Notes from ITLAL Underground

Teaching with Clickers

The Power of Good Questions to Engage Students and Provoke Thinking

What are clickers?
Clickers are handheld wireless devices (sometimes called “personal response systems”) that enable students to answer questions posed by their instructor. Students purchase clickers through the bookstore and can use them in multiple classes that are using the same system. They can be used by an instructor in class to obtain real-time feedback from students. Responses are anonymous to the class, but not to the instructor.

How can clickers help students learn?
Imagine a simple tool that allows you to find out what students are thinking at any moment. You ask a multiple choice question and all students respond. Their responses can instantly be projected to the screen in the form of a bar graph. Before sharing the preferred answer, you can then debrief by asking students to explain why they chose some options over the others. Quick surveys done this way can transform a lecture into an active conversation among students and instructor. No longer does the instructor have to hope that students are “getting it”—she knows if they are!! The real power of clickers is the instructor’s ability to stage increasingly complex and difficult questions in a sequence, based on what students have already demonstrated they understand. In this way the intellectual challenge of a course can be increased.

How can I use multiple choice questions to provoke students’ thinking?
First of all, we’re not talking about recall questions. A well conceived multiple choice question pitches a dilemma to students in the form of a judgment that needs to be made in order to choose among several very credible options. This contrasts with open-ended responses which can allow students to be creative but also lazy or superficial. With clickers students are forced to commit to an answer; when asked just to think of an answer, students can actually convince themselves that “I really knew the right answer all along.” Committing to a choice “outs” their thinking not only to you, but most importantly to themselves.

While our temptation is to use questions to review students’ understanding (“thinking backward”), clicker questions work best when students are asked to “think forward” or speculate about a problem that they don’t have enough information to solve. Questions of this type induce curiosity, which validates for students the interest of your content. Students actually become frustrated (and less engaged) when clicker questions focus on recall or basic comprehension, which do not provide sufficient intellectual challenge.

Here is one possible sequence for productively staging and sequencing an interactive class session with clicker questions.
1. Start with a problem (in the form of a multiple choice question) requiring a clear decision or judgment among several possibilities. Be careful not to overdetermine the problem by giving too much information.
2. Display the class’s answers (but do NOT reveal the correct answer) and debrief to surface students’ thinking and assumptions. If there is a wide distribution of answers, ask students to talk to the person sitting next to them and try to convince that person that their answer is correct.
3. Ask students to vote again and see how the distribution of answers changes. Debrief this step by ask students to explain their reasoning for their answers and consider the differences between popular answer choices.
4. Reveal and explain the correct or preferred answer, providing any additional information or concepts that are relevant to the decision.
5. Present another, more challenging, problem, that builds on the previous one and introduces new concepts.

This sequence demonstrates a key principle behind any question-and-answer sequence in a classroom: once students know the correct answer, they are less engaged in the conversation. With clickers, then, it is important to engage students in meaningful discussion and argumentation about
their answers BEFORE they know what the correct/preferred answer is.

What are some best practices for using Clickers in the classroom?

Make clickers matter. As with any classroom technology (especially when you are asking students to purchase it), students should know what your goals are for using Clickers and how responding to the questions you design will help them learn the course material. Make sure your syllabus explains why you are using clickers and how students can get the most out of the experience. It is essential, also, that you show them the value of clickers by using them regularly in class (every class meeting—this will also help students remember to bring their clickers every day). Many instructors give students credit for responding to clicker questions to incentivize their participation.

Adapt lesson plans. Adding clicker questions will require some changes in the way that you use time and deal with content in the classroom. Make sure that you allow time for debriefing student responses (and, in some cases, for spending additional time on material when students’ answers show that they are struggling). In your initial implementation, you may find that you are able to cover somewhat less material than you did in a traditional lecture format. The trade-off, though, will be in greater depth of student understanding.

Don’t just track your students—ENGAGE them. While clickers can be used to facilitate quizzes, check attendance, or hold students accountable for reading assignments, students will be much more likely to see the benefits of the technology if it gives them opportunities to interact with the instructor and each other as well as with the content. When students feel that they are just being monitored by the technology, they may become resentful and will be less likely to participate in meaningful ways. When they see how clickers are helping them learn, however, they will have a more positive attitude toward the technology and the course.

Which clicker should I use?
At UAlbany a few systems are still in use, but based on our recent research and experience, we are recommending that faculty who are interested in adopting clickers use the iClicker system. This system has proven superior under the criteria of functionality, reliability and ease of use. It is also the system that ITLAL and ITS staff have the most expertise in using and can best support.

If you would like information on the clicker systems we examined and tested please contact Sue Barnes at sbar-
nes@albany.edu.

Where can I go to see how a system works and to practice using it?
To see what clickers are all about, you can come to the Institute for Teaching, Learning & Academic Leadership (Library 069) to familiarize yourself with a demo system. We recommend that you contact us by phone (442-5521) or e-mail us at teachingandlearning@albany.edu to schedule an appointment in advance so we can ensure that someone will be available to show you the system and answer your questions.

If I know I want to use clickers in an upcoming semester, how do I start?
1. Schedule a meeting with an ITLAL staff member. In this meeting we will discuss your project and your specific goals for using this technology. We can then anticipate challenges in course design and in managing the classroom when clickers are in use.
2. ITLAL will show you the iClicker system and help you through the ordering process for the new equipment and software. We will also help you with ordering student clickers through the bookstore.
3. Rewrite your syllabus to include procedures and policies for students to follow. ITLAL can help you with this, including providing some boiler plate language for creating policies.
4. Schedule time in the ITLAL testing area to learn and practice using the software. ITLAL will also put you in contact with a current faculty user who can consult with you.
5. Visit your actual classroom and rehearse using the technology. Don’t get surprised on the first day of class by a set-up that looks slightly different from what you are accustomed to.

Resources: