CLICKERS: THE GOOD, THE BAD, THE INDIFFERENT…

Bev Bramble

Clickers are remote-control-like devices students use by pressing buttons to answer questions. They then view aggregate "voting" results in a pictogram projected at the front of the classroom. Clickers are now being supplemented by access cards students can buy that let their laptops or mobile devices serve as clickers instead of buying the clicker devices. As the instructional designer for UNB's Teaching and Learning Services, I was responsible for leading a 2006 pilot of 3 competing clicker vendors and subsequent support for clicker adoption on campus.

Why would anyone bother installing and learning to use clicker software and have students spend up to $50 to buy clicker devices or wireless access cards to do what they now do by raising their hands? I have heard this question many times, and even wondered it myself while troubleshooting clicker software problems.

However, the question oversimplifies the issue clickers try to address: how to improve student performance by getting them more invested in what is going on in class. A challenge many UNB instructors face is large classes of quiet students who won't participate and perform poorly on tests and assignments. Clickers can help students become comfortable contributing in class discussion and learning activities.

Picture this: you are lecturing and students are showing varying degrees of interest, from watching you and writing notes, to tapping as they stare into their laptop screens, to slouching, possibly sleeping. To vary the pace, you ask for a show of hands in response to a question ("how many think this is the correct answer? How many think that?"). A few hands go up in response to the first option. Several students look around to see how many hands are being raised as you move through the options. When there is a larger than usual number of tentative hands raised, others join in and raise theirs. It turns out that this is the correct answer. So, a lot of students who have been mentally coasting, think "There, I know that one." The instructor thinks, "Most people got the correct answer, so I can move on." Both find out later on an assignment or test that students really didn't get it after all.

We have found that the simple act of committing to an answer by pressing a button gets students more connected to what is going on and more invested in the outcome. After selecting an answer, they wonder what others picked, and whether it's correct. When they see the aggregate results display, they know whether they "got it," without losing marks or feeling embarrassed if they were wrong. And the instructor knows whether students understand the concept sufficiently to move on, or whether further explanation and examples are needed.

If the distractors were common misconceptions, the instructor may use the aggregate results display to further elucidate the concept. Or, if enough students got the correct answer without it being indicated, peer instruction where students pair up and take turns convincing each other that their selected answer is correct, may be useful. If both paired students selected the same answer, they can still talk about their reasons for selecting it, and discuss why some might pick another. After peer discussion, the question can be run again and the two sets of aggregate results compared. This is a type of learning by teaching, a technique for deep learning, where students refine their understanding of the topic as they explain and defend it.

So much for the promise. Now the reality.

When surveyed, typically a majority of students like clickers, appreciate the attempt to use technology and feel they are a positive addition. A minority are indifferent and approximately 10% of respondents feel clickers are pointless.

When educational software is described as "easy to use," this usually reflects the application programmers' idea of easy, rather than that of the user. Too often, steps required to use instructional software are too numerous, convoluted, and interface buttons aren't labelled with terms that make their function obvious, unless a lot of pilot testing with actual instructors was done before the software was released. Companies tend to skimp on pilot testing because it takes a lot of time and money, not to mention an appreciation of its importance, often lacking since many managers and developers feel that their school experience is all they need to design educational software.

I was surprised by the realization that most clicker vendors developed their products for PCs and had their PC programmers improvise a Mac version from the PC one, rather than building a unique Mac version. The result is that clicker software often works poorly on Macs, which is unfortunate since Mac users tend to be early adopters of educational technology.

It is easy to pick on software developers, without appreciating their Sisyphean task: Microsoft and Apple are constantly updating their operating systems (OSs) without much apparent regard for how it affects other applications that must use their OSs in order to function. Hitting a moving target is a thankless job. Lack of a standard university computer platform is also a challenge. I recently installed clickers on the computers of four instructors in one faculty in one morning, three of whom were team teaching. Each computer had a different operating system: Windows XP, Vista, Windows 7, which required a different version of the instructor software; and Mac (yet another version).

Add to this mix the sale of our selected clicker vendor to a competitor whose goal was to exterminate them, and we have an ill-structured exercise in frustration. Yet, many UNB instructors use clickers and see value in them. Many more would use them if the university or faculties would buy the devices and access cards for students—they don't want to add to students' financial burdens. A few have quit using clickers in frustration because of technical glitches that could not be resolved. When it comes to educational software, that's often as good as it gets.

References:

Some ideas for using clickers (requires UNB faculty/staff login): Clickers 201: So Students are Clicking: Now What? A presentation at UNB by Dr. Tom Haffie, UWO, September 2007 https://www.unb.ca/vp/learn/sew/index.php/Clickers_201:_So_Students_are_Clicking:_Now_What%3F_%28QuickTime_Movie%29 or view PDF script: https://www.unb.ca/vp/learn/sew/index.php/Clickers:_So_Students_are_Clicking:_Now_What%3F

Nichol, D.J., and Boyle, J.T. (2003). Peer Instruction versus Class-wide Discussion in Large Classes: a comparison of two interaction methods in the wired classroom. *Studies in Higher Education*, Oct2003, Vol. 28 Issue 4. http://web.ebscohost.com/ehost/detail?hid=22&sid=14622399-86bc-4829-8e48-59fe64357f1c%40sessionmgr13&vid=1&bdata=JnNpdGU9ZWhvc3QtbGl2ZSZzY29wZT1zaXRl#db=aph&AN=10895020

A resource site listing research on clicker effectiveness by discipline and in general: http://cft.vanderbilt.edu/docs/classroom-response-system-clickers-bibliography/

Bev Bramble is an instructional designer with UNB's Teaching and Learning Services, whose role is to support faculty members in implementing active learning strategies and instructional problem-solving. He can be reached at bbramble@unb.ca.