National Science Digital Library
Reusability and Interoperability Workshop

METADATA

August 6 - 7, 2004

NSDL Reusability Workshop

Metadata

From the British Museum … Photos by RR

Types of Metadata

- **Basic descriptive Information** (**bibliographic** metadata)
  - Enables a resource to be found.
  - Includes title, author, description, identifier and key words.
- **Contextual information**
  - Used to find resources for a specific context.
  - Includes grade level and intended audience.
- **Rights information**
  - Displays copyright & terms of use
- **Technical information**
  - Used to find resources for a specific platform
  - Includes the format & software requirements
- **Usage information**
  - Enables resource to be used
  - Includes software documentation & instructor / student guides
- Example:
  http://www.dlese.org/dds/catalog_DLESE-000-000-003-471.htm

Granularity and Metadata

Learning Environment	Learning Component	Learning Object	Information Object	Content Asset
• Information rarely encoded as metadata • Exception is documentation	• Metadata applies to entire component • Contextual metadata important • Guides important	• Contextual metadata becomes important • Guides for instructors and students may be needed • May include reviews	• Like Content Asset • Educational metadata may be important • Documentation important for software	• Basic descriptive Information for catalog • Rights important • Technical metadata may be important

Metadata - Guidelines

Description: Provide rich metadata about the resource.

Explanation: Providing adequate and accurate metadata will greatly enhance reusability because it helps the resource be found and used.

Four guidelines say to provide:

4.1 - "Basic" Descriptive Information

4.2 - Contextual Information

4.3 - Technical Information

4.4 - Usage Information

4.1 "Basic" Descriptive Information – P1

Description: Provide information (metadata) giving a basic description of the resource including a title, author, description, identifier and key words.

Explanation: Basic descriptive information enables the resource to be found and used.

Techniques and Examples:

Collection:

- Store/catalog basic metadata and use basic metadata during search and browse.
- Example: http://www.merlot.org/artifact/ArtifactDetail.po?oid=3000000000000445412

Developer:

- Basic descriptive metadata is usually provided by the author, generated automatically or added by a cataloger.

fedrl FEDRL INTERNAL

General - FEDRL#:10950

Click on an element name to see Best Practices information for that element.
To save your data, click "Save All", to cancel your changes, click "Cancel".

[Save All]   [Cancel]

Initials:	**jspicer**
History:	lwilliams: added content (12/8/2003) jspicer: added content (3/4/2004)
Internal notes:	12/9/03: Copied from 10880 to build record. LEW

Priority: [▼]

Title: Algebra tiles

Subtitle: [ ]

Series: [ ]

URL: http://matti.usu.edu/nlvm/nav/frames_asid_189_g_1_t_2.html?open=activiti   Click here to open the web site

Description: This virtual manipulative enables the student to make a bar chart showing quantities or percentages. The bar chart can be made three to twelve columns wide and five to twenty rows tall. Students can label columns and click on cells to make the chart. The manipulative allows the user to enter data as quantities and then by clicking the Percentage button instantly see the percentage

Done   Internet

4.2 Contextual Information – P1

Description: Provide information (metadata) addressing the context of use of the resource.

Explanation: Contextual information is used to find resources for a specific context. For educational applications, this includes information about the grade level and intended audience of the resource.

Techniques and Examples:

Collection:

– Store/catalog contextual information metadata.

Developer:

– Contextual metadata is usually determined by an author, authoring team or design team. Some authoring environments provide the means to add this metadata.

FEDRL INTERNAL

Educational – FEDRL#:10950

Click on an element name to see Best Practices information for that element.
To save your data, click "Save All", to cancel your changes, click "Cancel".

[Save All]   [Cancel]

Interactivity Type: ◉ Active   ○ Expositive   ○ Mixed

Interactivity Level: ○ Very low   ○ Low   ○ Medium   ◉ High   ○ Very high

Difficulty Level: ○ Very easy   ○ Easy   ◉ Medium   ○ Difficult   ○ Very difficult

ENCdl Web Resource Type:

Prof.Development
- ☐ Articles, readings, and reports
- ☐ Classroom issues
- ☐ Education periodicals
- ☐ Integrating technology
- ☐ Online collaboration
- ☐ Online courses
- ☐ Professional opportunities
- ☐ Professional organizations
- ☐ Standards and frameworks
- ☐ Teacher curricular support
- ☐ Workshop materials

Course Material
- ☐ Ask-an-expert
- ☐ Assessments
- ☐ Career information
- ☐ Informal education programs
- ☑ Lessons and activities
- ☐ Online textbooks
- ☐ Projects and investigations
- ☐ Real data
- ☐ Reference sources
- ☐ Simulations and demonstrations
- ☐ Suggested readings
- ☐ Syllabi
- ☐ Tools and equipment
- ☐ Tutorials
- ☐ Virtual field trips

Done   Internet

4.3 Technical Information – P 2

Description: Provide information (metadata) addressing technical requirements.

