Introduction

The conversion of a paper-and-pencil test to a CBT often requires a substantial effort in order to prepare the item bank. First of all, CBT programs usually require a larger number of test items, due to the greater number of test administration dates typical of CBT programs. The item bank must usually be supplemented so that a sufficient number of items, both within specific sub-content areas and overall, is available. A second aspect of preparing the item bank for computer-based testing relates to the need to transfer the items from the current storage system into appropriate CBT software. Depending on specific characteristics of the exam program, these two tasks can be considerably time consuming and expensive to accomplish. Nevertheless, they are essential for the successful functioning of the CBT.

Preparing Item Banks for CBT

Supplementing the Item Bank

When an exam program is administered as a CBT it is typically made available to examinees on more test administration dates than were provided under paper-and-pencil testing. An increased number of items must be written to address the security issues that arise from these additional test dates. For fixed CBT and random CBT exam programs the additional items are used to develop additional test forms. For adaptive CBTs the additional items are used to expand the item bank, so adaptive tests that satisfy content constraints and test security concerns can be delivered. Regardless of the test delivery method used, once an item has been seen by a certain number of examinees it may be advisable to "retire" the item in order to help provide adequate test security. The need to retire items also means that a continual supply of new items is needed. Further demands on the item bank are made when the CBT program offers immediate test scoring and reporting. When an immediate score is provided, the test forms must be assembled so that they are balanced in terms of overall content, average difficulty, and average testing time. A large number of items is typically needed to be able to produce these highly parallel test forms.

Importing the Item Bank

Another step in the preparation of the item bank for computer-based testing concerns the process of importing the items into the relevant CBT software. The items may either be

imported directly into the CBT software as a set, or it may be necessary for each item to be key-entered individually. Importing the items into the CBT software is a relatively modest task when the items have been stored in a software application that provides easy exporting to an appropriate file format. However, if the item records have been stored in a software program that fails to provide easy exporting, or in a paper-based records system, the process of importing the item bank can be highly demanding and time consuming. Furthermore, if the current item records are not complete, the task will also be made more difficult. Additional information about the items that may be needed in the item bank includes each item's content classification, the key, and item statistics such as the pvalue and the discrimination index. If the current item records do not contain all the required data, or if the records are flawed, a necessary preliminary step will be to address these problems.

Summary

The process of converting a multiple-choice exam program to CBT typically consists of the two tasks of supplementing the item bank and importing into the appropriate CBT software. Depending upon characteristics of the exam program, these tasks may require considerable time and effort. Nevertheless, they are essential to the success of a computer-based testing program.

Exam programs that include essay testing or performance-based testing will have additional concerns. While many CBT software applications can deliver essay prompts, automated scoring of the essays is not typically provided. In some cases, it may be possible to incorporate automated scoring into the CBT administration process. Converting a performance- based test to some type of CBT software simulation may also be possible, but the process is likely to be both time consuming and expensive.