructors prepare tree diagrams or flowcharts that include major points, optional stopovers, and illustrations or examples. Other instructors sketch the drawings that will be placed on the board.

Prepare your notes to aid your delivery. Experiment with using your laptop, sheets of paper, five-by-eight index cards, or smaller cards. Highlight difficult points, distinctions between major examples, and important information. Include notations that indicate times to pause or to ask for questions, and include reminders (“Ask students to jot down a response” or “If less than ten minutes left, skip to the conclusion”).

Write down facts and formulas for easy reference. Within the body of your lecture notes or on a separate file or sheet of paper, write out all the key facts, quotations, computations, and complex analyses.
Write down vivid examples. Experienced faculty recommend that you give special attention to preparing memorable examples, counterexamples, illustrations, and demonstrations. Research shows that an important characteristic of an effective teacher is the ability to present difficult concepts in ways that students can understand, through the use of metaphors, analogies, and examples; see Chapter 16, “Explaining Clearly.” (Sources: Erickson et al., 2006; Schwartz and Bransford, 1998; Stones, 1992)

Prepare your lecture for the ear, not the eye. When students are listening to a lecture, they cannot go back and reread a sentence or look up a word in the dictionary. Here are some tips to facilitate comprehension:

• Use short, simple words and informal diction, including personal pronouns; be conversational.
• Speak succinctly, in short, straightforward sentences.
• Offer signposts for transitions and structure: “the third objection,” “let’s look at this argument from another angle,” “in contrast,” “as we have seen,” “now we can turn to.”
• Restate and periodically summarize key points.

Compensate for dips in students’ attention. Studies show that students’ recall of material presented during a fifty-minute lecture improves when they have an opportunity to apply the material shortly after it is presented. Students are also more likely to remember information presented at the beginning and at the end of a lecture. As you plan your lecture, try to incorporate a student activity or another novel element for the midpoint. (Sources: Bligh, 2000; Fry et al., 2003)

Rehearse your lecture. Run through a newly prepared lecture to increase your confidence and to gauge the length of your presentation. If your time for practice is short, you might practice only the most difficult sections or the opening and ending.

Structuring a Lecture

Begin by writing out the main theme and why students should learn about it. Identify what you most want your students to remember about the topic. It is better to teach two or three major points well than to inundate students with
information they are unlikely to remember. Brown and Atkins (1986, pp. 35–38) recommend the following process for writing a lecture:

- Specify the main topic or topics.
- Free-associate words, facts, ideas, and questions as they come to you.
- State a working title or a general question based on the groupings from your free association.
- Prepare a one-page sketch of the lecture.
- Read selectively, as needed, and take notes on important ideas and structure.
- Draft an outline and flesh it out with examples and illustrations; identify your key points.
- Check the opening and ending.

**Organize your material.** Typical approaches include moving in chronological order, working from general principle to specific instances, building up from the parts to the whole, tracking one idea across different places, posing a problem and its solution, and announcing a thesis and providing evidence for it.

**Structure your lectures to emphasize the most important points.** Consider the difficulty of the material and your students’ abilities. Help students identify and focus on the key points by including the following elements:

- attention-getting introduction
- brief overview of the main points
- quick statement of background or context
- detailed explanation of no more than three major points, with the most important first
- concluding summary to reinforce key themes

**Create lectures that help students process the information.** Students are more apt to understand the material when you (adapted from deWinstanley and Bjork, 2002):

- Avoid dividing their attention. Learning suffers when students are trying to listen and read at the same time. If you are projecting slides, give students a moment to read the slide and then resume talking; see Chapter 51, “PowerPoint Presentations.”
- Relate new information to information your students already have.
- Repeat important points during two or more class sessions.
• Present concepts from more than one angle.
• Demonstrate the relevance of key ideas in several contexts.
• Provide opportunities for students to use the information—to do something in addition to listening and taking notes.
• Avoid cognitive overload (presenting too much information); see Chapter 29, “Helping Students Learn.”

*Structure your lecture to make your points unforgettable.* Set aside your knowledge and expertise for a moment, and try to identify with students who know nothing about the topic. According to Heath and Heath (2007), research studies show that novice learners respond to lectures with the following characteristics:

• *Simplicity:* focus on the core of the idea, stripped of any elaboration.
• *Concreteness:* use specific, clear language.
• *Emotion:* when you care about what you are saying, students will care.
• *Surprise:* surprise, suspense, and the unexpected will attract students’ curiosity and hold their attention.
• *Storytelling:* narratives are memorable, and they help students organize new material.

*Include verbal signposts.* Provide cues that signal transitions (“The second reason is . . .”) and that emphasize the links between new information and old information. (Source: Saroyan and Snell, 1997)

*Design your lectures in ten- or fifteen-minute blocks.* Each block should cover a single point, provide examples, and end with a brief summary and transition to the next section. If you find yourself running out of time, cut an entire block or shorten the middle section of a block rather than rush the summary.

*Budget time for questions.* Whether or not you open the floor for questions, leave time for students to ask you to repeat material or to supply additional explanations. Some faculty ask for students’ questions at the beginning of class, list them on the board or screen, and pledge to answer them sometime during the hour.

*Begin and end with a summary statement.* Continuity and closure are important: students need to see how each new topic relates to what they have already learned as well as to what they will be learning in the coming weeks. To bring your points home, use different words and examples in your opening and closing summaries.
Managing a Large-Enrollment Course

Establish reasonable rules for student behavior. Decide on your policies regarding latecommers, eating during class, and the like. Explain your rules during the first week, state them in the syllabus, and stress the value of cooperation and consideration. For example, some faculty set limits on when students can pack up and leave: “You’re mine until 2 pm!” or “When the cartoon appears on the screen you can go” or “I will end each session one minute early so that I won’t have to talk over the commotion of packing up.” See Chapter 4, “Classroom Conduct and Decorum.” (Source: Carbone, 1998)

Plan how to handle wait lists. The wait list for an oversubscribed large-enrollment course can steal a considerable amount of your time. Be prepared for enrolled students who either for a week or more about whether to drop your course, enrolled students who do not appear until two weeks into the term, and wait-listed students who refrain from doing the assignments (because they don’t know if they will be admitted) or who energetically pester you about adding the class. If there are no departmental or collegewide policies about wait lists, consider setting policies that limit wait lists to a reasonable percentage of the enrollment, that clear wait lists on the first or second day of class, and that drop students who do not attend the first and second class meetings.

