

Postdoc Academic Chat #4

DESIGNING AND DELIVERING EFFECTIVE LECTURES

Friday, January 18, 2013

Questions to Consider

1. What tips from reading #1 are you most likely to want to employ first in your lectures?
2. With reference to reading #2, what ways can you use to avoid overloading students during lectures?
3. In what situations do you think the use of guided notes as discussed in reading #3 make the most sense?

Readings

Note: This set of readings is somewhat longer than usual but hopefully it will provide some useful reference material for later use.

1. Designing and Delivering Effective Lectures
2. How to Create Memorable Lectures
3. Guided Notes - Improving the Effectiveness of Your Lectures

1. Designing and Delivering Effective Lectures

The posting below, a bit longer than most, gives twelve excellent tips on how to improve your lectures. It is by Jason N. Adsit at the State University of New York, Buffalo and is #57 in a series of selected excerpts from The National Teaching and Learning Forum newsletter reproduced here as part of our "Shared Mission Partnership." NT&LF has a

wealth of information on all aspects of teaching and learning. If you are not already a subscriber, you can check it out at [<http://www.ntlf.com/>] The on-line edition of the Forum--like the printed version - offers subscribers insight from colleagues eager to share new ways of helping students reach the highest levels of learning. National Teaching and Learning Forum Newsletter, Vol. 20, Number 5, September 2011.© Copyright 1996-2011. Published by James Rhem & Associates, Inc. All rights reserved worldwide. Reprinted with permission.

Regards,

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Tomorrow\'s Teaching and Learning

----- 3,165 words -----

Designing and Delivering Effective Lectures

"College is a place where the professor\'s lecture notes go straight to the students\' lecture notes, without passing through the brains of either." - Mark Twain

"Some people talk in their sleep. Lecturers talk while other people sleep." - Albert Camus

Lectures are often derided as ineffective, outmoded, and anathema to what we know about cognition, engagement, and student learning. As Woodring and Woodring (2001) note, "it has become trendy to 'lecture bash,' to describe colleagues who openly espouse the use of lecture techniques as old fashioned and out of step with educational trends" (109). In educational theory, the research literature is bursting with suggestions on how to "move beyond the lecture" by employing methods that are more active, cooperative, and learner-centered (Bonwell and Eison 1991; Brockbank and McGill 2007; Felder and Brent 2009; Lambert and McCombs 1998).

In spite of all the criticism, the lecture method remains the most common instructional model in higher education (Bligh 2000; Charlton 2006; Exley and Dennick 2004). Moreover, the lecture method has been shown to be particularly effective for:

- Setting the context of a topic or field for novice learners.
- Disseminating a common set of material to a broad audience.

Providing a synthesis of information from various sources.

- Clarifying complex information.
- Transmitting conceptual and systematic knowledge.
- Offering students a model of professional practice, i.e., the lecturer and his/her approach to the subject.

The key-or better yet, the key challenge-is to design lectures that are informative, engaging, and participatory. In what follows, we will offer some tips and suggestions for achieving this goal.

Tip #1: Plan Your Lectures

Knowing something and knowing how to explain something are different things. A good lecture is the result of planning, preparation, and hard work, and it is essential that you invest the necessary time and energy into identifying resources, organizing the material, developing examples, and preparing supporting documents for your students. When planning for a lecture, it is important to consider not only the selection and arrangement of content, but also the strategies that can be used to communicate, connect, and reach out to your audience.

Tip #2: Avoid the Tyranny of Content

While it is essential that you take the necessary time and energy to prepare a lecture, it is equally important not to over-prepare. In the case of new faculty, or faculty who are teaching a subject for the first time, there is a tendency to cover too much material, and account for every possible facet of a topic.

The quest for completeness, however, can have the following effect: the classroom session becomes a competition or race, that is, a race to see how much content you can cover in the allotted time. It is, in short, a race between you, the clock, and the content you intend to cover, which can result in the following bad habits:

- Talking faster, making it harder for your audience to keep up.
- Covering material in less detail, focusing only on the surface-level information.
- Limiting opportunities for questions or discussion, because questions and discussions are seen as a distraction or hindrance to your goal.

Regardless of the topic, you should restrict yourself to a few key points, ideally, three to four main ideas. By presenting a manageable amount of information, you provide your students with more-and better-opportunities for processing and assimilating the material, connecting it to what they already know, and situating it within the larger framework of the discipline (Lowman 1998).

