

A-State faculty using 'clickers'

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SPECIAL TO THE SUN

Undergraduate classes where students just sit and listen have been the standard format for centuries in colleges and universities. Now such approach is changing rapidly and changing for the better.

Faculty members in the Department of Biological Sciences at Arkansas State University have introduced a new technology to make teaching more interactive, interesting and productive: clickers.

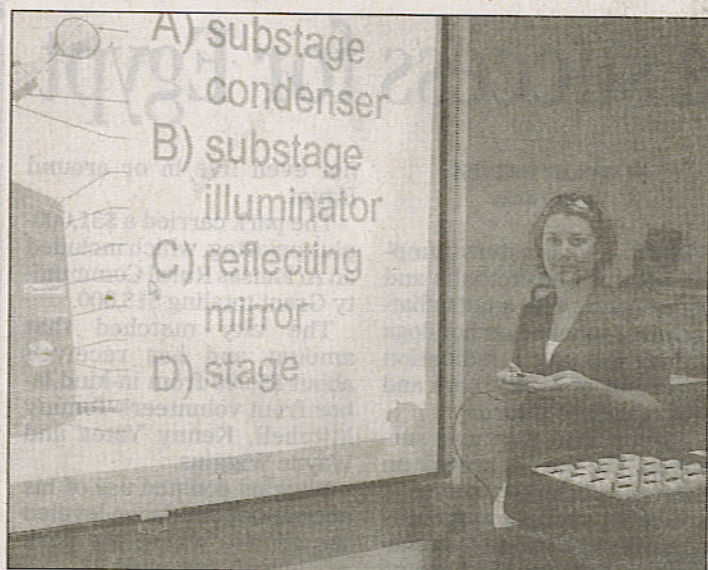
Teaching link

Clickers are hand-held devices that students use to interact with a computer in the classroom. It works as follows: The instructor prepares the lecture incorporating questions to the students as the lecture goes. When the time comes, the instructor asks the student to provide feedback usually through multiple choice questions. The students then respond using the clicker within a specified time.

Immediately a program in the computer analyzes the answers and gives the results just as if it were a TV game show such as "Jeopardy" or "Who Wants to Be a Millionaire?" It is kind of an electronic quiz whose results can or cannot be used as part of the course grade.

This allows the faculty to figure out whether the students are learning on the spot and also engages the student more directly with the material being presented in the classroom. When discussing the answers, the instructor can then re-emphasize whatever the students may have missed or misunderstood. This makes the students pay more attention and also become more engaged with the material being taught.

In addition to reviewing concepts, allowing student self-monitoring, revealing classroom perceptions and comprehension and providing low-stakes quizzes, this technology can be used to take attendance, measure the success of group work, cre-



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Graduate teaching assistant Sara Seagraves holds the teacher clicker while giving a practice quiz.

ate opportunities for in-classroom adjustments to lectures, provide and collect data for further analysis and assist curriculum development.

To date, the clicker technology has been used in two Biological Sciences courses: Biology of Animals Laboratory which typically has 75 to 150 students enrolled per semester; and Biology of the Cell lecture, which has 75 students enrolled per semester.

Other faculty members in other departments at ASU, such as the Department of Business, also have been using clicker technology in their classrooms.

Students connect

Initially, there was some anxiety from the students in terms of not being sure their answers were correctly recorded and their ability to change their answers. However, student feedback to the technology has been overwhelmingly positive, as they find that they are more active in learning and that it helps them understand the main points the instructors are trying to get across.

In addition to student feedback, an assessment of the impact clicker technology has had on learning was conducted over the last two years, and initial results are encouraging. We have found two improvements in learning based on grade improvements. First, compared to

students who took Biology of Animals prior to this technology, students exposed to the technology doubled their scores on their first practical from a pre-clicker average in the mid-30s, to a clicker-using student average in the mid 60s. Secondly, in terms of letter grades, students who had clicker technology in the classroom averaged one letter grade higher than those previous students who were not exposed to this technology.

In addition to grade improvements, drop rates were nearly cut in half during the spring semester when clicker technology was put in place in the Biology of Animals laboratory, which historically had a drop rate of 50 to 60 percent each semester.

With this innovation ASU is becoming part of the growing number of educational institutions of higher education that are applying new technologies to make teaching more efficient and attractive to their students.

From community colleges to research universities, clickers and other electronic devices is becoming a way to tell students "we care."

Contact the ASU Department of Biological Sciences at biology@astate.edu.

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