Chapter 17

Relevant Aspects for Test Delivery Systems Evaluation

Salvatore Valenti, Alessandro Cucchiarelli, and Maurizio Panti
University of Ancona, Italy

INTRODUCTION

The number of educational institutions seeking solutions to the problems associated with the burden of expanded student numbers is increasing every day. Most solutions to the problems of delivering course content, supporting student learning, and assessment may be found through the use of computers, thanks to the continuous advances of information technology. According to Bull (1999), using computers to perform assessment is more contentious than using them both to deliver content and to support student learning. In many papers, the terms Computer Assisted Assessment (CAA) and Computer Based Assessment (CBA) are often used interchangeably and somewhat inconsistently. The former usually covers all use of computers in assessment, including reporting and marking, such as in optical mark reading. The latter is often restricted to the use of computers for the entire process, including delivery of the assessment and provision of feedback (Charman and Elmes, 1998). In this paper we will adopt the term Computer Based Assessment and we will discuss some issues related to the online assessment of students.

The interest in developing CBA tools has increased in recent years, thanks to the potential market of their applications. Many commercial products, as well as freeware and shareware tools, are the result of studies and research in this field made by companies and public institutions.

For an updated survey of course and test delivery/management systems for distance learning, see Looms (2000). This site maintains a description of more than one hundred products and is constantly updated with new items.
Such a large number of assessment systems available obviously raises the problem of identifying a set of criteria useful to an educational team wishing to select the most appropriate tool for their assessment needs. From a survey of all the material available on the Net, starting from the results returned by the most common search engines and then going to a number of sites maintaining links related to educational resources (CAA Centre, 2000; ERIC®, 2000; TECFA, 2000), it appears that only two papers have been devoted to such an important topic (Freemont and Jones, 1994; Gibson, Brewer, Dholakia, Vouk, and Bitzer, 1995). The major drawback shown by both papers is the unstated underlying axiom that a CBA system is a sort of monolith that must be evaluated as a single entity. This is false, since the structure of a CBA system is very complex, as shown in Figure 1.

According to Figure 1, a CBA system is composed by:

- A Test Management System (TMS), i.e., a tool providing the instructor with an easy to use interface, the ability to create questions and to assemble them into tests, and the possibility of grading the tests and to make some statistical evaluations of the results;
- A Test Delivery System (TDS), i.e., a tool for the delivery of tests to the students. The tool may be used to deliver tests through paper and pencil, locally, on a LAN, or over the Web;
- A Web Enabler that may be used to deliver the tests over the WWW. The Web Enabler may be implemented as a separate tool. In many other cases, producers distribute two different versions of the same TDS, one to deliver tests either on single computers or on LAN, and the other to deliver tests over the Web. This is the policy adopted for instance by Cogent Computing Co. (2000) with CQuest-Test and CQuest-Web;
- Some utilities for Test Building Support – a set of tools that may provide the teacher help to build up both well-formed questions and tests. An instance of a TBS utility is represented by “Better Testing,” developed by Question Mark

![Figure 1: The complete structure of a CBA tool](image-url)
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