LRMI: Using Education Metadata to Support Learning

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Trilby Berger, MetaMetrics
Sue Buesing, Buesing & Associates
Michael Jay, Educational Systemics

With guest appearances by:
    Dave Gladney, AAP PreK-12 Learning Group
    Teila Evans, Educational Systemics

aap | PreK-12 Learning Group

MetaMetrics.

es EDUCATIONAL SYSTEMICS.

Introduction

Imagine if you will…

Imagine…

Imagine…

We Now Return to our Regular Programming

Imagine…

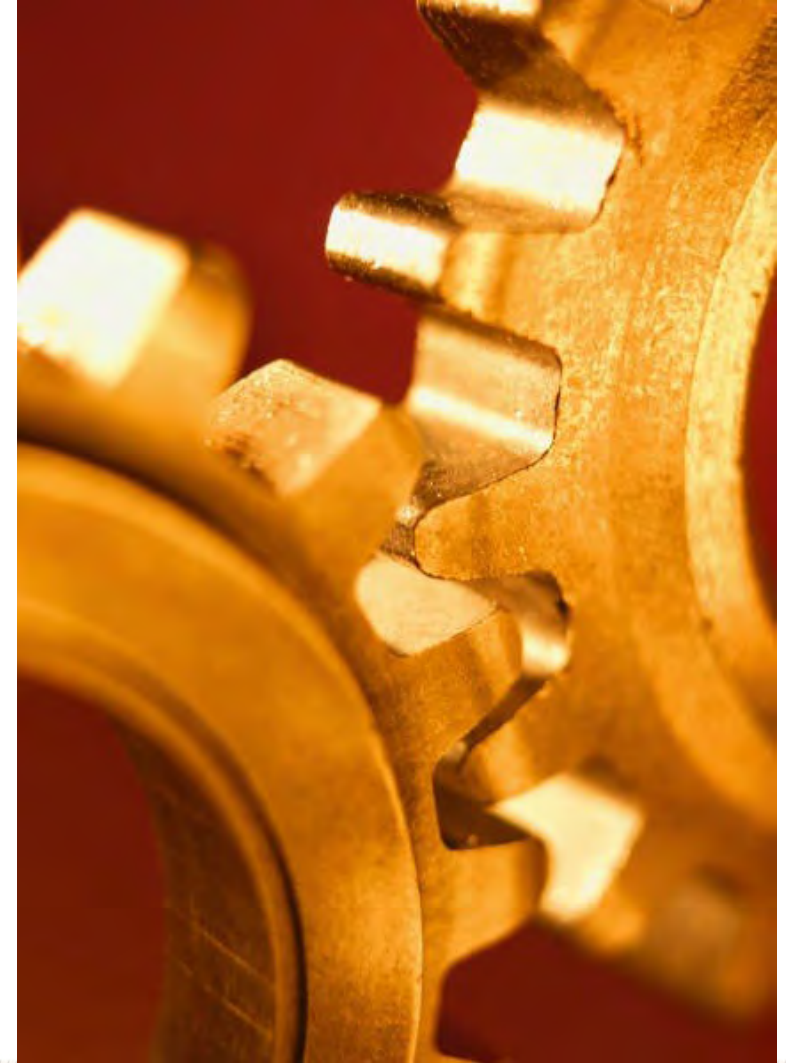Imagine…

Imagine…

Imagine…

Imagine…

3

Metadata Tagging ~ Changing Gears

A Shift in Purpose:

Marketing ~ Broad coverage of the standards to show some level of coverage

Discoverability ~ Alignments are used to locate specific resources directly connected to needs of students and teachers

