

Teaching Large Classes

Teaching large classes is particularly challenging, and newer faculty are likely to be assigned to teach at least a few of them. The resources below can help you keep your students actively engaged and minimize the time you spend grading, effectively and efficiently.

Students in a large lecture hall at Wake Forest University's School of Medicine are actively engaged through technology.

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Keeping students engaged in large lecture classes

Large lecture halls impose physical and logistical constraints on what you can do effectively. But there are tried and true techniques to keep students interested:

- [Interactive Lecture](#) techniques can be used in any size classroom, as can [Just-in-Time Teaching](#). (These links take you to the Starting Point pages on teaching techniques.) Interactive lectures are lectures interspersed with brief in-class activities that require students to use the information or concepts presented in the lecture. In Just-in-Time Teaching, students respond electronically to web-based assignments, due a few hours before class. The instructor then briefly reviews student responses to see what to focus on during the class period.
- [Beating the Numbers Game: Effective Teaching in Large Classes](#) lists in-class activities, out-of-class group exercises, and other ideas for keeping students engaged in large classes. The author, Richard Felder, is a chemical engineering professor at North Carolina State University, and an active researcher on the topic of how people learn.
- [How to Create Memorable Lectures](#) offers tips on getting and keeping students' attention and giving them opportunities to review and apply important concepts. This article is from Rick Reis' [Tomorrow's Professor Mailing List](#).
- Postings from [Rick Reis' "Tomorrow's Professor" Mailing List](#):
 - [Making the First-Year Classroom Conducive to Learning](#) explores approaches to improved learning in large class settings such as introductory level courses.
 - [Teaching Large Evening Classes](#) looks at four effective strategies in teaching large, often one night per week, evening courses.
- The effective use of [technology](#) and [group work](#) are two ways to enhance large classes, increase student engagement, and minimize the time you spend grading.... See the next sections of this page for details.

Making technology work for you

As technology becomes more complex, it becomes more daunting. But it can also be quite helpful. Here are some examples of time-saving, effort-saving technologies proven to be effective in teaching, especially in assessment.

- Classroom Communication Systems are electronic response systems you can have students use to respond to multiple choice, in-class questions you pose about the course material. These systems can help you and your students to assess their learning as you go, rather than waiting until the next quiz or exam. The instantaneous feedback allows students who get the wrong answer to ask you for further information immediately. This link lists several logistical questions you'll want to explore before implementing an electronic student response system. If you decide against the technological solution, there are other ways to conduct a quick in-class assessment.
- Teaching with Technology, from Carnegie Mellon's Eberly Center for Teaching Excellence, covers best practices of teaching with technology, tools (including Blackboard), examples of teaching with technology, copyright and fair use, and relevant publications.
- From Rick Reis' Tomorrow's Professor Mailing List
 - Online Multiple Choice Questions With Rationale Answer Statements: An Interesting Use of the WWW reviews the use of multiple choice, online weekly problem sets, with rationales, in a large biology class. The instructors examined the rationales for commonly missed questions, allowing them to identify and address areas of student confusion.
 - Teaching Naked: Why Removing Technology from Your Classroom Will Improve Student Learning describes several ways to use technology outside of the classroom, so that class time can be devoted to deeper learning.
 - The Brave New World of Classroom Technology describes the effective use of video clips, podcasts, wikis, animations, simulations, and more to enrich the classroom experience.
 - Mobile Learning looks at several aspects of the use of mobile devices in the classroom and explores the potential benefits and issues.
 - Lecture Capture: A Guide to Effective Use describes lecture capture: the recording of classroom activities using specific software and making that recording available electronically.
- Using the Internet to Promote Inquiry-based Learning. (more info) This electronic paper describes "a structured approach to inquiry-based learning that uses the World Wide Web as a primary information resource."
- The Virtual Resource Site for Teaching with Technology (more info) provides resources for developing an online course or course components.

Getting groups to work well

Many students, particularly high-achievers, resist group work. Yet the ability to work well in a group is an essential skill for most college graduates. In addition, students who learn in collaborative settings both learn and retain 1.5 times as much as students who learn individually (Johnson et al., 1998).

- Doing Collaborative Learning. From the National Institute for Science Education, this page focuses on how to implement collaborative learning in the classroom, from

structuring your class so that students "buy in" to the method, to creating groups (and dealing with group dynamics).

- Cooperative Learning. This Starting Point page defines cooperative learning and explores why and how to use it. It also provides a list of online resources and cooperative learning exercises.
- Cooperative Learning in Technical Courses: Procedures, Pitfalls, and Payoffs, (more info) by Richard Felder and Rebecca Grant, details successful strategies for applying cooperative learning techniques to quantitative problem solving, in and out of class.
- Postings from Rick Reis' "Tomorrow's Professor" Mailing List:
 - Integrating Team Exercises With Other Course Work provides a list of rationales for incorporating group work in your classes, going well beyond the usual reasons (building skills students will need in their jobs, improved learning). It also describes several strategies for integrating team exercises into your course, emphasizing the importance of group work to students.
 - Making Effective Use of Your Peers is an excerpt from a book for engineering students. It succinctly summarizes research findings on the benefits of studying in groups, findings which may help you to persuade your students to give group work a try.
 - He Said, She Said: Gender-Typical Speech Can Sour Teamwork explores the impact of communication styles on male and female students in engineering team projects, although the results have implications for all gender-mixed work groups.
 - Tips and Strategies for Effective Teamwork gives tips on structuring student teams, based on the authors' research and observations and students' comments.
- Innovation in Large Lectures - Teaching for Active Learning (Following this link takes you to the SERC catalog description of this journal article.) The journal article includes instructions presented to students for effective interactions in cooperative groups, the types of responses expected from students, and strategies for managing cooperative groups in a dynamic atmosphere in a large enrollment lecture course.
- Leaving the Lectern: "the story of how one professor at a research university used a form of active learning to change the way he taught" (description from the publisher's website)