The challenge is to reconcile the recommendations of the experts for involved learning with the reality of passivity that plagues large classes.

Student Involvement: Active Learning in Large Classes

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> *Tell me, and I'll listen.*
> *Show me, and I'll understand.*
> *Involve me, and I'll learn.*
> —*Teton Lakota Indian*

Most college teachers have had the distressing experience at the end of a brilliant lecture of asking students, "any questions?" only to be greeted with deafening silence. However effective one's presentational style and ability to communicate, student passivity remains a learning problem in large impersonal lecture courses. Increasing student involvement through making greater use of active modes of teaching was the major recommendation of the National Institute of Education report in 1984, *Involvement in Learning: Realizing the Potential of American Higher Education.* Nearly all learning theorists, faculty development consultants, and reports on higher education recommend the importance of interactive, participatory student involvement for learning that affects cognitive and affective growth. As Dunham and Gleason (1984, p. 50) have put it, "instructional environments need to be intimate, interactive, and investigative."

M. G. Weimer (ed.). *Teaching Large Classes Well.*
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Yet despite these recommendations, most college and university professors in most classes most of the time continue to lecture. Even those who write articles on the importance of interaction and discussion, still lecture more than is recommended. The lecture persists for all kinds of reasons. "I'd like to do less lecturing, but I've got too much to cover." Or, "That's all right for you but in my field I have to lecture to get them ready for the 300 level course." Or, "I'd like to try some new ideas, but I can't—I have three hundred students in the class, you know." Or, "Student interaction is impossible in my classroom. The chairs are in rows bolted to the floor—all I can do is lecture."

I believe that these genuine expressions of concern need not be barriers to active learning. The challenge is to reconcile the experts' recommendations about learning with the reality of the passivity that plagues large classes. This chapter will suggest several specific, practical ways of promoting active, participatory learning within the large lecture class format. Each of these approaches assumes a class size of at least one hundred students, sitting in conventionally tiered, dimly-lit lecture halls, with chairs in rows bolted to the floor facing a professor up (or down) front behind a lectern. Each of these strategies is applicable to fields of widely diverse content. The goal is to help faculty members discover ways of achieving an interactive, investigatory, and even intimate learning environment in large impersonal settings, thus empowering their students to take responsibility for their own learning.

Fundamental to each approach are three interrelated pervasive themes that I believe are crucial in promoting active learning. First, given diverse student learning styles, teachers should use a variety of strategies for teaching and learning, not only on different days but also within any single class period. In other words, there should be energy shifts within a class about every twenty minutes by changing both the activity and the voice or voices that speak. Second, in classes of any size, but especially large ones, visual reinforcements (on blackboards, handouts, or overhead transparencies) are vital in order to focus attention and clarify the context of verbal presentations, especially for those increasing numbers of students who are field-dependent and visual rather than auditory learners. And third, students learn best when there are spaces in the content being developed or explained on any given day. If instructors provide holes in their lectures, students must fill the space with their own insights, reading, analysis, or connections. Students learn best when they are involved in ownership of their intellectual discoveries, especially those that hook into their own experiences.

The active learning suggestions of this chapter are grouped into five sections: interactive lectures; questioning; using small groups in large classes; critical-thinking and problem-solving exercises; and large-class debates, simulations, and role playing.

Interactive Lectures

One form of the interactive, or participatory, lecture involves brainstorming. Students are invited to help create a lecture by participating in the process of ordering a topic into a coherent, rational pattern. When beginning a new topic, instructors may start with a participatory lecture by asking students to call out "everything you know or think you know about World War I" (or Freud, Darwinism, China, management principles, the Renaissance, DNA, or whatever). As recorded on an overhead transparency or blackboard, a list of specific names, dates, and events; descriptions of natural phenomena and human experience; feelings and prejudices; and possibly even interpretive judgments will unfold. Students bring to most courses both a degree of familiarity and considerable misinformation. Since anything goes brainstorming provides an opportunity for many students to participate and for faculty to find out what students already know and do not know.