Tip #3: Know Your Audience

In the vast majority of our courses, the material we cover is already so familiar to us that it seems "straightforward" or "common sense" or "elementary," but for our audience, it can seem daunting, opaque, and horrifically complex. When designing a lecture, always try to think through the material from the standpoint of the audience, and remember what it was like to learn this information for the first time.

In addition, it might be helpful to gather some information from your audience about

their backgrounds, e.g., their major areas of study, degree/program level, previous coursework, etc., to help you find an appropriate starting point for discussion. For longer term courses, you may even want to conduct a learning styles inventory to find out more about your students' study habits and preferences, which can help you better "map" or "align" the course content. (See the "References" section for more information on how to access Web-based tools for assessing your students' learning styles.)

Tip #4: Create a Complete Lecture

A good lecture, like a good research paper, has three key components: an introduction, a body, and a conclusion. While this sounds simple, it is often stunning to see how many lectures are missing one or more of these elements, and how often "lack of organization" is cited by students as the key feature of an unsuccessful lecture or course.

It is critical that you make the structure and organization of your lecture explicit to the audience. In other words, you should strive to abide by the simple-yet often overlooked-adage: Tell them what you are going to say, say it, and then tell them what you said.

The introduction should include:

- An attention-grabber—a statement of the problem, topic, or subject that draws people in. Stories, analogies, issues drawn from current events, provocative quotes, videos, pictures, and graphics can all serve as attention-grabbers. When selecting an attention-grabber, always strive to create relevance, and answer the question, "Why are we talking about this topic?"
- A statement of the context that connects this lecture to material covered in earlier sessions.
- An overview of the lecture itself, with an outline of what you are going to discuss. As Davis (1993) notes, "Outlines help students focus on the progression of the material and also help them take better notes."
- A statement of the intended goals or outcomes of the lecture—a definition of what you want the audience to know or be able to do as a result.

Some lecturers also like to provide the audience with a list of key terms, topics, or acronyms that will be included in the presentation. The key terms can be posted on the board, included in a handout, or provided in advance via email or an online course-management system.

The body should include:

- The core content of your discussion, including key concepts, principles, techniques, approaches, issues, etc.
- The key instructional activities—small-group discussion, review of datasets or problem sets.
- Opportunities for the audience to engage, review, and apply the material (See Tip #6 below for more information.)

- Formative assessments, that is, tools or techniques that let you know that the audience understands the material. These can range from highly informal and indirect approaches (e.g., looking at the faces of your students to see if they are following along), to more direct approaches such as question and answer sessions, having students solve problems in small groups or individually for the class, quizzes, or short-answer activities (where questions are posted electronically or on the board).

The conclusion should include:

- A summary of the material you covered in the lecture.
- A statement that sets the foundation for future class sessions by connecting the material you covered in the lecture to the larger aims of the course.
- Suggestions on how best to follow-up on the lecture, including additional readings, assignments, problem-sets, etc.
- Opportunities for the students to summarize material from the lecture and pose questions about topics that are still not fully understood. (One effective practice is to have the students write down one or two key points from the lecture and one or two questions that they still have about the material, and hand these into the professor before they leave class. This provides the professor with a "snapshot" of what the students learned-or didn't learn-that can be used to set the foundation for future lectures and course material.)

Tip #5: Develop Lecture Notes

While the most effective lectures are conversational in tone, you still need to stay "on point" and not stray from the lecture's core topics. Developing lecture notes can help you organize your thoughts in advance of a presentation and provide you with a script or roadmap to follow during the lecture. Lecture notes can also help you manage your time, and manage transitions from one topic to the next.

Developing lecture notes also provides you with a practical advantage. More likely than not, you will be teaching the course (or topic) again in the future, and a strong set of lecture notes can set a solid foundation for future lectures and make the preparation for future talks more efficient.

Tip #6: Audience Engagement and Interactivity

The audience's attention span tends to wane as a lecture moves on; for most people, attention tends to decrease considerably after 15-20 minutes (Bligh 2000). Therefore, when you design a lecture it is important to create formal breaks to help people stay better engaged with the material. "Activity breaks," as they are often called, do not simply break up the monotony of a lecture; when done effectively, they provide participants with formal opportunities to process, review, and apply the material.

Some common practices include:

- Asking a question or posing a problem to be discussed individually or in small groups.

