Chapter XI

Evaluating Electronic Voting Systems in Lectures: Two Innovative Methods

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Abstract

This chapter provides practical advice on the evaluation of electronic voting systems (EVSs), particularly in relation to two evaluation methods. It begins by considering two potential educational advantages of using EVSs in large-group lectures in higher education. Four evaluation questions that are commonly asked by lecturers who use EVSs are linked to these two pedagogical advantages. The main body of the chapter focuses on two methods, observation and audit trails, and shows how these can be used to innovatively evaluate the use of EVSs. The development of an observational coding schema is described, and a case study of its use in two learning contexts is presented. Practical and technical issues associated with the use of audit trails are then discussed before a second case study is presented. The two case studies presented in this chapter draw extensively on data collected in evaluations of EVS implementations at the University of Glasgow.
Introduction

The use of electronic voting systems (EVSs) in higher education has become more widespread, evidenced by this volume dedicated to the issue. Educators are taking advantage of EVS technology in order to make their lectures more interactive, to promote peer-based and class-wide discussion, to help students prepare for exam questions, and to offer lectures that are contingent on students’ learning needs. While there is no one way to use an EVS, when an EVS has been implemented, every student in a class can use a handset to respond to questions posed by the lecturer. The lecturer can then collate all the students’ responses and present them back to the group.

The increased use of EVSs in higher education has raised the question of how to evaluate their use and impact. We start our discussion in this chapter by considering two potential educational advantages of using an EVS in large-group lectures, and pose four evaluation questions that are frequently asked after an EVS has been implemented. The main body of this chapter discusses two innovative methods of evaluating EVSs. The purpose of the chapter is not to provide an exhaustive discussion of evaluation techniques and methods. Rather, we attempt to give EVS users background information and practical advice on how to employ two evaluation methods that should be readily accessible to them. Our discussion draws on data we have collected in evaluations of EVS implementations at the University of Glasgow.

Authors have suggested a number of benefits to adopting EVS technology (Cue, 1998; Draper & Brown, 2004; Draper, Cargill, & Cutts, 2001; Dufresne, Gerace, Leonard, Mestre, & Wenk, 1996; Elliott, 2003; Mazur, 1997; Nicol & Boyle, 2003). For example, Draper, Cargill, and Cutts (2001) suggest seven “pedagogic categories of use” for EVS equipment, outlining how it could be educationally useful. These categories include facilitating assessment, providing feedback to the teacher and the learner, facilitating real-time experiments, and initiating discussion. However, when the rationales for using EVSs in large-group lectures are distilled, two predominant, direct benefits on teaching and learning processes seem to emerge.

The first of these is the provision of feedback. When an EVS is used, students can be given formative feedback, both through lecture-based questioning, and practice summative, assessment sessions. Feedback can be provided by the system, the teacher, or the students themselves. Lecturers receive feedback from students, either explicitly or implicitly, through their EVS responses. This “dialogue” between students and their lecturer makes contingent teaching possible, where the lecturer’s presentation is largely driven by the responses of students. The second benefit of EVSs is the promotion of active learning. Traditionally, large-group lectures are didactic learning experiences where students are relatively passive bystanders. By asking students to respond to questions, students become active participants in the lecture. Active learning can be promoted through peer-based discussion, or simply through the act of responding to a lecturer’s question (Draper et al., 2001; Kennedy & Cutts, 2005).
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