

## **Policy Issues for Learning Objects NLII Executive Summary**

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A *Learning Object* is considered to be any digital asset that is intended to be used to achieve a learning objective and can be re-used in different contexts. Learning objects may be data or data sets, texts, images or image collections, audio or video materials, executable programs, courses offered through Course Management Systems (CMS), or other resources that can be delivered electronically. Most agree that learning objects should be re-useable and re-purposeable over time and location and interoperable across systems and software.

Learning objects have the potential to provide individualized learning experiences for specific learners in which their learning styles, prior knowledge, and specific learning needs are accounted for. They also may "offer great value in terms of saving time and money in course development, increasing the reusability of content, enhancing students' learning environment, sharing knowledge within and across disciplines, and engaging faculty in a dynamic community of practice" (Metros, 2001). For these reasons the National Learning Infrastructure Initiative has designated learning objects as a key theme, see

<http://www.educause.edu/nlii/keythemes/learningObjects.asp>.

This summary identifies key issue points and makes recommendations for action by institutions that are now or are planning in the future to initiate learning object development and distribution.

### **OWNERSHIP AND VALUE ISSUES**

- Digital instructional materials, to include learning objects, may be considered in a variety of intellectual ownership contexts. These contexts may include an open environment or one in which various entities assert claims to ownership as well as control.
- Learning objects may represent "intellectual capital" of the academy to be considered as intellectual philanthropy given to the scholarly commons requiring reciprocity in contribution to participate.
- Learning objects may represent "intellectual capital" of the academy and as such require identifying, tracking, and controlling access to them, particularly in relation to re-use (see <http://www.educause.edu/issues/issue.asp?issue=faculty>)
- Learning objects may be a potential source of revenue for institutions and require careful negotiation of Intellectual Property Rights and Copyright prior to development and dissemination. Such rights may be designated by: time, degree of intellectual or creative contribution, amount of resources contributed by author and host institution, and actual market value of completed object (see <http://www.educause.edu/asp/doclib/abstract.asp?ID=ERM0346>)
- Learning may also be considered as intellectual philanthropy, given to the scholarly commons for the enrichment of all who use them with the covenant that use obliges reciprocity. This model is an alternative to the learning object as capital in a free market model.

- Costs of development and maintenance must be analyzed in terms of effects on student learning, return on investment, and changes that will be required to update content, pedagogical design, and learner needs (see <http://www.educause.edu/asp/doclib/abstract.asp?ID=EDU0297>)
- The Digital Object Identifier (DOI<sup>®</sup>)<sup>1</sup> system identifies and tracks use of digital objects not only to protect, but also to document how intellectual property is being used. The right to use a copyrighted piece is embedded in metadata that is tagged to the object. The Creative Commons Project (<http://creativecommons.org/>) provides no-cost licenses so that copyright holders can inform potential users about copyright restrictions.

## USE AND DISTRIBUTION ISSUES

- Learning objects require a context for *access* and *use*, and this typically (but not necessarily) means a repository (typically a large database) that stores objects which can be integrated into a Course or Learning Management System, however other models for distributed learning object repository networks are emerging (see [http://www.usdla.org/html/journal/JAN03\\_Issue/article01.html](http://www.usdla.org/html/journal/JAN03_Issue/article01.html)).
- Access levels can be designed into objects so that different populations have different access rights. Consider the following in managing access to and reuse of learning objects (see <http://xml.coverpages.org/IMS-Briefing-DRM-200202.pdf>).
  - Objects can be viewed but not printed or saved
  - Either part or all of an object can be downloaded for a fee
  - Either part or all can be downloaded for inclusion in another work
  - Either part or all of an object can be downloaded for re-use for a set period of time.
- Before objects can be stored they must conform to a pre-determined system that identifies what they are and how they can be used (see the IMS Project: specification by type <http://www.imslobal.org/specifications.cfm>).

## DESIGN ISSUES

- The granularity or size of an object is directly related to how it can be reused. The larger an object (a course) the less re-usable it is. As true for most instructional resources, it is more likely that smaller objects (files, movies, animations, etc) have greater usability across contexts.
- Learning objects are best developed in a team approach. Common roles and responsibilities requisite for a team approach are: manager, instructional designer, programmer, graphic artist, editors, subject matter expert, and trainers (see <http://it.coe.uga.edu/itforum/paper56/paper56.htm>)
- Expert or peer review can ensure quality of objects stored in repositories (see, MERLOT <http://www.merlot.org/home/PeerReview.po>).
- Metadata specifications must be identified and adhered to during the development process (see Curtin University of Technology <http://metadata.curtin.edu.au/template.html>).
- Some metadata specifications articulate pedagogical dimensions which can support designs that are have a greater chance of achieving instructional objectives (see ARIDIANE (<http://www.ariadne-eu.org/en/system/index.html>) and Education Markup Language (EML, see <http://eml.ou.nl/introduction/explanation.htm>).

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<sup>1</sup> Digital Object Identifier System

- Learning object design should take into consideration the needs of users who have impairments of hearing, seeing, and mobility. CAST (<http://www.cast.org/udl/>) offers design guidelines that address both US legislative mandates for digital equity (see <http://www.section508.gov/>) as well as research-based designs that support the needs of a large range of learning needs and preferences.
- Learning objects should have dynamic features that give control to the user who can make just-in-time and just-in-need decisions about how he or she interacts with content, interface, and other learners (see [http://www.imsproject.org/accessibility/acclipv1p0pd/imsacclip\\_bestv1p0pd.html](http://www.imsproject.org/accessibility/acclipv1p0pd/imsacclip_bestv1p0pd.html)). IMS has issued both best practices for accessibility as well as technical standards for implementation that support learning design.
- Learning objects should be prototyped and field-tested for quality control. This will reduce future revisions and technical flaws that may prevent use and save costs required for revisions.
- Learning objects may not achieve instructional objectives as they stand alone, but they are more likely to when situated in well-thought out “wrap-around” pedagogical strategies or activities (see Instructional Architect <http://ia.usu.edu/>).
- As with any learning material, the context embedded in an object can distract or confuse the learner. Context can be addressed by: (1) “use a parent (context free) and child (context included) object association:” (2) provide direction to context specific information such as assignments, activities, assessments, etc., and, (3) use a combination of the above (see [http://www.flexiblelearning.net.au/leaders/fl\\_leaders/fl102/finalreport/final\\_hand\\_higgs\\_meredith.pdf](http://www.flexiblelearning.net.au/leaders/fl_leaders/fl102/finalreport/final_hand_higgs_meredith.pdf))

## **SUSTAINABILITY ISSUES**

- Learning object initiatives can bring recognition to the institution, serve as a commodity for bartering with other institutions, and can provide accreditation assessment data (see [http://venus.atlantic.edu/kolitsky/NLIIPolicies\\_v2.html](http://venus.atlantic.edu/kolitsky/NLIIPolicies_v2.html)) Considering these potentials, long-term funding and infrastructure is key (see <http://venus.atlantic.edu/kolitsky/nliilowgsupport.htm>).
- Learning object initiatives hold the potential to re-conceptualize the teaching and learning process possibly transforming the culture of higher education (see <http://www.educause.edu/asp/doclib/abstract.asp?ID=LIVE034>).
- A proactive approach to the development, storage, and distribution management of learning objects increases control of access, reduces costs incurred through out-sourcing development, simplifies intellectual property rights issues, and facilitates faculty and student object creation (see <http://www.educause.edu/asp/doclib/abstract.asp?ID=NLI0363>).