



Active Learning Series

PART 4: Incorporating Active Learning into a Large Lecture Course

Active learning practices can boost student engagement with course material, enhancing learning and increasing performance on assessments in all fields. Integrating active learning practices into your high enrollment lecture sections also helps to personalize learning and build a learning community among students and instructors.

Covering Content More Effectively During Lecture

Helping students learn and internalize content knowledge is a complex task that requires instructors to be both proactive and creative. Ambrose et al. (2010) define learning as “a process that leads to change, which occurs as a result of experience and increases the potential for improved performance and future learning” (p. 3). Furthermore, the authors emphasize that learning is something that students must actively do themselves, not something that they passively receive from an instructor (Ambrose et al., 2010). Despite this, traditional lecture is still likely the most widely used form of content delivery in colleges and universities (Nilson, 2010). Although lecture certainly has its place in today's classrooms, there are other strategies that can be used to engage students while still promoting learning. Varying your instructional strategy also has benefits for low-income and first-generation students, who may feel isolated when more traditional pedagogies are used exclusively (Engle & Tinto, 2008).

Incorporating Active Learning

Since content coverage alone does not ensure student learning, streamlining content can create time for in-class activities. Allowing students to engage fully with course material in small group activities can increase student satisfaction with the learning experience and student performance on comprehension measures (Yazedjian & Kolkhorst, 2007). If instructors ensure class activities are complementary to lecture topics and aligned with course learning goals, a similar amount of content can be covered as in a standard lecture-only class (Oliver Hoyo, 2011). Below are some suggestions for streamlining course content.

- Carefully define class learning outcomes and unit objectives. This allows you to really focus in on the important content and to make sure your activities are aligned with your learning outcomes. (Fink, 2013; Wiggins & McTighe, 2005).
- Consider shortening your lecture. Shortening your lecture while using active learning activities can help to reinforce or further explore the content you cover. For example, you could have students research and present on the content themselves in pairs or groups.
- Practice will make the activity run efficiently. The first time you plan to use active learning, try it with your TAs, or let them help you devise it. If that is not possible, think about how long it would take you and triple the time (Svinicki & McKeachie, 2013). Then when you run the activity, monitor how long students took on the assignment so that you can better manage your time in the next iteration.

Structuring Lecture Creatively with Active Learning

Lecture can be an efficient way to communicate information to students, especially when paired with active learning activities – individual or collaborative (Gregory, 2013; Smith & Cardaciotto, 2011). Collaborative learning has been found to be quite effective in a variety of class types and subjects

(Barkley, Major, & Cross, 2014; Loes, An, Saichaie, & Pascarella, 2017). Supplement lectures with active learning activities like pair- or group-work, problem-solving, or low-stakes assessments.

Lectures are effective for conveying information, but not for learning outcomes that require higher-order thinking, or inspiring new interests, values, or behavioral skills in students (Bligh, 2000). Implementing a format like Smith et al.'s (2005) Bookend-Model (see Figure 1) can help organize your time in the classroom to cover content and accomplish learning goals. This model of class design shows an easy way to integrate interactive lecturing in your class. Using this bookend-strategy to organize your lecture into 10-12 minute portions followed by 3-4 minute active learning activities should provide a balance between supplying students with new concepts and allowing them to work with those concepts in groups or on their own. Break up your lecture with **short, active learning strategies** that engage students during class. For example, you may want to start your class asking students to review the previous class, predict content related to your day's lecture, or gauge their prior knowledge about a new topic. Then, wrap up your class having students summarize what they've learned and reflect about any questions that they still have.