The only rule of brainstorming is to acknowledge every offering by writing it down, thus providing visual reinforcement and honoring student contributions. As ideas are proposed, clever teachers might arrange the ideas in rough groupings. Alternatively, they might ask students to suggest categories and to comment on the accuracy and relative importance of the array of events, experiences, and interpretations. Refinements can be dealt with by erasures, a luxury not allowed in the formal lecture. Thus begins a jointly created coherent understanding of the topic.

In an interactive session like this it is necessary, as in any lecture, for the professor to have a clear idea what should be revealed and discovered in the process. Some points, probably, must be made. At the same time, however, teachers must guard against excessive manipulation and be flexible enough to depart from their preconceived ideas. The final creation should legitimately reflect both student and teacher conceptions of what is important about a topic. When the class is over, the teacher and students will have created an organized configuration of salient points and concepts. In this interactive process, students spend more time thinking than recording as they concentrate on contributing to the evolving lecture before them.

Obviously, the participatory lecture can be done badly. When students have not brought to the class the limited knowledge provided by their prior experience or reading, or when the professor manipulates student statements to a rigidly preconceived schema, the experience can be dreary. But when the mutual participation is free and open, students are actively engaged and teachers might even gain new insights about familiar material. Although less efficient than a traditional lecture, the participatory lecture actively involves many students and can be done in any size auditorium.

A variation of the interactive lecture is to ask students at the beginning of class to call out one concrete visual image that stands out from a text, scene, laboratory experiment, event, art object, or personal experience. "From your reading of *The Color Purple* (or *Candide*, or an account of Galileo's trials, or a surgical procedure), what one specific scene or moment stands out in your mind?" Spending a few minutes hearing these images at the beginning of a traditional lecture (or in the middle somewhere) activates student energy and enhances the vividness of the day's content. No analysis is necessary—just recollections and brief description. The recall of concrete scenes prompts further recollections, and a flood of images flows from the students. As students report their images, the instructor list them on a transparency or blackboard, thus providing a visual backdrop to the lecture or discussion that follows. After five minutes, ask the class: "What themes seem to emerge from these items? What connects these images? Is there a pattern to our recollected events? What is missing?" In this inductive approach, facts precede analysis. Many students get to say something early in class and every contribution gets written down to aid the collective memory and provide a visual reinforcement to learning.

Another way to introduce a new topic—or to check on learning halfway through one—is to ask students to suggest statements they think are true about some particular issue. "It is true about deregulation that . . ." "We have agreed that it is true about the welfare system that . . ." "It is true about the theory of relativity that . . ." and so on. I have found this strategy useful for dealing with a topic—slavery, for example—where students think they already know a great deal but the accuracy of their assumptions demands examination. This exercise reveals the complexity and ambiguity of knowledge as students present their truth statements and other students raise questions about or refute them. It also generates a list of questions and of issues demanding further study.

Using Questions for Involvement

The use of questions—for students and for instructors—is an obvious way to shifting energy back and forth in large classes. Teachers ask rhetorical questions all the time in lectures. But they also ask real ones and expect responses. There are several approaches.

From the movie *Paper Chase* we all have an indelibly stereotyped view of one method of asking questions in large classes. One student is singled out and interrogated unmercifully in order to tease out the significance of a particular legal case. When I watch John Houseman at work in his role as the pitiless law professor, I always think of Socrates, who was a mixture of great teacher genuinely guiding others to their

own self-discoveries and skillful, manipulative, intellectual hustler steering others to his desired answers. Having admitted that, we can do variations of the same approach, presumably more mercifully than either Houseman or Socrates.

One approach is to address a somewhat open-ended question to the class: "What were the causes of World War I?" Or, "what is the meaning of the green light at the end of Daisy's dock?" Or, "how did the universe begin?" Or, "what is art?" Or even, "why was Socrates condemned to death?" A student answer is met with a follow-up question, which is directed at the class generally. The instructor need not put one person on the spot, for the primary point is to convey substantive content and raise further questions. In the end, as in brainstorming, a number of points and arguments are articulated and perhaps even listed on the board. A further question can invite the students to begin to critically analyze the various arguments. "Which of these arguments makes the most sense to you, and why?"