Plan how to handle student announcements. Some instructors prohibit any student announcements in class. Others adopt one or more of the following strategies (adapted from UC Berkeley listserv on teaching):

- Announcements in class: Some faculty restrict in-class announcements to one minute and allow a maximum of two announcements per class session. Some faculty require students to e-mail proposed announcements for clearance beforehand. Some faculty also limit announcements to those directly related to the content of the course.
- Announcements by course e-mail: Faculty typically inform students that they will edit all proposed announcements for length, clarity, and relevancy and that these announcements will be limited to two or three a week.
- Announcements written on a designated panel of the chalkboard.
- Leafleting: Students may distribute flyers outside the door of the classroom to entering students, but they may not leaflet inside or leave flyers on students’ seats.
Plan how to grade homework. If you do not have a graduate student instructor (GSI) or reader, grade samples of homework assignments to save time. For the assignments you do not grade, post the answers so that students can assess their own performance. See Chapter 19, “Maintaining Instructional Quality with Limited Resources.”

Plan how to collect and return homework. The following procedures can expedite the return of homework and avoid the misdirection of items:

- Use your learning management system or collaborative and learning environment to accept and return homework.
- Set up boxes with a homework folder for each student. For the sake of privacy, fold and staple the paper before placing it in the folder or ask students to submit their work with a cover page that has only their name on it.
- Place students’ work in alphabetical stacks (A–G, H–N, etc.). Give each of your readers or GSIs a stack and have students go to different parts of the room to receive their work. Or have students line up in alphabetical order and march past you as you return their work.
- Return homework during office hours.
- Collect and hand back work in sections (if your course has sections).
- Post the correct answers online, but don’t return any homework.

Stagger due dates for essay or research papers. One faculty member requires all three hundred of his students to write one paper during the semester, but students write on different topics and the papers are due on different dates. At the beginning of the term, he randomly divides the class into ten groups of thirty students each. He announces the dates when the various groups are to turn in their papers. All students receive their paper topics two weeks before their due date. Using this approach, the instructor is able to read and respond to all three hundred papers but never reads more than thirty in a given week. (Source: Erickson et al., 2006)

Use multiple-choice tests as an alternative. Use your learning management system to design tests that can be scored online. Multiple-choice exams can measure both fundamental knowledge and complex concepts. To give students practice in writing and grappling with open-ended questions, include two or three items that call for a few paragraphs of explanation or analysis. If you do not use a learning management system for testing, optical scanning and scratch-off technology allow for the quick and reliable scoring of in-class exams.

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References


Preparing to Teach the Large-Enrollment Course


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. The following suggestions, based on the teaching practices of faculty and on research studies on speech and communication, are intended to help you capture and hold students’ interest and increase their retention.

General Strategies

**Observe excellent teachers.** If your college gives out teaching awards, ask to visit the classes of those who have been designated excellent lecturers or watch them on a webcast. Take note of teaching strategies that work that are different from yours. UC Berkeley has short clips, with explanatory text, of faculty who have received the Distinguished Teaching Award (teaching.berkeley.edu/video.html).

**Watch yourself on video.** Often we need to 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 video recording of yourself can be invaluable; see Chapter 53, “Video Recordings and Classroom Observations.”

**Learn how not to read your lectures.** At its best, lecturing resembles a natural, thoughtful 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—even if you are a dynamic reader—your presentation will seem formal and distant, and you forfeit the expressiveness, animation, and spontaneity of plain talking. Reading from notes also reduces your opportunities to engage your class in conversation and prevents you from maintaining eye contact. On this point all skilled speakers agree: use notes, but 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, 1995)

Opening a Lecture

Take a moment to warm up. 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 will help you maintain a conversational tone.

Minimize nervousness. Some nervousness is normal. Take a few 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. If you freeze up during the lecture, experienced instructors recommend that you take a sip of water, which gives you time to collect your thoughts, then smile and continue.

Signal that the lecture is beginning. Give students a cue to quiet down: dim or flicker the lights, change the slide that is projected on the screen, or bang a gavel. Select any visual or auditory device that doesn’t require you to yell over the din.

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:

- From a sociology lecture: “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.”
- From a business lecture: “Teddy 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 them lying on the floor. His supervisor says, ‘Teddy, could you please pick up the papers so
that no one trip over them?” Teddy says loudly, ‘Pick them up yourself.’ If you were the supervisor, what would you do next?”

- From a rhetoric lecture: “The number-one fear of Americans—more terrifying than the fear of death—is public speaking.”

- From an economics lecture: An economist shows a slide of farmers dumping milk from trucks or burning cornfields and asks, “Why would people do this?”

- From a physics lecture: “Watch what happens to this balloon when the air is released.”

- From an architecture lecture: “How many of you believe that ‘high-rise’ housing means ‘high-density’ housing?”

- From a social welfare 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.”

- From a psychology lecture: “Look at this incomplete image of a penny, something you see every day. What is missing?”

**Announce the objectives for the class.** Tell your students what you expect to accomplish during the class, or list your objectives on the screen or 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 any audience. Students will feel more engaged in the class if the opening minutes are personal, direct, and conversational. (Source: Heppner, 2007)

**Capturing Students’ Interest**

**Watch your audience.** Focus on your students as if you were talking to a small group. One-on-one eye contact will increase students’ attentiveness and enable you to catch facial expressions and body language that indicate whether you are speaking too slowly or too quickly, or whether students need another example or explanation. A common mistake lecturers make is to become so absorbed in the material that they fail to notice whether students are paying attention and following along.

**Vary your delivery to keep students’ attention.** Students’ attention is likely to wander over the course of a class period. To extend students’ attention spans and recapture wandering minds, try the following techniques:
• 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, trios, or quartets to brainstorm or answer a question or discuss a topic.
• Pause to allow students to catch up on their notetaking.
• Intersperse slides, charts, graphs, videos, or film clips.

