Enhancing Lectures With Handouts

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Traditional lectures continue to be the predominant form of teaching in most undergraduate classrooms. Traditional lecture can be defined as an instructor/professor standing in the front of the classroom and presenting material to the class, with or without the use of audio visual aids, such as slides. A common picture that comes to mind when we hear the term “traditional lecture” is an auditorium full of students listening to a professor or teaching assistant talk about the day’s material, potentially with little interaction from the students attending the lecture. At the United States Military Academy, we try to focus more on discussion of material than the standard “stand in the front of the class and lecture.” However, some courses lend more to traditional lecture than other courses. Additionally, there are times when a lecture is preferred for a specific lesson, even if a traditional lecture may not be the norm for that particular course. Generally the intent of a lecture is to present the material to students so they are able to understand the material for recall or application on an exam. During the lecture, students are usually encouraged to take notes for their review later in preparation for the exam. The problem is most students are not very good at taking notes, with research indicating the majority of students get less than 50% of the critical points in a lecture into their notes (Austin 2002). If the majority of undergraduate classrooms utilize traditional lectures to teach their students, what can be done to improve students’ notetaking, information retention and recall, or both? This brief literature review aims to demonstrate what research shows about notetaking during lectures, how to enhance students’ experiences with notetaking and learning during lectures, and to provide some recommendations.

Research shows that students, in general, are notoriously bad notetakers. Austin (2002) showed that students record less than 50% of the critical points mentioned during a lecture. Kierwa, et al. (1991) showed that in order for learning to occur, there are two processes that happen: encoding and external storage. Encoding occurs when a student hears the information from the professor, and the external storage occurs from writing the information down and reviewing it. An issue that arises from traditional lectures is that students are feverishly writing everything the professor says, and they are unable to reflect and think about the information that is being presented. Poor notetaking results in insufficient encoding, and if notes are insufficient because students missed the majority of the critical points, then review and external storage is insufficient because the notes are lacking key points.

One method to improve students’ notetaking is providing handouts to facilitate notetaking. In theory, providing handouts to students’ will improve their notetaking, which in turn will improve encoding and with better notes, external storage will be improved (Barnett 2003). All of these improvements would hopefully improve learning. There has been extensive research in the area of providing handouts to students, to include what types of handouts and when the handouts should be provided (i.e. before or after the lecture). There are several types of handouts that can be provided to students: the lecturer’s full lecture notes, skeletal or guided
notes, full slide deck of PowerPoint slides (if PowerPoint is used), slides with information missing, and outlines. Research indicates there are advantages and disadvantages to each of these handout types.

Providing the lecturer’s full lecture notes is one option for providing handouts. When providing the full lecture notes, the student is able to have all of the critical points the lecturer will talk about. Kierwa, et al. (1985) showed that students who had the instructor’s full notes to augment their own notes performed better on recall events than students who only had their own notes or had only the instructor notes. This ties back into the role of encoding and external storage. Students were able to encode more while taking their own notes and then their external storage improved because they had the instructor notes. Issacs (2006) argued when providing the full notes however, there is a risk students will tone out the lecture knowing they will receive the full notes or they already have the full notes, depending on when the instructor provides them. Shutting out the lecturer clearly affects the encoding of the student. Additionally, having the full notes and the student toning out the lecturer causes the student to miss key examples and applications, so the student may do better on recall tests, but not as well on application tests.