A second approach to questioning, perhaps the next step, is to put a question to the class and ask three students sitting next to one another to explore it for five minutes. "What were Austria's problems?" "Should art be socially useful?" "Would you have voted for Socrates' death? Why or why not?" The best kinds of questions are those not simply seeking information (Austria) but those requiring students to make judgments and choices among equally compelling alternatives (Socrates). After only five minutes in the trios, enormous energy is generated by putting the choice to the class: "How many would have voted to put Socrates to death?" "How many not?" "Why?" A lecturer could indeed have presented both the pertinent information and alternatives more efficiently but without the interaction, dispersal of energy, and multiplicity of voices, points of view, and controversy.

But students also have their questions and even in large classes we can provide ways for them to ask questions and learn how to formulate better ones. Being able to ask questions about a particular text or issue is essential in coming to terms with it. There are many ways of generating student questions. Ask students ahead of time (on Wednesday for Friday's class) to prepare one or two questions about their reading or a topic and bring them to class. Instructors can put the assignment to them this way: "A question I still have about slavery (or Kant, the New Deal, quarks, mammography, Gilligan's stages of moral development, or whatever) but have been afraid to ask, is . . ." Students can either walk into Friday's class with their questions or be invited to put them on cards and submit them ahead of time, a technique which helps reticent students' questions to be heard.

Another variation is to ask students as they enter the classroom to call out questions about the text or topic they hope will be answered that

day. At the end of the hour ask them to write down one or two still unresolved questions they want explored at the next class. Or, at some point halfway through a period divide the class into pairs or small groups of three or four and ask them to "take five minutes to agree on one question that you think is crucial that I respond to." This will sort out fewer, more thoughtful questions. In addition, and equally important, this task leads to some peer teaching and learning as one member of a group answers another's question in the course of the search for a consensus question. Hearing student questions is an excellent way, in addition to brief, one-minute written reports, for a professor to get feedback on how well students are learning. The quality and substance of their questions indicates areas of strength and gaps in understanding.

A *press conference* is a questioning variation that is well-suited to concluding a unit. Students are invited, as investigative reporters, to ask questions of their teacher about the topic they have been studying. They may seek to clarify confusing material or to find out new information or, like a budding Socrates or Mike Wallace, to press their professor's position on an issue to a point of contradiction or inadequate evidence. The teacher's responses might be crisp and short or might constitute mini-lectures. Professors can structure questioning sessions in any number of imaginative ways to facilitate and humanize the learning process. In any event, this lecture-hall variation is feasible in any size class; it succeeds in providing interaction, energy shifts, and different voices; and it underlines the importance of students' responsibility for their own learning.

Small Groups in Large Classes

The suggestions already made indicate the importance of breaking large classes into small groups. Whether the class size is 50, 150, or 500, it can always be broken down into smaller groups of five, eight, ten, or whatever, thus serving many purposes. The first, quite simply, is to provide energy and interaction, enabling more students to think during class, to say something, and to generate more ideas about a text or topic. Groups usually lend themselves to a lively, competitive spirit, whether asked to or not. Students in groups are inevitably interested not only in their own group but also in "what they're doing over there." Moreover, there is potentially more intimacy in the class when broken into groups. Not only do students get to know each other but the teachers have an opportunity to establish personal contact with more students as they move around listening to a sampling of the small group discussions. Furthermore, reticent students find it easier to express themselves in the smaller groups and can gain some confidence in speaking up in larger settings after having practiced talking to a smaller, safer audience.

There are three crucial points to consider in helping small groups

to work and learn efficiently. First, the instructions should be clear, simple, and task oriented, such as the following examples. "Decide together which of the brothers is the major character in the novel." "Why did the experiment fail and what would you suggest changing?" "What is Picasso's painting saying?" "Identify three positive and three negative qualities of King David's character." "If you were the company treasurer (or lawyer), what decision would you make?" "If you were Lincoln, what would you do about Fort Sumter?"

