Electronic Voting System

Enhancing learning and teaching with technology
What is an electronic voting system?

An electronic voting system (EVS) uses small handsets to collect responses from students and can help to support discussion and an engaging approach to learning.

During a teaching session the lecturer poses a question and a choice of answers. Typically this is done by inserting multiple choice questions into a PowerPoint presentation. Each student has a handset that allows them to select their preferred option while the question is displayed. The lecturer has a small receiver attached to their computer that is able to accept responses from the handsets. The results are then graphically displayed on the screen. Once the results are displayed the lecturer chooses a course of action to respond to the results, such as asking students to discuss their choices or re-explaining a topic.

Why use EVS?

Greater interaction and engagement in face-to-face teaching situations can lead to increased understanding and enthusiasm amongst students for learning. Feedback is an essential part of engagement as it increases students’ awareness of their own understanding and the lecturer’s knowledge of students’ levels of understanding.

Interaction and feedback on learning can occur without using technology (for example by using peer discussion or asking for a ‘show of hands’); however EVS encourages and provides a mechanism to stimulate interaction and engagement. EVS also offers additional opportunities beyond non-technical approaches: student participation increases because responses are anonymous and the immediacy and accuracy of the feedback to the lecturer about the group’s thinking enables the lecturer to respond and adapt immediately.
These interactive approaches also incorporate various factors that encourage deep learning (Biggs, 2003):

- “Teaching to elicit an active response from students; for example by questioning, presenting problems, rather than teaching to expound information
- Teaching by building on what students already know
- Confronting and eradicating students’ misconceptions
- Teaching and assessing in a way that encourages a positive working atmosphere so students can make mistakes and learn from them”

(Cutts, 2006)

EVS can be used to check existing knowledge, gauge opinion and for revision but has proven to be most effective when used formatively to stimulate discussion and exploration among students. A key principle is that gaining the student response and displaying the results is not seen as the end goal but as a starting point to promote engagement and discussion. Encouraging peer instruction and discussion can also be very effective.

“Some of the most mature uses of voting technology in lectures are based on using seemingly simple questions to get at the fundamental concepts of the subject. The researchers, based in physics education, found that many students could mechanically work their way through the problems to get the right answer, but had little understanding of what the result really meant in terms of fundamental physics. Their seemingly simple questions tend to split the class, and then students argue with each other as to the correctness of their own answer. This articulation of their reasoning process is believed to be highly effective in promoting a deep engagement with the concepts.”

(Cutts, 2006)
Osama Khan  
School of Management,  
Faculty of Management and Law

Osama used EVS in two modules (Financial Derivative and Financial Markets and Real Estate Finance & Investment) to encourage greater student participation. One technique he uses is to set problems and encourage students to work on these together and compare answers across the class using EVS. Osama also wanted to get feedback from the students as to their understanding of particular topics and concepts so that he could pace and tailor the lectures accordingly, and revisit areas of misunderstanding.

Osama says:

“I noticed that students were really engaging with the session. As soon as they see a question displayed, they started discussing among their colleagues, doing calculations, and were really involved in answering the question. There was a sense of learning all the time. In a typical lecture you observe your students listening to you whereas using EVS the role is reversed: they were asking me questions and that was a really different kind of feeling, they were learning by doing.”
Nick already uses a range of approaches such as peer discussion and questioning in his lectures to engage his students in his module (Social Psychology) but felt that using EVS could extend this interaction and provide additional feedback to students.

**Nick says:**

“At the outset of introducing a topic I can ask students to give their views, their opinions, guesses or predictions about phenomena. I can then build on that by adjusting what I’m going to say next, pick up on misunderstandings or perceptions that are at variance with the evidence we have. It makes the whole enterprise a more immediately interactive process.

Having started with a sceptical attitude, I find myself a great enthusiast. This is a great boon to the way we teach potentially. It’s simple to use and to include in the normal procedures we build lectures around. For the student it offers them more involvement and engagement and you get much more feedback from them.”
What to consider

EVS can provide an opportunity to take a fresh look at the function of the traditional lecture format and to steer away from material coverage towards a space for students to think, engage and learn. Some points to consider:

• The quality of engagement will depend on the questions you ask. Questions that focus on what a student can remember are less likely to encourage active learning than questions that focus on understanding. Thinking up well-designed questions with convincing alternative answers can take time.

• Students will tend to focus on getting the right answer but learning through mistakes is equally valuable. Avoid emphasis on the ‘correct’ answer and use the responses to promote discussion and exchange of ideas. The way you respond and encourage students to react once the results are displayed will affect the quality of the learning process.

• Using questioning, discussion and peer instruction within a session will reduce time for ‘covering’ the material through lecturing. Thus you may need to redesign your session to allow time for interaction.

• Students may be unfamiliar or even uncomfortable learning in this way: consider how you will introduce your students to using EVS and encourage them to share ideas and become more active learners.
How to get started

The University has an EVS called TurningPoint and a site licence for the accompanying software. At the time of printing there are 1850 handsets available in the Library for individual students using EVS to borrow. Staff wishing to use EVS in their teaching should contact the E-Learning team to discuss their plans.

• Look at online resources relating to EVS (including a range of videos and papers) available at www.surrey.ac.uk/e-learning

• Come to ‘EL10: Using an Electronic Voting System to Support Active Learning’ to see how the technology works and explore best practice of using it in teaching.

References