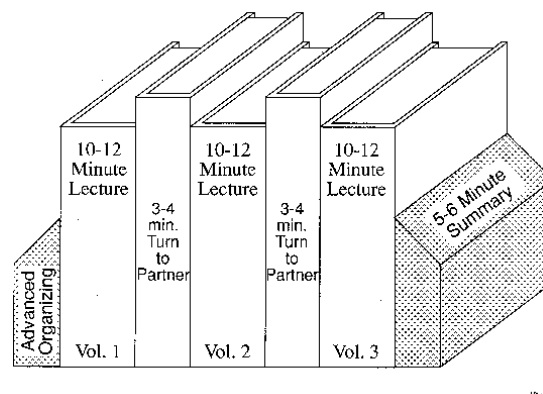


Figure 1: Bookend Model (Smith et al., 2005)

Research also suggests that inquiry-based learning promotes higher-level thinking in students, including critical thinking and problem-solving skills (Nilson, 2010), and can improve students acquisition of course content (Luckie et al., 2012). Additionally, Engle & Tinto (2008) suggest that incorporating more active, cooperative, and problem-based learning activities that “require students to become more involved in the learning process,” (p. 25) can be one way to promote success for diverse learners, and for low-income, first-generation college students. Similarly, research suggests that writing-to-learn activities can promote students’ learning of content, performance on content exams, and engagement in the course (Bean, 2011; Drabick et al., 2007; Reynolds et al., 2012). Writing-to-learn activities range in size and intensity; from longer research-based projects to short in-class discovery writing.

Guiding Teaching Assistants in ALCs

One study of six high enrollment biology lectures found that both students and TAs were more satisfied with coursework when TAs played an active role in learning activities, freeing up time for the instructor to interact directly with students (French & Russell, 2001). Below are some examples of how to involve TAs in coursework:

- Ask TAs to field questions and circulate amongst groups during active learning activities.
- At the beginning of class, ask TAs to provide a 5-minute review of the previous lecture.
- Ask TAs to assist with logistical concerns like time-management, distributing and collecting materials, managing technology, and listing key terms on the board.
- Divide the lecture hall up into smaller sections, and ask TAs to facilitate discussions or activities in each section.



- Hold weekly meetings for instructors and TAs to make sure everyone is prepared, and to allow TAs to take ownership of a specific upcoming activity. This allows for motivation and pride in doing a good job, benefitting both the TA and the students.

Optimizing Technology to Make Lectures more Interactive

There are a variety of different classroom technologies that can be used to help make high enrollment classes more interactive. These technologies include classroom response systems (i.e., clickers) and webcasting/podcasting lectures, among other technologies and programs. Education technologies like these provide students with opportunities to more actively engage in course material (MacArthur & Jones, 2008), and can help to improve students academic performance (Mayer et al., 2009; Traphagan et al., 2010).

Using “Clickers”

Integrating classroom response systems (e.g., clickers) into high enrollment lectures has been shown to increase student engagement and collaboration (MacArthur & Jones, 2008). In-class, low-stakes assessments (like the ones that clickers make possible) can help instructors quickly identify common misconceptions and measure specific learning outcomes, making the teaching environment more effective (Sevian & Robinson, 2011). A large-scale study of clickers found that students who responded to questions with clickers had a higher gain in understanding than students who responded to questions on paper (Mayer et al., 2009). For help integrating clickers into your classroom, see [Academic Technology Services](#).

To get started, make sure your questions focus on higher-order understanding of concepts, as well as rote memorization or recall. While clickers lend themselves well to yes/no questions, you can build up to questions requiring problem-solving, the demonstration and/or application of new skills, or the integration of ideas across topics.

- Example Question 1: *Think about the different mental biases we’ve gone over today. Nikki decides to buy a small car because it is good for the environment. When she goes to look at small cars, she is surprised that they came in luxury versions because she expected them to be very basic and uncomfortable. What bias has Nikki been using? What does this suggest about Nikki and her bias(es)?*
- Example Question 2: *Today we’ve been discussing climate change. Think about climate change in a broader context. Given what you know about the water cycle from last week’s discussion, what part of the water cycle is under the biggest threat from climate change, and why?*

If technology doesn’t appeal to you or your classroom faces some possible connectivity issues, try using analog clickers made from differently colored index cards or sheets of paper with different colors in each quadrant. Students can hold up the color which represents their response option, allowing you to easily see trends in student responses.

Citation

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