

*The traditional lecture can be enhanced by including active learning designed to further course goals of learning knowledge, developing skills, or fostering attitudes.*

## Enhancing the Lecture: Revitalizing a Traditional Format

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During the past twenty years a number of educational authorities and blue ribbon commissions have called for introducing active learning into our classrooms. The resulting changes have been particularly evident in the health professions, which found that traditional lectures emphasizing the memorization of information ill-prepared students for clinical settings, in which they were asked to demonstrate sophisticated communication and problem-solving skills. To meet this need, the American Association of Colleges of Pharmacy, for instance, challenged its member institutions to develop an outcomes-based curriculum utilizing active learning that would provide students with the skills necessary to practice pharmacy effectively in the twenty-first century. In response, the faculty at the Saint Louis College of Pharmacy, among others, has begun to significantly change its educational objectives and teaching strategies in the classroom in order to explicitly teach towards outcomes and then assess the effectiveness of that effort ("Background Paper II," 1993). These changes, and others like them, have created a tension in higher education.

For example, a recent discussion on the Internet erupted into a heated debate as usually sedate college professors vehemently attacked or vigorously defended the traditional lecture. Unfortunately, the protagonists relied more on singular personal experience to defend their stances than on knowledge of the pertinent, available research. Such emotional arguments, while not uncommon, serve little purpose other than generating ill-will based on a false dichotomy. Lectures, whether good or bad, depend on situational context, instructor skill, and course objectives.

More-dispassionate observers of the educational process would argue that to increase their effectiveness it is important to understand both the advantages

and the limitations of the lecture. Cashin (1985, pp. 2–3) states that lectures have the following strengths:

1. Effective lecturers can communicate the intrinsic interest of a subject through their enthusiasm.
2. Lectures can present material not otherwise available to students.
3. Lectures can be specially organized to meet the needs of particular audiences.
4. Lectures can present large amounts of information.
5. Lectures can be presented to large audiences.
6. Lecturers can model how professionals work through disciplinary questions or problems.
7. Lectures allow the instructor maximum control of the learning experience.
8. Lectures present little risk for students.
9. Lectures appeal to those who learn by listening.

Cashin (pp. 3–4) goes on to point out the disadvantages of traditional lectures (fifty or seventy-five minutes of teacher talk):

1. Lectures fail to provide instructors with feedback about the extent of student learning. (Thinking in terms of how much the student is learning as opposed to how much material has been presented is a fundamental and necessary shift in perspective.)
2. In lectures students are often passive because there is no mechanism to ensure that they are intellectually engaged with the material.
3. Students' attention wanes quickly after fifteen to twenty-five minutes.
4. Information tends to be forgotten quickly when students are passive.
5. Lectures presume that all students learn at the same pace and are at the same level of understanding.
6. Lectures are not suited for teaching higher orders of thinking such as application, analysis, synthesis, or evaluation; for teaching motor skills; or for influencing attitudes or values.
7. Lectures are not well suited for teaching complex, abstract material.
8. Lectures require effective speakers.
9. Lectures emphasize learning by listening, which is a disadvantage for students who have other learning styles.

An understanding of these strengths and limitations provides insight into how we might improve our teaching.

For instance, systematically incorporating brief active learning strategies into lectures minimizes many of the weaknesses of the lecture approach. Discussion questions; short, in-class writing assignments; and formative (ungraded) quizzes quickly provide feedback about student comprehension of the material being presented. Moreover, these activities keep students from becoming passive, and if interspersed at appropriate times, keep student attention focused. Research also suggests that active learning techniques are more

effective for teaching higher-order thinking skills and are useful when trying to change student attitudes or to motivate students (McKeachie, Pintrich, Yi-Guang, and Smith, 1986). Finally, the use of differing active learning techniques reaches a broad range of student learning styles. The use of these activities, then, can significantly enhance our lectures.

