Tools for Creating E-Learning: Learning Objects

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The concept of e-learning is an extremely hot topic in higher education today. E-learning is defined as learning with the aid of information and communications technology tools.[1] When considering adopting and creating e-learning for a curriculum it is easy to migrate directly to the array of development software packages and course-management systems available today. The marketing efforts and ease of use of these products make the process of adopting e-learning appear simple and lead to the impression that one product can solve all of your needs. This is not the case, however. Before "diving in" with tools for e-learning, one must first decide, What do we want to build with these tools? A thorough knowledge of the available tools and their capabilities is helpful, but one must also ask, What do we want the students to learn? A student-centered approach is critical in the process of answering this question. Identifying the specific content that students are to learn is essential. Specific content can be defined as facts, concepts, processes, pro-cedures, or principles.[2] In addition, is the student expected to learn this content at the "remember" level or the application level? Only after these questions are answered can one effectively identify and list the educational objectives for the content.[3] At this point the construction of a learning object can begin. This article examines learning objects, their application to e-learning, and their design and appropriate use and discusses mechanisms for sharing learning content to enhance instruction.

What Is a Learning Object?

A learning object is smaller than a course, unit, or section and represents a small unit of instructionally sound content centered on an educational objective or outcome intended to teach a focused concept.[4] Learning objects can present content, allow opportunities for practice, contain simulations, allow for collaborative interactions, or allow for student assessment. The possibilities are endless for implementing learning objects in e-learning.

Types of Learning Objects

There are four main types of learning objects: *tell, show, ask,* and *do*.[5] *Tell*-format learning objects are used to present general information to students, such as to tell information about, tell a definition, tell the steps

Key Points

▶ Learning objects are small units of instructionally sound content intended to teach a focused concept.

▶ Learning objects are developed to meet specific educational objectives.

▶ Various types of media assets are used to build learning objects for effective e-learning environments.

▶ A variety of software-development tools exist; select the right tool for the job.

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in a procedure, or tell the events in a process (Figure 1). The lecture medium is the most common of the *tell* format, but using popular presentation software packages or Web-based delivery to present content is often a component of the *tell* format. We believe that allied health-care education is no different than education in many other disciplines, which for years have presented content in the *tell* format, expecting students to learn efficiently. Given the educational objective of many of the processes and procedures students are faced with (i.e., application of clinical skills), the *tell* format of instruction alone might not be optimal. The lecture or *tell* format has a place in instruction but must be used appropriately.

The *show* format of learning object is used to demonstrate specific information—to show an illustration of a concept, show a demonstration of a procedure, or show a visualization of a process (Figure 2). The *show* format of instruction is important to demonstrate to students a prototype of how a procedure is done. *Show* without practice and feedback, however, can also be ineffective at meeting the educational objective.
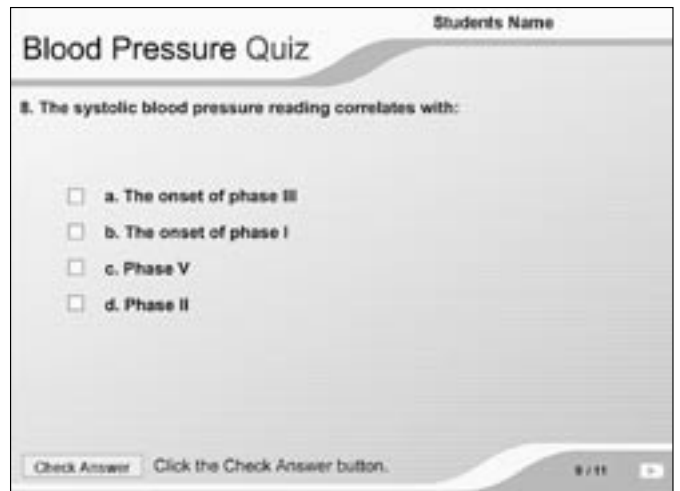
The *ask* format of learning objects is appropriate when we want students to recall the general information that was presented, such as remembering a definition, the steps in a procedure, or the events in a process (Figure 3). The *ask* format, in many cases, is a quiz or exam used as a form of assessment. With appropriate feedback, the *ask* format can also be effectively integrated in the instructional process to enhance learning in addition to assessing it.

Figure 1   *Tell* content from *Assessing Blood Pressure* learning object. From Barker WS, Mistry D, Winterstein AP. *Assessing Blood Pressure*. 2002. Available at: http://132.241.10.14/bp/bp.html. Retrieved July 24, 2003.
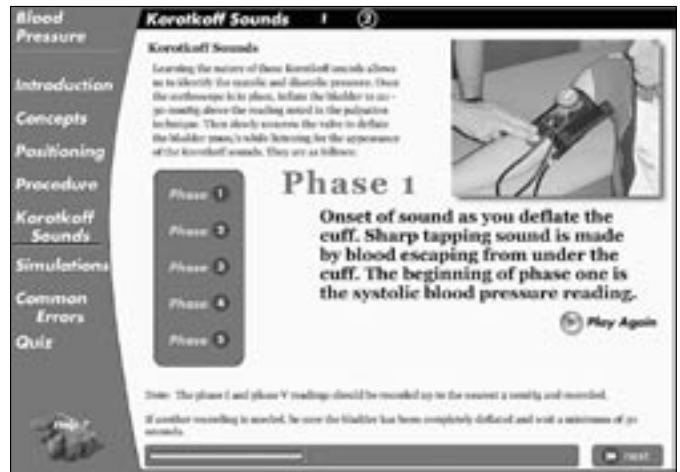
Figure 2   *Show* content from *Assessing Blood Pressure* learning object. From Barker WS, Mistry D, Winterstein AP. *Assessing Blood Pressure*. 2002. Available at: http://132.241.10.14/bp/bp.html. Retrieved July 24, 2003.

Figure 3   *Ask* content from *Assessing Blood Pressure* learning object. From Barker WS, Mistry D, Winterstein AP. *Assessing Blood Pressure*. 2002. Available at: http://132.241.10.14/bp/bp.html. Retrieved July 24, 2003.

The *do* format of learning objects is appropriate when we want students to be able to use knowledge or to demonstrate a skill in a specific situation (Figure 4). *Do* requires the student to analyze an instance to find the properties that determine its class membership (classification), to perform a procedure, or to interpret a process by predicting a consequence or by finding faulted, missing, or inadequate conditions. In the acquisition of clinical skills, the *do* format of meeting the educational objective is an obvious fit. Nonetheless, we might find that students have difficulty performing at this level. This could result from