2015

Mining a system: The use of data mining and system dynamics to explore technology integration

Sarah Katherine Howard
University of Wollongong, sahoward@uow.edu.au

Jun Ma
University of Wollongong, jma@uow.edu.au

Jie Yang
University of Wollongong, jiey@uow.edu.au

Kate Thompson
University of Sydney

Mining a system: The use of data mining and system dynamics to explore technology integration

Abstract

Abstract presented at the 16th Biennial EARLI Conference for Research on Learning and Instruction, 25-29 August 2015, Limassol, Cyprus

additional guidance is needed to help pre-service teachers to fully integrate pedagogical, technological and content information during lesson planning.

Using Videopapers to support the process of reflection in the context of teacher education

Case studies,Pre-service teacher education,Reflection,Technology,Higher education,Learning in context

Maria Daniil, Cyprus Ministry of Education and Culture, Cyprus;

A wealth of studies address the role of reflection in encouraging pre-service and in-service teachers to identify and understand the different layers of complexity associated with teaching. This paper reports an exploratory, qualitative case study which investigated the process of reflection through the use of the video annotation tool, called Videopaper, in the context of teacher education. The study involved two cohorts of student teachers who engaged in the structured tasks of video-recording a lesson, reading previously created Videopapers by other student teachers, editing the video-recorded lesson and creating their own Videopaper to reflect on teaching practice. Various data collection methods such as observations, individual and group interviewing, focus groups, videoing and material collection were employed. A thematic analysis approach consisting of deductive and deductive steps was used for the analysis of the data. Drawing on the framework of reflection - devised by the researcher - evidence of reflection was identified both in the process of engaging in the various tasks and in the content of the Videopapers the student teachers created. The findings revealed that the structured tasks the student teachers engaged in (video-recording a lesson, reading Videopapers, editing the video-recorded lesson and creating a Videopaper) enabled them to inquire into their teaching, step back and notice their practice. This process facilitated the reflection process since it supported the student teachers to reflect in a structured way and become more analytical and critical upon their teaching practice.

Mining a system: The use of data mining and system dynamics to explore technology integration

Quantitative methods,Educational technology,Teaching/instruction,Secondary education

Sarah Howard, University of Wollongong, Australia; Jun Ma, University of Wollongong, Australia; Jie Yang, University of Wollongong, Australia; Kate Thompson, University of Sydney, Australia;

Technological innovation in schools has, as yet, resulted in relatively limited teacher and student engagement with new ways of learning supported through information and communication technologies (ICTs). One of the possible reasons for this is that educational research has struggled to grasp the complexity or dynamic nature of technology integration. This paper presents a combined approach of system dynamics and data mining to understand some of the complexity and dynamics of technology integration. Using a theoretical system model of technology integration, we present the application of data mining techniques to discover rules and patterns of that system. Specifically, the analysis explores studentsí perceptions of

technology integration, as a are key component of teachersí decisions to use technology in the classroom. The analysis draws on 2012 student questionnaire data from the evaluation of a large-scale one-to-one laptop program in Australia. Early results demonstrate two patterns of interest in the data: 1) approximately 20% of students report low ICT engagement and 2) 10-30% report negative beliefs about learning with technology, across all levels of ICT efficacy. Findings suggest a significant portion of students are not interested in, or benefiting from, use of ICTs in learning. The next steps in this research will be to investigate rules and behaviours among other factors to create predictive models of technology integration. The research is innovative in its use of data mining techniques to create a predictive system model to better understand technology integration in teaching and learning. Implications for further research will be discussed.

E 20

26 August 2015 13:45 - 15:15

Room Purple_H2

Paper Presentation

Writing

Writing

Keywords: Instructional design,Language (Foreign and second),Writing/Literacy,Higher education,Action research,Comparative studies,Content analysis,Design based research,Experimental studies,Cognitive skills,Self-regulation,Primary education,Student learning,Argumentation,Literacy

Sig's: SIG 12 - Writing,SIG 26 - Argumentation, Dialogue and Reasoning

Chairperson: Debra Myhill, University of Exeter, United Kingdom

Interactive instructional video for L2 writing in higher education: The impact on student learning

Instructional design,Language (Foreign and second),Writing/Literacy,Higher education

Elke Van Steendam, KU Leuven, Belgium; Luc De Grez, KU Leuven campus Brussels, Belgium; Katie Goeman, KU Leuven, Belgium; amanda frawley, KULeuven, Belgium;

The majority of studies on observational learning in writing use videos in which expert and/or peer models demonstrate the use of writing strategies (Rijlaarsdam et al., 2008). Ideally, these videos are based on Banduraís social cognitive theory (Bandura, 1997), according to which learning is governed by four processes: attention, retention, production and motivation. However, more research is needed to determine the ëidealí match of attention-triggering, retention-enhancing and motivational cues in instructional video for higher education writing