(Sources: Bligh, 2000; Heppner, 2007; Wilson and Korn, 2007)

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

**Convey enthusiasm for the material.** Think back to what inspired you as an undergraduate and to the reasons you chose your academic field. 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 students’ enthusiasm. Everyone agrees that if you appear bored with the topic, students will quickly lose interest. Researchers recommend vocal and physical animation. To be vocally animated, draw attention to important words by lowering your pitch, use rising inflections to signal a climax, and occasionally speak softly, which forces students to listen more carefully. Recommended physical gestures include making eye contact with students, using varied facial expressions, changing gestures and posture for emphasis and to command attention, and moving vigorously about the stage. (Sources: Brown and Race, 2002; Tauber and Mester, 2007; Zimbardo, 1997)

**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 will instinctively become more expressive. Choose informal language, and try to be natural and direct.

**Use concrete, simple, colorful language.** Use first-person and second-person pronouns (I, we, you). Choose dramatic adjectives; for example, “vital point” rather than “main point” or “next point.” Eliminate jargon, empty words, and unnecessary qualifiers (“little bit,” “sort of,” “kind of”). If your class includes students who do not speak English well, avoid slang and allusions that may be unfamiliar to them.
**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, but resist the impulse to incorporate tangential details that do not support your learning objectives. For example, when explaining the meteorological processes involved in the formation of lightning, don’t distract students with statistics about the number of people struck by lightning. (Source: Harp and Maslich, 2005)

**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 at them. You will have an easier time if your notes are brief and in large letters.

**Maintain eye contact with the class.** Look directly at your students one at a time, for about 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 try to include others. Don’t waste time hoping to win over the visibly uninterested; concentrate on the attentive. If direct eye contact upsets your concentration, look between two students or look at forehead.

**Use movement to hold students’ attention.** A moving object is more compelling than a static one. Occasionally, move about the room. Use deliberate, purposeful, sustained gestures: hold up an object, take off your glasses, push up your sleeves. To invite students’ questions, adopt an open, casual stance. Beware of nervous foot shifting.

**Use movement 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. (Sources: Heppner, 2007; Tauber and Mester, 2007; Weimer, 1988)

**Use facial expressions to convey emotions.** If you appear enthusiastic and eager to talk, students will be more enthusiastic about listening to you. Use your eyes,
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cyebrows, forehead, mouth, and jaw to convey enthusiasm, conviction, curiosity, and thoughtfulness. (Source: Lowman, 1995; Tauber and Mester, 2007)

**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.

**Avoid a boring lecturing style.** Researchers have identified several characteristics of boring lecturers: they ramble, go into too much detail, have a low rate of activity, talk in a monotone at a sluggish pace, make little eye contact and have few facial expressions, show little emotion and with flat affect, react minimally to students’ questions, and conduct class and lecture in a predictable routine. (Source: Forsyth, 2003)

**Keep track of time.** Be aware of how long you are taking to make your points. Decide in advance what material you should have covered halfway through the class period and what material you will leave out if you are behind schedule. Do not try to speed up to cover everything in your notes. Have a plan for what to omit: If I don’t have fifteen minutes left when I reach this heading, I’ll give only one example and post the other examples online.

### Mastering 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, present important points more deliberately than anecdotal examples. If you tend to speak quickly, try to restate your major points so that students can absorb them. Research shows that a speaking rate of about 100 words a minute is optimal for students’ comprehension; understanding suffers when the rate approaches 150–200 words a minute. (Source: Robinson et al., 1997)

**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 lecture. When using a microphone, speak in a normal voice and do not lean into the microphone.

**Vary your pitch, volume, and intonation.** Communication experts recommend placing the emphasis on key nouns and verbs and building sentences to an
emphatic conclusion, rather than letting them trail away. Try not to let the volume of your voice drop at the end of sentences. Practice these techniques and apply them to the first few sentences or minutes of your lecture. Over time you will naturally expand these techniques to the entire lecture. Lowman (1995) describes a series of voice exercises to improve projection, articulation, and tonal quality. (Sources: Lang, 2008; Tauber and Mester, 2007)

**Pause.** The pause is one of the most powerful tools in 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 in midsentence, 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, announce, “This is the really important consideration,” and 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 swaying or rocking back and forth. 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, elbows rigid; instead, keep your elbows bent and lightly rest your hands on the lectern, ready for purposeful gestures.

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

### Closing a Lecture

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

**Finish forcefully.** Don’t allow your lecture to trail off or end in midsentence because the period is over, and avoid the last-minute “Oh, I almost forgot . . .”
Delivering a Lecture

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, 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. In this way, she dramatically introduced the topic of the next lecture, center of gravity. Don’t worry if you finish a few minutes early; explain that you have reached a natural stopping point. (But don’t make a habit of quitting early.)

**End your lecture with the volume up.** Make your voice strong, lift your chin up, keep your eyes on your audience. To signal class is over, say “See you on Wednesday” or “Have a good weekend.” If the room is available, stay after class for a few minutes to answer students’ questions, or walk out with students.

**Improving Your Lecture Style**

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

**Record a video of your lecture.** When reviewing a video recording of yourself lecturing, you can watch the entire video, watch the video with the sound turned off, or listen to the video without watching it. For advice on analyzing your video, see Chapter 53, “Video Recordings and Classroom Observations.”

If you are listening to only the sound track, the following procedure is effective (adapted from Lowman, 1995):

- Listen first straight through, without stopping or taking notes. What is your overall impression of the voice you are hearing?
- Replay the recording, and jot down words that best describe your voice.
- Replay the recording again, this time focusing on the use of extraneous words, the level of relaxation and fluency in the voice, patterns of breathing, volume, pitch and pace, emphasis, and articulation.

You may be pleasantly surprised to discover that the nervousness you felt was not visible to your class.
Work with a communication consultant. Communication consultants can help you develop effective delivery skills. Ask your campus faculty development office for names of consultants or for a schedule of workshops on lecturing and public speaking.

References


Explaining Clearly

Research has shown that student achievement correlates most highly with two characteristics of effective teachers (Feldman, 1989). One is preparation and organization. The other is clarity and “understandableness.” The suggestions below will help you communicate clearly and intelligibly to stimulate students’ thinking and maximize their learning.

