

Learning object

Any digital resource that can be reused to support learning. The term "learning objects" generally applies to educational materials designed and created in small chunks for the purpose of maximizing the number of learning situations in which the resource can be utilized.

The first serious theoretical work on the idea of using assemblages of individual digital resources as the basis for instructional design was done by Merrill and his colleagues on the TICCIT project at Brigham Young University when they developed the Component Display Theory (CDT) in the early 1970s. By the early 1990s CDT evolved into Instructional Transaction Theory, which utilized "knowledge objects" as the components of instruction. The term "learning objects" was popularized by Wayne Hodgins in 1994 when he named a CEdMa working group LALO, "Learning Architectures and Learning Objects." The term was picked up by several corporations as well as the IEEE's Learning Technology Standards Committee (LTSC).

Because the focus of early learning objects research and development has been on maximizing reusability, learning objects are generally understood to be digital resources. This is so because most non-digital resources can be used by only one person at a time; that is, they are "rival resources" for which prospective consumers must compete. Digital resources available on a computer network are "nonrival resources" because they can be utilized simultaneously by many people. (For example, if one person has checked a book out from the library another person cannot use it -- but they can both use the digital resources available on a website simultaneously.) Much of the excitement around them is due to the fact that learning objects are nonrival resources.

Because learning objects are nonrival, much of the research and development to date has been financially motivated. However, not all learning objects-related activity is driven by this rabid "write it once, sell it a million times for \$89 per copy" capitalism driving the early 21st century technology economy. When combined, the nonrival nature of learning objects and their reusability in different learning scenarios make for educational resources that can be used in different learning environments by different individuals at the same time. This realization has led some to believe that learning objects can be the foundation of massive adaptive instructional systems capable of delivering individually tailored learning opportunities to large groups of people at the same time. For this same reason several universities and corporations have turned to learning objects as an economical solution to their online distance education programs. While learning objects certainly provide the content foundation of such a system, creating appropriate learning architectures and intelligent systems capable of performing the desired individualization has proven difficult.

Because of Merrill's extensive and popular work with knowledge objects (which are a subset of learning objects as described above), many have mistakenly assumed that learning objects are necessarily embedded in a traditional instructional design philosophy such as that associated with Merrill's work. However, several chapters in The

Instructional Use of Learning Objects demonstrate that learning objects are compatible with constructivist and other non-traditional paradigms (see Bannan-Ritland, Dabbagh, and Murphy; Hannafin, Hill, and McCarthy; and Orril).

Because many learning objects are non-textual (e.g., digitized slides, animations, or video clips), locating learning objects within a digital library can be a daunting task without the help of metadata. Metadata are resource descriptors used to index a resource for later discovery, such as the resource's author, title, and date of publication. This information is similar to that used to catalog books in a library. By any measure, as of this writing more resources have been expended on the creation of a standard set of learning object metadata descriptors than has been spent developing instructional theories around learning objects. The most significant of these is the LTSC's Learning Objects Metadata Standard. If this out-of-balance research and development thrust is not righted soon, we will find ourselves with digital libraries full of easy-to-find learning objects we don't know how to use. Digital libraries of learning objects will then be reduced to glorified clip art collections used mainly to "prettify" online instruction. If learning objects are to have a positive impact on actual learning, more research and theoretical work on their appropriate instructional use must occur before learning objects are disregarded as more shiny baubles in the drawer of educational technology.

For Further Reading

David Wiley ed. 2000. *The Instructional Use of Learning Objects*. Bloomington, IN: AECT. Available online at <http://reusability.org/read/>

Wiley, David. 2000. *Learning Object Design and Sequencing Theory*. Unpublished doctoral dissertation, Brigham Young University. Available online at <http://davidwiley.com/papers/dissertation/dissertation.pdf>

Jane Greenberg, ed. 2000. *Metadata and Organizing Educational Resources on the Internet*. Binghamton, NY: Haworth Information Press.