## Books on Active Learning or Big Classes

### Tools for Teaching
by Barbara Gross Davis
ISBN-13: 978-0787965679

### Abstract

This is the long-awaited update on the bestselling book that offers a practical, accessible reference manual for faculty in any discipline. This new edition contains up-to-date information on technology as well as expanding on the ideas and strategies presented in the first edition. It includes more than sixty-one chapters designed to improve the teaching of beginning, mid-career, or senior faculty members. The topics cover both traditional tasks of teaching as well as broader concerns, such as diversity and inclusion in the classroom and technology in educational settings.

### Interactive Lecturing: A Handbook for College Faculty 1st Edition
by Elizabeth F. Barkley (Author), Claire H. Major (Author)
ISBN-13: 978-1119277309

### Abstract

Tips and techniques to build interactive learning into lecture classes

Have you ever looked out across your students only to find them staring at their computers or smartphones rather than listening attentively to you? Have you ever wondered what you could do to encourage students to resist distractions and focus on the information you are presenting? Have you ever wished you could help students become active learners as they listen to you lecture?

Interactive Lecturing is designed to help faculty members more effectively lecture. This practical resource addresses such pertinent questions as, “How can lecture presentations be more engaging?” “How can we help students learn actively during lecture instead of just sitting and passively listening the entire time?” Renowned authors Elizabeth F. Barkley and Claire H. Major provide practical tips on creating and delivering engaging lectures as well as concrete techniques to help teachers ensure students are active and fully engaged participants in the learning process before, during, and after lecture presentations.

Research shows that most college faculty still rely predominantly on traditional lectures as their preferred teaching technique. However, research also underscores the fact that more students fail lecture-based courses than classes with active learning components. Interactive Lecturing combines engaging presentation tips with active learning

techniques specifically chosen to help students learn as they listen to a lecture. It is a proven teaching and learning strategy that can be readily incorporated into every teacher's methods.

In addition to providing a synthesis of relevant, contemporary research and theory on lecturing as it relates to teaching and learning, this book features 53 tips on how to deliver engaging presentations and 32 techniques you can assign students to do to support their learning during your lecture. The tips and techniques can be used across instructional methods and academic disciplines both onsite (including small lectures and large lecture halls) as well as in online courses.

This book is a focused, up-to-date resource that draws on collective wisdom from scholarship and practice. It will become a well-used and welcome addition for everyone dedicated to effective teaching in higher education.

## Student Engagement Techniques: A Handbook for College Faculty

by Elizabeth F. Barkley (Author), Claire H. Major (Author)
ISBN-13: 978-1119686774

## Abstract

Practical Strategies and Winning Techniques to Engage and Enhance Student Learning

The revised and updated second edition of Student Engagement Techniques is a much-needed guide to engaging today's information-overloaded students. The book is a comprehensive resource that offers college teachers a dynamic model for engaging students and includes over one hundred tips, strategies, and techniques that have been proven to help teachers across all disciplines motivate and connect with their students.

This edition will provide a deeper understanding of what student engagement is, demonstrate new strategies for engaging students, uncover implementation strategies for engaging students in online learning environments, and provide new examples on how to implement these techniques into STEM fields.

## Demystifying the Meaning of Active Learning in Postsecondary Biology Education

https://www.lifescied.org/doi/full/10.1187/cbe.20-04-0068


### Abstract

Active learning is frequently used to describe teaching practices, but the term is not well-defined in the context of undergraduate biology education. To clarify this term, we explored how active learning is defined in the biology education literature (*n* = 148 articles) and community by surveying a national sample of biology education researchers and instructors (*n* = 105 individuals). Our objectives were to increase transparency and reproducibility of teaching practices and research findings in biology education. Findings showed the majority of the literature concerning active learning never defined the term, but the authors often provided examples of specific active-learning strategies. We categorized the available active-learning definitions and strategies obtained from the articles and survey responses to highlight central themes. Based on data from the BER literature and community, we provide a working definition of active learning and an Active-Learning Strategy Guide that defines 300+ active-learning strategies. These tools can help the community define, elaborate, and provide specificity when using the term active learning to characterize teaching practices.


## Active Learning in Flipped Life Science Courses Promotes Development of Critical Thinking Skills

https://www.lifescied.org/doi/10.1187/cbe.16-11-0332


### Abstract

Although development of critical thinking skills has emerged as an important issue in undergraduate education, implementation of pedagogies targeting these skills across different science, technology, engineering, and mathematics disciplines has proved challenging. Our goal was to assess the impact of targeted interventions in 1) an introductory cell and molecular biology course, 2) an intermediate-level evolutionary ecology course, and 3) an upper-level biochemistry course. Each instructor used Web-based videos to flip some aspect of the course in order to implement active-learning exercises during class meetings. Activities included process-oriented guided-inquiry learning, model building, case studies, clicker-based think–pair–share strategies, and targeted critical thinking exercises. The proportion of time spent in active-learning activities relative to lecture varied among the courses, with increased active learning in intermediate/upper-level courses. Critical thinking was assessed via a pre/posttest design using the Critical Thinking Assessment Test. Students also assessed their own learning through a self-reported survey. Students in flipped courses exhibited gains in critical thinking, with the largest objective gains in intermediate and upper-level courses. Results from this study suggest that implementing active-learning strategies in the flipped classroom may benefit critical thinking and provide initial evidence suggesting that underrepresented and first-year students may experience a greater benefit.

## Active learning sparks collaboration and understanding

https://www.cals.iastate.edu/features/2022/active-learning-sparks-collaboration-and-understanding

**Abstract** Instructors at Iowa State University strive to see the imaginary lightbulbs go off above their students' heads when they grasp a new concept. To help students have these "lightbulb moments," Nick Peters and Elizabeth "EB" Wlezien are introducing active learning to their classroom.

## The Curious Construct of Active Learning

https://cpb-us-e1.wpmucdn.com/blog.umd.edu/dist/2/664/files/2021/10/Lombardi-et-al.-2021-The-Curious-Construct-of-Active-Learning.pdf

**Abstract** The construct of active learning permeates undergraduate education in science, technology, engineering, and mathematics (STEM), but despite its prevalence, the construct means different things to different people, groups, and STEM domains. To better understand active learning, we constructed this review through an innovative interdisciplinary collaboration involving research teams from psychology and discipline-based education research (DBER). Our collaboration examined active learning from two different perspectives (i.e., psychology and DBER) and surveyed the current landscape of undergraduate STEM instructional practices related to the modes of active learning and traditional lecture. On that basis, we concluded that active learning—which is commonly used to communicate an alternative to lecture and does serve a purpose in higher education classroom practice—is an umbrella term that is not particularly useful in advancing research on learning. To clarify, we synthesized a working definition of active learning that operates within an elaborative framework, which we call the construction-of-understanding ecosystem. A cornerstone of this framework is that undergraduate learners should be active agents during instruction and that the social construction of meaning plays an important role for many learners, above and beyond their individual cognitive construction of knowledge. Our proposed framework offers a coherent and actionable concept of active learning with the aim of advancing future research and practice in undergraduate STEM education.