Classroom Response Systems for Active Learning

"Clickers"

Clickers, aka classroom or student response systems, are technologies for rapidly recording, analyzing, and displaying student responses to instructors' questions during class. According to instructor preference, students use dedicated response devices, their own wireless device, or a combination. The technology is easy to learn and use, integrates with the Blackboard course management system for graded questions, and provides instructors with detailed data for rapidly assessing class and individual student understanding and progress.

Faculty at the University of Tennessee use clickers for a variety of purposes, including:

- Gaging understanding through immediate **formative feedback**.
- "Shrinking" the large lecture class by **involving** the participation of all students.
- Obtaining anonymous **information** about a class – prior courses, interests, etc.
- Anonymously **gaging the effectiveness** of assignments and learning activities.
- **Enforcing preparation** for class participation through graded quizzes.
- Encouraging **attendance**.
- **Anonymously polling** student opinions and perspectives on complex issues to stimulate discussion.
- **Challenging** students and stimulating discussion with questions requiring integration of concepts or analysis.
- **Generating data** for in-class use.

And that's only a sample! Contact Tenn TLC to share how you use clickers or to explore new ways of using clickers in your courses.

Photo: Reed College mLab: http://www.reed.edu/cis/mlab/clickers.html

"My course is NOT a game show!"

A class using clickers might look very different from a class without clickers; but perhaps not. In the active learning class, students are listening, taking notes, and discussing, analyzing, and addressing questions and problems posed by the instructor and other students. With the addition of clickers **nothing changes except** the active participation of all students and the immediate feedback available to both the instructor and students.

Using clickers does not change how an instructor designs a course and delivers classroom instruction. Clickers do not drive or dictate pedagogy and teaching style. Rather, clickers are tools for helping instructors increase their effectiveness in helping students achieve desired learning outcomes. Clickers do not replace lectures: clickers turn passive lectures into active lectures. Clickers do not replace the discussion intensive class: clickers provide the discussion class with feedback and data for further analysis and discussion.

Clickers enhance and expand the effectiveness of what instructors are already doing. And, as creative instructors gain experience and confidence in using this instructional tool, they will invariably explore and develop new ways of using clickers to facilitate learning, consistent with course needs and their own evolving teaching style.

1 Getting Started with Clickers

Turning Technologies ® response devices in use at the University of Tennessee

- **Consult with colleagues**: Faculty in all Colleges at the University of Tennessee, and in most departments, are effective and creative clicker users.
- **Contact TennTLC** for individual consultation and ideas for integrating clickers into your course design, as well as developing effective clicker questions for your course needs and teaching style.
- **Contact OIT Instructional Support** to obtain the response system software and receiver, and to schedule instructor training.
- **Notify the UT Bookstore** of your intention to use clickers when you request books for your course.

Resources

Bruff, D. (2009). Teaching with classroom response systems: Creating active learning environments. San Francisco: Jossey-Bass.
(available from the UT and TennTLC Libraries)

Caldwell, J. E. (2007). Clickers in the Large Classroom: Current Research and Best-Practice Tips. CBE—Life Sciences Education 6:9-20.

Hoekstra, A. and S. Mollborn. (2011). How clicker use facilitates existing pedagogical practices in higher education: data from interdisciplinary research on student response systems. Learning, Media and Technology 1:1-18.

Vanderbilt University Center for Teaching:
http://cft.vanderbilt.edu/teaching-guides/technology/clickers/

How Clickers Facilitate Learning

Clickers can be used to augment classroom instruction in a variety of ways. The first question is "What do I want to accomplish?" or "What might clickers help me do more effectively?" Identify one or two needs initially. As you become more comfortable with the technology, expand the range of your usage (your students will adapt to the technology quite readily – most will already be familiar with clickers).

A **good place to begin** is by using clickers to quiz students over assigned reading content. These questions are typically over definitional or factual knowledge – the understanding students should bring to class to allow for more in depth or nuanced discussion in class. Questions can come as a series at the beginning of class (which has the advantage of getting everyone thinking in the same disciplinary groove), or interspersed throughout the class as the material arises. Regular quizzes of this type serve to enforce engagement with assigned homework material, and will help identify concepts or ideas that students have particular difficulty grasping.

Consistent with what you would do anyway, clickers can be used to ask questions requiring synthesis of ideas, interpretation or analysis. Polling students over controversial or unresolved issues is also an effective way to generate discussion in class and help students think within the discipline.

Should clicker quizzes be graded, and how much should they contribute? To be effective, questions designed to encourage preparation for class should contribute to students' grades; but how much is a function of what other assessment tools and student products are used. Polling questions or partial credit for incorrect answers to quiz questions can be used to award participation credit. It's up to you and what you want to accomplish. Contact TennTLC for individual consultation about designing clicker questions appropriate for your course.