Explanation: Technical information includes the format of a resource and what software or systems are required to use or modify the resource.

Techniques and Examples:

Collection:

– Store/catalog technical information metadata.

Developer:

– Technical Information metadata may be provided by an author or authoring team, may be automatically generated or may be added by a cataloger. Some authoring environments provide the means to add this metadata.

FEDRL INTERNAL

Technical – FEDRL#:10950

Click on an element name to see Best Practices information for that element.
To save your data, click "Save All", to cancel your changes, click "Cancel".

Save All   Cancel

Format:

Application
- ☐ Application/Flash (animation)
- ☑ Application/JAVA applet
- ☐ Application/Software

Audio
- ☐ Audio/AIFF
- ☐ Audio/Basic
- ☐ Audio/Midi
- ☐ Audio/MPEG
- ☐ Audio/QuickTime
- ☐ Audio/RealAudio

Image
- ☐ Image/GIF
- ☐ Image/JPEG
- ☐ Image/Tiff

Model
- ☐ Model/VRML

Text
- ☐ Text/Excel
- ☑ Text/HTML
- ☐ Text/PDF
- ☐ Text/Plain
- ☐ Text/PowerPoint
- ☐ Text/RichText
- ☐ Text/Word
- ☐ Text/XML

Video
- ☐ Video/Animated GIF
- ☐ Video/AVI
- ☐ Video/Flash
- ☐ Video/MPEG
- ☐ Video/QuickTime
- ☐ Video/RealPlayer
- ☐ Video/RealVideo
- ☐ Video/ShockWave

Requirements
(up to 8):

Type:	Requirement Name:	Minimum Version:

4.4 Usage Information – P 3

Description: Provide information on how to use the digital learning resource.

Explanation: User information includes software documentation (online, printed or in the form of help screens), instructor guides, and other information that helps a resource be properly and effectively used.

Techniques and Examples:

Collection:
- Store/catalog usage information, provide ability to link to usage information.

Developer:
- A link or reference should be provided to any documentation that is necessary or will make it easier to use, reuse or, if appropriate, modify a resource.

☐ Text/Word   ☐ Video/RealVideo
☐ Text/XML   ☐ Video/ShockWave

Requirements
(up to 8):

Type:	Requirement Name:	Minimum Version:

Browser
Operating system

Other Platform
Requirements:

To view the National Library of Virtual Manipulatives you must use a web browser with Java-enabled; see resource for complete listing of browser recommendations.

Installation Remarks:

Duration:

P: ____ Year ____ Month ____ Week ____ Day

T: ____ Hour ____ Minute ____ Second

Save All   Cancel

Metadata Examples

4.1 "Basic" Descriptive Information

   and

4.2 Contextual Information

– DLESE http://www.dlese.org/dds/index.jsp

– Authoring tool:

4.3 Technical Information

– ENCDL - http://www.encdl.org – advanced search

4.4 Usage Information

– Wattenberg's "Lite Applet"
http://www.joma.org/vol2/articles/wattenberg/JOMA_article/
wattenberg1.html

Activity – 15 minutes

10 minutes:

1. Review the guidelines and techniques and ask for clarifications.

2. Evaluate a collection (or two) for both searchable metadata and individual asset metadata, determining which guidelines are met.

    –   NSDL – www.nsdl.org

    –   Math Forum – www.mathforum.org

    –   Amazon.com book searching and metadata – go to www.amazon.com, search books (get to advanced search by not entering a key word)

    –   ADVANCED: Go to http://www.reusablelearning.org/index.asp?id=33 and view source to see metadata embedded directly in an object. Comment on the pros and cons of this approach

5 minutes:

3. Discuss evaluations with your table and the larger group.

Reusable LEARNING

Next: Day 2

NSDL Reusability Workshop

Questions? Comments?

Dinner at 6 – In this room (drinks from hotel)

Grow presentation with Muniram Budhu

Start tomorrow at 8:30 after breakfast

August 6 - 7, 2004

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