- Having students tackle a topic or issue in pairs or small groups, and then having them "report back" to the whole class (often referred to as the think-pair-share model).
- Reviewing a film clip or multimedia clip that pertains to the material.
- Working through a case study that is drawn from professional practice.

Tip #7: Create Visual Backups and Supports

Audiovisual aids augment your presentation-and can help facilitate learning by providing the audience with additional supports, cues, and examples of what is being discussed. The key with any audiovisual aid-drawings, graphics, videos, PowerPoint slides, clips, or even writing on the chalkboard-is to keep it simple, clear, relevant, and uncluttered.

Some suggestions:

- Less is best. Use audiovisual aids to support, summarize, and highlight what you are saying, and resist the temptation to make the aids a verbatim transcript of the discussion.
- Don't distract the audience. Avoid using too many "bells and whistles," including unnecessarily dramatic transitions, moving graphics or text, or sounds.
- Focus on the key facts and only include two to three main points in any slide.

Tip #8: Quality Control

Take a few minutes before each lecture to conduct a "quality control check."

- Check the technology in the classroom, including the computer, overhead projector or visual display, and Internet connection.
- Review the order of your presentation materials and visual displays.
- Check your spelling on handouts, overheads, and PowerPoint slides.
- If you are using a series of hyperlinks or Websites, check to see if the links are correct and up to date.
- Always have a backup plan, and be prepared to deliver your lecture using alternative tools, techniques, and supports.

Tip #9: Enthusiasm

Many faculty members like to describe their teaching style in the following way: "I teach content." That is, they characterize their role in the classroom almost exclusively in terms of information dissemination, where it is their job to present the material, and the students' job is to learn it. While this is certainly one of the key features of our work in the classroom, how the material is presented plays an important role in how it is received and understood.

Expressing enthusiasm for a topic, and for one's field in general, can have a positive impact on student engagement with the material. Alternatively, if you appear bored with a topic or with the questions that arise concerning the topic your audience will quickly lose interest. As Bligh (2000) notes, the best way to generate interest in a subject "is to

display interest oneself," and the only thing more contagious than enthusiasm "is the lack of it."

Suggesting that you should show enthusiasm for a topic or field should not be misconstrued as a call for diminishing the topic's seriousness or importance. In other words, enthusiasm should not be understood as "wackiness" or "silliness" or unnecessary "frivolity." Rather, it should be understood as a call for demonstrating the relevance and significance of the material and for answering the question, "Why are we talking about this?"

The following phrase occurs again and again in the literature on presentations: Don't be boring. While it must be admitted that "boring" is largely in the eye of the beholder, there are some practical strategies that can be used to increase audience interest:

- Establish eye contact with your audience, and don't spend all your time reading directly from your notes.
- Get out from behind the lectern and move around the room.
- Use movement and gestures to emphasize points.
- Project your voice, and make sure the audience can hear you.
- Vary the pace and tone of your speech to add interest and "dramatic effect."

Use colorful anecdotes, examples, and analogies.

Tip #10: Ask Questions

Asking provocative or open-ended questions is a helpful way to engage the audience and gather feedback on student learning. But it is important to ask questions that are conversation starters and not conversation stoppers.

Some typical conversation stoppers:

- "Are there any questions?" is probably the least provocative question you can ask your audience. Students have been conditioned through years of schooling to recognize this question as a specific type of marker or signal, i.e., as a signal that you are finished, or ready to move on to another topic. In some cases, the students will not answer this question because they, too, would like to move on, while in other cases, students will be reluctant to pose a question because they do not want to "bother" you (since you have indicated that you are ready to move on) or "bother" their classmates (by "interrupting" their instructional time).
- Questions that are too vague or general and lack (or are perceived to lack) a direct connection to what is being discussed.
- Questions that are too detailed or complex and require the students to piece together the notes they have just taken.

Some techniques for developing conversation starters:

- Asking the audience to answer a multiple choice question or to select the best response from a range of possible options.
- Asking the audience to complete a sentence or "fill in the blank" ..
- Asking the audience to apply the new concepts to a case, problem, or example.
- Asking the audience to rephrase a concept or idea in different terms.
- Making the question "Are there any questions?" into something more specific and meaningful, such as, "Are there any questions about how X (theory, concept, idea, argument) relates to Y?" or "Are there any questions about how this approach might differ from other approaches of techniques discussed in class?" or "Are there any aspects of this theory (or approach, or concept) that remain unclear?"