General Strategies

**Give students a road map.** At the beginning of class, provide a brief outline (on the board or screen) of that day’s class. During the session, refer to the outline to alert students to transitions and to the relationships between points. In addition, if not available in the textbook, place on the course Web site definitions of new terms; complex equations and formulas; and graphs, charts, and drawings.

**Place key concepts in a larger context.** To give students a sense of continuity and meaning, introduce a new topic by explaining how it relates to earlier material and to the course’s main themes. To capture students’ attention, emphasize the importance of the topic in addressing a specific problem or explaining a particular phenomenon. Students care about the relevance and application of ideas and concepts, and they appreciate real-world examples. (Source: Bain, 2004)

**Be selective.** Students become confused, overwhelmed, or bored when they feel inundated with information. Deliver the most essential information in manageable chunks. Focus on the fundamentals, use generalizations, and do not give too many exceptions to the rule.

**Set an appropriate pace.** Talk more slowly when students are taking notes and when you are explaining new material, complex topics, or abstract issues. You can pick up the pace when relating stories, summarizing previous points, or presenting examples.

**Assess your own clarity.** Pay attention to puzzled expressions, dramatic fall-offs in attendance, and low ratings for clarity on evaluations of your teaching. As you
complete a topic, ask students to identify the main points, to state any questions that remain unanswered, and to identify the point that remains most unclear. Address misunderstandings promptly. (Source: Hativa, 1998)

**Address possible barriers of an accent.** American students may have trouble understanding instructors from other countries who speak something other than the usual range of American English. To address issues of accent, experts recommend that you give assignments in writing; use verbal signals when you speak (“Well, let’s get started”); and say the same thing in a few different ways. (Source: Sarkisian, 2006)

**Aiding Students’ Comprehension**

**Build on students’ prior knowledge and current understanding.** If an explanation is beyond students’ level of understanding or fails to take into account their misunderstandings or faulty knowledge about a topic, then comprehension breaks down. (Source: Wittwer and Renkl, 2008)

**Identify points that may be hard for students to understand.** Think about your students’ general level of preparation and try to anticipate what they may or may not know. Researchers recommend that you look at your notes before class and identify terms or concepts that may be unfamiliar. Add definitions for unusual words or expressions as well as for technical terms. Introduce new terms one at a time, and project each on the screen or write it on the board. Be ready to illustrate concepts with examples. (Source: Sorcinelli, 2005)

**Alert students to the start of a complex point.** Cue students to the most difficult ideas (“Almost everyone has difficulty with this one, so listen closely”). Because students’ attention wanders throughout the hour, try to recapture their interest before you explain a difficult point.

**Create a sense of order.** Convey the structure of the session with the following techniques:

- *Forecasting the topic:* “Today I want to discuss three reasons why the government wants to mandate assessment of student learning in higher education.”
- *Announcing transitions:* “The first pressure, then, came from concerns about affordability and the increasing costs of higher education. Now let’s look at
a second factor: how political candidates emphasized ‘accountability’ as a campaign promise.”

- **Restating the main ideas**: “We’ve looked at three pressures on colleges to institute assessment procedures: the government’s desire for cost-effectiveness, the appeal of campaign slogans in the past election, and public disenchantment with higher education.”

**Move from the simple to the complex, from the familiar to the unfamiliar.** Lay out the most basic ideas first and then introduce complexities. Start with what students know and then move to new territory. (Source: Bain, 2004)

**Begin with general statements and then provide specific examples.** Research shows that students generally remember facts or principles if they are first presented with the general rule; then given specific examples, illustrations, or applications; and then offered a restatement of the rule, generalization, or principle. For complicated ideas, however, you might first offer an easy example that illustrates the principle, then provide the general statement and explanation of the principle, and then offer a more complex example or illustration. (Sources: Brown, 1978; King, 1994; Wittwer and Renkl, 2008)

**Give students opportunities to apply the explanations they hear or read.** By performing a task, solving a problem, or generating a self-explanation, students can extend and deepen their understanding. (Source: Wittwer and Renkl, 2008)

### Presenting Key Points and Examples

**Limit the number of points you make in a lecture.** Research shows that students can absorb three to five points in a fifty-minute period and four to five points in a seventy-five-minute class. Be ruthless in paring down the number of major points you make, and be more generous with examples and illustrations that clarify your arguments. Cut entire topics rather than condense each one. Refer interested students to resources that provide a more detailed treatment. (Source: Lowman, 1995)

**Call attention to important points.** Your students may not grasp the importance of a point unless you announce it: “This is really important, so listen up” or “The most important thing to remember is . . .” or “This is so important that you should have it engraved on a plaque” or “You don’t have to remember everything in this course, but you should remember . . . .” Follow through by explaining why the particular point is important.
Demonstrate a process rather than describe it. Instead of telling students how to present a logical argument, present a logical argument and help them analyze it. Instead of describing how to solve a problem, solve it in front of them, labeling the steps as you go along.

Use multiple examples to show how the same idea applies in different contexts. As examples of aerodynamic oscillation, one instructor describes holding a scarf out of the window of a moving car, holding a thin piece of paper near an air conditioner, and traveling across a suspension bridge battered by gale winds.

Use analogies, anecdotes, and vivid images. People tend to remember images and strong anecdotes. Help students understand and recall important concepts by pairing abstract content with a vivid image, a revealing anecdote, or a concrete association. A physics professor describes velocity by presenting the image of a speeding bullet. An integrative biology instructor compares the size, texture, and other qualities of body organs to familiar objects such as a walnut or a grapefruit. An economics professor defines a trillion by saying how long it would take to count off a trillion seconds (31,700 years). (Sources: Ford, 2002; Kaufman and Bristol, 2001; Lowman, 1995)

Using Repetition and Reinforcement

Use repetition to emphasize important material. Although it is commonly believed that students can only pay attention for about fifteen minutes before their minds begin to drift (Davis, 1993; McKeachie and Svinicki, 2006; Middendorf and Kalish, 1996), researchers have found little empirical support for a fifteen-minute attention span (Wilson and Korn, 2007). Students’ attention does wander, but not at precise intervals. To underscore the importance of a point, plan to say it more than once.

Find different ways to make the same point. No single explanation will be clear to all students, so rephrase major points, and let students know you are doing so. You might make a point twice, once in formal language and once colloquially. Or you might present the same point in two or three different modes—verbally, graphically, and numerically—or with different examples.