The Problem? Finding Resources That Fit a Need

WEB   IMAGES   VIDEOS   MAPS   NEWS   MORE
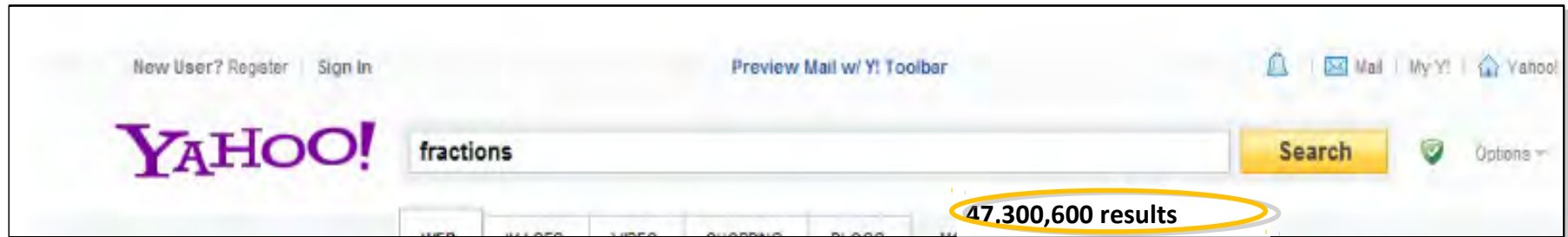
bing   fractions   🔍

48,600,000 RESULTS
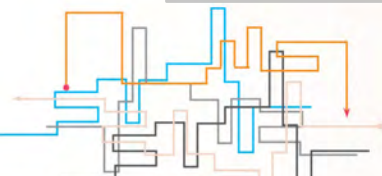
Google   fractions   🔍

Search

About 33,400,400 results (0.25 seconds)

New User? Register | Sign In   Preview Mail w/ Y! Toolbar   🔔 | ✉ Mail | My Y! | 🏠 Yahoo!

YAHOO!   fractions   Search   🛡 Options ▼

47,300,600 results

ISLE Open Education Resources Search

fractions

X

| Newest First ⇕ | Show 20 Items ⇕ | List View ⇕ |

Found 2016 results.

Jump to Page: 1 2 3 4 10 50 100 101

Decimals, Fractions & Percentages

Students learn about and practice converting between fractions, decimals and percentages. Using a LEGO® MINDSTORMS® NXT robot and a touch sensor, each group inputs a fraction of its choosing. Team members convert this same fraction into a decimal, and then a percentage via hand calculations, and double check their work using the NXT robot. Then they observe the robot moving forward and record that distance. Students learn that the distance moved is a fraction of the full distance, based on the fraction that they input, so if they input ½, the robot moves half of the original distance. From this, students work backwards to compute **Show/Hide >>**

TeachEngineering.org

Keywords:
English
Learning Task

Created 2/22/2014 10:21:0

Robot Wheels!

Students solidify their understanding of the terms "circumference" and "rotation" through the use of LEGO® MINDSTORMS® NXT robotics components. They measure the circumference of robot wheels to determine how far the robot can travel during one rotation of an NXT motor. They sharpen their metric system measurement skills by precisely recording the length of a wheel's circumference in centimeters, as well as fractions of centimeters. Through this activity, students practice brainstorming ways to solve a problem when presented with a given scenario, improve their ability to measure and record lengths to different degrees **Show/Hide >>**

TeachEngineering.org

Keywords:
English
Learning Task

Created 2/22/2014 10:10:1

Breaking Beams

Students learn about stress and strain by designing and building beams using polymer clay. They compete to find the best beam strength to beam weight ratio, and learn about the trade-offs engineers make when designing a structure.

TeachEngineering.org

Keywords:
English
Learning Task, Lab Material

Created 2/22/2014 10:06:0

Pedal Power

In this engineering activity, learners examine bicycle mechanics and gear ratios. Learners determine which gears will help them bike a set course in the shortest amount of time.

Keywords:
English

Search by criteria, valuable results!

Shifts in Education

From the learner & parent's perspective:

1. How can I do better?

2. How can I differentiate myself?

3. How can I get what I need based on how I learn?

4. How can I do well on qualifying tests?

From the educator & institution's perspective:

1. How do I address the needs of an increasingly diverse set of learners?

2. How do I engage learners who have access to rich resources and media?

3. How do I compete with educational alternatives?

Shifts in Education

From the content developer & publisher's perspective:

1. How do I provide coherent offerings that address the needs of an increasingly diverse set of students?

2. How do make the most of the instructional assets I have?

3. How do I make the value of my product(s) evident in a educational environment where learning objects are more prevalent?