Tip #11: Answer Questions

Questions are a vital part of any lecture or presentation and provide opportunities for the whole audience to clarify, consolidate, and enhance their understanding of the material. It is important to treat the question and answer session as a formal part of the presentation that requires as much careful planning and control as the delivery of the core material.

Here are some suggestions that will help you be more effective at answering questions:

- Be patient and mindful of the fact that people in the audience are encountering the material for the first time. They are, in essence, still "processing" the material and their questions will often reflect this fact.
- Listen to the entire question and make sure you are clear what the question is about before you offer a response.
- Clarify, and ask for additional information or background if you are unclear about the question.

Repeat the question for the whole audience.

- Answer the question you were asked, not the question you wish you were asked.
- Answer the question you were asked, and then stop. Adding too much supplementary information, or worse yet, rambling, can confuse the audience.
- Strive to involve the rest of the audience, in the framing of the question itself (e.g., "How many other people here were wondering the same thing?") or in the response (e.g., "Does anyone else have a suggestion or insight that might help us clarify this problem?").
- Learn to admit that you don't know the answer to every question. Not knowing the answer to every question isn't a sign of weakness. Instead, it is a sign of being human, and actually has a lot of instructional value. For example, it can be used to help further discussion and engage your audience (e.g., "I'm not really sure, but that is certainly an interesting question. Would anyone else in the audience happen to have any thoughts on this?") or to create a mini-research project for your students (e.g., "I'm not really sure, but that is certainly an interesting question. Perhaps you and your neighbors would like to look into this topic and report back to the rest of the class next week").
- When you are confronted with a question that is considerably off-topic, or one that will take the discussion too far afield, simply inform the student that an appropriate answer to the question might be better handled outside of class (after the class session is concluded,

during office hours, via email, etc.).

One final item: Many instructional manuals recommend that you avoid answering a question with a question. While this can be troublesome if used too often, my experience has shown that answering a question with a question, particularly one that is posed to the entire audience for consideration, is an excellent way to help generate discussion.

Tip #12: Reflection

There is always room for improvement, and it is important to make reflection a formal part of your instructional routine. It is often helpful to jot down a few ideas while the lecture is still fresh in your memory and ask yourself: What could I have done to make this discussion more engaging, or meaningful, or clear? Student feedback (based on formative assessments, questions asked in class, or student evaluations) and feedback from your colleagues can also serve as a key source for ideas on improving your lectures, and can help you identify any areas in the lecture where there might still be gaps or shortcomings. Finally, you may want to videotape or audiotape your lecture review and evaluate your performance.

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2. How to Create Memorable Lectures

The posting below looks at, well actually the title speaks for itself. It is from the newsletter, Speaking of Teaching, produced by the Center for Teaching and Learning (CTL), Stanford University -, <http://ctl.stanford.edu/Newsletter/> Winter 2005, Vol. 14, No.1. Speaking of Teaching is compiled and edited by CTL Associate Director Mariatte Denman at [mdenman@stanford.edu.] Reprinted with permission.

Regards,

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Tomorrow's Teaching and Learning

----- 2,958 words -----

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, 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 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 long-term 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 found a particularly helpful way to keep student's attention, increase student understanding, or improve student performance. You can contact Mariatte Denman at mdenman@stanford.edu.

Quick and Easy Ideas for Better Lectures

Provide students with a framework for each lecture

- o Aim for three to five main points in each lecture.
- o Begin the lecture with a high-level question that the upcoming information can answer.
- o Prepare a handout of the lecture's main points.

- o During lecture, be explicit about what students should focus on.

Don't overload students

- o Give students short breaks throughout lecture to review their notes and ask questions.
- o Include a formal activity or assignment after every 15-20 minutes of presentation.
- o Don't use too many different types of presentation materials at once.
- o Don't give students two conflicting things to attend to at the same time.

Students are also more likely to remember information that relates to ideas or experiences they are already familiar with.

- o Use examples from student life, current events, or popular culture.
- o Ask students to generate their own examples from personal experience.
- o Tell students how new information relates to previous lectures in your course.
- o Show students how specific skills can be applied to real-world problems.
- o Create activities and assignments that ask students to fit new information into the overall themes of the course.

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3. Guided Notes - Improving the Effectiveness of Your Lectures

The posting below looks at a very interesting approach to enhancing the effectiveness of student learning during lectures. It is by William L. Heward, professor of Special Education, School of Physical Activity and Educational Services, The Ohio State University. This publication is funded by the U.S. Department of Education under grant #P333A990046.