Use redundancy to let students catch up with the material. Students will have trouble moving on to a second topic if they are still grappling with the first. Give students a chance to catch up by building in redundancy, repetition, and pauses.
References


Personalizing the Large-Enrollment Course

Classes of more than a hundred students pose special challenges for instructors. It is easy for students to feel anonymous or isolated in large courses and difficult for them to get to know one another for support and group study. By nature, large courses include students of varying abilities, interests, and aspirations, but they offer few opportunities for individual attention. The following suggestions are designed to help you give your students a sense that their presence and participation matter.

**General Strategies**

*Be as flexible as your class plan will allow.* Provide a “warm” classroom environment that includes time for you to entertain students’ comments and give immediate responses to their questions.

*Share your enthusiasm and interests.* The best lecturers give the impression that they are talking to a few friends about topics of great personal and professional concern. Let your students see that your interests and values extend beyond the classroom. Before class begins, one science faculty member plays the music of the composer or musician whose birthday is closest to that day, or a piece of music that sets the tone for the class: soothing jazz for an exam, hard rock on a Friday.

*Be attentive to the physical environment of the classroom.* Make sure that the lights are adequate for note taking, that glare does not interfere with the students’ view of the screen or chalkboard, and that the room temperature is comfortable. Encourage students to increase their comfort by closing the blinds or opening the windows.

*Make the space seem small.* A large lecture room will seem smaller if you stand in front of the lectern, not behind it. Move about the room as you lecture, using
the aisles if appropriate. If you have graduate student instructors, join with them in distributing class materials. (Source: Gleason, 1986)

Creating a Sense of Community

**Encourage students to get to know one another.** Students who feel anonymous in class are less motivated to learn and less likely to work hard, while students who feel a sense of community pay more attention and participate more. On the first day of class, ask students to introduce themselves to one or two others sitting nearby. If your class does not have sections, explain how study groups operate, and set aside class time to organize the groups (see Chapter 21, “Learning in Groups”). Give short group assignments, or have the class form teams of two or three students to submit test questions, work on in-class projects, and so on. Ask students to exchange contact information with two other people in the class or to look each other up on an online social networking site. For more ideas, see Chapter 3, “The First Days of Class.”

**Make an attempt to meet informally with students.** In a large class, you will not be able to meet each of your students, but it is worthwhile to get to know some of them. Some faculty extend an invitation for students to drop by a café for conversation. Others select two or three students a week from the class roster and invite them to lunch. Still others hold afternoon teas in their offices throughout the semester. One faculty member invites groups of students to a local ball game. (Source: Padian, 1992)

**Try to learn the names of some students and refer to students by name.** Students in a large class seem to appreciate an instructor’s attempts to learn some names. If a student brings up a point, ask for the student’s name, and refer to that point or question as his or hers. The effect of this personal address carries over to all the students. (Source: Benjamin, 1991)

**Ask students to submit autobiographical information.** If class size permits, during the first week of class ask students to complete a brief questionnaire with their name, contact information, year in college, hometown, reasons for taking the course, expectations, hobbies or interests, work experience, and so on. Summarize this information so that students know about their classmates. You can also use this information to select course activities or match your examples to students’ interests.
Hold an in-class orientation for freshmen and transfer students. One science faculty member dismisses his large introductory lecture class twenty minutes early during the second week of the semester and invites first-year students to stay. At this meeting, he reintroduces himself and the graduate student instructors, learns a bit about the backgrounds of the students, and gives them advice on how to study, the importance of attending class, the value of forming study groups, campus resources for counseling and tutoring, and how to get to know professors at a large university. (Source: Padian, 1992)

Provide extra-credit competitions. One faculty member offers students in a large computer science course the chance to enter up to three contests per term to earn extra credit. He reports that about 10 percent of his class of four hundred students take up the offer. Contests have included programmed adventure games, robotics, and computer animations. He gives all the winners a certificate, extra-credit points, and an invitation to dinner at his house the following term. Such contests can challenge, encourage, and motivate the best students. (Source: Levy, 2004)

Minimizing the Distance Between Teacher and Student

Let students know that they are not faces in an anonymous audience. In large courses students often think that their classroom behavior (eating, talking, nodding off, arriving late, leaving early) goes unnoticed. By your word and deed, let students know that you are aware of what is happening in class.

Ask students to refrain from sitting in certain rows. One math professor asks students not to sit in rows 3, 6, 9, and 12, so that she can walk between the seats and observe students when they are working on problems during class.

Invite specific students to sit in the front row. Before each class begins, one faculty member writes a list of students’ names on the board; those students are requested to sit in the front row. Over the course of the semester, every student sits up front at least once. During the first few minutes of class, before he begins lecturing, the instructor talks informally to the front row about the homework, their other courses, and the like. He reports that his students appreciate this interaction, and most rate it as a positive experience. (Source: Wheeler, 2000)

Recognize students’ outside accomplishments. Read your campus newspaper, scan the dean’s list, pay attention to undergraduate awards and honors, and let students know you are aware of their achievements.
Occasionally attend lab or discussion sections. Attending sections gives you an opportunity to meet students and answer questions in a more personal setting.

Capitalize on outside events or situations, as appropriate. Relate major world events or events on campus both to topics in your class and to the fabric of your students’ lives outside the classroom. Consider posting a calendar or setting aside class time to mention local events (plays, lectures, performances) that will enhance their understanding of the subject matter.

Arrive early and chat with students. Ask how the course is going, whether they are enjoying the readings, whether there is anything they want you to include in lectures. Or ask students to walk back with you to your office after class.

Read a sample of assignments and exams. If you have graduate student instructors who do most of the grading, let students know you will be reading and grading some of their assignments and exams.

Seek out students who are doing poorly in the course. Write “I know you can do better; see me during my office hours” on all exams graded C— or below. Offer early assistance to students having difficulty.

Acknowledge students who are doing well in the course. Write “Good job! See me after class” on all exams graded A— or above. Take a moment after class to compliment students who are excelling. Some teachers send “A” students a letter of congratulation at the end of the term.

Schedule topics for office hours. To encourage more students to come to your office hours, periodically schedule a help session on a particular topic; see Chapter 55, “Holding Office Hours.”

