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How to Create Memorable Lectures

IN GENERAL, STUDENTS capture only 20–40 percent of a lecture's main ideas in their notes (Kiewra, 2002, p. 72). Without reviewing the lecture material, students remember less than 10 percent after three weeks (Bligh, 2000, p. 40). All instructors hope that their lectures will be the exception, but these numbers present a clear challenge: How can we guarantee that students learn and remember what we teach? How do we create and deliver lectures that stay with students long past the last few minutes of class? In this newsletter we take up this challenge, by considering how students attend to, make sense of, and absorb new information.

The Learning Process: From Attention to Comprehension to Integration Cognitive theories describe three phases of the learning process (see Schneider for an extensive discussion of theories). In the first phase, we decide what to attend to. We cannot notice everything that is going on in our environment, so we orient our attention selectively. In the classroom, we hope that students are attending to us, but many things compete for their attention. If we want students to learn, we need to capture their attention.

In the second step of learning, we organize what we observe into a coherent mental pattern or structure. In the classroom, students are constantly interpreting what you say, what they read on the blackboard, and what they see on slides. Students must decide how to organize this information in their own minds (and notes). The more you can provide students with a framework for interpreting lecture material, the easier it is for them to understand new ideas.

These first two phases of learning create a short-term memory for new information. To fully "own" new information in long-term memory, we need to rehearse the new information and connect it to existing frameworks of knowledge. This gives new information meaning beyond the particular learning occasion, and makes it easier to retrieve. This final phase of learning begins in the classroom, with review and application, and continues out of the classroom through well-crafted assignments.

How can you use this information in your lecture? James R. Davis describes a simple approach to maximizing the first two stages of learning: "Get the students' attention…tell the students what to pay attention to ... and don't overload the system" (p. 141). These three strategies address the initial learning environment—the classroom—and can help a lecturer communicate material effectively. To these basic strategies, we add one more strategy that takes into account the final stage of learning: Give students the opportunity to review and apply lecture material, both in class and between classes. This strategy guarantees that students will fully integrate the material and make the knowledge their own—and that is what makes a lecture truly memorable.

Get Students' Attention

Every lecturer hopes that the pure beauty and intrigue of ideas and information will captivate students. Before students engage with ideas, however, they must first be engaged by the instructor. Therefore, like any public speaker, the lecturer's first task is to capture the audience's attention. A lecturer must connect with students and draw them into the lecture.

This rapport can be accomplished in a variety of ways, from attention-grabbing gimmicks to highly thoughtful approaches. Most instructors are wary of gimmicks; a common concern is that any attempt to appeal to students' interests will lower the intellectual quality of a lecture. However, engaging students needn't be at the expense of high academic standards. As a lecturer, you don't need to be a performer or an entertainer; you simply need to keep your audience in mind, and find the most direct way to interest students in your material.

One of the most basic and direct ways to attract and keep students' interest is instructor expressiveness—the use of vocal variation, facial expression, movement, and gesture. This tactic can be applied to any lecture content, from Shakespeare to statistics. Students are more likely to pay attention to instructors who exhibit expressive behaviors, because expressive instructors are more interesting to attend to and easier to understand. For this reason, expressiveness enhances communication and facilitates student comprehension. Students also tend to interpret an instructor's expressiveness as enthusiasm for the subject, and enthusiasm in the classroom is contagious. Expressive behaviors intrigue students, and encourage them to actively consider the lecture material. For these reasons, expressive behaviors lead to higher levels of student achievement and satisfaction (R. P. Perry, 1985, quoted in Murray, p. 192).

The famous "Dr. Fox" experiments, first conducted by Ware and Williams in the mid-seventies, illustrate the effects of instructor expressiveness (see Murray, 1997). The experiments used six videotaped lectures,

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all given by a professional actor assuming the persona of "Dr. Fox." The topic of each lecture was biochemistry, but the amount of information in each lecture varied (low, medium, or high). In addition, lectures were presented with either a low or high level of seductiveness." "High seductiveness" was defined in terms of expressive behavior: the use of movement, gesture, vocal emphasis, humor, and charisma. "Low seductiveness" was characterized by a flat, matter-of-fact style.

