

# Chapter 1.39

## Evaluating Content–Management Systems for Online Learning Programs

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### **ABSTRACT**

Creating quality assessments typically requires the involvement of many people who require access to the item and test information, which is stored in repositories called item banks or, more appropriately, content-management systems, since they store many kinds of content used in the test development process. This chapter discusses the types of options that are available in content-management systems and provides guidance about how to evaluate whether different content-management systems will meet an organization's test develop-

ment and delivery needs. This chapter focuses on online, fully Internet-enabled applications, since those applications have the most features.

### **INTRODUCTION**

Everyone is assessed and evaluated throughout his or her entire life, both formally and informally. Some of these assessments are in the form of tests—either written (e.g., multiple-choice or essay tests) or performance-based (e.g., the driving portion of a driver's license exam). Be-

cause everyone has been assessed many times, it sometimes seems that creating a test is routine and simple—write some items, package them into a test, administer the test, and give a score based on the performance. When tests are used to make important decisions about the test takers' future (e.g., whether they can work in the field they have trained for), it is imperative that the test be psychometrically sound.

That is, the scores must be meaningful: the scores should be accurate (i.e., be reliable) and their interpretations should be backed by evidence and theory that supports the proposed uses of the test (i.e., be valid; AERA, APA, & NCME, 1999). Ensuring the psychometrics integrity of a test is much more complex than the simple steps mentioned above. Following the general approach of major test publishers (such as Educational Testing Service or ACT, Inc.), the steps for developing a psychometrically sound test might be:

1. Carefully determine the content domain of the test (e.g., focus groups with subject matter experts, job task analysis, etc.).
2. Develop a detailed test blueprint to map the test to the domain of interest.
3. Write items to match the test blueprint (e.g., in terms of specific content areas, item types, conventions).
4. Review the items for technical and editorial accuracy.
5. Field test the items to gather statistical evidence about the items.
6. If a pass/fail or similar decision will be made with the scores, determine those cutscores using psychometrically accepted methods.
7. Build the operational test forms using the field-tested items such that the test scores will be reliable, valid, and fair.
8. Publish the test for delivery.
9. Administer the test and score the test takers.
10. Monitor the test results.
11. Field test new items for future forms.
12. Refresh or replace operational test forms periodically to prevent items from being used for too long; these forms must be statistically comparable to previous forms.

Before desktop computers and the Internet were widely available, the test development process used by major test publishers was rather tedious by today's standards. For example, one method of keeping track of item revisions and statistics was to keep every item on a 4x6" index card with statistics placed on labels on the back. As the item was revised, new versions of the item were stapled to the front, and as the item was administered multiple times, new versions of the statistics were added to more cards.

To assemble items into test forms, test developers sorted through the cards, grouped them into test forms while balancing content and statistical properties. All of this was done manually. After the forms were approved, the items had to be retyped to create test booklets, which were then printed, copied, and distributed. Examinees took the test, and then waited several months to get their results while the tests were mailed back, answer sheets were scanned on mainframe computers, and results were compiled and analyzed.

Computers revolutionized how item and test data were stored and how tests were produced (Baker, 1986; Bergstrom & Gershon, 1995; Wright & Bell, 1984). Item banking software has been developed to manage the items, item statistics, classification codes, and other information about the items, alleviating the need to manually track this information. Item banking systems usually store information about the test and summary statistics about the items as well.

The Internet also brought about major changes. Test developers, psychometricians, subject matter experts, and committee members began sending files through e-mail, rather than the mail. This greatly reduced turnaround time on reviewing

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