Talk about questions students have asked in previous terms. Mention specific questions that former students have asked and explain why they are excellent questions. This acknowledgement lets students know that you take their questions seriously and that their questions will contribute to future offerings of the course. (Source: Gleason, 1986)

Listen attentively to all questions and answer them directly. If the answer to a question will appear in an upcoming segment of your lecture, acknowledge the aptness of the question, ask the student to hold onto the question for a bit, and answer the question directly when you arrive at that subject; see Chapter 13, “Fielding Students’ Questions.”
Try to empathize with beginners. Remember that not all of your students are as highly motivated and interested in the discipline as you were when you were a student. Slow down when explaining complex ideas, and acknowledge the difficulty and importance of certain concepts or operations. Try to recall your first encounter with a concept—what examples, strategies, or techniques helped clarify it for you? By describing that encounter and its resolution to your students, you not only explain the concept but also convey the struggle and rewards of learning. (Source: Gleason, 1986)

Monitoring Students’ Progress

Ask questions. By asking questions, you turn students into active participants and you can also get a sense of their interests and comprehension. For example, you might leave the last ten or fifteen minutes for students’ questions, and if several questions concern one topic, incorporate a presentation on that topic into your next lecture. If your class is too large for an open discussion, identify participation areas of the room (the northeast quadrant one period, the southwest the next) and engage that day’s group in discussion. Consider using clickers or other strategies to check on students’ understanding. See Chapter 32, “Informally Assessing Students’ Learning.”

Take an extra pause to look out at the class after you have made a key point. Be alert to nonverbal reactions that indicate that you have lost your students. For example, are students asking their neighbors about a point they missed? If so, try to identify the sticking point, or ask students to supply elaborations or illustrations.

If you have graduate student instructors, ask for periodic reports on problems students are having. At the end of each week ask your graduate student instructors to list two or three points that caused students the most difficulty in discussion sections. You might also ask for their observations about students’ responses to your lectures.

Give frequent quizzes and two or more midterms. Frequent quizzes (graded or ungraded) give students more opportunities to do well in your course, and they give you a better sense of students’ progress. See Chapter 39, “Quizzes, Tests, and Exams.”

Gather feedback during the semester. See Chapter 52, “Early Feedback to Improve Teaching and Learning,” and Chapter 32, “Informally Assessing
Students’ Learning,” for a variety of informal ways to check students’ progress and gauge how and what they are learning.

References


Encouraging Student Participation in the Large-Enrollment Course

Traditional lecturing suffers from a major defect: it is one-way communication in which students sit, listen, and take notes. But students learn best when they take an active role, when they discuss what they are reading, practice what they are learning, and apply concepts and ideas. The following techniques have been used successfully by faculty in various fields to engage large undergraduate classes in student-student and student-faculty interaction, both to enhance learning and to break up the potential tedium of straight lecturing. Though oriented toward large-enrollment courses, these ideas can be implemented in classes of any size. See also Chapter 22, “Informal Group Learning Activities.”

General Strategies

**Challenge students’ notions about the large class.** Many students assume that they can sit silently in a large class, taking notes and watching the instructor do all the work. To prepare students to take part in learning activities during class, explain your teaching strategies and expectations at the beginning of the term. Discuss the relationship between participation and learning, and let students know that the in-class activities will give them a head start on homework and on studying for exams. Begin engaging students at the first class session, when norms for the class are being established. (Sources: Felder and Brent, 2003; Freisem and Coutu, 2005; Messinco et al., 2007)

**Plan how to engage students.** As you prepare your lectures, decide at what points you will stop lecturing and give students a task or exercise (as individuals, pairs, or small groups) of a specific duration (fifteen seconds to fifteen minutes). Consider also how you will handle reporting back: call on individuals for responses, ask for volunteers, or provide your own response. Aim for variety in the type of activity, size of groups, and the interval between lecture and activity.
In the largest classes, of course, students will need more time to break into small groups and to wrap up their work. (Source: Felder and Brent, 2003)

**Breaking the Class into Small Groups**

*Group students in pairs or trios.* At the beginning of a class session, ask students to pair off with someone sitting beside or behind them for the purpose of discussing an issue or solving a problem later in the hour. At a stopping point in your lecture, ask the pairs to define a term (“Describe the Doppler effect to your partner”), to pose a “why” or “how” question from the reading, to solve a problem, to answer a question, or to identify the major points in the lecture. To dispel any misinformation, offer a brief answer to the entire class when the pairs are done. Studies show the effectiveness of this strategy on students’ short-term and long-term retention. (Source: Prince, 2004)

*Use learning dyads.* Give an assignment that students are to complete before the next class meeting. The assignment may entail reading, problem solving, undertaking a field trip, conducting a laboratory experiment, or some other activity. In addition to doing the assignment, each student is to prepare two or three questions about the assignment; for example, “Why did Congress pass the Repatriation Act of 1935?” In class, have the students pair off and ask their partners a question from their list; students should alternate in the roles of questioner and responder. At successive meetings, have students form new partnerships.

*Form small working groups.* Ask your class to form groups of three or four students, and pose a task that the groups can resolve in two or three minutes. For instance, ask the groups to rank several items, to identify the causes of a given occurrence, to generate examples that illustrate a particular point, or to suggest ways to remedy or change something. In a cognitive psychology class, a faculty member asks groups to “identify which aspect of artificial intelligence has the greatest impact on our lives: robotics, expert systems, pattern recognition, or natural language.” In a math class, a faculty member hands out a short problem for the groups to solve at their seats, but he distributes only one copy per group, which compels the students to collaborate rather than work on their own.

If class size permits, let students know that you will be soliciting responses from each group—this provides additional incentive for students to do the work. If the class is too large, ask one or two groups to state their conclusions, and ask how many of the groups agree.
Use the snowball discussion technique. Ask the class to pair off. Pose a general question that will generate several ideas from even the least sophisticated student: “Who are the key professionals, besides the architect, involved in designing, financing, and constructing a building?” Ask each pair to generate as many responses as possible during a designated period (three or four minutes), with one member recording the responses. When time is up, ask each pair to join with a nearby pair to form a four-person group. The quartet can combine their ideas into one list and add new ideas to it. If desired, the quartets can combine again to form octets. During the last round, ask the students to select one member of the group to report back to the class.