4. How do I transition my organization to leverage emerging business models without losing what makes us unique?

Judging a Book by its Cover

Not a good idea but we all do it
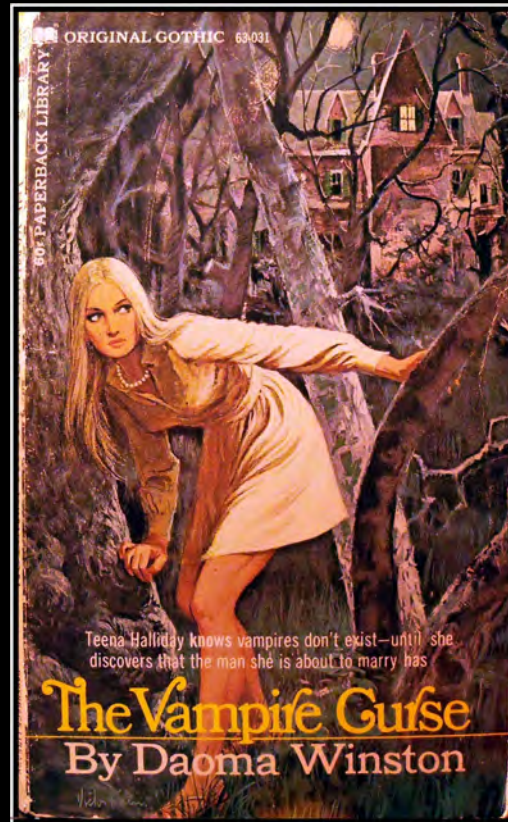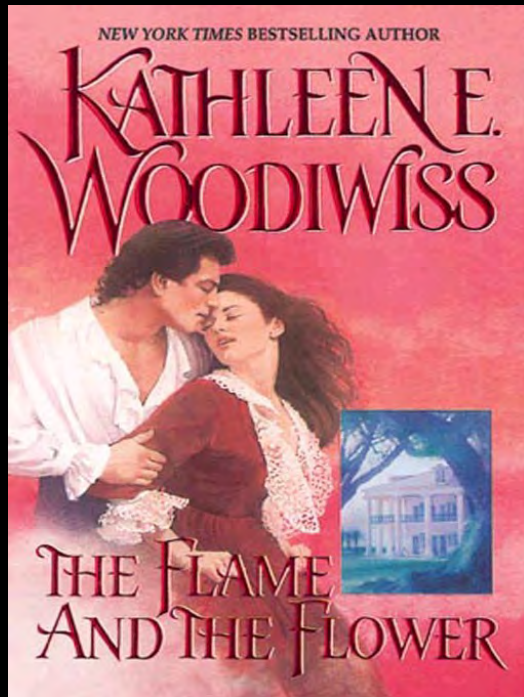
Some attributes we want in our Instructional Resources?

Attribute	%
Includes material supporting differentiated instruction	93
Includes material supporting 21st century skills	84
Includes free online resources	84
Includes material supporting RtI	83
Comes in a digital format	69
Includes resources ready for interactive whiteboards	67
Includes material supporting project-based learning	67
Includes material for use with ELL students	58
Available by subscription	18

SLC

So, why do we need a standard?

Long History of Classification

NON-PRINT MATERIALS EVALUATION FORM
[Please complete and return to IRC with item]

CALL NO.	TITLE	COPY NO.

1. **CONTENTS:**

	Ex.	Good	Ave.	Poor
Authenticity	☐	☐	☐	☐
Clarity	☐	☐	☐	☐
Interest	☐	☐	☐	☐

2. **RECOMMENDATIONS:**

	K-3	4-6	7-8	9-12
Interest Level: Grades	☐	☐	☐	☐
Appropriate For Grades	☐	☐	☐	☐

☐ Discard   ☐ Repair

3. **CONSIDERING ALL FACTORS. I RATE THIS ITEM AS:**

☐ Excellent
☐ Good
☐ Average
☐ Below Average
☐ Poor

You are encouraged to make additional comments on the back.

I-IR-14

Hayward Unified School District

So why is this different?

