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Using iClickers in Your Courses for Instant Student Feedback

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Click-Click-Click: Obtaining Instant Class Feedback

by Eric LePage (originally published in Volume 3, Issue 4, April 2008's edition of Digital Bridges, a publication of the Teaching and Technology Center)

Last Spring, the Teaching and Technology Center announced a new TTC Innovators Program grant called the TTC Classroom Response System Initiative which looked to provide instructors with the ability to elicit instant feedback from their students through the use of wireless radio frequency devices commonly known as “classroom clickers”. The grant program supported faculty in the development of PowerPoint lectures utilizing this polling technology to support course objectives and learning outcomes for students within the curriculum. Interested faculty had to experiment using the Turning Point Classroom Response Systems to develop a series of PowerPoint lectures (minimum of five) to be used as the interface for students who would be responding to multiple choice, true/false, Likert scale questions, and more via their wireless radio frequency devices. Students could provide instant feedback anonymously for polling purposes or their responses could be tracked for assessment purposes.

Six faculty members received grants to incorporate the use of Classroom Response System devices into their classroom teaching. Four of those faculty members used the clickers this past Summer and Fall, and shared their experiences and the experiences of their students in using these interactive polling devices (here, in their own words) ...

**Martina Arndt—
Department of Physics**

My original proposal to use clickers this semester was to use the technology in my PHYS 107 Exploring the Universe course with accompanying lab. Not only did I do that, I also incorporated them into a professional presentation!

I met all my goals for using the clickers in my introductory astronomy course. I used them as a:

- Refresher: Help students review material from a class weeks prior so that they would have the material fresh in their memory for the class that day (e.g. Multiple Choices questions on Kepler’s Laws).
- Review: Provide students with some practice questions for an upcoming exam (multiple choice)
- Way to take the pulse of the class: Get some anonymous feedback on an exam they had taken a week prior (e.g. multiple choice questions on how many hours did you study? Did you do the practice multiple choice questions I provided? What grade do you think you earned? Would you like to retake it?)
- Way to get to know students: On the first day, I asked students questions about their majors, concerns about the class, what year they were, etc.
- Pre/post testing technique: I asked students a series of True/False questions about the moon before a lab on the moon (e.g. The moon spins. The moon is only up at night.) and then the same questions after the lab. I used their responses to see what preconceptions existed and if the lab helped them reevaluate them.

Overall, the clickers were a success. Using them as a refresher made class that day much more productive and effective. It was a great way to review material and to stimulate questions from the students.

Students always appreciate review questions, mostly to get a sense for what sorts of things I deem important and to get practice. Having a way to do them in real time made it feel much more like a group study session (which I think all students should do, but they usually don't), and was therefore more effective than having students work on the questions on their own in their dorm rooms.

Taking the pulse of the class was a great way for students to anonymously share what they did to prepare for the exam, and how they felt about their performance. It was a great launching pad for a discussion on how to best study the material and what they can do to improve their grades on the next exam. Students were very honest about their responses, some admitting they had not studied or done the provided multiple choice questions. They were also harder on themselves than I was – they thought they had done much worse than they really had!

I used to hand out a paper survey on the first day of class to learn more about the students – everything from their major, year, interests, and so forth. It was also a way for me to draw out their concerns – and experience has told me that most students are afraid of the math. I like for them to know they are not alone – that other students share the same concern. The clickers provided me a way to nearly instantaneously show the students that a lot of them were worried about the math (my prediction held true again!) and that reduced some of the anxiety for them – I hope - and provided me a great way to advertise the services of the Math Lab in the academic Achievement Center.

Lastly, I am a proponent of using pre and post tests in an informal way to identify some of the firmly held “beliefs” that students have about things in physics and astronomy. In principle, after taking a physics or astronomy course, students should be able to reassess their beliefs and perhaps correct some of their misconceptions. The moon is a classic example- yes, it does spin, but students have a hard time believing it. So, doing a pre test with the clickers gives me (and the students) a sense of where everyone stands, and then after the lab, we do the post test. There are always some stragglers who still believe that the moon does not spin, but doing the post test provides me another way to revisit the material and try to clear up misconceptions.

The students LOVED using the clickers in class – they were engaged and felt like they were playing a game. They also really appreciated the anonymous nature of the responses. They also liked tinkering with them – if you press the “?” button, the “feedback” counter increments by one, so the students made it a separate game to try and get the “feedback” counter as high as possible. I suppose there is no way to remove ALL distractions!

At my end, writing the questions was the hardest part. I felt limited by the Multiple Choice, Leichart Scale, T/F – I craved a way to get written responses or numerical answers to problems. But that may be beyond the scope of the clickers. I also found that I usually forgot the “dongle” in the classroom when I was done. I decided to not assign students to a particular clicker; rather I handed them out at the start of class and they were not allowed to leave until they handed them back.

**Dr. Shannon Donovan—
Department of Accounting and Finance**

I incorporated PowerPoint slides that used clicker participation into most of my presentations in my Managerial Finance class for the Fall 2007 semester. I had some computer issues toward the end of the course, so I didn't use the clickers for the last two chapters and I actually found that the students were disappointed. They liked the participation - breaking up the class, the change of pace.