Students who watched the highly expressive lectures performed better on a multiple-choice recall test than students who watched the less expressive lectures. This suggests that expressiveness enhances students' memory for the lecture content. Students who watched the highly expressive lectures also gave higher ratings to the instructor, independent of the level of information provided in the lectures. The authors coined this last finding the "Dr. Fox Effect." Students may give high ratings to teachers who convey almost no content, but present their lectures enthusiastically. Lectures can be enjoyable but still fail to meet important teaching goals.

However, as Murray argues, there is no reason to believe that expressive behaviors "are in any way incompatible with more traditional criteria of effective teaching, such as content coverage and high academic standards" (p. 196). To avoid the Dr. Fox Effect, keep in mind that expressiveness is more about communication than entertainment. The key teaching goals of each lecture are still to increase students' knowledge and skills, not to entertain students. Expressiveness is simply a tool for engaging students with the material, not an end to itself. A good litmus test for whether expressiveness is effective, rather than merely entertaining, is whether it invites students to be active, rather than passive learners. It is important to ask yourself: Once you have students' attention, what are you doing with it?

Expressiveness can be learned, through training and practice. The Center for Teaching and Learning provides a number of resources for instructors looking to develop expressive skills (including class videotaping and oral communication training). Expressiveness can also be enhanced by the instructor's own engagement with the material. Even though the material is familiar to you, you can rediscover its importance and appeal each time you share it with new students.

When we think back to those teachers who captivated our attention during a lecture, they undoubtedly used different strategies suited to their individual temperaments, styles, and disciplines. Some may have been more typically charismatic, and others less showy but deeply passionate about ideas. Some may have owned the lecture hall physically, acting out their lectures, while others may have kept us riveted with their ability to tell a good story. What they probably all shared, however, was presence. Not stage presence, but presence in the sense of being truly present: physically, emotionally, and intellectually. The expressiveness that follows from full presence is a natural attention-grabber—no gimmicks needed.

Direct Students' Attention

But even when students pay attention, they may fail to attend to the most important material in a lecture. Think of how much new content you share with students in just one lecture. Students need to absorb, record, and understand the steady flow of auditory and visual information. To do so, students must listen, view, think, and write, all at once. The juggling of these activities might explain why students' notes capture only 20–40 percent of a lecture's content. Because the content is new to students, it can be difficult for them to identify which ideas are critical and which are peripheral. How can we help students attend to the most important information, so that they understand and remember the key points of each lecture?

The solution is to provide students with a framework for each lecture, so that they can direct their attention to the most important information. One way to do this is to prepare a study guide for your course that describes each lecture's objectives, key concepts, and questions to consider (Schneider, p. 57). A handout with the lecture's major points will prepare students to listen and look for the central elements of the lecture. Skeletal lecture handouts, with room for students' notes, can also help students organize what they hear and see, and may be more effective than providing students with your full lecture notes (Kiewra, 2002, p. 72).As you prepare your lecture outlines, aim for three to five main points in each lecture, with clear links between each lecture topic and your main points.

You can also ask students to answer conceptual questions as they take notes during lecture. Each part of a lecture can be preceded by a high-level question that the upcoming information can answer. This encourages students to interpret and organize lecture content according to an important and useful conceptual framework. In one study, students who took notes trying to answer conceptual questions performed better on a recall test than students who took traditional notes that simply recorded information (Rickards & McCormick, 1988).

During lecture, be as explicit as possible about what students should focus on. Clearly introduce key concepts and definitions. Identify important themes as a way for students to sort through the content of the lecture. Use verbal and visual cues to highlight major points, categories, and steps of an argument. You can also direct students' attention to the most important points by asking them to review or explain those points during class. All of these strategies will help create a framework for students, so that they can quickly and accurately identify and understand the core ideas in your lecture.

Don't Overload the System

Once we have students' attention, we need to consider how quickly students can process information. Short-term memory requires time to process the sensory input we receive; students are not sponges and cannot immediately "absorb" new information. Give students short breaks throughout lecture to review their notes and ask questions. A short break that includes students' questions can also give the lecturer an opportunity to assess student understanding and adjust the remaining part of the lecture if needed. You can also include a more formal activity or assignment after every 15–20 minutes of presentation. For example, ask students to summarize or paraphrase the last few important points, either in their notes or with the person sitting nearest them. You can then review the points and move on to the next phase in the lecture. Giving students and yourself a break has another advantage. The audience's attention in a lecture drops dramatically after ten minutes of listening (Bligh, 2000, p. 53). Students can remember most of the first ten minutes, but very little from the middle part of the lecture. A short break will revitalize the audience's attention, and students will be much more likely to remember information from throughout the lecture.

