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New Initiative: "Clickers" In Our Classrooms

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- *To draw the attention of 200+ students from 6-7 different sections assembled in Ewart Hall, the lecturer of one of the 'General Lectures' of "**Scientific Thinking**" announces that there will be a competition between the sections at the end of the lecture. When the time comes, student representatives from each section are asked to answer one or two multiple choice questions by "clicking" the correct answer projected on the PowerPoint slide on the screen using small handheld devices (clickers). A histogram appears with the results and another one follows with the scores of the teams: the winning team cheers and an animated discussion takes place. The competitive spirit motivates many students to concentrate on the lecture and the instantaneous feedback allows them to clarify misconceptions to one another.*
- *In a **Construction Engineering** class, the instructor uses the same devices together with peer instruction techniques to review material at the end of each module and/or to prepare for a quiz. Anonymity and immediate feedback encourages students to participate safely and allows for discussion around each question.*
- *An **Economics** instructor tries the same approach and finds that his students perform better on the quiz and ask him to use clickers again for future reviews.*
- *Another **Economic**s instructor uses clickers to evaluate the impact of a "simulation" on her students' understanding of certain concepts using pre- and post-testing.*
- *A **History** instructor designs a graded team-based quiz in the format of "Jeopardy" a popular TV game. He uses clickers to determine individual scores and team scores instantaneously.*
- *An **Arabic Studies** instructor uses them to collect demographic information on his students and test their pre-course knowledge. With this information he hopes to adjust his teaching to his students' preparation and to address any preconceptions they come to class with. A post-class test allows him to quickly assess if he has met his learning goals.*
- *A **"Writing Program**" instructor uses them to assess the use of "blogs" in his course and an instructor in a **Core Curriculum course** has her students vote for best argument in a debate.*

These are just but a few examples of the many creative ways our faculty, with the support of the Center for Learning and Teaching, is using this technology to promote active learning and/or to asses how effectively they teach.

So what are "clickers"?

Also known as personal response systems (PRS), clickers look like small "remote controls" which each student uses to key in their answers to a multiple choice question initiated by the instructor and projected on a screen. These clickers are coupled with a receiver on the instructor's computer and when students "click" their answers, the results are saved in a data file which can be displayed as a histogram. Individual student data as well as collective class data are saved for each session. Software allows the students' responses to be recorded, analyzed and graphed.

How can you use them?

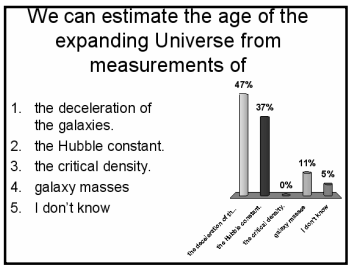
Like any other technology, using clickers in the classroom does not guarantee that your students will be more engaged or that they will learn better. Successful implementation requires careful planning and a clear link to learning goals and outcomes.

Clickers work especially well with peer instruction[1], an active learning method which has been particularly well documented in physics education[2] and which has been extensively and successfully used in other branches of science and engineering (Wood 2004). It has also been adopted and adapted in any course where conceptual understanding is important. It boils down to asking thought-provoking questions

[1] Ellozy, Aziza (2004). Active Learning (1) : The Peer Instruction Method. Retrieved February 27, 2007, from Center for Learning and Teaching Web site: http://www.aucegypt.edu/academic/clt/Newsletters/V3Issue9.pdf

[2] Mazur, Eric (1997). *Peer Instruction: A User's Manual*. Upper Saddle River, New Jersey: Prentice Hall.

(ConcepTests) on the screen to which students choose an answer. If the class is split among several different answers the students are asked to turn to their neighbors and convince them of their reasoning. After another one or two minutes they are asked to record their revised answer. After the discussion, the number of correct answers typically rises significantly. As learners, we know that explaining something to somebody else is a great way to develop our own understanding.



To summarize, clickers could be used to: (adapted from Duncan, 2005)

◊ Promote interactivity and discussion in class
◊ Measure what students know before you start to teach them
◊ Test students' understanding
◊ Find out if they've done assigned readings
◊ Provide immediate feedback
◊ Administer an effective review session
◊ Measure student attitudes
◊ Discuss diverse points of view when there is no correct answer (ethics)
◊ Allow students to express their knowledge without having to worry about giving a "dumb" answer

Why would you use them?

Many articles have been written about clickers and how they enhance the learning experience (Wood 2004, Siegel et al 2004, Duncan 2005). At the very least, this technology helps students quickly assess their understanding and focus on what needs improvement. The common consensus among the many studies and experiences of students and faculty is that class interaction and engagement is enhanced. In a large study at the University of Amherst (Duncan 2005, p10) 75% of students strongly agreed/agreed that clickers increased their interest and enjoyment. In a more recent study at the University of Wisconsin's four campus system[1] involving 3500 students in 28 courses and 19 disciplines, 93.5% of faculty strongly agreed/agreed that students were more engaged and 72% strongly agreed/agreed that clickers benefited learning.

Like with any technology, clickers can facilitate learning if applied thoughtfully. In this case the design of the right questions is the most important aspect. **The Center for Learning and Teaching is promoting the use of this user-friendly technology because of the tested pedagogical benefits and effectiveness.** For this purpose we are piloting them in as many courses as we can with the ultimate objective of transferring the responsibility of buying and administering their use to the individual departments.

Should you wish to try out this technology in your course, call the Center for Learning and Teaching (Ext 6659 or 6635) to make an appointment with one of our staff members.

Sources:

- Duncan, Douglas (2005). *Clickers in the Classroom*. Pearson Education, Inc.
- Wood, William (2004).Clickers: A Teaching Gimmick that Works". *Developmental Cell. 7*, 796-798.
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- Siegel, J. A. (2004). INTICE - Interactive Technology to Improve the Classroom Experience. Retrieved January 20, 2007, Web site: http://www.ph.utexas.edu/~ctalk/bulletin/intice.htm

Share with us your experiences by contributing to the New Chalk Talk series, or by simply sending comments/suggestions to aellozy@aucegypt.edu , pandeli@aucegypt.edu

[1] Retrieved Feb 26, 2007 at http://www4.uwm.edu/ltc/srs/grant/docs/facultyresponses.pdf