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IMPROVING THE EFFECTIVENESS OF YOUR LECTURES Developed by William L. Heward (heward.1@osu.edu). Reprinted with permission.

Regards,

Rick Reis
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Tomorrow's Teaching and Learning

----- 1,730 words -----

Guided Notes - Improving The Effectiveness Of Your Lectures

The Ohio State University Partnership Grant Improving the Quality of Education for Students with Disabilities Guided Notes

What Are Guided Notes?

Guided notes are instructor-prepared handouts that provide all students with background information and standard cues with specific spaces to write key facts, concepts, and/or relationships during the lecture. {See example on page 5}. Guided notes (GN) require students to actively respond during the lecture, improve the accuracy and efficiency of students' notetaking, and increase students' retention of course content. GN can help organize and enhance lecture content in any discipline or subject area. Instructors can develop GN for a single lecture, for one or more units within a course, or for an entire semester-long course. GN follow the principles of Universal Design for learning - they improve learning for all students.

Some Pros and Cons of the Lecture Method

Lecturing is one of the most widely used teaching methods in higher education. The format is simple and straight forward: the instructor talks (and illustrates, demonstrates,

etc.) and students are held responsible for obtaining, remembering, and using the most important content from the lecture at a later time - most often on a quiz or an exam.

Advantages of lecturing.

Although some educators consider the lecture method outdated and ineffective, it offers several advantages and reasons for its continued use (Barbetta & Scaruppa, 1995; Michael, 1994).

- * Lecturing is an efficient use of the instructor's time. A good lecture can be presented from one semester to the next, reducing subsequent planning and preparation time to review and update.
- * Lecturing is versatile. It can be used with large or small groups, for any curriculum area, and can last from a few minutes to several hours.
- * The instructor has complete control of course content. When lecturing, the instructor has complete control over the level of detail and degree of emphasis with which course content is covered.
- * Lecturing enables coverage of content not available in published form. For example, findings from just-completed or on-going research projects may be presented to students via lecture.
- * The lecture method can be used to supplement or elaborate course content. Content that is particularly important or difficult for students to learn directly through text-, web-, or field-based activities can be highlighted during the lecture.
- * The lecture method provides flexibility. The instructor can probe students' understanding and make on-the-spot adjustments to the lecture if warranted.
- * Lectures can be personalized. Instructors can customize lectures to meet students' interests and backgrounds.
- * Lectures can be motivating for students. Students can see and hear their instructor's level of enthusiasm for and commitment to the discipline.

Disadvantages of lecturing.

The lecture method also poses some significant challenges for students and instructors.

- * Course content is often presented via lecture in unorganized and uneven fashion. This makes it difficult for students to determine the most important aspects of the lecture (i.e., What's going to be on the exam?).
- * Students can be passive observers. The typical lecture does not require students to

actively participate. One of the most consistent and important educational research findings is that students who make frequent, relevant responses during a lesson learn more than students who are passive observers. (Brophy & Good, 1986; Fisher & Berliner, 1985; Greenwood, Delquadri, & Hall, 1984).

* Many college students do not know how to take effective notes. Although various strategies and formats for effective notetaking have been identified (e.g., Sasaki, Swicegood, & Carter, 1983), notetaking is seldom taught to students.

* The listening, language, and/or motor skill deficits of some students with disabilities make it difficult for them to identify important lecture content and write it down correctly and quickly enough during a lecture. While writing one concept in his notebook, the student with learning disabilities might miss the next two points (Hughes & Suritsky, 1994).

* Instructors sometimes get off-track from the primary objectives of the lecture. Professors - especially those who really know and love their disciplines - are famous (infamous!) for going off on tangents during lecture. Although anecdotes are interesting and provide enriching context, they can make it difficult for even the most skilled notetakers to determine the most important content.

Why Use Guided Notes?

* Students produce complete and accurate lecture notes. Students who take accurate notes and study them later consistently receive higher test scores than students who only listen to the lecture and read the text (Baker & Lombardi, 1985; Carrier, 1983; Kierwa, 1987; Norton & Hartley, 1986). Inaccurate and incomplete lecture notes are of limited value for subsequent study. GN help level the playing field between students with and without good notetaking skills.

* GN increase students' active engagement with course content. To complete their GN, students must actively respond to the lecture's content by listening, looking, thinking, and writing.