A final consideration involves how lecturers present information. Lecturers are often encouraged to use a wide range of presentation materials, including audio, video, and written materials. While this can attract students' attention, it can also overload students' attention. Cognitive overload occurs when different forms of processing interfere with each other (Mayer & Moreno, 2003, p. 45). A common example is when students are presented with an illustration that also includes a written explanation. Students may be unable to process the information quickly, because looking at the illustration and

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reading the text both place demands on the same sensory channel (vision). Mayer found that replacing the written explanation with an auditory narrative, which uses another sensory channel, is more effective. Another common way to overload attention is to give students two conflicting things to attend to at the same time (say, a transparency on the overhead and a verbal narrative that does not directly relate to the overhead). Students must figure out which sensory channel provides the essential information, and they may not always guess correctly. You can avoid cognitive overload by maintaining a reasonable pace in your presentation and by carefully coordinating your verbal instruction with any other media.

Give Students Opportunities to Review and Apply

Information becomes solidified in longterm memory when we have opportunities to retrieve, review, and reflect on that information. As an instructor, you have two main opportunities to make sure this happens: 1) Give students time, during lecture, to review and apply ideas. 2) Give students assignments that encourage them to review their lecture notes and use the lecture content. Previously, we described how short breaks during a lecture can give students the opportunity to make sure they have correctly identified and recorded important information. To go beyond this simple fact-checking, give students time in lecture to solve a problem or discuss an idea.You can post the problem or discussion question on a slide at the beginning of the lecture, so that students attend to the lecture with the anticipation of applying the information. You can have students tackle the problem or issue in pairs at the end of the lecture, or work alone and then vote on a solution or position. You can also create a think-tank situation by inviting volunteers to talk through their thought processes as they try to solve the problem or respond to a question. The full class can then discuss both the process and outcome of the thought experiment.

Of course, your students' learning process does not end in the lecture hall. You provide a strong foundation for learning during class, but students typically are overwhelmed by other demands on their time and thoughts. Students rush from one class to the next, and spend time in extracurricular activities, athletics, jobs, and socializing. By the end of the day, any information that is not reviewed may not be accurately remembered.

We can increase students' learning by offering them the opportunity to review each lecture in a meaningful and timely way. It is not enough to hope that students will review their notes; create assignments that encourage or require it. For example, ask students to create a matrix, flow chart, table, or concept map based on the information presented in lecture (Titsworth & Kiewra, 2004, p. 450). Give students a problem that can only be solved using lecture material. Have students prepare a debate, a student panel, or a position paper on a subject related to lecture content (Frederick, 2002, p. 60). If an online discussion forum is part of the course, ask students to respond to questions related to the most recent lecture. By reviewing, interpreting, and applying lecture material, students are more likely to build lasting memories and develop higher-level thinking skills.

Students are also more likely to remember information that relates to ideas or experiences they are already familiar with. You can capitalize on this phenomenon by using examples from student life, current events, or popular culture. You can also ask students to generate their own examples from personal experience in class or as a written assignment. Whenever possible, tell students how new information relates to previous lectures in your course. Show students how specific skills can be applied to real-world problems. Create class activities or assignments that ask students to fit new information into the overall themes of the course. For example, have students compare two ideas, synthesize competing perspectives, or discuss the evolution of one theory to another. All of these techniques will make it more likely that students will remember the information from lecture, because students will integrate the material into already existing knowledge structures and experiences.

Teaching Strategies for Memorable Lectures

We have reviewed several teaching strategies that take into consideration how students learn new information in a lecture setting. We encourage you to apply these strategies to your own teaching, and find out what works best for your lecture content and personal teaching style. We also love to hear about innovative and effective lecturing strategies on campus. Please share your success stories if you have a found a particularly helpful way to keep student's attention, increase student understanding, or improve student performance. You can contact Shelley Grund at sgrund@lander.edu.

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