Another option for providing handouts is providing guided, or skeletal, notes. Austin (2004) defines guided notes as “modified versions of the instructor’s notes or slides that require students to fill in missing information as the lecture progresses” and Barbetta (1995) defines guided notes as “handouts that guide students through a lecture by providing a format that includes basic background information with standard cues and space for students to write the key points.” Issacs (2006) states an advantage of skeletal notes is they keep students engaged because they will need to fill in blanks and empty spaces on the handout, which aids in encoding, and Brazeau (2006) stated that students who used partial notes (e.g. guided/skeletal notes) performed better than those students who received full notes from the instructor. When creating skeletal notes, research suggests that providing additional space on the handout is most beneficial so students can personalize the handout with their notes in addition to filling in blanks. This will allow the students to annotate examples and applications. Using skeletal notes can be adapted to providing slide handouts if a lecturer prefers to use PowerPoint for their lectures. The slide handouts can have information missing as well. Kinchin (2006) reported that slide handouts can be effective because the lecturer can put graphics on the slide handouts that are difficult for students to copy into their notes and the slide handouts should be more than the lecture slides. Jones (2003) adds that slide handouts can have additional information on them, such as applications, questions, and additional reading. A disadvantage of providing skeletal notes or guided notes is that students might only pay attention to key words in the lecture to fill in the blanks and then not pay full attention to the rest of the lecture.

As shown, there are advantages and disadvantages to providing handouts. In addition to providing handouts, the timing of providing handouts is also important. Instructors can provide handouts prior to class by posting the appropriate handout format to an online forum, provide the handouts in class, or provide the handouts after class. Skeletal notes and outlines are generally best suited for being provided prior to the lesson be taught so students can use them while preparing for the lecture because the skeletal notes or outline would have the main ideas that will be discussed. Full lecture notes, if to be provided, should be provided after the lecture. Again, this is to encourage students to take their own notes and then use the full lecture notes to augment their own notes instead of using the instructor notes to replace their own notetaking. However, if students know they will be getting the instructor’s notes after the lecture, they may not take their own notes (Babb 2009, Kierwa 1985, Weatherly 2002).
Although most research suggests providing some sort of handout is beneficial to students, there is some research that indicates providing handouts may not be beneficial. Brazeau (2006) determined that students become passive learners when they are provided all the information. When students receive handouts, they may think the handouts are complete since they came from the instructor, thus the student relies on the handout for all the information, instead of being engaged in the lecture and doing the reading in support of the lesson. Another study indicates that when students do not receive handouts, they focus more on writing down details (Isaacs 2006). Finally, Weatherly (2002) argues that there is actually a negative correlation between providing outline notes prior to a lecture. Over three exams, students who had access to the online notes prior to the lecture performed more poorly on the exams than did students who did not have access to the notes prior to the lecture. One reason for this, as is argued by others who suggest providing notes prior to the lecture is not beneficial, is that students may decrease their attendance to the lecture since they have notes. By not attending lectures, students miss the application and examples that are provided by the instructor. Some of these examples may not be included in the outline notes.

The efficacy of lecturing is not solely based on handouts, however. There is an abundance of literature and research pertaining to conducting effective lectures, to include cueing, writing on the board, and allowing time for writing notes. Additionally, there is significant research about how to conduct effective lectures using Powerpoint slides (Jones 2003). Some research also indicates instructors should spend time teaching students how to take notes as well (Kierwa 2002). There are several factors that go into enhancing a lecture with handouts, but the general consensus seems to be that providing a handout is beneficial because it aides in notetaking, allowing for better encoding and allowing the student to focus on the lecture and processing the information, vice just trying to write everything down. The preferred type of handout is the skeletal or guided note because it causes the student to pay attention to the lecture to complete the handout, while providing room on the handout for additional notes.

Annotated Bibliography


This article provides research into the use of guided notes in undergraduate classrooms. The authors discuss the statistics behind how ineffective students are at taking notes, and then provides a method for improving notetaking through the use of guided notes. The authors discuss the purpose of guided notes, compared quiz scores of two groups (one group with guided notes and one group without), and report their findings (quiz scored trended higher with the guided notes group). The authors then discussed some possible reasons for the results.

This article further emphasizes the findings from 2002 by extending the discussion to lectures with slides and guided notes that follow the slides. The authors established three groups for their research. One group attended a lecture without slides or guided notes, one group attended the lecture with slides, and the final group attended the lecture with slides and guided notes. In this research, the authors were focused on notetaking. They looked at each person’s notes and determined the percentage of critical points, examples, and elaborations the student had in their notes. They found that students who used guided notes had more of the important lecture information in their notes, and that guided notes offer an alternative to providing formal training on notetaking to students.