I assigned each student a number and they were responsible for coming to get that clicker number at the beginning of class and for returning that clicker at the end of class. I also used this as attendance but did not use it for grading. I didn't have the chance to evaluate which students answered how this time around, learning the technology and incorporating the slides took most of my time. I was able to download and save the information by clicker number and see how the class was doing overall, however, in the future I would like to learn how each student answered individually.

I generally incorporate 5 to 10 slides in a class presentation. Some of the questions on the slides were just a check to see if the students were paying attention to what was just presented, some required the students to actually do a problem and compute the answer, and some were just fun such as "I love to compute ratios! True or False". The computational and knowledge check questions were as much for me as the students to check the pulse of learning in the class. Rather than just have someone who knows the answer volunteer, I could get a quick feel on the entire class. The fun question really helped to break up a heavy topic. Most of the students didn't lie either; they strongly voted 'False' on the loving to compute ratios question.

I also used the clickers to promote discussion if there was not a strong agreement as to the correct answer. I would ask a student who answered one way to support his argument and then ask a student who answered another way to support her argument.

Again, I used the clickers for attendance but not for grading, so all the students generally picked up their clickers but not all participated. I didn't keep track of which students did and did not participate but in general if there were 25 clickers out, I'd get 21 to 24 answers to a question. I am not positive if this was lack of participation or a mechanical issue. Most of the time all the students said they entered an answer but I didn't often get 100% participation recorded. I never took the class time to figure it out.

I did have class discussions in each of the classes about the students' feelings about the clickers and the students seemed to like the clickers. No one voiced a strong opinion against them. There were a couple of classes where I had technical difficulties but generally the clickers were easy to get started with. Adding slides and student use was fairly simple to learn.

**Dr. Thanh Nguyen—
Department of Secondary Education and Professional Programs**

I have had the benefit of using Classroom Response Systems (CRS) in my courses for the past couple of semesters. CRS helped me convey the most sensitive, controversial, and provocative thoughts to my students without offending them.

For my EDMC 532 - Teacher as Leader course, I used CRS as a surveying tool to provoke discussions on issues that otherwise we would prefer not to discuss.

For example, when we discussed a teacher's responsibilities in teaching their students about gay and lesbian awareness, some students would become agitated or use strong language in addressing other students. Some students would refuse to discuss or deal with these issues because of their religious beliefs or values. With CRS, I was able to pose questions with no right or wrong answers, and allow the students to select an answer anonymously with the clickers. For example, I used CRS for the following discussion: "We know that Matthew Shepard was beaten, tied to a fence and left to die because he was gay. As teachers, we should: (1) raise awareness about gays and lesbians to students as young as possible (2) raise awareness about gays and lesbians only to high school students (3) raise awareness about gays and lesbians for all school teachers and the community OR (4) not discuss or raise awareness in my religious school because we would be fired." Since they could anonymously pick one answer that they felt best fit them, they would feel more comfortable in selecting an answer. CRS displayed the results in either bar or pie chart (one of the many charts you can choose from). Many times, students would be surprised to see answers that they would not think others would respond with. The charts function as teachable moments, and students would voluntarily defend their decision on why they chose a particular answer over others. Students found these discussions acted as their "Aha" moments.

I have to say that CRS can be a powerful teaching tool for training teachers. Human beings are so diverse, not only in regards to race, ethics, religions, and languages but also learning styles, social-economics, poverty, gender, and so on. In training teachers, educators cannot force teachers to change one view over another. Yet educators have to train teachers to teach our next generations to become good citizens. CRS helped me to train many teachers, not just to develop them as good teachers but also as a teacher-as-leader who is willing not only to teach but also to take on challenges beyond the classroom walls.

**Dr. Nancy Witherell—
Department of Elementary & Early Childhood Education**

In Second Summer session '07, I was able to use Turning Point to enhance ELED 250 Foundations of Reading. The purpose of this course is to prepare students to pass the Foundations of Reading MTEL (Massachusetts Test for Education Licensure).

In preparation to use the Turning Point program in this course, it was necessary to scan the practice test students use to aid in the passing of this exam. This test has 100 multiple choice test items, with a selection of four answers each.

During the last few days of class, this practice test was used very successfully with the Turning Point system. In the past, I would go over the items and students would barely raise their hands for A,B,C or D. With the Turning Point program, I waited for 100% participation. This was truly an effective use of time. The program would show immediately the percentage of students obtaining the correct answer. This enabled me to then discuss only the questions where a high number of students had chosen incorrectly, and to explain further to them why one answer was better than another. This program, which allows "every pupil response", actively engaged my students and made a necessary review that used to be dull and boring, interesting and motivating.

In addition, I analyzed the state results from students who took this course. Statewide, the Foundations of Reading for the July 14th session had a 52% pass rate. In my class of 24, 21 students took the July 14th exam. Of the 21, 16 received a passing score. This resulted in a 71% pass rate, which is significantly higher than the 52% state pass rate.

Final Thoughts

The classroom clickers are quickly becoming considered as standard, required course purchases alongside textbooks, lab manuals, graphing calculators, art supplies, and so on, and can be quite inexpensive compared to these other course purchases, so if you are interested in learning more about implementing classroom response systems in your own courses, please contact the Teaching and Technology Center at ttc@bridgew.edu or 508.531.2634. We would be glad to sit down with you and discuss the best options for you and your students.