A quick guide to ‘clickers’

The eLearning Unit, Centre for Lifelong Learning (Updated: September 2013)

What are ‘clickers’?

Clickers are handheld electronic device with an alpha-numeric keyboard that enables each participant in a lecture theatre or classroom to give an instant response (objective or qualitative) to a question or problem.

‘Clicker’ is a commonly used colloquial term, but this type of technology is also known as classroom communication systems, instant response systems, audience response systems, personal response systems or electronic voting systems. (This web site lists 24 different terms for electronic voting systems!)

How do they work and how can you use them?

Typically with most clicker systems, questions are predetermined and embedded into PowerPoint presentations. However, you can create questions ‘on the fly’ responding to points in a class discussion etc. Students are able to reply anonymously to any question or problem – the results for the whole class are typically generated and displayed ‘live’ as the responses are received into some form of chart. Some types of clickers enable free text responses. Clicker questions can be used to test student’s knowledge on a topic (the classic mcq’s etc.), stimulate discussions around difficult concepts and problems students commonly struggle with, and to illicit their opinions or experiences on a particular topic. Clickers that enable free text responses can be used to create audience generated topics lists for evaluation and feedback purposes.
The following blog article has examples of different creative question types that can be used with clickers:

Multiple-choice questions you wouldn’t put on a test: Promoting deep learning using clickers.

What are the learning and teaching benefits?
As with any learning technology, learning and teaching benefits will depend on how the technology is used. A key benefit of clickers is that students can vote anonymously and receive instant feedback. This can encourage students to:

- Interact and engage more freely than raising their hand in a large class etc.
- Assess their responses against others in the room and any correct answer.
- Can help engage students into a topic by eliciting their options or experiences.
- Can stimulate class, group or peer discussions – encouraging students to actively articulate their understanding or lack of understanding on a particular topic to each other which can be less threatening than to the tutor in front of a large class.

Tutors can receive instant feedback on whether a class understands a particular topic etc. This can enable opportunities for diagnostic testing and contingent teaching.

Peer instruction is a commonly used model for using clickers which has been designed to support students to better understand topics or concepts they typically find difficult. Students initially vote on the answer to a problem question without the answer being revealed by the tutor. They are then encouraged in pairs or small groups to discuss and reach a consensus on the right answer. The tutor will then reveal the correct answer and stimulate further class wide discussion. Research indicates that the process of students articulating to each other their understanding or lack of understanding on a concept or topic can be a very effective form of learning. Research indicates that this can be effective even if none of the students know the right answer! For example:


Can you show me an example of clickers in action?
The following link will open a 5 minute video from the University of Strathclyde (this a little bit of a promotional video for the University at the beginning!). This video shows clickers being used in different subject areas, and staff using the peer instruction method describe previously:

JISC case study from the University of Strathclyde
Are there any technical problems or limitations in using clickers?
Although the technology is relatively easy to set up and use, the main problem can be the management of the handsets:

- Storing and getting large numbers of handsets to a lecture theatre.
- Handing out handsets for each session & collecting them back in.
- Checking for damage, replacing batteries etc.

Although the cost of handsets has dropped in price as this technology becomes more common, and if you buy in bulk the unit price will drop, they are still expensive for many departments to buy, manage and maintain – particularly if they don’t have local IT support.

To get around some of these technical problems, the School of Engineering for example, issues a handset to each new student at the beginning of term – they give staff a post dated cheque to cover any loss or damage etc. but this still needs to be managed and organised.

How do other institutions get around some of these technical limitations?
The University of Surrey has clicker software installed in most large lecture theatres and students borrow handsets through their library short loan system in a similar way to a library book.

Other institutions (some Scottish Universities) have built clicker handsets into some large lecture theatres. This obviously limits their use to specific venues and still requires the technical maintenance associated with mobile handsets.

Recent research and development has focused on using mobile phones as clicker handsets, for example the Poll Everywhere, Socrative, Learning Catalytics from Harvard University or the xLearn text wall service (text only feedback). The logic is that most students have mobile phones and will bring them to lectures avoiding the practical management problems listed previously. Using mobiles involves students sending a text (SMS) message for each question response which means that they pay for the service. This is not a problem for most students who commonly have large or unlimited texting packages with their mobile phone contracts, but can be limiting for some. Some clicker companies (E.g. TurningPoint’s ResponseWare Web software) are now offering mobile solutions alongside their handsets which can use local Wi-Fi networks cutting out text message costs, but this solution still requires you to buy their original products.
Who is using clickers within the University?
Staff in engineering, vets, medics, dentists and health sciences are currently using clickers. For example:

**Dr. Luke Dawson, School of Dentistry**
Here Luke is using traditional clickers to support students to develop their diagnostic skills based on a series of case based problems. Students are asked to vote on their confidence for different diagnostic options. (This video may ask you to download the Silverlight plug-in before running.)

**Dr. Susanne Voelkel, School of Life Sciences**
This video shows Susanne getting students to use their mobile phones as clickers for the first time in a lecture theatre. The video is introduced by Nick Bunyan from the eLearning Unit explaining how the Poll Everywhere software works.

Where can I get further support and advice?
Please contact eLearning Unit in the Centre for Lifelong Learning if you would further support using clickers.

Further resources

**Books**


**Research**

**Derek Bruff’s website** is a very good source of research into the pedagogy of using clickers.

**Videos**
Harvard’s Prof. Eric Mazur outlining how he developed the peer instruction method and how he now teaches using questioning. (short, less than 5 minute YouTubecom videos).