For purposes of discussion, an *enhanced lecture* is defined as a series of short, mini-lectures punctuated by specific active learning events designed to meet class objectives. Using this model, the enhanced lecture could fall anywhere on the active learning continuum, depending on the complexity and frequency of the strategies used. A simple enhanced lecture could involve two to three pauses during the lecture to allow students to compare notes or ask questions. Those instructors who are familiar and comfortable with more complex strategies might choose to incorporate into the class period lengthy group activities focused on skill development, punctuated with brief mini-lectures that summarize a previous activity or create a transition for the next activity. Again, the extent to which these active learning strategies are incorporated into the lecture depends on the course objectives and the instructor's teaching style. As in many situations, more is not necessarily better.

The enhanced lecture will have a beneficial impact upon students. A number of research studies have shown that active learning is preferable to traditional lecture if the instructor's goal is to develop higher-order thinking or change student attitudes (Bonwell and Eison, 1991). The power of interaction in a classroom is nicely illustrated by the following story. A physics professor, a traditional lecturer, at Truman State University (formerly Northeast Missouri State University) had serious doubts about the efficacy of active learning and believed that he could challenge its proponents' claims through a rigorous, quantitative study. Accordingly, in his introductory physics course he taught two sections, to provide both an experimental and control group. In the control group, the professor lectured for several minutes, then asked students to work individually on problem worksheets for twenty minutes. The final portion of the class involved the professor solving the problems in front of the classroom, encouraging students to contribute their answers where appropriate. Conversely, in the experimental class, after a brief lecture to introduce concepts, the students worked in small groups on the problem worksheets for twenty minutes while the instructor moved between groups answering questions that arose. For the next five to ten minutes, student groups shared their answers with the class. Finally, if there was still confusion about the problems, the instructor would provide his solution. All other parameters of the class were the same (homework, quizzes, exams, and labs).

At the end of the course, the instructor analyzed pretest and posttest scores, student performance on a standardized physics examination, and results of an attitudinal survey given at the beginning, middle, and end of the semester. He concluded that there was no statistical difference in the performance of the two groups with regard to their understanding of Newtonian mechanics. He did find, however, a significant difference (both statistically and

educationally) in how the students reacted to the course. The motivation level of the control group remained the same throughout the semester while the motivation level of the experimental group rose approximately 50 percent during the course of the semester. These students “showed a great deal of enthusiasm” in the course and reported “having fun” (Samiullah, in press). Because student performance stayed the same, the change in student attitude persuaded the instructor to act on the evidence of his own experiment. He has changed his teaching style in the introductory course to include active learning (Samiullah, in press).

### Planning and Structuring the Enhanced Lecture

Before examining active learning strategies that are appropriate for the enhanced lecture, at least three assumptions must be articulated: (1) we have done the preliminary groundwork for assessing the course as to the appropriate levels of knowledge, skills, and attitudes that we wish our students to demonstrate (see Chapter One); (2) we are knowledgeable and skillful lecturers who understand the various forms that a lecture can take to promote effective communication; and (3) our mini-lectures will never be more than fifteen to twenty minutes long. (This assumption is based on research that suggests that students cannot effectively assimilate material beyond that time frame.) Given these assumptions, the following questions are appropriate:

*How does this activity meet my course objectives?* In order to select specific active learning techniques that further our course objectives, let's focus on the three questions raised in Chapter One: (1) What do I want my students to know? (2) What do I want my students to do? and (3) What do I want my students to feel? Used in conjunction with Bloom's taxonomy of educational objectives (Bloom, 1956) or with an understanding of the macro and micro skills inherent in our disciplinary processes, these three questions provide a useful blueprint for developing specific active learning activities in class.