This technique is helpful early in the term because it gets students thinking about the subject matter, lets you see how much they already know about the field, helps students overcome the isolation and impersonality of a large class, and sets a pattern of student participation for the term. You can repeat the process later in the term with a more sophisticated topic.

Convene simultaneous discussion groups. Announce a topic or question and have students divide into discussion sections (twenty to twenty-five people) that meet in corners of the lecture hall or move into empty neighboring classrooms. Briefly sit in with each group to answer questions, comment on the topic, and help the groups stay on track. It is helpful to give students guidelines on how to participate in a discussion (see Chapter 9, “Leading a Discussion”). As time permits, reconvene the class to summarize the groups’ activities.

Use the thirty-five/five rule. When 35 percent of the groups have completed an in-class task, the remaining groups have about five more minutes to finish. (Source: Michaelsen, 2004)

Engaging the Entire Class

Ask students to brainstorm. Some faculty, even in classes of up to four hundred students, pose a general open-ended question to the entire class and ask students to brainstorm, that is, to offer as many suggestions as possible without judging their validity. For example, “What factors contributed to the formation of OPEC?” Give your students these guides for brainstorming:

- Quantity is the goal: the more suggestions, the greater the likelihood of obtaining good ones.
- No one should criticize any suggestion.
- Freewheeling ideas are welcome.
Encouraging Student Participation in the Large-Enrollment Course

Write your students’ suggestions on the screen or board in rough categories (for example, social, economic, and political factors) but do not label the categories; instead, ask your students to name the categories or themes. Or you can sift through the list, combine related ideas, and provide the major conclusions yourself. Some faculty stop in the middle of a lecture and ask students to write their thoughts on the subject being discussed. (Sources: Bligh, 2000; Frederick, 1986)

Post questions or problems. Begin the period by asking students to raise questions or problems. Write these on the screen or board, but do not answer the questions—just help your students state their problems. Once the list is finished, you can sort the items into categories. If the list is long and time is limited, ask the class to vote on which problems should be given priority. You can then either respond to the questions yourself or assign questions to groups of students. Some of the benefits of posting questions include increased participation, an attitude toward problems as challenges rather than as evidence of inadequacy, and increased self-confidence as students help others and are helped by them. (Source: McKeachie and Svinicki, 2006)

Devise an online questionnaire. Create a short questionnaire covering one or more controversial topics (theories, research findings, positions on issues) that will be addressed during the course. After each controversial statement, list five response categories: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree. Have students complete the questionnaires online.

Throughout the semester, reveal selected results from the survey as they relate to new concepts or issues covered in lectures or readings. Offer the class a snapshot or profile of itself so that each student can see how his or her views match those of classmates. If time permits, ask one or more members of the class who took a “strongly agree” or “strongly disagree” position to state their reasons and evidence. Such discussions bring controversies to life, and students tend to be interested in hearing the opinions and reasoning of fellow students.

Pause during your lecture to pose a quick problem or ask a question. Give students a few minutes to solve a problem at their seats; after you explain the answer, proceed with your lecture. For example, ask students to reorder a set of randomly sequenced steps, to correct the error in a weak argument, or to select a response to a multiple-choice question. (Or use clickers to call for votes on an issue or answer; see Chapter 32, “Informally Assessing Students’ Learning.”) Or you might ask questions that have a one- or two-word answer—“What’s the next number in the Fibonacci sequence 0, 1, 1, 2, 3, 5, 8, ______?” “Who painted Expulsion from Paradise?” Keep the pace brisk, move about the class, and call on people with direct eye contact. (Sources: Cooper and Robinson, 2000; Gleason, 1986)
Pause during your lecture for a short ungraded writing activity. See Chapter 34, “Helping Students Write Better in All Courses” for a variety of informal in-class writing activities.

Ask students to become experts on a key term. At the beginning of the semester, post a list of concepts, ideas, people, organizations, or events. Ask each student to select one term (in large classes, groups of students may choose the same term). For their first assignment, students submit a one-page “definition” of their term. Throughout the semester, students are encouraged to read in depth on their term and to serve as in-house experts when that term comes up in lecture. (Source: Christensen, 1988)

Encourage students to ask questions. If the class is too large for you to call on students, ask students to write their questions on index cards and pass them to the aisles. If there are only a few questions, you can quickly sort them and give answers on the spot. If you receive many questions, tell students you will address them during the next session. A variation is to shuffle and redistribute the cards and have individual students read a question aloud and give a response. (Source: Staley, 2003)

Conduct a large-group discussion. To hold a discussion with several hundred students, let disagreement play a major part. After a student expresses a point of view, ask the rest of the class to indicate whether or not they agree. Once agreement is registered by a show of hands, ask for points of disagreement or alternative views and put these to a show of hands. Keep the discussion moving by searching for different ideas and inviting comments that support different views. (Source: Maier, 1963)

Periodically cut short your lecture. Occasionally end your lecture half an hour early and use that time for informal discussion. One faculty member allows students to leave the room at that point; for those who stay, he reports holding lively discussions about the lectures, reading assignments, and the discipline. (Source: Padian, 1992)

Avoid starting a serious discussion near the end of the period. As class draws to a close, students’ questions or comments may be stifled by peer pressure for the dismissal of class.

Allow time for students to write a summary of what has been presented. Periodically, at the end of the class session, ask students to jot down the two or three key...
Encouraging Student Participation in the Large-Enrollment Course

points of the day’s lecture or the question that is uppermost in their minds. Collect their responses and review a sample as a check on what they have learned.

References

Christensen, T. “Key Words Unlock Students’ Minds.” College Teaching, 1988, 36(2), 61.
Maintaining Instructional Quality with Limited Resources

In large classes, compared to small classes, the curriculum is more tightly prescribed, student-instructor interaction is more limited, and procedures are more formalized (Hattie, 2005). Although students and faculty may prefer small classes, the financial constraints of many colleges and universities, especially those in the public sector, necessitate large-enrollment courses. More challenging still, these courses are often taught without graduate student instructors (GSIs) or readers, and with little or no funding for guest lecturers, classroom technology, laboratory sessions, or field trips.