- We need a common set of descriptors that allow us to structure our searches.

- Common is not so common!

- Education benefits from not going it alone… even with the trade-offs.

- We have lived in a world with different standards. The internet changes all that.

- Individualized learning and teacher collaboration depends on it!

Striking a balance – looking for a needle
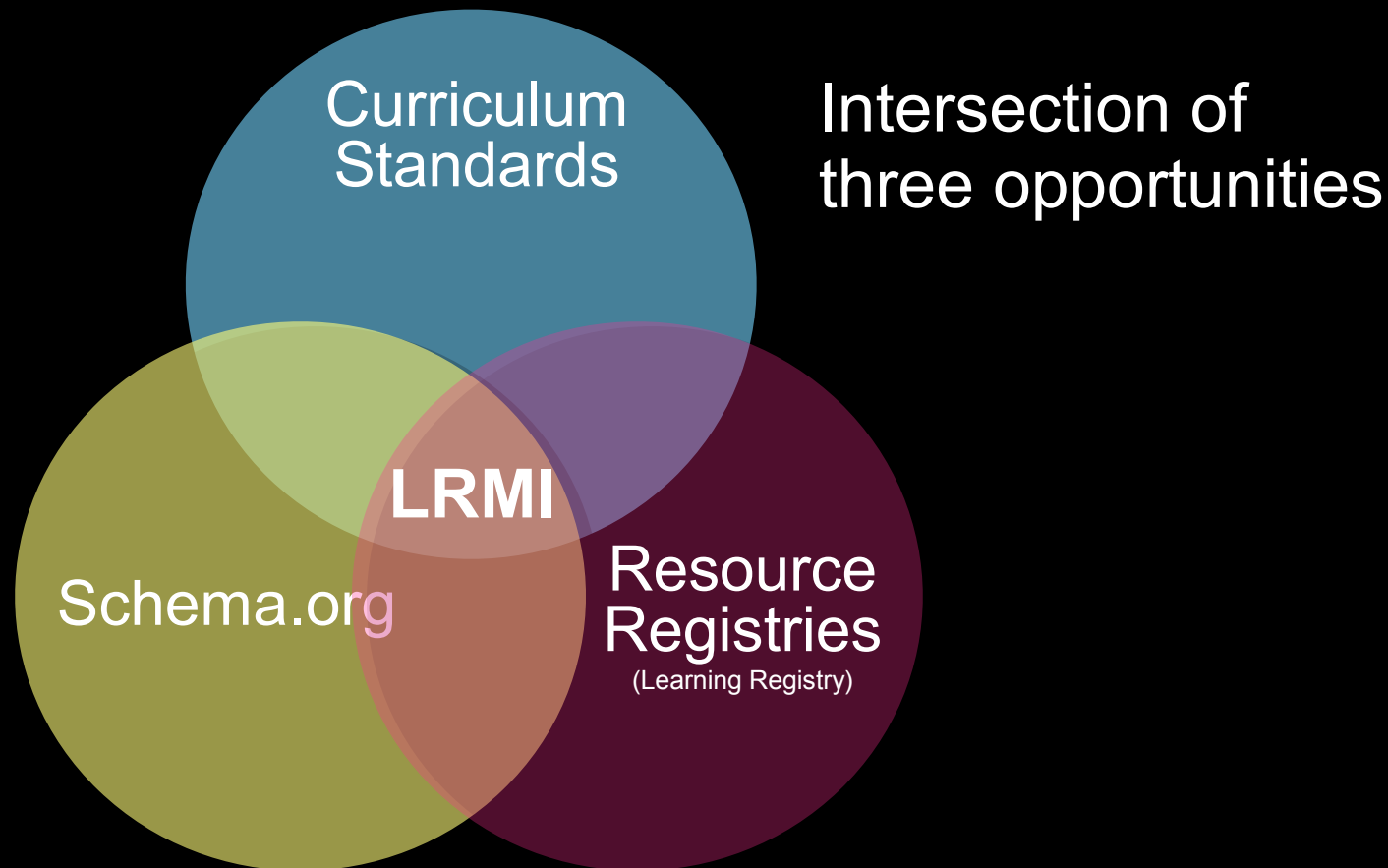
Why Now? Kinda' Perfect Storm

Goal: Make it easier and more convenient to find learning resources that meet specific student and class needs.