*What do I want my students to know?* Bloom's first two levels of thinking—knowledge and comprehension—are the principle focus of many professors in the classroom. Within this model, *knowledge* means the information (facts, rules, or principles) that students must recall in order to practice higher-order thinking skills. By asking students the familiar questions *who*, *what*, *when*, *where*, and *how*, we can quickly ascertain whether or not they have learned the information as we intended. Perhaps more important, we want to know whether students truly understand, or comprehend, the material being presented. Can they organize and select facts and ideas presented in a meaningful way? Can they describe the concept in their own words? This assessment is particularly important with novice students, who often can regurgitate facts and figures or who have memorized formulas without really understanding their meaning. (If you have not had this experience, ask a beginning student what the words *democracy* or *velocity* mean.) One of the central roles that active learning can play in the enhanced lecture, therefore, is to provide a mechanism

to see how students understand the lecture. Specific activities that might be included in the lecture are the pause procedure, short writes, Think-Pair-Share, formative quizzes, lecture summaries and Classroom Assessment Techniques.

**The Pause Procedure.** Two factors underlie the pause procedure's effectiveness. First, stopping the lecture every thirteen to eighteen minutes allows the students to do something else, thus dealing with the physiological and psychological responses that keep them from listening effectively for longer periods of time. Presumably, short breaks allow people to return to peak listening efficiency. Second, having students compare notes makes good sense. Two people working together are likely to take better notes than one person working alone, and experience indeed supports this assumption. Students inevitably discover that they learn something from someone else's notes. To break the predictability of the pause procedure, it is advisable to mix this technique with others, such as short writes, opportunities for questions, and so forth.

**Short Writes.** Punctuating a lecture with short writing assignments is a powerful way to assess the degree to which students understand presented material. For instance, the "one-minute paper," advocated by Angelo and Cross (1993), can be as simple as asking, "What was the most important thing you learned during this class?" or "What questions remained unanswered?" Within the framework of an enhanced lecture we could present three questions or instructions at evenly spaced intervals, such as the following: "What was the main idea presented in this portion of the lecture?" "What are some of the major concepts associated with today's topic?" and "Describe the concept of \_\_\_\_\_ in your own words." The resulting short writes could be submitted to the instructor or they could form the basis for class discussions. (On a practical note, one-minute papers usually take three to five minutes to implement.)

**Think-Pair-Share.** Think-Pair-Share is a widely used technique that serves many purposes. In its simplest form, two students discuss together for two to three minutes what would be an appropriate answer to a question that has been asked. They then share their results in a large class discussion. If time permits, it is more effective to have students write down their individual answers to the question prior to talking in pairs. Writing forces each student to attempt an initial response to the question, which they can then clarify and expand as they collaborate. Writing then talking about their answers can take five to ten minutes depending on the question's complexity. An extension of this format is to have two pairs join each other and compare answers.

Think-Pair-Share is particularly effective because it can work in classes of any size to get students involved. It is also an effective way to deal with a student's reluctance to answer questions from the instructor, particularly at the beginning of the semester, before rapport and trust have been established. Students are much more willing to share joint answers than to be held individually accountable for their responses. This is particularly true in large classes where many students are intimidated, fearing to "look stupid" in front of their peers.

**Formative Quizzes.** Formative—that is, ungraded—quizzes are used to easily and efficiently determine how students comprehend material. Using the

same types of questions that would normally be used on major examinations, the instructor places questions on the board or an overhead projector, giving students an appropriate time to respond. (Complex essays could be broken into component parts.) If the question entails multiple choice, students can raise their hands in agreement as each prompt is featured. With this approach, instructors quickly determine how most students understand what has been presented. Misunderstood material warrants a clarifying discussion. In addition to determining comprehension, formative quizzes educate students about the kinds of questions they will be expected to answer on the major exams. This preview can lessen student anxiety by making the instructor's expectations clear. Conversely, it can show students problem areas that warrant further study.

**Lecture Summaries.** Students can better synthesize course material if they are provided with specific opportunities to summarize lectures during class. As previously suggested, this opportunity for synthesis can be done informally by short writes or by having small groups of students share notes. A more formal approach is the guided lecture (Kelly and Holmes, 1979), which consists of the following steps: After presenting the objectives of the lecture, the instructor asks students to put their pencils down and listen carefully to a lecture that is approximately one-half of the class period. The students' goal is to determine the major concepts presented and to remember as much supporting data as possible. For five minutes at the end of the lecture students are asked to write down all of the presentation they can recall. Working in small groups, students then construct a complete set of lecture notes, using the instructor as a resource when necessary. Kelly and Holmes are convinced that the approach improves students' listening skills and creates a set of notes superior to those taken by most individuals.

