2005

Learning objects and repositories

Win Shih

Stepping Up to the Plate: Learning Objects and Repositories

Win Shih
Denison Memorial Library, University of Colorado at Denver and Health Sciences Center

In recent years, there have been concerted efforts and keen interest in higher education, specifically in health sciences education, to create a distributed network in sharing educational content digitally. In the E-learning environment, a new partnership has been formed among educators, instructional designers, media specialists, information technology professionals, and librarians in developing "learning objects" to augment course development and teaching enhancement. EDUCAUSE, the association that promotes the use of information technology in higher education, identifies learning objects as one of the six evolving technologies in its 2004 environmental scan of the digital landscape[1]. In another EDUCAUSE annual survey, developing learning object repositories is listed as a key component of E-learning / distributed teaching and learning, one of the top ten 2005 IT issues[2].

Like many new concepts, no consensus exists on the definition of a "learning object." A commonly cited one is by David Wiley, who defines it as "any digital resource that can be reused to mediate learning.[3]" The term "learning object" can trace its origin to the object-oriented programming paradigm, which emphasizes the reuse of programming code, and the "learning objectives" practice, stating the desired learning and performance outcomes in instructional design and planning. For unlike traditional course designs, a learning object, leveraged with Internet technologies, possesses the following features, assets, attributes and advantages:

- Digital nature that can support the presentation of content in blended formats, from text to multimedia, animation, simulation, gaming, interactive mapping, lecture notes, lesson plans, syllabi, to quizzes, and beyond.

- Flexible enough to allow learning anytime, anywhere, and at any pace. Learning objects can be mixed with traditional learning materials and can replace or complement traditional instruction.

- Customizable and "personalizable," supporting a variety of learning styles, from "just-in-case," to "just-in-time," to "just-for-you," to 'just-enough," to "on-demand" learning.

- Modular, reusable, and durable, like LEGO blocks; learning objects can be assembled and repurposed for multiple educational contexts. There is no need to "reinvent the wheel."

- Portable and interoperable; platform and system independent.

Currently, content sharing among proprietary commercial learning management systems, such as Blackboard and WebCT, is difficult, if not impossible. E-learning standards providing specifications for metadata structures and communication protocols are necessary for sharing and collaboration of learning objects across diversified platforms and systems. Therefore, under the coordination of Advanced Distributed Learning (ADL, http://www.adlnet.org), a U.S. government-sponsored organization, a suite of E-learning specifications, SCORM (Sharable Content Object Reference Model), has been developed. SCORM enables reuse, durability, interoperability and accessibility of learning objects and tracking of learner progress. In fact, SCORM has now become the de facto standard for running, packaging, describing and sharing learning content.

In the health sciences arena, the Association of American Medical Colleges has established an online database, CurrMIT (Curriculum Management and Information Tool), for medical schools to manage and report their curricula since 1999. About two-thirds of medical schools in the U.S.

and Canada currently participate in this system. Recently, AAMC has partnered with MedBiquitous (http://www.medbiq.org), an international consortium of professional medical and healthcare associations, universities, and companies, to develop a set of SCORM-compliant E-learning standards in the health sciences field. The new SCORM for Healthcare standards, currently in beta testing, is an extension of the general SCORM with customizations meeting the special needs of the healthcare community.

A proliferation of cross-institutional learning object repositories facilitates the sharing and open access of course materials. These repositories fall into two categories based on their collections: general or discipline-specific. Some of the most successful multi-disciplinary-based repositories are: MERLOT (Multimedia Educational Resource for Learning and Online Teaching, http://www.merlot.org) from California State University; Canada-based CLOE (Cooperative Learning Object Exchange, http://cloe.on.ca/); and EduResources Portal (http://sage.eou.edu/SPT/) from Eastern Oregon University.

An EDUCAUSE assessment reported that a discipline-specific or cohort-based approach are the most successful learning object repositories[4]. The following table summarizes a few current online health-sciences-related repositories and referatories (portals):

Repository	Subject	Collection	Organization	Scope	Access	URL
The Computer-assisted Learning in Pediatrics Project (CLIPP) (2000-)	Pediatrics	31 cases	Council on Medical Student Education in Pediatrics	U.S.	Closed	www.clippcases.org
The Consortium on Medical Education and Technology (COMET) (2005-)	Medicine		AAMC North East Group on Educational Affairs Special Interest Group	U.S.	Open	comet.med.nyu.edu
The Harvey Project (1998-)	Human Physiology			Global, Peer-reviewed	Open	www.harveyproject.org
The Health Education Assets Library (HEAL) (2000-)	Health Sciences	20,000+ images, animations, and video clips	HEAL Federation, funded by NLM, NSF, and AAMC	Global, Peer-reviewed; some contents from IVIMEDS	Open	www.healcentral.org
International Virtual Medical School (IVIMEDS) (2003-)	Medicine	1,500+ reusable learning objects	IVIMEDS	Global, contributed by member institutions; some contents from HEAL	Closed	www.ivimeds.org
Johns Hopkins School of Public Health OpenCourseWare (2005-)	Public Health		JHSPH	JHSPH content only	Open	ocw.jhsph.edu
MedEdPortal (2005-)	Medicine		AAMC	U.S., Peer-reviewed	Open	www.aamc.org/meded/mededportal
Neuro-Ophthalmology Virtual Education Library (NOVEL) (2003-)	Neuro-Ophthalmology	6 collections	Eccles Library of University of Utah; the North American Neuro-Ophthalmology Society	U.S., Peer-reviewed	Open	library.med.utah.edu/NOVEL; content.lib.utah.edu/cgi-bin/browseclient.exe
Radiological Society of North America Education Portal	Radiology		RSNA	U.S.	Closed	www.rsna.org/Education

To put all of this into some kind of reasonable perspective, we must "step up to the plate" now and realize that, in today's networked academy, new technologies present collective opportunities as well as challenges, to various stakeholders, librarians notwithstanding. The success of implementing a learning object repository depends upon the continuous renewal of partnership between librarians and each "shareholder" of the new "networked academy." As newer, faster, better technology increasingly revolutionizes teaching and learning processes, collaborative campus-wide efforts fostered amongst IT professionals, instructional specialists, librarians and faculty grow evermore imperative to the development and success of student-centric learning environments. Quality of partnership interlaced and interwoven throughout these knowledge shareholders is guaranteed to "make or break" the outcome of a student's higher-educational learning experience.

Endnotes

[1] For full survey report and white papers, see http://www.educause.edu/issues/etcom/ http://www.educause.edu/EvolvingTechnologiesReports/869

[2] For full report, see: http://www.educause.edu/2005currentissuesresources/6323

[3] Wiley, D. (2003). The coming collision between automated instruction and social constructivism. In C.M. Gynn and S.R. Acker (ed.), *Learning Object: Contexts and Connections* (p. 18). Columbus, OH: Ohio State University. [http://telr-research.osu.edu/learning_objects/ documents/TELR-LO7screen.pdf]

[4] Metros, S. and K. Bennett. (2004). Learning objects in higher education: the sequel. *EDUCAUSE Center for Applied Research, Research Bulletin*, 2004, p. 6.