Professors who teach these large courses must decide how to handle the responsibilities and tasks that were once entrusted to GSIs and readers: How will tests and writing assignments be graded? What will replace weekly sections? This chapter discusses how to provide quality education on a tight budget by restructuring courses and adopting cost-efficient teaching and testing techniques.

**General Strategies**

*Use technology as part of course redesign.* Instructors can use learning management software to create online tutorials, exercises, and other resources that address core skills and foundational principles that were traditionally handled in GSI-led sections. Research shows that after an initial outlay for development, cost savings can be achieved through technology without risks to students’ grades, retention, or conceptual understanding. (Sources: Guskin and Marcy, 2003; Harley et al., 2003; Twigg, 2003)

*Develop students’ independence.* Help students develop the skills they need to become independent, self-regulated learners. It can be both cost-effective and educationally desirable to invest in efforts to promote students’ autonomy early in
their college years. See Chapter 29, “Helping Students Learn.” (Source: Gibbs and Jenkins, 1992)

**Prepare students for new ways of learning.** If you implement group testing, peer teaching, or other nontraditional strategies, discuss these approaches with your students and give them the skills they need to succeed at these tasks. Be explicit about learning objectives, assessment requirements and criteria, and levels of academic support. (Source: Gibbs and Jenkins, 1992)

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**Administering and Grading Tests without Readers and GSIs**

*Ask students to submit proposed test questions.* Faculty have had success in adapting students’ items for midterm exams. See Chapter 39, “Quizzes, Tests, and Exams.”

*Consider group testing.* In group testing, pairs or small groups of students complete a single test. The challenge of group testing is assessing performance in ways that are fair to individuals when the evidence is a single exam. One option is to give all members of the group the same grade. Another option lets students distribute grades among themselves. For example, if a test receives a score of 80, the four students who worked together on the test would have 320 (80 × 4) points to distribute among themselves. If you want to use this kind of strategy, describe the process and have students determine the criteria for allocating points before they submit the exam. See Chapter 39, “Quizzes, Tests, and Exams.” (Source: Cannon and Newble, 2000)

*Consider peer grading.* For midterms or quizzes (but not the final exam), arrange to have each test individually graded by two different students during class time (with you as the third reader if the two student graders disagree). Students need training, scoring guidelines, and practice for this strategy to be effective. But it does provide students an additional opportunity to learn. See Chapter 39, “Quizzes, Tests, and Exams.” (Source: Race et al., 2005)

*Develop rubrics and grading criteria.* For short answer and essay questions, rubrics can significantly cut down grading time. In addition, if the guidelines are distributed to students in advance of the exam, students may write higher quality answers which can lead to easier grading. See Chapter 36, “Evaluating Students’ Written Work.” (Source: Race et al., 2005)
Assigning and Grading Writing Assignments without Readers and GSIs

Don’t read and grade every piece of writing. Even if you cannot respond to each writing assignment, students will learn more about the topic if they write about it. Ask students to analyze or critique each other’s work in small groups during or outside of class. Or have students write for their own purposes, without any feedback. Students will learn that they are writing in order to think more clearly, not to obtain a grade. As time permits, collect a sample of papers and skim them.

Assign brief in-class writing. Before discussing a topic, ask students to write a paragraph or two summarizing what they know about the topic or what opinions they hold. Do not collect these; the purpose is to focus students’ attention. Or you can ask students to write in response to short-answer questions you pose during class. For example, you could ask three or four questions that test students’ recall of the assigned readings. (Source: Tollefson, 2002)

Use peer response groups. Divide the class into groups of three or four students and schedule a critique session during which students read and comment on each other’s rough drafts. Provide the groups with guidelines for responding to the drafts (see Chapter 34, “Helping Students Write Better in All Courses”). Faculty who have had students grade other students’ work report that the grades students assign closely match the faculty member’s own assessment. (Source: Erickson et al., 2006)

Develop a standard feedback sheet. Include common student errors with space for check marks and assessment criteria with space for brief comments. (Source: Race et al., 2005)

Assigning and Grading Problem Sets without Readers and GSIs

Give frequent homework but do not grade every assignment. Some instructors collect all the homework assignments and grade only one or two problems on each; other instructors collect two or three problems a week for grading. Some faculty ask their students to place all their homework in a notebook and to submit the notebook for checking every few weeks. You can also give and grade short in-class quizzes based on the problem sets. For ungraded assignments, post an
answer sheet online or distribute one in class on the day the homework is due and have students check their own work. (Source: Zietz and Cochran, 1997)

**Encourage students to collaborate on homework or projects.** Students can learn from each other by working together. Ask students to work in small groups and submit a single homework assignment. For suggestions on grading group work, see Chapter 21, “Learning in Groups.”

**Evaluate some class requirements on a pass/fail basis.** Instead of assigning a numerical grade or a letter grade to every piece of homework, use two-point system (pass/not pass) or a three-point system (check, check plus, or zero).

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**Holding Discussion Sections without Readers and GSIs**

**Build discussion online.** Use learning management or other software to create online student discussion groups or chat rooms. Keep in touch with students electronically through a message board; see Chapter 11, “Online Discussions.”

**Use undergraduate teaching assistants (UTAs).** Some departments allow advanced undergraduates to earn credit by tutoring and teaching sections of first-year students. These UTAs can respond to papers, grade tests, and conduct review sessions. Students report that UTAs are often effective tutors because they are better able to remember their own difficulties in learning the material. If you do use UTAs, plan to provide pedagogical guidance and mentoring, including a pre-semester orientation, weekly meetings to discuss logistics and pedagogy, classroom observation, and the like. Also, if your campus has a teaching assistants’ union, work with the union in devising a plan for using UTAs. (Source: Civikly-Powell and Wulff, 2002; McKeeegan, 1998; Miller et al., 2001; Twigg, 2003)

**Offer a substitute for discussion sections.** In lieu of small, weekly, GSI-led section meetings, offer fewer, larger, open-ended sections that any student in the class can attend. Encourage students to teach one another during these sections. Students, of course, will be less knowledgeable and adept than GSIs, but they will benefit from the experience of learning how to explain concepts to peers. (Source: Gibbs and Jenkins, 1992)

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**References**