**Classroom Assessment Techniques.** Three classroom assessment techniques outlined by Angelo and Cross (1993, pp. 126–147) can assess students' recall of information presented in the classroom. Focused listing, which could be used at any time during the course of a lecture, is designed to see whether students recall the most important points associated with a particular topic (for example, create a list of the advantages of both the North and the South going into the Civil War). A second approach provides students with an empty or partially filled outline of the lecture and asks them to fill in the blanks in a limited amount of time. A third technique consists of a two-dimensional table with rows and columns that are used to organize information and illustrate relationships (for example, list one major political, economic, and social consequence of World War II for each of the countries shown in Exhibit 3.1).

These techniques can be individual or group assignments depending on the instructor's goals and preferences.

*What do I want students to do (skills)?* Traditionally, in the classroom faculty have placed most of their emphasis on recounting disciplinary content. Skill development has been relegated to laboratory or homework assignments. Experience tells us, however, that students often need explicit coaching in the

**Exhibit 3.1. Consequences of World War II**

	<i>Political</i>	<i>Economic</i>	<i>Social</i>
Great Britain			
Russia			
Germany			
Japan			

classroom before they can effectively develop those skills outside the classroom. (As an example, can you think back to a class when as a student you were certain you could do the math or science problem illustrated, until you went home and actually tried to do it—and found you didn't have a clue? Most of us can.) *Explicitly* is the key word here. Although many of us believe that students learn specific skills as we model them in front of a classroom, most students cannot learn the skill unless they actually go through the process.

### **Using Bloom's Taxonomy to Develop Activities at an Appropriate Level**

When I ask faculty to list those skills that they are teaching in the classroom, "thinking" tops the list. When I push the issue further and ask what strategies they use to teach thinking in the classroom, there is less agreement. Traditionally, we have relied on problem sets or written assignments outside the classroom; inside the classroom we often focus on clarifying the lecture material. Although most of us want to help our students enhance their ability to think, we are uncertain how to approach this task explicitly. Specific active learning techniques structured around questions using Bloom's taxonomy (Bloom, 1956) is one way to meet this challenge.

One of the keys to constructing exercises designed to promote thinking is to ensure that the questions asked are at an appropriate level. As shown in Exhibit 3.2, the Maryland State Department of Education (McTighe, 1985) developed an extremely useful guide to help instructors frame questions that can be used to generate discussions or as prompts for active learning exercises.

Bloom's original work is another rich source for examples of questions at varying levels that cut across disciplines.

Many general activities that are suitable for an enhanced lecture in any discipline—such as individual short writes, small or large group activities, journals, formative quizzes, and so on—could be organized around the questions

presented in Exhibit 3.2. More-specific activities are found in Angelo and Cross (1993), which classifies all of its Classroom Assessment Techniques according to Bloom's taxonomy. For instance, the Pro and Con Grid (p. 168), which lists advantages and disadvantages of any concept, helps students develop analytical and evaluative skills. The Defining Features Matrix (p. 164), which asks students to compare and contrast features of related items or concepts, is a structured analytical activity applicable in any discipline. All of these approaches can help students explicitly to enhance their thinking.

*What disciplinary skills do I want them to know?* Another way to approach the development of skills in a classroom is while planning the course to ask the question, What skills from my discipline do I want students in this course to acquire? A global response to this question might be, "I want my students to understand the scientific method [or issue analysis or decision making, and so on]." This response leads, however, to even more difficult questions: What are the component parts of this skill and how do I teach them explicitly? What skills are appropriate for this class, given the level of the course? Recognizing that the development of a skill is a repetitive process, we must ask, How many times and in what different contexts must students have the opportunity to practice this skill? How will I assess whether or not students have acquired the skill at an acceptable level of proficiency? In the limited time available in any given class period, what content am I willing to give up to develop this skill? These questions, at the heart of ability-based education, usually overwhelm newcomers to the concept of explicitly teaching skills. Many instructors simply do not know where to begin.