Guided notes take advantage of one of the most consistent and important findings in recent educational research: students who make frequent, lesson-relevant responses learn more than students who are passive observers.

* Students can more easily identify the most important information. Because GN cue the location and number of key concepts, facts, and/or relationships, students are better able to determine if they are getting the most important content.

"Guided notes are wonderful, especially during a lecture. They clue you in on what is important." - College student with learning disabilities.

* Students are more likely to ask the instructor questions. Austin, Gilbert, Thibeault,

Carr, and Bailey (in press) found that students in an introductory psychology course asked more questions and made more comments during lectures when GN were used than they did during lectures when taking their own notes.

* Students earn higher quiz and exam scores with GN. Experimental studies have consistently found that students across all achievement levels those with and without disabilities - earn higher test scores when using guided notes than they earn when taking their own notes (Austin et al., in press; Heward, 1994; Lazarus, 1993)

* GN can serve as an advance organizer for students. Some students have indicated that they benefit from reviewing the lecture topics prior to attending class.

* Instructors must prepare the lecture carefully. Constructing GN requires instructors to examine the sequence and organization of lecture content.

* Instructors are more likely to stay on-task with the lecture's content and sequence. Because GN let students know what's supposed to come next, instructors are less likely to stray from the planned content. And if and when an instructor does wander, students know that the information is, at most, supporting context or enrichment, and not critical course content for which they will be held responsible.

* GN help instructors prioritize and limit lecture content. Many instructors pack too much information into their lectures. While this tendency is understandable - instructors want their students to learn as much as possible - when it comes to how much new lecture content students can learn and retain, less can be more (Nelson, 2001; Russell, Hendricson, & Herbert, 1984). Constructing GN requires decisions about what is most important for students to learn.

* GN content can be easily converted into test/exam questions.

* Students like GN and appreciate instructors who prepare them. Students appreciate and give positive evaluation ratings to instructors who develop and provide GN.

" Last semester I developed guided notes for my two lecture-based courses, and the feedback I received from students was very positive. Several of my colleagues told me students in their classes asked if they would start using guided notes, too." - Faculty member in psychology department.

Two FAQs About Guided Notes

Q: Isn't providing students - especially college students - with guided notes making it too easy for them? Are we just "spoon-feeding" them the information?

A: To complete their guided notes students must actively respond - by looking, listening, thinking, and writing about critical content - throughout the lecture. We make it too easy for students when we teach in ways that let them sit passively during class.

Q: Why not just pass out an outline of my lecture or a copy of the guided notes already completed?

A: Distributing completed guided notes reduces the necessity for students to think and respond during class, or even to attend class at all.

Guidelines for Constructing and Using Guided Notes

* Examine existing lecture outlines (or create them as necessary) to identify the most important course content that students must learn and retain via lecture. Remember: less can be more. Student learning is enhanced by lectures with fewer points supported by additional examples and opportunities for students to respond to questions or scenarios (Russell et al., 1984).

* Delete the key facts, concepts, and relationships from the lecture outline, leaving the remaining information to provide structure and context for students' notetaking.

* Insert formatting cues such as asterisks, lines, and bullets to show students where, when, and how many facts or concepts to write.

* Use PowerPoint slides or overhead transparencies to project key content. Visually projecting the key facts, definitions, concepts, relationships, etc. that students must write in their GN helps ensure that all students access the most critical content and improves the pace of the lecture.

* Leave ample space for students to write. Providing about three to four times the space needed to type the content will generally leave enough room for students' handwriting.

* Do not require students to write too much. Using GN should not unduly slow down the pace of the lecture. Two studies found that students' exam scores for lectures taught with GN that could be completed with single words and short phrases were as high as their test scores over lectures taught with GN that required more extensive writing to complete (Austin & Sasson, 2001; Courson, 1989).

* Enhance GN with supporting information, resources, and additional response opportunities. Consider inserting diagrams, illustrations, photos, highlighted statements or concepts that are particularly important (e.g., Big Ideas) and resources such as bibliographies and websites into GN. Sets of questions or practice problems interspersed within GN give students additional opportunities to respond and receive instructor feedback during the lecture.

* Make GN available to students via course website and/or photocopied course packets. Many instructors are understandably concerned that making their lecture notes available prior to class will reduce attendance because students will assume the notes contain all the information they need. However, distributing GN before class may give students an

incentive to attend class in order to complete the notes.

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