The second necessity in giving instructions is to give the groups a sense of how much time they have to do their work as in, "Take ten minutes to define your group's position." And third, instructors should be sure to ask each group to select a recorder and to provide ways of reporting back and debriefing the process. In not-so-large classes, one way is to invite each group briefly to state their conclusion(s) orally in turn, with the teacher recording them on the board. Another is to ask the recorder from each group to write its conclusions on a transparency or on newsprint posted around the room. Still another, accompanied by brief oral presentations, is to write them down on paper to be collected, collated, and reported back by the teacher at the next class.

In very large lecture halls filled with 200–400 students, breaking up into small groups is more difficult but still possible. At an appropriate point, interrupt your lecture to ask two or three students sitting next to each other to discuss an issue or question together for a few minutes. "What's the most important point I've been making for the past ten minutes?" Who is the real hero of the story?" "What's the major constitutional concern in this case?" "What's the answer to the problem?"' After as little as three or four minutes, invite volunteers to stand and report conclusions and concerns.

This process provides public affirmation of the thinking of a room full of students, thus giving feedback both to other students and to the teacher on how well they understand a particular topic. Even "wrong" feedback is instructive and can dictate the next appropriate minilecture and reading assignment. Without this short break, the professor might not have known the gaps in student knowledge and gone ahead into the next unit, at the cost of losing a good portion of the class. Moreover, with even brief shifts of energy, students not only experience a variety of voices and a sense of shared responsibility for their learning but also wake up and are more likely to listen attentively to the teacher's next twenty minutes of lecturing.

Problem Solving and Critical Thinking

These suggestions have been predicated upon shifts of energy and voice in about twenty-minute blocks of time, a form of arranging the

information to facilitate comprehension and memory. A typical fifty-minute class period, therefore, should usually involve three segments. First, the instructor delivers a twenty-minute lecture, perhaps explaining a new concept, or presenting a case study, or otherwise setting the stage for some activity involving students. Then students participate for fifteen to twenty minutes, practicing the new concept, discussing the implications of a problem, or role-playing the effects of a situation the professor has described in the opening minilecture. After some feedback on the activity, the professor concludes the class by summarizing the important points, re-explaining the concept, and bringing closure to the class. Alternatively, teachers might use the last ten minutes to prepare students for an out-of-class assignment or to introduce a new topic.

This alternating approach is applicable for any discipline, perhaps best for natural and social science fields where instruction calls for a mixture of theory and data, model and findings, or hypothesis and experimental demonstration. In these situations, each involving questions of how best to proceed after learning a theory or model, students are trained in critical thinking and problem-solving skills. "How could the nation experience rapid inflation and high unemployment at the same time?" "Why does the electron in some experiments behave like a particle and in others like a wave?" "How come the circle cannot be squared?" "If I can generate heat energy in an object, why can't I use heat from it to run my machine?" "Why do some of us perceive an old woman and others a young one?" "What brought Captain Parker's men to Lexington Green that cold April morning?"

The problem-solving lecture begins with a question, a paradox, an enigma, or a compellingly unfinished human story—some tantalizing problem that hooks student interest. The answer unfolds during the class hour; if the instructor is skillful, the unfolding will be completed with only about ten or fewer minutes left in the period. Solving the problem, depending on what it is or in what field, may require a scientific demonstration, a mathematical proof, an economic model, the outcome of the novel's plot, or historical narrative. Solving problems is an ideal way of breaking a class period into alternating chunks of time and dispersed energy.

The problem, or question, is woven throughout the lecture, inviting students to fill in spaces in the story or model with their own unfolding solutions to the problem as they listen. Preferably, the resolution could be an interactive process in which students' tentative solutions to a problem or completions of a story, are elicited, listed on the board, and discussed. "What do you think will happen?" "Which solution, outcome, or explanation makes the most sense to you?" If no consensus, the teacher lectures a little more, invites a new set of student responses, and asks the question again. Ideally, when the problem is finally resolved, most stu-

dents will have figured it out themselves just before the teacher's solution is announced at the class-ending bell.

