

i>clicker Pedagogy Case Study
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COURSE OVERVIEW

Course Title/Subject: International Economics.

Typical Enrollment/Student Information: ~200 students per class. This course attracts upper-division students from a wide array of disciplines, though the majority of students are business or economics majors.

Course Structure: This 3-credit class meets twice a week at 8:00 a.m. and lasts for 1 hour and 20 minutes. Even at that dreadfully early hour of the day, the class always fills quickly to the class limit of 200. One teaching assistant is assigned to the course to assist with grading and advising.

Course/Student Challenges: The major challenge in teaching such a class is keeping the large number of students reasonably engaged for this relatively long period of time. Clickers are used during the lecture as one mechanism to enhance student engagement. i>clickers are also useful in addressing other key challenges, such as ensuring that students retain a great deal of information and learn to effectively analyze economic issues.

Course Grading Policy: Class grades are based on 2 midterm exams (worth 40%), a comprehensive final exam (worth 40%), 3 problem sets (8%), attendance (6%), and clicker answers (6%).

MOTIVATION FOR USING i>clickers

There are several reasons I use i>clickers in the classroom:

- They increase student engagement.
- They provide students with immediate feedback on their comprehension of material.
- They provide me with important and immediate feedback as to how effectively the subject matter has been presented.
- They offer variation to keep and refocus students' attention throughout a long lecture.

IMPLEMENTATION

Obtaining i>clickers: Each student is responsible for purchasing a clicker, and most do so at the local bookstores. Recently, a secondary market has emerged through which

students resell their clickers directly to other students (they can also resell them to the local bookstores).

Registering i>clickers: Students are required to register their clickers. Although some register via the clicker website, the vast majority register the first day of class through the in-class/roll-call registration. Over 95% of the 200 students are usually registered in class by the second day.

Classroom Technology: In teaching this course, I use quite varied technology in addition to clickers. The tablet computer, data projector (which I use instead of an overhead), and PowerPoint slide presentations all integrate extremely well with the clicker technology.

i>clicker Grading Policy: Students receive credit for answering questions correctly, but the stakes are low. By answering at least half of the questions correctly, they get 1 point per session. For the term, clicker points constitute only about 6% of their final grade. Just giving a small amount of credit seems to be all that is needed to keep students engaged. To avoid the problems associated with forgotten clickers and absences for different reasons, I set the maximum number of clicker points possible as less than the total number of class days (typically 20 maximum points for the term out of 26 total sessions).

Daily Use: I use clickers in every class, usually presenting 3–4 questions. Sometimes I encourage students to discuss the questions with each other before responding, while at other times I have students answer questions independently. Occasionally, I will ask a particular student to expand upon the answer to a clicker question.

Questions Asked: There are a number of ways I use clickers. Often, I ask a question right at the beginning of class that relates to material addressed in the previous session. In this way, I assess understanding and retention of lecture material. I also tend to pose a question to students before I deal with a subject, particularly if it is an area where there are often general misperceptions. For example, on the first day of the International Economics course, I want to provide a simple descriptive profile of the role of the United States (U.S.) in the international economy. The common perception is that the U.S. is the #1 exporter, that its largest trading partner is China, and that international trade is a relatively important component of the U.S. economy. Before addressing the topic, I pose the following clicker question:

Example.

The screenshot shows the iGrader interface for a session. At the top, it says "iGrader Set Session Scoring" with a "Help" button. Below that is a question box with a blue background and white text: "Which of the following is true about the United States?" with five options: a. The world's largest exporter in absolute terms, b. A relatively "closed" economy (X/GDP low), c. Largest trading partner is China, d. Largest trading partner is Mexico, e. None of the above. Below the question, it shows "Performance Points" for the session: Total performance points for this session: 1. There is a checkbox for "Not to exceed 1 points" which is checked. It indicates "Question 2 of 3" with "Previous" and "Next" buttons. The "Correct Answer" is set to "B". A table shows the results for this question, with a red circle around it:

	A	B	C	D	E
Points:	0	1	0	0	0
%:	13	11	41	11	24
Number:	19	16	60	16	35

Buttons for "Hide Screenshot", "Set and Close", and "Cancel" are also visible.

