



AN INTRODUCTION TO LEARNING OBJECTS

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Abstract

A new player has flamboyantly entered the e-Learning arena drawing crowds and creating a fever pitch of excitement. Are learning objects just a Johnny-come-lately? Are they truly the long awaited instructional messiah or just another wanna be techno-blip? This paper outlines the basics of learning objects, why corporations are investing heavily in the associated technology, and some of the challenges they present.

What are Learning Objects?

Derived from work in several disciplines learning or instructional objects are a technological construct that has been operational zed and is now being successfully applied to competency development and support across industries. To be effective, learning objects require instructional design skills to shape content into effective learning and support chunks or bites, and information technology architectures to define, tag, house, maintain, deploy, and display the objects in a meaningful framework, usually across an internet or intranet platform.

Definitions and terminology related to these objects abound. For some a learning object is:



Small chunks or granules of information that can be accessed individually or mixed, matched, and glued together to form a variety of instructional courses or minicourses. (Zielinski, 2000, p. 134)

To others a reusable learning object (RLO) is a collection of chunks organized into a whole which covers a topic or logical sequence of instruction.

For the purpose of this paper, the following definitions developed through working with a variety of clients, shall be used.

TRADITIONAL	AICC	ADL – SCORM	SUGGESTED
Course	Course	Course (Outer Container)	Package
Module	Block	Block (Nesting Container)	Learning Element
Chapter / Sub-chapter	Block	Block	Performance Element
Lesson / Topic	Assignable Unit	Assignable Unit (AU) (Reusable Content)	Learning Object / Instructional Object
	Interaction	Raw Media	Asset



Definitions

PACKAGE	A collection of learning elements packaged as an offering. Must contain at least one learning element.
LEARNING ELEMENT	A complete series of performance elements that represents what a learner needs to master to perform a task or master a body of knowledge. Must contain at least one performance element.
PERFORMANCE ELEMENT	A series of learning objects that cover a subject or topic.
LEARNING OBJECT / INSTRUCTIONAL OBJECT	A self contained, context-independent unit. Reusable and transportable. A meaningful division of learning that can be accomplished at one sitting.
ASSET	A defined fragment in a learning object. A test item, a media piece, a video clip, a fragment of interactive content, an illustration, etc.

Reusable learning objects are modular or free standing which means they can be transported between applications and environments. When developed according to emerging standards, learning objects can be transported to other companies and used with diverse learner groups. In order to be transportable, learning objects must be free of any reference to other objects (no pre-requisite or co-requisites referred to), must be non-sequential (no presumed sequence of objects), must be free of transitions (links to other objects), and self-contained. To be truly reusable a learning object must satisfy a single learning objective.



Learning objects are allowing for “ a new model for digital learning – one in which learning content is free from proprietary “containers”, can flow among different systems and be mixed, reused, and updated continuously...” (Barron, 2000, p.1)

Each object and asset has two components: the object or asset and its metadata tag, also called a metatag. This tag provides context in the form of descriptions and keywords and is how the objects and assets are managed in the database and populated into the display templates. The best tagging schema limit the number of tags per object. The tag should capture the essence of the content and, often, the media the content is displayed in.

As the key component in learning objects, assets are transportable and reusable on their own and are often reused in performance support systems supporting employees at the job-site by providing moment-of-need access to procedures, explanations, references, or nodules of learning covered during the learning event. Learning object and asset reuse helps to blur the line between learning and performance, greatly reducing time to competency.

Cisco has a level between the raw media or asset and the learning object which they call a reusable information object (RIO). These RIOs contain a content item, a practice item, and an assessment item. (Barron, 2000, p. 2) In Cisco’s



approach, each RIO is categorized and then several are combined and nested between an overview and a summary to make a reusable learning object.

Cisco Learning Object

O V E R V I E W	R I O C O N C E P T	R I O P R I N C I P L E	R I O P R O C E D U R E	S U M M A R Y
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In practical terms, working with clients in the transportation and telecommunications industries, developing assets and combining the assets into learning objects is proving to be effective and is providing for more flexibility than the reusable information object model. However, those intending to sell their objects across industries should carefully consider adhering to Cisco's approach since it is the one taking the lead in the standards arena.

Each corporation moving into the learning object arena establishes the types of assets and objects they will be developing. For example, one client in the transportation industry has categorized assets as follows:



- Introduction
- Procedure
- Concept
- Policy
- Activity
- Summary
- Assessment
- Feedback

Categorization is critical since it guides both the development and the tagging of the asset or the information object.

