



A Repository for Learning Objects: Supporting the Reuse and Repurposing of Redesigned Courses and Their Content

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Presentation Agenda

- Background
- Key Concepts
- Project Objectives
- Decomposition of Course Content
- Metadata Application Profile
- Functional Requirements
- Testing and Evaluation
- Conclusion



Background

- Texas Higher Education Coordination Board
- Texas Course Redesign Project
- What is THECB LOR?
 - **Phase I: Proof-of-Concept**
 - May – August 2007
 - Demonstration of technology and functionality
 - Version 1 LOR
 - **Phase II: Research & Development**
 - September 2007 – August 2009
 - Version 2 (October 2008)
 - Version 3 (May 2009)



Background (cont.)

- Courses and course content
 - Developed by separate projects
 - No standard or common logical structure
- Quality of content
 - Competitive grant process for redesigned courses
- Intended audience
 - Instructors/instructional designers at public institutions of higher education in Texas
- Intellectual property
 - Belongs to Texas Higher Education Coordinating Board



Background (cont.)

- Phase I: Proof-of-Concept
 - Four factors for integrating learning objects into educational settings (Campbell, 2003)
 - Interoperability
 - Educational properties
 - Technological issues
 - Cultural issues



Key Concepts

- **Learning object (LO)**
 - A digital resource (simple or complex) that can be used to support learning
- **Granularity of LOs**
 - Fine and coarse grain
 - Size/chunk of material
- **Metadata record**
 - Information about the resource
- **Metadata scheme**
 - Pieces of information that comprise the record



Key Concepts (cont.)

- **Reusing**

- Acquiring a learning object and using it as it currently exists without any modification and additional effort by a user of the object.

- **Repurposing**

- Acquiring one or more learning objects and using them as a basis for a new learning object either through modification of the original, recombination of multiple learning objects, or any other actions that are carried out on the learning objects to serve a similar or new purpose compared to the intentions of the original creator of the learning objects.



Phase I: Project Objectives

1. Decompose a THECB redesigned course in discrete learning objects;
2. Identify and implement an appropriate metadata scheme to describe and manage the learning objects in the repository;
3. Enable search and browse capabilities in the repository to support end user tasks of finding, identifying, selecting, and accessing the learning objects; and
4. Provide course content in packages to import into learning management systems.



Decomposition of Course Content

- Goal: Demonstrate various levels of granularity that can be considered for LOR
- A redesigned U.S. History I course
 - Five levels of granularity
 - Level 1-Free-standing Learning Object
 - Level 2-Topic
 - Level 3-Lesson
 - Level 4-Unit
 - Level 5-Complete course
 - Structural levels served to guide levels of granularity
 - Other course materials
 - IMS content packages



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Disciplines and Courses

Shown below is a list of disciplines and the courses and sub-disciplines within them. Click on a name to view that discipline or course home page.

- [History Courses](#)
 - [U.S. History](#)
 - [U.S. History 1](#)
 - [A. Course Structure](#)
 - [B. Course-wide Assessments](#)
 - [C. Complete Course](#)
 - [D. Course Units](#)
 - [E. Course Lessons and Related Assessments](#)
 - [F. Course Topics](#)
 - [G. Case Studies and Case Study Teaching Guides](#)
 - [H. Free-Standing Learning Objects](#)
 - [I. IMS Content Packages](#)



Metadata Application Profile

- Comparison of Learning Object Repository Metadata Applications
 - 24 learning object repositories listed by the Florida Distance Learning Consortium (2007)
- THECB Metadata Application Profile
 - Combination of DC, LOM, and GEM elements
 - 37 elements



Metadata Elements in THECB LOR Application Profile

Intended Educational Audience (dc.audience.educationLevel)	Course Structure (dc.relation.isPartOf)
Author's Affiliation (dc.contributor.affiliation)	IMS Content Package (dc.relation.uri)
Authors (dc.contributor.author)	Rights (dc.rights)
Other Contributors (dc.contributor.other)	Access and Use Rights (dc.rights.accessRights)
Date Published (dc.date.dateAccepted)	Access and Use License (dc.rights.license)
Date Accessioned (dc.date.dateAccessioned)	Rights Holder (dc.rights.rightsHolder)
Date Available (dc.date.dateAvailable)	Subjects (dc.subject)
Date Issued (dc.date.dateIssued)	Title (dc.title)
Summary (dc.description.abstract)	Other Title (dc.title.alternative)
Learning Object's Content (dc.description.tableOfContents)	Learning Object Type (dc.type)
Learning Object Description (dc.description.uri)	Individual Cataloger (gem.cataloging.individualCataloger)
Media Format (dc.format)	Domain Cataloger (gem.cataloging.individualCatalogerDomain)
Size (dc.format.extent)	Discipline and Subdiscipline (lom.classification.taxonPath.taxon)
Format (dc.format.mimetype)	Difficulty Level (lom.educational.difficulty)
(dc.identifier.uri)	Interactivity Level (lom.educational.interactivityLevel)
Instructional Method (dc.instructionalMethod)	Interactivity Type (lom.educational.interactivityType)
Language (dc.language)	Typical Learning Time (lom.educational.typicalLearningTime)
Creation and Ownership Information (dc.provenance)	Technical Requirement (lom.technical.requirement)
Publisher (dc.publisher)	



Functional Requirements

Functional requirements address the behaviors of the repository application and types of interactions the application should support.

The functional requirements were categorized to address:

- Administration
- Submission of learning objects
- End user access to learning objects



Functional Requirements (cont.)

