



Feedback & Backchannels with Clickers & Cellphones

It is essential for an instructor to know what students understand (or don't) so they can customize their classes to their students' needs. Sometimes all that is needed is a show of hands. Flashcards, clickers, Twitter backchannels, cell phones, and online polling are tools that can solicit this feedback, depending on the needs of the instructor and the class.

1. A Show of Hands

The simplest and fastest form of feedback is to call for a show of hands. Mazur (1997) added to this by using Concept Tests (multiple choice questions that test mastery of concepts). At a break in the class, the Concept Test is offered and students answer with a show of hands.

Alternatively, colored flashcards might be used if one wants to avoid peer influence or even Immediate Feedback Assessment Technique (IF-AT) scratch-off cards if using Team-Based Learning (TBL) (Michaelsen, 1989). If all of the students get the right answer, the instructor can move on. If the students are divided in their opinion, Mazur would have them turn to each other and convince each other of their opinions, and then test again. Often, this would resolve the issue. Occasionally, the class would become convinced of the wrong answer. And then Mazur would go back and try to explain the issue again (Crouch et al, 2007, pp. 13-14). Of course, a show of hands is not appropriate when intimate student information is requested.

2. Clickers

Clickers are electronic wireless tools that allow students to respond to multiple choice questions. It is somewhat unfortunate that "clickers" can also refer to any tool that makes a clicking noise, such as those used for training marine animals. Student Response Systems or Audience Response Systems are other names for these.

Clickers should be used to:

- a. Solicit anonymous honest student responses to intimate questions like "Who here has used illegal drugs?" or "Who here believes in the existence of non-Terran aliens?" Those responses can then be immediately displayed as anonymous data on a chart to be used in class.
- b. Record student responses to compare two or more sections, or to compare a pre-test with a later post-test (Lasry, Apr. 2008).
- c. Record student responses for grading (as long as the class is not large enough for someone to give his clicker to someone else).
- d. Solicit student feedback that demonstrates their level of understanding (Beatty, 2008).
- e. Force students to commit an answer that may lead to cognitive dissonance.

- f. Present challenging questions that will raise the level of conversation.
- g. Ease faculty transition to a more interactive classroom. Clickers allow instructors to ask simple multiple-choice questions and keep teacher-student discussion at a minimum, so the class still feels like the lecture familiar to us all. But it also increases interaction and demonstrates to instructors that class can be more fun and more effective with that increased interaction. As one instructor said, “My worst day using clickers is about as good as my best day using standard lecture” (Simon, 2008).

Clickers should not be used to:

- a. Take attendance. Students can easily loan their clicker to someone else.
- b. Present easy questions to make students pay attention long enough to click a button, or perhaps to just wake them up from a lecture-induced stupor.

3. Online Polling (via Cell Phones, iPads, Laptops, etc.)

Online polling is the next step beyond clickers. Students don’t have to buy a separate tool; most have a cell phone already. Students can submit their answers either through the web (SurveyMonkey, etc.) or through an in-class receiver (as with Clickers). Here are the things to keep in mind when considering the use of online polling:

Privacy: Any work identified with an individual student can potentially place that student at risk. Even if it is just a bad exam, having a copy on the web for even a short time can potentially harm a student later, because the Internet Archive and other services routinely archive materials on the web. You can investigate this by searching for a website you have deleted using the Wayback Machine (<http://archive.org/web/web.php>). To assure privacy, the student data should either be located behind a firewall (as with a Learning Management System or LMS) or be gathered and stored on the instructor’s machine (as with some clicker systems).

Input Device: Today’s students may seem fast when texting, but texting is still slower than Morse Code! When writing lengthy responses, students need a full-size keyboard.

Mode	Average speed	Highest Recorded Speed
Texting	20 wpm	56 wpm (iPhone)
Morse Code	20 wpm	75 wpm
Handwriting	22 wpm	282 wpm (Shorthand)
Typing	35 wpm	80+ wpm for professional typists; world’s record is 216 wpm

Distraction: Texting is fun but distracting, to the extent that states are beginning to form laws about texting while driving, something that one would think would be an obvious no-no. In class, a cell phone, iPad, or laptop offers many other forms of diversion, including texting, sexting, watching movies (including porn!), working on homework for other classes, checking FaceBook, etc. Allow these devices in class if students will be using them for work and will be kept busy, or if you can control their use in some way. Many students use them for notes or for recording lectures, which are legitimate academic uses. Policing students is a difficult and perhaps even

impossible task. If a student is obviously not involved in academic tasks, they may be interfering with other students' learning. To avoid that, ask him/her to leave and to meet with you at office hours to discuss their behavior.

Cheating: If the work is to be graded, any test given with the availability of a cell phone must assume that some or all of the students will be accessing other resources (the web, IMing or texting friends or colleagues, etc.) (eSchool News, 2003). If the use of such resources is appropriate to the test (i.e. an open book exam), then cell phones can be used, but the risk of plagiarism also exists and the instructor should spot check textual responses in the same way he/she would check a student paper. Moreover, there are online services that will take an exam or even a class for a price. In such an exam, the instructor takes on the responsibility of ensuring the true authorship of the work.

4. Twitter Backchannels

Twitter can create a channel for use with a specific class and section (i.e. #HIST104s2fall2012) and even for individual groups within each section. The data in that channel is open to the public, so it should not be used to gather intimate student information. It can, however, be used to create a backchannel in which students post questions for the instructor(s) without interrupting the lecture, presentation, or movie. It also allows students to submit (and instructors to record) more fulsome qualitative responses.

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