Curriculum Standards

Intersection of three opportunities

LRMI

Schema.org

Resource Registries
(Learning Registry)

from a representation by Brandt Redd, Gates Foundation

"*Why?*"

Improve search results.

Search

Web

Images

Maps

Videos

News

Shopping

Recipes

More

San Diego, CA

Change location

Ingredients Yes No

mayonnaise

tarragon

mustard

celery

potatoes

vinegar

dill

paprika

Any cook time

Less than 15 min

Less than 30 min

Less than 60 min

Any calories

Cold-Fashioned **Potato Salad** Recipe : Alton Brown : Recipes : Food ...

www.foodnetwork.com › ... › Holidays and Parties

★★★★★ 62 reviews · 59 mins

Get this all-star, easy-to-follow Food Network Cold-Fashioned **Potato Salad** recipe from Alton Brown.

Potato Salad Recipe | Simply Recipes

www.simplyrecipes.com/recipes/**potato_salad**/

45 mins

Sep 5, 2011 – Classic **potato salad** with boiled potatoes, sour cream, mayo, green onions, celery, parsley, pickles and bacon.

Potato Salad Recipes - Allrecipes.com

allrecipes.com/recipes/**salad**/**potato**-**salad**s/

Looking for **potato salad** recipes? Allrecipes has more than 200 trusted **potato salad** recipes complete with ratings, reviews and mixing tips.

↳ Best Potato Salad Recipes · Creamy Potato Salads · German Potato Salad

Potato salad - Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/**Potato_salad**

Potato salad is a dish made from boiled potatoes, the versions of which vary throughout different regions and countries of the world. Although called a salad, it is ...

Perfect **Potato Salad** | The Pioneer Woman Cooks | Ree Drummond

thepioneerwoman.com/.../fourth-of-july-week-perfect-**potato**-**salad**/

45 mins

Jun 29, 2009 – I'll be posting a new Fourth of July dish every day this week. And I can't promise there won't be bacon involved at s...

Images for **potato salad** - Report images

MOMA
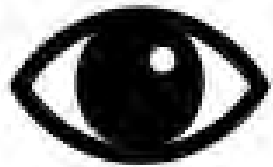
Visual Descriptions

Access the collection in vivid detail, with audio descriptions designed for visitors who are blind or partially sighted (available in eight languages)

vs.

Collection

Commentaries by artists, curators, and others on works in the collection (available in eight languages)

Our Challenge

"There is nothing worse than a sharp image of a fuzzy concept."

- Ansel Adams
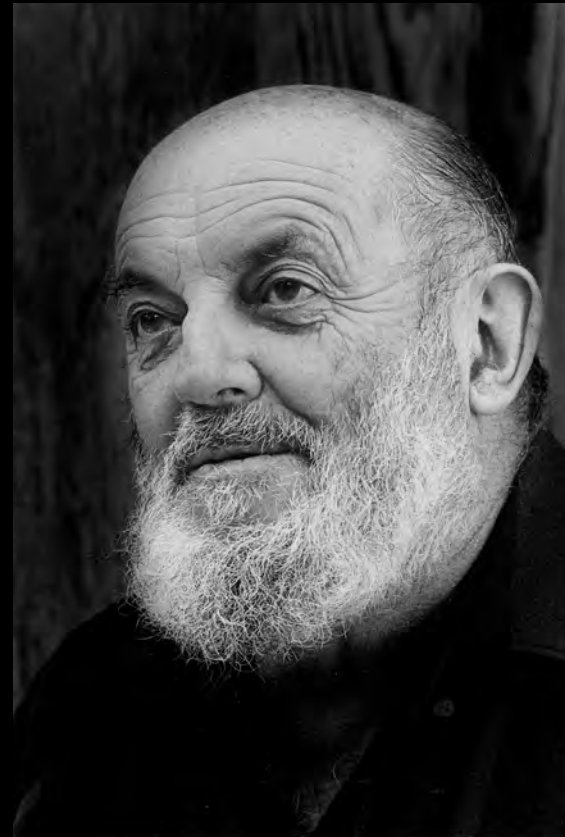
AEP Program

Phase I

June 2011 - March 2012

- Convene Technical Working Group
- Convene Advisory Group to inform/review TWG's work
- Draft properties
- Inform general public, decision-, and policy-makers
- Encourage community feedback and discussion
- Submit draft specification to Schema.org