The answer to this dilemma is to start small, working with a few carefully structured exercises that illustrate a skill that you consider crucial for students who are studying your discipline to possess. For instance, as a historian I decided that issue analysis was central to my discipline. I wanted my students to read an article or historical passage and be able to answer the following basic questions:

- What is the issue in this piece?
- What is the author's conclusion with regard to the issue?
- What are the main arguments provided by the author?
- What evidence is presented? Is the evidence credible?
- Are there ambiguous statements in the text?
- Do you agree with the author's conclusion? Why or why not?

It should be pointed out that I had never been taught this concept or process explicitly when I was a student at any level. (For an extended discussion of issue analysis, see Browne and Keeley, 1994.)

My first attempt at introducing these skills was a disaster. In an introductory class for first-year students, after lecturing briefly over some now-forgotten concept, I told the students we were going to answer some questions about the associated reading that had been assigned the previous class period. I then

**Exhibit 3.2. Guide for Framing Questions**

Knowledge: Identification and recall of information

Who, what, when, where, how \_\_\_\_\_ ?

Describe \_\_\_\_\_ .

Comprehension: Organization and selection of facts and ideas

Retell \_\_\_\_\_ in your own words.

Application: Use of facts, rules, and principles

How is \_\_\_\_\_ an example of \_\_\_\_\_ ?

How is \_\_\_\_\_ related to \_\_\_\_\_ ?

Why is \_\_\_\_\_ significant?

Analysis: Separation of a whole into component parts

What are the parts or features of \_\_\_\_\_ ?

Classify \_\_\_\_\_ according to \_\_\_\_\_ .

Outline/diagram \_\_\_\_\_ .

How does \_\_\_\_\_ compare/contrast with \_\_\_\_\_ ?

What evidence can you list for \_\_\_\_\_ ?

Synthesis: Combination of ideas to form a new whole

What would you predict/infer from \_\_\_\_\_ ?

What ideas can you add to \_\_\_\_\_ ?

How would you create/design a new \_\_\_\_\_ ?

What might happen if you combined \_\_\_\_\_ ?

What solutions would you suggest for \_\_\_\_\_ ?

Evaluation: Development of opinions, judgments, or decisions

Do you agree with/that \_\_\_\_\_ ?

What do you think about \_\_\_\_\_ ?

What is the most important \_\_\_\_\_ ?

Place the following in priority order: \_\_\_\_\_ .

How would you decide about \_\_\_\_\_ ?

What criteria would you use to assess \_\_\_\_\_ ?

Source: Adapted from McTighe, 1985.

gave the students oral instructions about the eight questions I wanted them to answer, and asked them to work individually on the task for ten minutes. A large class discussion, I confidently declared, would follow.

Those experienced with active learning can only smile at the naivete of both my process and my expectations; no doubt they could predict the confusion and frustration that erupted in the classroom, forcing me to abandon the exercise. In the years since, I have learned to ponder the following questions before introducing any new strategy in class. These questions apply to the introduction of any skill, not just issue analysis.

*Are my expectations realistic with regard to class level?* In this instance, I overwhelmed students with analytical tasks that were beyond their experience, and for some, beyond their cognitive abilities. After working on this skill at least once a week, however, by the end of the semester most students could confidently identify the issue, the author's conclusion, and most of the major arguments being presented. Some could consistently provide a more sophisticated and complete analysis involving evidence, ambiguity, and so on.

*How can I ensure that students are prepared for the exercise/discussion?* Ensuring student preparedness is a concern that faculty express again and again. The key is to create assignments that encourage student responsibility. These could include answering associated study questions, developing summaries, or solving problems that are turned in at the beginning of class. Although more draconian and time-consuming, announced quizzes lead to more careful preparation. (In my experience, pop quizzes rarely work because overly optimistic students readily assume that you will not give a quiz that day.) Finally, particularly if the material is complex, you could reproduce a key or representative section of the assignment on which to base student analysis and discussion.