Cisco has established five categories: concept, fact, process, principle, and procedure (Barron, 2000, p. 2) and categorize at the RIO level. Ruth Colvin Clark suggests that the five Cisco categories are appropriate for information objects but that instructional objects require tags such as assessment, practice/activity, objective, feedback. (Clark, 1998, p. 4) Both these types of objects would then combine into a reusable learning object. As you can see by the bulleted list above, the model I have been using with clients simplifies the process, conceptually, and allows one to teach instructional designer to create assets to serve the various purposes.

Assets will often be developed in more than one media to meet more than one need; especially if assets are being created to support blended delivery. Assets can be created in any of a number of media such as text, still graphic, animation, simulation type A: example: flow of liquid through equipment, simulation type B:



example: a form or screen being completed, flash movie or digitized video, or a multimedia nodule.

Why Develop Learning Objects?

Until recently electronic and non-electronic content was developed for one-time, event-based instruction that was, for the most part, strictly sequenced and controlled. Even digitized content was difficult to quickly access and deploy at the desk-top, at the moment of need. Recently we have seen an increase in the amount of content being developed in asset and object format, developed for use in multiple ways. Creating learning objects and assets requires a major mind shift on the part of the instructional designers and deploying them requires a database infrastructure. So why add the complexity and cost to an already complex corporate learning environment?

According to Warren Longmire of Infomania,

The object approach can satisfy both immediate learning needs – such as knowledge-based or skills-based course – and current and future learning needs that are not course-based. (Longmire, 2000, p. 1)

According to Ruth Colvin Clark learning objects can be used to capture, disseminate, and improve knowledge capital in an organization. (Clark, 1998, p.



1) The knowledge drain out of organizations as people leave due to retirement, reengineering, or career changes calls for a better way to define, store, and use corporate knowledge. Learning objects can be used to categorize, contextualize, and tag this knowledge and then display it in a variety of training, documentation, reference, and support venues.

Learning objects provide flexibility.

If material is designed to be used in multiple contexts, it can be reused much more easily than material that has to be rewritten for each new context. It's much harder to uncouple an object from the context of its parent course and then recontextualize it than it is to conceptualize as part of the development. (Longmire, 2000, p. 1)

However, in order to ensure flexibility, assets must be designed to the right level of granularity: the optimal size to meet the learning need, any related performance need, the requirements of multiple audiences, and deployment in a variety of timeframes. In addition, the assets must stand-alone and maintain consistency in terminology, tone, granularity, and approach to the content being covered.

Learning objects and their metatags facilitate maintenance, searching and management of content. They also allow for immediate customization of content based on the criteria selected by the performer. Objects can be compiled into an



infinite variety of learning sequences. Assets can be displayed in support systems providing, for example, the exact procedure the performer needs to follow at that moment. This reuse of content increases its value, both in terms of cost savings and in terms of cost avoidance (no new development costs).

Challenges

Learning objects and assets support a competency-based approach to the development of skills, knowledge, and attitudes by matching objects with performer gaps. Development of competency-based, rather than course-based, content can be a challenge for traditionally trained instructional designers who have been building beautiful, wholistic programs for years. To effectively design and develop assets and then combine them into objects the instructional designer must learn to conceptualize content as both granular and part of the larger whole. To add to this challenge, the larger whole is a moving target since objects and assets may be displayed in any sequence and combination.

Due to the granularity, learning object designs lend themselves to team development. Once the competencies are identified, the goals established and the granules defined, assets can be storyboarded, written, and coded by different people. You might have a cadre of instructional designers working on assets who are spatially separate and from several different sub-contractors. To ensure



that the objects end up with one voice and one look and feel, standards for language and terminology must be set. In addition standards must be set around how certain types of information will be displayed (tables, bullets, graphically) and the formats for assessment items ensure that all the standards are appropriate for intranet and internet delivery.

Despite the early promise, deep in the garden of reusable learning objects lurks a grave danger: the proliferation of information rather than learning. As M. David Merrill reiterated in his 1998 interview with Training Magazine, "Information is not Instruction". (Kruse, 2000, p. 1) Much concern is being expressed throughout the industry about the number of information objects being created and touted as learning objects. Just presenting the content without context, without opportunities to practice or cognate, and without assessment does not constitute learning and does not enhance retention or transfer of learning to the job. Our biggest challenge is to not let technology drive our designs but rather to harness technology to deliver granularized, focused, and effective learning and support.



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