The results—but not the answer—are then shown to students. When they see that the answers are widely distributed and are told that the majority of them got the answer wrong, their interest in what is to be discussed is heightened. This exercise offers an immediate and tangible means for me to dispel misconceptions. Once the subject is then explained, I present the same question, and this time the correct answer is shown...with the following results:

This screenshot shows the same iGrader interface as the first one, but for "Question 3" instead of "Question 2". The question and options are identical. The "Performance Points" section shows "Total performance points for this session: 1" and the "Not to exceed 1 points" checkbox is checked. It indicates "Question 3 of 3" with "Previous" and "Next" buttons. The "Correct Answer" is still "B". A table shows the results for this question, with a red circle around it:

	A	B	C	D	E
Points:	0	1	0	0	0
%:	1	99	0	0	1
Numbers:	1	150	0	0	1

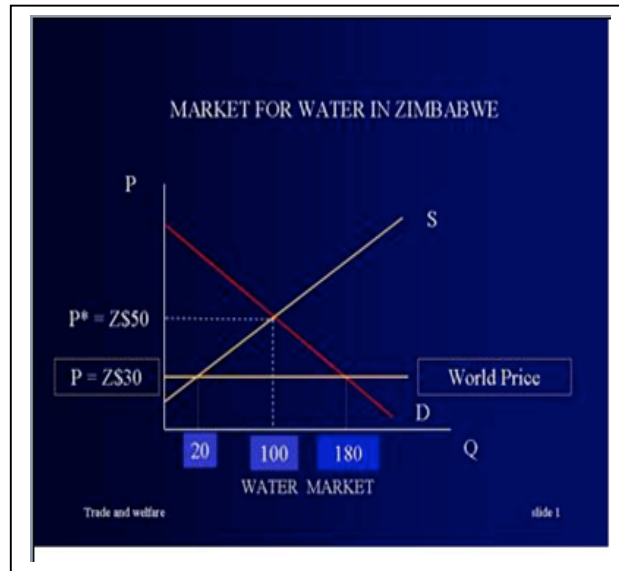
Buttons for "Hide Screenshot", "Set and Close", and "Cancel" are also visible.

Not only do students see their improvement, but they see the value I've added with this exercise. Questions addressing areas where there are common misperceptions tend to be the most effective. I've generated all of the clicker questions for the course, and they are both descriptive, such as in the previous example, and conceptual, as in the following example.

Example.

What quantity of water would be imported into Zimbabwe at a world price of Z\$30?

- A. 180
- B. 160
- C. 100
- D. 20
- E. None of the above



At the end of each session, I post the clicker questions and their correct answers on my course web page.

RESULTS

Successes

Engaged Students in Large Class without Adding Stress. Clickers have effectively engaged students in a large class setting. In the past, when I posed questions directly to individual students, many would freeze and panic. With clickers, students are now engaged with a “relaxed alertness” because they can answer questions anonymously.

Provided Much-Needed Variation. Clickers also provided an additional element of class variation to keep (or refresh) student attention, along with the occasional video clip, class game, PowerPoint review, and other such devices that are so crucial in a long class. Indeed, just the 1- or 2-minute pause from the daily routine seemed to recharge their brains and refocus their attention.

Provided Immediate Feedback to Instructor. Occasionally, even after my supposedly “brilliant” explanation of the material, the majority of students sometimes failed to answer a clicker question correctly. Armed with this information, I was then able to restate the material in a different way so that most of the students were ultimately able to answer the question correctly.

Fostered Learning and Interest. Student reaction to clickers has been extremely positive. In a survey I conducted at the end of the first term that I used clickers, 93% of students indicated that “the clicker exercises during lecture helped in understanding the material better,” and 80% said they “would like to use clickers in future economics courses.”

Improved Exam Scores. Although I don't have pre-post data to quantify the results, my general impression is that students are performing better on the exams.

Challenges

We had no pedagogical challenges using i>clickers.

CONCLUSION/DISCUSSION

In summary, clickers have been a valuable and welcome addition to my International Economics course. Although I've been skeptical of most of the new educational technologies flooding the profession in recent years, this is 1 innovation that, for me, has proven its worth. I've used i>clickers for a few years now, and I've consistently seen important benefits for students. I shall continue to use them in my International Economics class, as well as in my new course on the Social Science of Sports, which will be launched next term. As I do, I believe that even more advantages of the i>clicker system will come to light.