*How will I introduce the skill?* Students must see how the skill should be performed. Usually this is a two-step process: first, the instructor models the skill so that students can see how an expert uses it; second, students attempt the skill in class, getting as much feedback as possible during their initial attempts. This method is strengthened if you can state criteria for what constitutes a good answer or if you are able to provide examples of other students (both good and bad, preferably from students not in the class).

*How will I structure the exercise/problem?* The issue analysis exercise described earlier was ineffectively structured. First, the instructions should have been written out and handed to students to facilitate understanding. Moreover, since it was the first time that students had encountered this skill, asking them to work in pairs would have been more productive than asking them to work individually. Together they would have generated better responses to the questions, and the resulting class discussion would have been more lively since they would have had collective responsibility for the answers given.

*Are my expectations realistic with regard to time?* As a rule of thumb, expect to use more time than you planned for the first run of an exercise: things won't go as expected, and you will have planned too much. In the issue analysis exercise, I presented students with far too many questions to respond to in the time

allotted. Because it was the first time the class had been asked to engage in issue analysis, a more realistic expectation would have been to ask students to focus on one or two of the analytical questions (for instance, What is the issue and what is the author's conclusion?), perhaps spending three to five minutes writing an answer to the question, then turning to a partner for an additional five minutes to clarify their responses. Finally, the class as a whole, with the instructor facilitating the discussion, could have spent five to ten minutes on the topic. As the semester progressed, less time would be needed to review specific skills as students developed proficiency.

*How will I assess that students have achieved proficiency in the skill?* The key to assessing skills is to do it frequently (relying more on formative than on summative assessment), to provide criteria that are as complete as possible, and to have congruence between the skills you teach and the way you structure major tests. When instructors exhort students to “think” but issue multiple choice tests focused primarily on factual knowledge, students quickly perceive the disparity and spend their study time accordingly.

*What do I want students to feel (attitudes)?* Although faculty often do not consider student attitudes as central to planning their course, in most disciplines they are important. Many health professionals, for instance, perceive as crucial the ability to be empathetic towards clients. Their courses may place heavy emphasis on such techniques as role play, which is designed to foster greater understanding of cultural differences in their patients. Even if we do not see an immediate professional need, most of us would like students to appreciate our disciplines, to understand that they can be exciting, enjoyable, perhaps even fun. Too often in our drive to cover “the material,” however, we forget to allow students opportunities to experience the joy of using our disciplinary techniques to gain an understanding of themselves and their environment. Two examples of instructors who address student attitudes will suffice. A cultural historian at a small liberal arts college integrates the lyrics of popular songs of a particular period with slides of events representative of the same period to evoke a visceral understanding of history. Similarly, a distinguished professor of chemistry at a major research institution enters the classroom wearing an outdated polyester coat. Casually he demonstrates the near indestructibility of the material (such as briskly rubbing the coat with a wire brush) while discussing the chemical composition of polymers. It is no accident that these two individuals have reputations at their institutions as outstanding teachers. Without sacrificing intellectual rigor, they work at making their subject matter come alive for students.

## Creating the Enhanced Lecture

Before we can structure our enhanced lecture, we need to make a series of contextual and logistical decisions.

*What are the physical limitations of the room?* Fixed chairs or long rows of tables are just two of the many constraints that unknowing architects have

placed on the use of active learning in many classrooms. The more that movement is restricted, the less ambitious can be our efforts. No matter what constraints exist, however, we can always use individual activities and work students in pairs.

*How large is the class?* Class size also determines what activities we can use in the classroom. In a large class not only do physical constraints hamper active learning, but the sheer numbers of students will limit our efforts as well. For instance, just getting students to break into appropriate groups can be daunting in a large class, although at least one professor overcame this problem by color-coding lecture hall seats. Also, we cannot hear from everyone even if we are working in groups; reports from representative groups can speed up the process. Finally, just the mechanics of handing out prompts for discussion (surveys, problems, and so on) or retrieving responses is a challenge in a large class. We must find ways to overcome these obstacles by using well-defined groups, streamlining reporting procedures, developing prompts on overheads, and so on.