This article explores how the timing of providing slides (before or after lecture) affects attendance, participation, and exam performance. The authors address a concern some researchers have about providing notes (or slides or handouts) to students, which is students will not attend class. The authors found attendance was higher when slides were available before the lecture, students who participate actually participated more when slides were available before class, and that students prefer to have the slides before the lecture so they can use the slides as a guide for notetaking. There was no direct correlation to exam performance as there are more factors than availability of slides that affect exam scores.


In this article, the authors discuss guided notes in detail. They discuss what guided notes are, advantages to both the instructor and the student, and how to incorporate guided notes into your teaching style. They also provide some examples of guided notes, as well as how to create guided notes for a course. This is a very informative article for anyone interested in using guided notes.


In this article, the author discusses providing skeletal notes, full instructor notes, or no notes at all. There were four groups in the research: one group who listened to the lecture and took their own notes; one group listened to the lecture and used instructor provided skeletal notes; one group received full instructor notes and listened to the lecture; and one group received the full notes but did not attend the lecture. The skeletal notes group and the group writing their own notes performed better on exams than those who had full instructor notes, however there was not a significant difference between the skeletal note users and the own note taker exam
scores. The author also found that the notes from the group who used the skeletal notes were far better than the group that used the full instructor notes.


This article discusses the idea of taking notes in class during lecture. The author argues that providing students with a full set of notes results in passive learners and encoding is diminished. She determined that students who take their own notes or used partial notes provided by the instructor performed better than those who were provided full notes from the instructor, indicating the process of note taking, whether taking your own notes or filling in an outline provided by the instructor, improves learning.


In this article, the author discusses the effect of providing handouts to students for lectures. The research was questionnaire based, asking instructors questions about their lecture practices and thoughts on providing handouts to students. In the opinion of the researcher and other instructors, students tend to “switch off” when provided full notes, whereas providing skeletal notes assists in notetaking and also allows students to focus on what is being said in the lecture.


This article is focused on teaching in the Life Sciences, however the points the author makes are applicable to other disciplines as well. He focuses on using PowerPoint and how to use PowerPoint effectively in teaching. As part of his discussion, he mentions how to provide a useful handout using PowerPoint. The PowerPoint handout should not simply be a regurgitation of the lecture slides, but there should be additional information on the handout that may not be on the actual slides. This is a good article to review for effective use of PowerPoint, which can also enhance learning.


This article compares providing full instructor notes to students to providing skeletal notes to students. The author provide a good discussion of results obtained when comparing students who take their own notes, use only the instructor notes, and who use both their own notes and the instructor notes. He addresses the idea of providing evaluations (e.g. quizzes) after a short review period (which will test recall based on the lecture and notes taking during the lecture, or encoding) and then after a longer review period (which will test storage and reviewing notes). The author also discusses how lecture/instruction should be tailored based on this research.

This is an in-depth article focused on notetaking functions (encoding, encoding plus storage, and external storage only). They also examined three notetaking techniques (conventional, linear, and matrix). They investigated performance on recall and synthesis tests. The authors do a good job of discussing the results of the performance tests in terms of the variables they manipulated, but also in terms of other factors that affect test performance.


This article provides insightful information into using PowerPoint handouts effectively in the classroom. The author discusses what PowerPoint handouts should include and how students can most benefit from the handouts. He provides several examples (as figures) of how an instructor can make an effective PowerPoint handout that is different than simply providing the lecture slideshow as a handout. This is a good article for instructors who predominantly use PowerPoint and are looking for a way to enhance learning in their courses.


This article is one of the few articles that actually indicate there is a negative correlation to giving students access to lecture slides. The authors provided access to slides to one class while not allowing access to the slides to another class. The students who did not have access to the slides performed better across three exams. The authors discuss several reasons why access to the slides may have been the cause, but they also address other factors that may have contributed to the poorer performance.

Additional References


Vaz, Mario. “What do students expect of lecture handouts during the first year of the medical curriculum?” *Medical Teacher* 21, no. 3 (1999): 324-325