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Administering Exams Electronically: Issues, Techniques, and Assessment

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Abstract

Administering electronic quizzes and exams can be an important and time-consuming component of the paperless classroom. This paper will examine issues, as well as tools and techniques for building, distributing, and grading electronic exams. Issues include availability of facilities, control of off-campus test taking, faculty productivity, and the student learning process. Tools include a number of commercial products for use in on and off-campus situations, along with the possibility of generating in-house software.

Introduction

The electronic classroom is a current reality for many professors, especially for teaching Information Systems (IS) related courses for both distance and on-campus learning environments. More than 50 percent of all higher education institutions engage in distance learning (Cotton, 1997), and the fully paperless, Web-based classroom is a target for many professors (Bialac and Glover, 1997, and Chimi and Gordon, 1997). Administering electronic quizzes and exams can be an important component of the paperless classroom and may be the most difficult and time-consuming element. This paper will address issues associated with this process, along with a review of available tools and techniques. The need for assessment of tools and techniques is also discussed.

Issues Associated with Electronic Exams

Facilities and control are of special concern in many circumstances for exams administered in-class and for those administered at the time-discretion of the student. In-class exams require appropriate facilities in an electronic classroom with a working computer station available for each student. Network downtime can wreak havoc on the most carefully planned procedures. Out-of-class procedures must be concerned with issues such as time limitations, availability of unauthorized materials and resources to the person taking the exam, and the identity of the person.

Administering multiple choice exams is fairly straightforward and students can adapt fairly easily to the process. The availability of more immediate feedback may be helpful, but setting up the exam can be time-consuming, even with some of the newer tools (Chimi & Gordon, 1997). While there are a number of tools available for building Web-based exams, the state of technology falls far short of the simplicity of publisher and professor generated test banks for paper-based exams.

Administering short answer, problem solving, essay and other open-ended forms of exam questions can present different issues, especially when time limitations are enforced. Students who have limited keyboarding and technical skills may be at a significant disadvantage. They may expend more of their thought processing energy on the exam-taking process itself than on the answers to the questions. Grading the exam can also be a productivity issue for professors. Electronic mark-up and return by e-mail can be more time-consuming than the standard paper-based process.

Available Tools and Techniques

A number of Web-based tools are currently available, each with their own specific limitations. Lotus' Learning space provides an easy-to-use tool for setting up multiple choice and short answer exams, but requires a Lotus Domino Server platform for administration. Web Forms is an inexpensive shareware product which can build a fairly complete exam for multiple-choice, short answer and essay questions, but usually requires customization with an HTML editor (Chimi & Gordon, 1997). EZSurvey (Simon, 1998) is designed for administering surveys rather than exams, but looks promising for building test banks for a variety of testing formats. Several other commercial products are also available to assist with on-line testing for both on-campus and distance-learning situations. MicroTestIII, from the Chariot Software Group, allows users to scramble answers to multiple choice tests and to create different versions of a test. Quizmaker 2.0, from the Maui Educational Technology Research and Development Center, is a free service that allows educators to create multiple choice, short answer, and essay quizzes on a server for use in distance learning environments. Question Mark's Web Administrator and E-mail Test Presenter provides secure test delivery and administration environments through Internet e-mail. WebCT provides fairly extensive testing facilities in a full featured Web-based course delivery tool with capabilities similar to Learning Space. TopClass, another course delivery tool, is not as comprehensive as Learning Space or WebCt, but does provide testing and discussion features.

Another approach would be to develop in-house scripts for building test banks for an interactive testing environment. As with most in-house developed software, the up-front development time may be costly, but the end product would more closely conform to particular needs. A good example of in-house developed scripts is detailed on the WeBWorK Web site. WeBWorK was designed by mathematics professors at the University of Rochester for administering homework assignments. The problem set creation process requires some knowledge of the PERL programming language, and can be a time-consuming task. However, student reactions, especially to the quick feedback given on assignments, has been quite positive (Pizer and Gage).

Assessing the Effectiveness of Electronic Exams

While Web-based tools most assuredly increase access to education, there is some debate as to whether or not they actually promote an improved learning experience (Owston, 1997). Chimi and Gordon (1997) did find anecdotal evidence that students prefer the electronic testing process. Response to WebWork as reported on the WebWork site (Pizer and Gage) was also encouraging. Also of concern is the issue of faculty productivity (McCandless, 1997). Does all of this technology, especially where interactive testing is concerned, lead to a net gain or a net loss in productivity?

Most of the tools discussed above require a considerable investment in either time or money, or possibly both. Is the pursuit of on-line exams worth the effort? Does this process provide any real benefit for either student or faculty? How steep is the learning curve? Is a heavy financial investment really necessary? Can test banks be developed for on-line testing as easily as they can for traditional tests? What kind of facilities are necessary for an effective testing environment? These questions and others must be explored before Web-based testing becomes a reality for most faculty. Right now it is less expensive in terms of both time and financial investments to maintain a test bank on a word processor or specialized software than it is to build electronic exams. And it is not obvious that they will provide any significant benefit over currently available tools.

References

- Bialac, R. & Glover, H., "Paperless Classroom in Introductory Courses." *Proceedings of 12th Annual International Academy of Information Management*, December, 1997, pp. 167-168.
- Chimi, C. & Gordon, G., "Using Innovative Information Systems Techniques to Teach Information Systems." *Proceedings of 12th Annual International Academy of Information Management*, December, 1997, pp. 161-166.
- Cotton, C., "Administrators Plan for Distance Learning." *Syllabus*, 11:3, Nov., 1997, pp. 50-51.
- McCandless, G., "Technology and Faculty Productivity." *Syllabus*, 10:7, Oct., 1997, pp. 14-16.
- Owston, R., "The World Wide Web: A Technology to Enhance Teaching and Learning?" *Educational Researcher*, 26:2, March, 1997, pp. 27-33.
- Pizer, A. & Gage, M., "WebWork: Meliora Mathematica University of Rochester," <http://www.math.rochester.edu/webwork>.
- Simon, B. "Two Ways to Take Stock," *PC Magazine*, 17:1, Jan., 1998, p. 73.