*How will my teaching style influence my choice of strategies?* Each of us needs to reflect on those personal characteristics that affect our classroom teaching style so that we choose appropriate strategies. Some instructors, concerned about “losing control” of a discussion’s direction or fearing that they cannot answer tangential questions, need structured, focused activities. Others, uncomfortable with the noise accompanying highly animated discussions, may need to rely on more-sedate activities such as formative quizzes or writing exercises. Still others find that the systematic planning that goes into a formal cooperative learning course does not fit their needs for flexibility and spontaneity. To be effective, therefore, we must select strategies congruent with who we are.

*Where are we in the semester? (How familiar are my students with the material and the tactics?)* Finally, we must consider the temporal issue of where in the semester we are. Early in the semester large group discussions are less effective than pairs because students hesitate to voice opinions in front of strangers. Similarly, if students are still learning basic concepts and associated vocabulary, they may resist engaging in a meaningful role play or analyzing a case study with any degree of sophistication. Our decisions on strategies, therefore, are always contextual.

For purposes of discussion, let’s assume that we are teaching an introductory American history class to 150 first-year students. In the fifth week of the semester, our active learning based script for a presentation on the causes of the American revolution might be as follows (numbers represent allotted minutes):

- [7] Formative quiz and discussion about key study terms to determine student understanding of the basic material [overhead transparency in large type].
- [15] Mini-lecture on the political causes of the Revolution, with an emphasis on Locke’s compact theory of government.

- [10] Small-group discussion (two to three students each) analyzing the introduction to the Declaration of Independence, finding specific examples of the compact theory [overhead transparency prompt].
- [8] Large-group discussion for explication and clarification.
- [7] Mini-lecture on the influence of the compact theory on contemporary political thought.
- [3] One-minute write: What questions do you still have about the compact theory? Leave your responses in the box at the back of the room.

The most difficult part of implementing a new script is getting the timing right. Experience dictates that one-minute writes take two to five minutes, Think-Pair-Share needs ten minutes or more for complex tasks, and large group discussions provide the greatest time flexibility because instructors control the interaction. In addition, most of us plan too much in any given time frame. So, if the timing is thrown off because students do not understand a concept or because a topic generates significant discussion that you want to continue, substitute a less complex strategy somewhere further along. For instance, in the active learning based script presented earlier, if the initial discussion went longer than intended (fifteen rather than seven minutes), the analysis of the Declaration of Independence could become totally a large-group discussion shorter in length. Finally, if the events planned do not create the experience envisioned, an instructor can always fall back on Plan B, which for most of us is to lecture. With practice, the ability to modify activities as the class progresses simply becomes routine.

For those who are starting to use active learning in their classrooms, the enhanced lecture provides maximum flexibility. It can be fashioned to meet a wide variety of course objectives in any discipline, even under the most trying of circumstances. Moreover, given the number of options available to us, the enhanced lecture can also meet the personal needs of most instructors, regardless of their teaching style. The key to its success is to think carefully about what you want to accomplish, to reflect on the context of your classroom, and then to plan structured activities that meet your goals.

### **For More Information**

For a summary of the research on active learning, see Bonwell and Eison (1991, pp. 8–10). If you would like to review other research pertaining to lectures, consider the following: although published more than twenty years ago, perhaps the most complete work is Bligh (1974), which details research on the acquisition of information and the effectiveness of specific lecture techniques. A more recent work by Penner (1984) has an extensive section on classroom presentation. In an excellent article that demonstrates the scholarship of teaching at its best, Chilcoat (1989) offers specific recommendations to improve clarity based on the findings of 104 studies. There are also a number of articles or chapters in journals and books devoted to teaching. For example, see periodic articles in *College Teaching* or books by Brookfield (1995), Davis (1993), and others.

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