- Administration
 - managing user accounts, setting permissions, implementing metadata schema, etc.
- Submission of learning objects
 - creating metadata records for submitted items, uploading files associated with the items
- End user access to learning objects
 - browse indexes, simple search, advanced search, presentation of results



Technology for the LOR Application

- DSpace version 1.4.2, an open source software repository platform developed by MIT Libraries and Hewlett-Packard Labs
- Front end: JSP Interface, served by Apache Tomcat
- Back end: PostgreSQL database server, Apache Lucene search engine
- Handle server to provide identifiers, like:
<http://hdl.handle.net/2188/217>



Submission of Learning Objects and Metadata Creation

Customized:

- Metadata registry
 - DC: <http://dublincore.org/documents/dcmi-terms/>
 - LOM: http://www.unt.edu/wmoen_lom
 - GEM: <http://www.thegateway.org/about/documentation/metadatraElements>
- Submission pages
- Submission workflow
- Controlled vocabulary tool



Submission of Learning Objects and Metadata Creation (cont.)

Custom controlled vocabulary tool

Enter the Handle URL for the item in the repository that holds the outline of the course. [Input Rules.](#)

Course Structure

In the first box, enter a term that indicates the broadest discipline for which this learning object was created. If appropriate, sub-disciplines are appropriate, please indicate those.

Discipline and Sub-Discipline

<input type="text" value="History"/>	<input type="text" value="United States"/>
<input type="button" value="Remove"/>	<input type="button" value="Remove"/>
<input type="text"/>	<input type="text"/>

Find appropriate terms from the History vocabulary list to describe topics, locations, time periods, and people. Click the "Add Subject to box 1" and click the term which you want to input into the first box. If there is no appropriate term, click the "Add Subject to box 1" and click the term which you want to input into the first box. The steps are the same to add a second subject term. Subject terms are repeated.

[Add Subject to box 1](#) [Add Subject to box 2](#) [Add Subject to box 3](#) [Add Subject to box 4](#)

Subjects

<input type="text" value="George Washington"/>	<input type="text" value="Battle of Saratoga"/>
<input type="button" value="Remove"/>	<input type="button" value="Remove"/>
<input type="text"/>	<input type="text"/>

Enter a succinct summary of this learning object.

Summary

testvocab - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://zed.lis.unt.edu/vocab/tvocab.php?sub=3

Subject Vocabulary

Page: 1 of 1
Records: 419

Search	Term	Aspect
<input type="button" value="Clear"/>	Sorted By: Aspect ascending, Term ascending	
<input type="button" value="Add"/>	"Treaty Party"	what
<input type="button" value="Add"/>	Abolitionism	what
<input type="button" value="Add"/>	Act for the Impartial Administration of Justice	what
<input type="button" value="Add"/>	Adams Administration	what
<input type="button" value="Add"/>	Adams-Onis Treaty	what
<input type="button" value="Add"/>	Albany Plan	what

Done sp0055@gmail.com



End User Interaction with Repository

- Browse capabilities by:
 - Disciplines and Courses, Titles, Subjects, Date Published
- Search capabilities by:
 - Title, Subject, Learning Object Type, Media Format, Intended Educational Audience, Instructional Method, and Author Affiliation.
- Full-text searches of textual learning objects



End User Interaction with Repository (cont.)

- Viewing and downloading

Educational Interactivity Type: Mixed

Educational Interactivity Level: Low

Typical Learning Time: 2.5 hours

Difficulty Level: Low

Creation and Ownership Information: Created by the University of North Texas with funding by the Texas Higher Education Coordinating Board as part of its Texas Course Redesign Program. The intellectual property of this learning object belongs to the Texas Higher Education Coordinating Board.

Date Published: Aug. 2007

IMS Content Package: <http://hdl.handle.net/2188/183>

URI: <http://hdl.handle.net/2188/182>

Appears in Courses: [E. Course Lessons and Related Assessments](#)

Files in This Item:

File	Description	Size	Format	
00_unit_one_lesson_one.htm	main page	834 B	HTML	View/Open

[Show full item record](#)



Testing and Evaluation

- **System-level functionality assessment**
 - Check against functional requirements set by team
- **Use-level assessment**
 - Real users engaging with the LOR
 - Use scenarios to direct users' engagement with the functions of the LOR
 - Tested functions assumed to be those needed by typical repository users (search, browse, preview, etc.)
 - Relatively simple to moderately complex use scenarios guided the tasks carried out
 - System level assessment by users, elements of usability assessment



Future Research

- Phase II: Research and Development
 - Enhance the technical infrastructure
 - Revise the metadata elements
 - Identify user requirements and subsequent usability testing against those requirements
 - Identify policy issues related to intellectual property when learning object are modified by those reusing/repurposing
 - Administration of the production system
 - Distributed submission of items into the repository
 - Machine-processes to assist metadata generation



Quick Links



My Account

Learning Object Repository

This repository contains a wide range of learning objects created as part of the Texas Higher Education Coordinating Board's Texas Course Redesign Project.

Search the Repository

Enter some text in the box below to search the Repository.

Communities in the Repository

Select a community to browse its collections.

- English
- History
- Language
- Mathematics
- Science

SEARCH

BROWSE

Entire Repository

COLLECTIONS

Titles

Subjects

Authors

Media Formats

Date Created

MY ACCOUNT

Login

Register



Thank you

Questions? Comments?

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<http://thecblor.unt.edu/>

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