Introduction

A CBT must be transmitted to the examinee's computer at a specific location, and then displayed through a specific software application. The physical location of the computer on which an examinee will take the exam, in most cases, will be a CBT center or site. Other physical locations for CBT administration are possible, including unsecured locations such as an examinee's home. The software application that is used to transmit the electronic test data to the examinee's computer may also be used to display the test items on the screen. Alternatively, a browser application may be used for displaying test items on the examinee's computer screen. Both the physical location of the CBT administration and the software used to display the items have considerable implications for the important test administration issues of standardization and security.

Considerations for Sites and Software

CBT Sites

There are several types of physical locations that can be used for administering computer-based tests. First of all, the CBT vendor is likely to have a "channel" of sites maintained under direct control. Test administration at these CBT sites is supervised by professional test proctors who follow specific guidelines for standardized and secure administrations. Another type of CBT location is the third-party, or "vendor partner", site. An advantage of using third-party CBT sites is that they can expand the geographic area in which test administration is available. However, some aspects of test administration may be more variable in these third-party sites. For larger test sponsors, another possibility is to administer the CBTs within their own, internal computer labs. If these computer labs are staffed with test proctors, test security may be maintained, along with some level of standardization. Finally, when test security and standardization are not important, as in practice tests and other low-stakes test applications, unsecured physical locations may be used. In fact, the CBT may be made freely available across the internet to examinees in any location.

CBT Software

The software used to transmit or deliver the test to the examinee will vary, depending upon whether the CBT is administered on a stand-alone computer, on a computer connected to a local network, or on a computer connected through the internet to a

remote server. Based on the specific configuration, the electronic data necessary for administering tests to examinees might be transmitted to the test computers in a number of ways. If the CBT is administered on a stand-alone computer, the electronic test data is usually either installed on that computer's hard drive, or the test is delivered using a diskette or CD. A more common method through which electronic test data is transmitted to an examinee is through the local computer network at a CBT site. In this case, the test and item data may be uploaded to the server at the CBT site prior to the examinee's scheduled test session. Finally, the CBT may be transmitted over the internet to the examinee's computer from a server at a remote location. When the internet is used to transmit the CBT, the items are typically delivered individually from the server as the test progresses, and the examinee's responses and other data are captured and stored on the remote server.

Two types of CBTs use the internet for transmitting test data. In the first, the software application that is used to transmit the electronic test data to the examinee's computer may also be used to display the items to the examinee. In this case, some components of the CBT software program must have been previously installed on the examinee's computer. This program displays the items and administers the CBT in a standardized fashion. Alternatively, in another type of internet-based CBT, the internet is used to transmit the electronic test data, and then a browser software application on the examinee's computer (e.g., Internet Explorer, Netscape, Mozilla Firefox) is used to display the test items. In this browser-based approach to CBT delivery, no test-specific software needs to be installed on the examinee's computer. This type of internet-delivered CBT provides an immediate advantage in ease of administration; however, a related disadvantage is that the test cannot be delivered in a completely standardized fashion. Differences in specific browser features or user-customized options can result in fairly substantial differences in the appearance, or even functionality, of items on the screen.

Summary

There are several options for the physical location in which a CBT will be administered, as well as several types of software that can be used to transmit the test and display the items. Most options for transmitting and displaying CBTs have the potential to operate in a secure manner. However, only CBTs administered within a proctored environment can be considered to provide true test security. Furthermore, just as test proctors are necessary for test security, certain administration conditions are necessary for

standardization. Standardization only occurs when consistent procedures, along with standard hardware and software applications, are in place.