Chapter XV

Web-Based Assessment: Techniques and issues

Sivakumar Alagumalai
Victoria University of Wellington, New Zealand

Kok-Aun Toh and Jessie Y.Y. Wong
Nanyang Technological University, Singapore

Meaningful learning is a positive outcome of successful teaching. Teaching can be fruitless when no learning occurs. Assessment is the intermediate check between good teaching and learning. Assessment includes both the qualitative and quantitative checks for successful learning and appropriate assimilation and integration of knowledge and experiences.

This chapter reviews current trends in assessment with particular reference to Web-based techniques. Measurement models related to assessment are discussed. Current researches on Web-based computer adaptive testing utilizing common-gateway interfaces are highlighted. It also discusses technical details of how Web-based assessment are set up and implemented. Details of communication technologies currently using Web-based techniques are highlighted.

This chapter concludes with a review of current research and methods in current practice on Web-based assessment techniques. Plausible uses of newer software and the requirements for parallel hardware developments are raised. The final section also argues that if teaching methods and pedagogies are changing and being modified due to developments in information and communication technologies, it would be necessary to relook at assessment. Web-based assessment presents the optimal mode for testing authentic learning and has the potential to be developed as the most common way of testing, replacing paper-and-pencil tests in the future.

INTRODUCTION

The marking of homework, exercises and examination scripts can be an expensive, time-consuming and depressing routine. Computerized-linear tests and computer-adaptive tests, which are forms of computer-administered and managed tests, have been shown to

reduce testing time, to obtain more information about the test takers, to increase test security, to provide instant scoring and to be scheduled more easily than paper-and-pencil-administered tests (Bugbee, 1996). Thus, computers can take away many of the routine aspects of testing and assessment. Advances in instructional, information and communication technology, coupled with the increased capability of the technology to respond to the needs of students have also directed assessment into computerized modes. Information technology today has made it possible for all computerized testing to be Web-based. Thus, Web-based assessment would certainly play an important role in the assessment of teaching and learning in the future.

TECHNICAL BASIS TO WEB-BASED TESTING

Common-Gateway Interfaces and Integrated Development Environment Links are the basis for all forms of Web-tests and surveys. The Hypertext Transfer Protocol used by the Internet is generally a one-way street, going from servers to clients. However, browsers can ask the server to display specific requests. Thus, there is also the return requester path. Common-Gateway Interfaces function on this path (McComb, 1996). They function in two ways: one is URL-based and can be displayed readily while the other is hidden. Commonly used functions are *GET* and *POST*.

McComb (1996) indicates that Common-Gateway Interfaces programs that use the *GET* method are generally easier to write, but the URL is limited to 256 characters. The *POST* method is ideal when lots of data has to be provided by the client, and there is no restriction to the number of character used.

Tied to these functions are the necessary Integrated Development Environment Links that passes commands from the Common-Gateway Interfaces to the databases that stores the information. The Microsoft's Access *.mdb database format was used as it provided several advantages over other database engines (Garcia, 1997).

The test form on the Web usually has a title, an introduction, and is followed by the test questions or survey items. At the end of these items are the "*SEND FORM/SUBMIT*" and "*RESET ENTRIES*" buttons. Behind these buttons are the associated Common-Gateway Interfaces functions. On completing the test, the user clicks on *the SEND FORM/SUBMIT* button, which then initiates a sequence of events internally.

On submitting their response, the related Common-Gateway Interfaces routines through the software server responds by producing another form, this time acknowledging receipt of users information.

All the client's information is captured on an Access database that has fields corresponding to the headings of the test database and sits in a directory where the Common-Gateway Interfaces functions are located. Web site Professional server software is used to pass data between database engine and the compiled Common-Gateway Interfaces functions, and the form on the Internet. The Integrated Development Environment Links provide the transfer of all data received on the database, which can be translated to a spreadsheet for data management and analysis.

Web-based tests could also have any level of password protection. It could require one to first enter the name and identification number. The compiled routines checked the received information against a database of personal particulars. If and only if the information received and held were identical, was the person allowed to do this test. Only the ones

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