

Evaluating of Web Conferencing Tools for Teaching Mathematics and Statistics

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Abstract

Evaluation of technologies is a crucial part of exploring how technologies can be used in mathematics teaching. Modern technologies provide a new approach to mathematics and statistics education, and will be an essential and demanded part of the educational experience in the new millennium.

Using new technologies in mathematics education is the biggest challenge in the pedagogy of mathematics. Over the last decade there has been a very rapid expansion in the capability and usage of Information and Communication Technologies (ICT). To use ICT or e-learning in mathematics education, there will be a need to know more about different kinds of technologies.

At Wollongong University, we are involved in the evaluation of Web Conferencing tools for teaching at an institutional level. To evaluate them firstly requires the identification of evaluation criteria such as: Functionality, Cost, Cross Platform and so on.

Institutional Evaluation of Web Conferencing Tools

To know if mathematics and statistics teaching and learning have improved through the use of new technologies, outcomes need to be evaluated. There are several different approaches to evaluation, for instance, Alexander and Hedberg (1994), examine evaluation at the design, develop, teach and institutionalize stages; Bastiaens, Boon, and Martens (2004) take a different approach and consider reaction, learning, performance and organization. This evaluation is more limited in that it is to identify technologies which extend the teaching technologies available on campus. The first criterion concerns with functionality; the technologies are to permit sharing of applications, sharing of whiteboard, videoconference and other collaborative tools.

The task is to evaluate the Web conferencing technologies (as listed in table 1), with regard to criteria which satisfy both institutional and teaching requirements. Institutional criteria include cost, maintenance, functionality, ease of use and so on. Teaching and student criteria in mathematics extend to use of mathematical symbols and particular, mathematical learning outcomes. The advertising materials for each Web conference technology will be used to provide some of the data for the evaluation. A complete evaluation requires that the desired outcomes are known.

This requires thinking about potential users and their uses and learning objectives. So in this sense this evaluation may be considered to be an evaluation ahead of the actual usage being defined.

The comparison of Web conferencing technologies can be represented as a frame, with the entries a yes or no or rating as in Table 1.

	Marratech	Elluminate	iVisit	eBeam	NetMeeting	Breeze
Online Whiteboard						
Videoconference						
Cross Platform						
Functionality						
Maintenance/Support						
Scalability						
Cost						
Electronic Capture						
Ease of Use						
Number of Concurrent Users						
Others						

Table1. Web Conferencing Technologies and Selection Criteria

At an institutional level, when the costs involved are likely to be large it may be possible to negotiate the inclusion of features which are not currently included. So negotiation for a particular criterion may not be problematic in the long run.

Should technology be used in mathematics instruction? This question we have answered with a simple affirmative for this evaluation. Technology is an important part of teaching and learning mathematics. The answer at the classroom level is more complicated. Firstly, there is the need to identify the problem, the alternative solutions available, with the choice of technology or not taken because it is the best in terms of some outcome.

Reference:

Alexander, S., & Hedberg, J. (1994). Evaluating technology-based learning: Which model? In K. Beattie, C. McNaught, & S. Wills (Eds.), *Interactive multimedia in university education: Designing for change in teaching and learning* (pp. 233-244). Amsterdam: Elsevier

Bastiaens, T., Boon, J., & Martens, R. (2004). Evaluating integrated e-learning. In W. Jochems, J. van. Merrienboer & R. Koper (Eds.), *Integrated E-learning implications for pedagogy, technology & organization* (pp. 187-198). RoutledgeFalmer: London and New York

Weiss, Carol H., (1998). *Evaluation* (second edition). Prentice Hall, New Jersey