The large-class lecture setting also provides an opportunity to practice an old-fashioned but woefully ignored technique: explication de texte. Instructors can teach students how to read, even in large-lecture classes, by going directly to a text and reading and analyzing passages together out loud. At first, the professor models how to read and interpret a passage. The students, following along in their books (or on handouts or an overhead projection), observe the professor working through a selection from a speech, sermon, essay, poem, or fictional passage. In introductory survey courses I regularly spend part of a class period early in the term showing how I would read and highlight a traditional textbook.

Then it is their turn: how better for students to develop their reading skills than to see them modeled, followed by an opportunity to practice analyzing a text themselves? There are many ways to select appropriate passages and structure such a class. Invite students, either ahead of time or at the start of class, to "find one or two quotations from the text which you found particularly significant," or, "find one quotation you especially liked and one you especially disliked," or, "identify a quotation which you think best illustrates the major thesis of the chapter," or, "find a quotation which suggests, to you, the key thematic symbol of the text."

Students are then ready to read these passages out loud and discuss them. "Jennifer, would you please read the top paragraph on page 144?" Be sure to pause long enough for everyone to find the right spot in their book: "Top of page 144—is everyone with us?" Lively and illuminating engagement is guaranteed because not all students select the same quotations nor, probably, do they all interpret passages the same way. Upon reaching a particularly ambiguous passage, small groups of three to four students could be asked to struggle with the meaning. "Three of you sitting next to each other: put your heads together and in your own words state what you think is the main point of the passage." Or, "what's happening here?" Teachers may invite a few groups to report their reflections, giving teachers an opportunity to react to the substance of their interpretation, comparing it to their own thoughts. Breaking into small groups disperses the energy and provides practice and feedback for students before returning again to the professor's voice and analysis. After having struggled with a passage themselves for a few minutes, hearing the teacher's interpretation has more meaning.

This process of modeling how to read analytically, followed by practice, assessment, and more modeling can be done in large-lecture classes for other than just verbal texts. Art historians, musicologists, economists, and anthropologists have traditionally used lectures to demonstrate how to "read" an abstract painting, sonata allegro form, supply and demand curve, or artifact. Natural scientists explain their texts with

elaborate demonstrations. Some social science teachers use the lecture period to train students in other analytical skills: quantitative analysis of graphs, charts, tables, and census data, as well as how to read maps. I regularly hand out short historical documents in my classes—a household inventory, a diary entry, a census table, a folk tale, a ship's manifest, an old tool, a family photograph—and ask: "what do you see?" Then, after hearing several descriptions: "what does it mean? what implications can you draw from the document on how people lived?"

Whether using traditional verbal or nontraditional sources, and whether working with forty or four hundred students, the large class is an opportunity to teach critical-analysis and reading skills to our students. The process of participating together in the analysis of a common text is interactive, investigatory, and intimate. To summarize: instructors can make sure students have a copy of the source in question in front of them (or visual access through slides and overhead transparencies), and the follow the three steps of modeling by the instructor, practice by the students, and feedback.

Whole Class Debates, Simulations, and Role Playing

Although assigning specific tasks to small groups of students can disperse energy and achieve interaction in large classes, not all instructors are comfortable with the uncertainty and potential lack of control implicit in the decentralized large class. Therefore, I would like to suggest a few ways of achieving more student participation and engagement in large classes without changing the professor's central controlling role in the classroom.

One strategy is to take advantage of the central aisle dividing large lecture halls in order to structure debates. Students can either support the side of an issue assigned to the half of the hall where they happen to be sitting, or as prearranged, can come to class prepared to take a seat on one particular side of a debate. I put up signs over the lecture hall doors labeling the two sides. Although neither one of two polar sides of an issue contains the whole truth, it is pedagogically energizing (if only to point out the complexity of truth) for students to be compelled to choose and then to defend one side of a dichotomous question.

