

How to Learn More Effectively from Lectures (for students)

Lectures are strenuous learning experiences. To illustrate, consider all the cognitive activities involved during a lecture.

- You must select and focus on relevant information and ignore distractions and irrelevant information.
- You need to organize and connect new material being presented with relevant prior knowledge (things you already know).
- You need to make inferences about how new ideas are related to one another, decide which ideas are important and which are less so.
- You need to interpret the meaning of graphics, such as diagrams, pictures, charts and graphs and reconcile those with the instructor's oral explanations of them.
- As you are doing all this, you also need to make decisions about what information to record in your notes, and what to do about information you don't understand or completely missed.
- You also need to adapt to your instructor's mode of presentation. Teachers differ with respect to their organization, clarity, pace of presentation, enthusiasm, coherence, length, use of graphics such as slides and video, degree of interaction with students such as asking and answering questions, and so on.

Given their cognitive complexity it is not surprising that students do not always learn very effectively in lectures. Research has shown, for example, that on average students learn less from straight lectures than other modes of instruction (Freeman et al., 2014). Another indicator that learning from lecture is difficult is that students' lecture notes contain less than 50% of the main ideas from the class period (Kierwa, 1989).

On the bright side, research has shown there are numerous strategies that can help you learn more effectively from lectures. If you struggle or have difficulty *getting much* out of lectures, consider the following recommendations.

Recommendations to improve your learning from lecture

Before lecture

- Before class review the terminology, concepts and ideas relevant to the upcoming lecture. What you already know about a topic is a key factor in learning more about it. When you know very little about a topic, learning about it is much harder. That's why preparing for lectures is especially important. National surveys indicate that a lot of students do not prepare for class on a routine basis. Coming to class unprepared automatically makes the lecture more difficult to understand and to remember. One way to learn more from a lecture is to do assigned readings, review material from the previous class, and learn new terminology or specific facts that will be included in the upcoming lecture.

Preparation is vitally important; the more you know about the topic going into a lecture the better able you will be to make sense of and remember new material. To illustrate, consider this scenario. Suppose an upcoming lecture will focus on three key concepts, going into depth and connecting these concepts to other material in the class. The assigned reading for class provides an overview of these concepts. Students who read the assigned material will have

some initial familiarity and understanding of the concepts. When the instructor introduces these ideas in lecture, prepared students will know what the instructor is talking about. They will know some of the terminology and will be able to start learning the more detailed information in the lecture. Overall, they will be better able to organize, interpret, and make sense of the new material. What about unprepared students? They won't even know basic terminology, and everything the instructor says will be unfamiliar. Trying to learn will require much more cognitive effort. Unprepared students will learn less from the lecture because they have no relevant prior knowledge on which to build an understanding of the new information.

During lecture

- Use a note-taking strategy that focuses on the meaning of the information. Instead of just writing down what the instructor says, think about and write down what the information means. Many students record notes verbatim, writing down everything the instructor says. This may seem like a good strategy, but verbatim notetaking takes a lot of mental effort, leaving little mental horsepower left over to think about the subject matter you are writing down. Research has also found that college students' notes typically include less than half of the main points of a lecture. This means students are missing large chunks of information every class period. If you are dissatisfied with your notetaking strategy and want to get more out of lectures see, [How to Learn More Effectively from Notetaking](#).
- Focus and maintain your attention on the lecture material and turn off your phone. Try to focus your full attention on thinking about the lecture material. You cannot even begin to learn something unless you attend to it. Research indicates that students often are distracted during class, especially by using their devices for non-class activities, e.g., checking social media. Contrary to popular belief, people cannot attend simultaneously to two different activities. When you engage in social media you cannot attend to lecture at the same time. You have to switch your attention back and forth between activities. The more often you switch your attention, the more learning gaps you will have. Multitasking in lecture is particularly bad because you cannot go back to the information you missed. The lecture goes on without you. Research shows that students who engage in media multitasking take longer to complete assignments, learn less and get lower grades. There are NO academic advantages to multi-tasking.
- Monitor your understanding during the lecture. Monitor your comprehension and jot down reminders and questions to ask during or after class. By the end of the class period you should be able to look at your notes and very quickly put checks beside material that you do not understand very well. This will help you identify comprehension gaps for later study.

After lecture

- At the end of class or as soon as feasible, review your notes. Try to fill in missing information by writing down things that you remember. Write down questions and make notes to ask other students or the instructor to help fill in the gaps.
- Take 10 minutes to review your notes again a day or two after the class. Most of us start to forget information soon after a lecture is over. Reviewing your notes is particularly effective after you have started to forget the material. An excellent way to review

is by self-explaining and self-testing. Look at key words in your notes and then try to recall and explain as much as you can without looking at your notes. After each bout of recalling and explaining check your notes to see if you are accurate and on track.

- Compile a list of questions from the lecture. Try to answer these before the next class. If you can't answer them on your own, ask your instructor, tutors, or classmates for help.
- While the material is still fresh, write a few questions and answers to use for self-testing when you study. This is beneficial in two ways. First, writing the questions will help you learn and remember the material. Two, using the questions for practice quizzes will further strengthen your understanding and memory of the answers.

To summarize, think of learning from lecture as a three-part episode that involves:

1. preparing for the lecture by doing assignments or readings that focus on essential knowledge you will need in order to benefit from the lecture.
2. experiencing the lecture in class (or via a recording) in which you take notes and focus on trying to understand the new material, and then
3. elaborating and consolidating what you learned at the end of and after class. This may involve reviewing notes, adding missing material to notes, and self-explaining and self-testing on lecture material.

Lectures are cognitively demanding learning experiences. You need to know relevant prior knowledge to help you make sense of new material, and during lectures you must manage your attention, focus on the meaning of the material, connect new information to your prior knowledge, take notes that preserve the meaning of the material, and monitor your comprehension so that you can restudy or get help on information you don't understand. Following the lecture, you need to review notes and self-test to consolidate what you have learned.

At first glance these recommendations may look like they will add more study time to your day.

Maybe so, but the time will result in two benefits:

1. You will learn more from each lecture and be better prepared for the next lecture. You will be better able to “keep up” with the material in the course.
2. You will be better prepared for exams. The strategies lead to long-term learning. By studying more systematically for each class period you will be preparing for the next course exam as well. There will be less need for long bouts of cramming before the exams.

References

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