The following process permits the professor to maintain rigorous control from the podium in leading the debate: "From the right side of the hall we will hear five statements on behalf of the hawk side of U.S. involvement in Vietnam, after which we will hear five statements from the left on behalf of the dove side." The process can be repeated, including rebuttals, before concluding by asking for two or three volunteers to make summary arguments for each side. Other obvious debate topics, following the stimulus of a reading, film, or minilecture, include such

questions as: "Should Nora have left or stayed?" "Burke or Paine?" "Abortion: pro-life or pro-choice?" "Marx or Adam Smith?" "Intervene in Nicaragua or not?" "Evolution or creationism?"

But of course, most important questions do not divide into halves. Our good students would never settle for forced dichotomous choices. When some students (quite rightly) refuse to choose one side or the other, create a middle ground and space, and invite their reasons for choosing it. Some large lecture halls have two central aisles, which makes legitimizing a third position both intellectually defensible and physically possible. "Those who repudiate both the hawks and the doves (or Burke and Paine) for what you think is a more reasonable position, sit in the middle." Now three groups are invited to state their positions. The dimensions of learning increase. Students in the middle, for example, might learn how difficult it is to try to remain neutral on heated emotional issues or during revolutionary times.

For those teachers willing occasionally to risk a little classroom chaos for uncertain learning outcomes (though really no less uncertain than what happens to our eloquent words in student notes during a traditional lecture), role playing and simulations are guaranteed to add energy, participation, and interaction to large lecture hall courses. I have written elsewhere (Frederick, 1981) in more detail about using simulated role playing, so here I will just sketch the outlines of this lecture variation.

There are many simulation games on contemporary issues in the social sciences, but most are too expensive and time consuming to seriously consider using in our large classes. Therefore, I prefer to create my own less elaborate games, putting students into the many roles represented in some historical event or period. The process is not as complicated as one might think. First, a minilecture establishes the context and setting for the role playing (defined as a loose simulation of actors and problems). Second, the class is divided into a number of small groups (of varying sizes and including duplicate roles depending on class size), and each group is assigned a clearly delineated role. Third, each group is given a specific, concrete task—usually to propose a position and course of action. And fourth, the proposals emanating from different groups will inevitably conflict with each other in some way—ideologically, tactically, racially, regionally, or over scarce funds, land, jobs, power, or resources.

The format of such sessions can take whatever direction a professor wishes, given careful and clear planning and directions, assertive leadership, and a lot of luck. One could hear the proposals of different groups and immediately incorporate them into a lecture on how what really happened reflected many of these same conflicts. Or, one could carry out the role-playing process longer by structuring a meeting or convention to consider the differing groups' proposals. The student groups could be

instructed to prepare speeches and see the deliberations through to some conclusion, and then to caucus to develop strategies, coalitions, and tactics for achieving their goals. Neat, simple, clear closures are not easy (short of the class-ending buzzer), but this variation for large lecture classes has tremendous potential for experiential learning and, of course, involves enormous energy and interaction. Whenever the professor wishes, debriefing the exercise—which is essential—is an opportunity to restore order, to identify what was learned, and to make the transition to the next topic and pedagogical approach, probably a traditional lecture.

In conclusion: in each of these various suggestions I have sought to show that large lecture-hall classes need not be barriers to providing the kind of interactive, engaging, investigative experiences that enhance student learning. It is, I suppose, obviously easier to deliver a conventional lecture for the full fifty minutes, ending with the obligatory (and usually failing) invitation: "any questions?" Instructors should not be misled: planning and structuring active learning in large classes takes time and energy. But the rewards, both for students and instructors, are enormously satisfying. The excitement of active learning is injected into precisely the place where it is least expected. In this way instructors renew their commitment to the highest challenges of their calling. And, after using a variety of these active approaches with a large class, one might even finish a traditional lecture and ask, "Any questions?"—and be pleasantly surprised by an active response.

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