Phase II

March 2012 – April 2013

Awareness building

Proof of Concept

Collaboration on Tagger/Search

Educator/publisher surveys

Encouraging/supporting Schema.org adoption

Hands-on Publisher Tagging Support

Phase III

May 2013 – April 2014

Publisher Tagging Support

LR Sandbox for Publishers

LRMI Governance
LRMI Ecosystem
    Service Provider's Program

    Awareness Building

Publisher and Educator Surveys

5. State of the LRMI

Happenings

LRMI Properties are now part of Schema.org

Others related metadata is emerging: Accessibility (A11y) led by Benetech, professional development (iPD) led by ISKME

Publisher awareness has increased from 47% to 86% over the past year

Increasing interest among companies producing tools for publishers

LRMI (schema.org) can now be EPUB3 requirements

Happenings

Discussion at Schema.org level around relationships between CreativeWorks, collections, ordered collections, etc. (public-vocabs@w3.org and lrmi@googlegroups.com)

Discussion around governance for the spec beyond 2014

Increasing global outreach

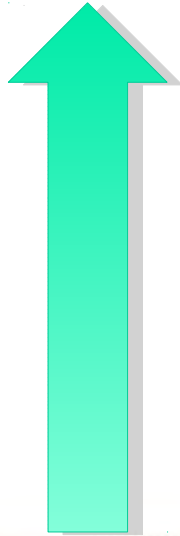# Implications

Shifting

Move from…

Resource	to	Learning
Institution	to	Learner
Media	to	Engagement
Adopted	to	Discovered

What is the Solution?

Educational Standards + **LRMI Tagging**

- Created with input from teachers, parents and community leaders

  - Consistent, clear understanding of what students are expected to learn

  - Designed to be robust and relevant to the real world

  - Focus on core conceptual understandings and procedures

  - Reflect the knowledge and skills needed for success in college and careers.

  - Adopted by 45 states and District of Columbia

Referencing the Standards

Dot Notation

- Published and Adopted Standards – Math.6.EE.1
- Including Cluster Headings for Math – Math.6.EE.A.1

URL - http://corestandards.org/2010/math/content/6/EE/1

Globally Unique Identifier (GUID) - C3D4E8BB80BF43E3A1EA57DD2B56C334

LRMI Uses Dot Notation (with Cluster Headings)

Hierarchy of CCSS

Math	ELA/Literacy
Initiative	Initiative
Framework	Framework
Set	Set (optional)
Grade	Strand + Domain
Domain	Grade
Cluster	Standard
Standard	Component (optional)
Component (optional)	
CCSS.Math.Content.4.NF.B.3a CCSS.Math.Content.4.NF.B.3a	CCSS.ELA-Literacy.L.4.1a CCSS.ELA-Literacy.L.4.1a

Other Standard Sets

- Next Generation Science Standards

- CCSS 15% Change states

- Texas and other states that did not adopt the CCSS

- Lexile

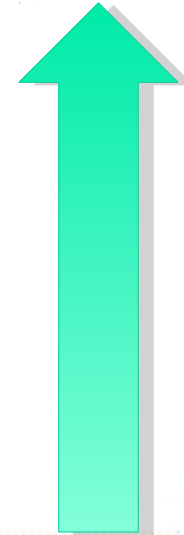- Range of Subject Standards

- Other Professions Standards

What is the Solution?

Common Core State Standards + **LRMI Tagging**

LRMI Fields of Metadata

General:

Title

URL

Language

Created On

Usage Rights URL

Publisher

Is Based On URL

Education:

End User

Age Range

Educational Use

Interactive Type

Learning Resource Type

Time Required

Alignment:

Educational Alignment

Alignment Type

Dot Notation

Item URL
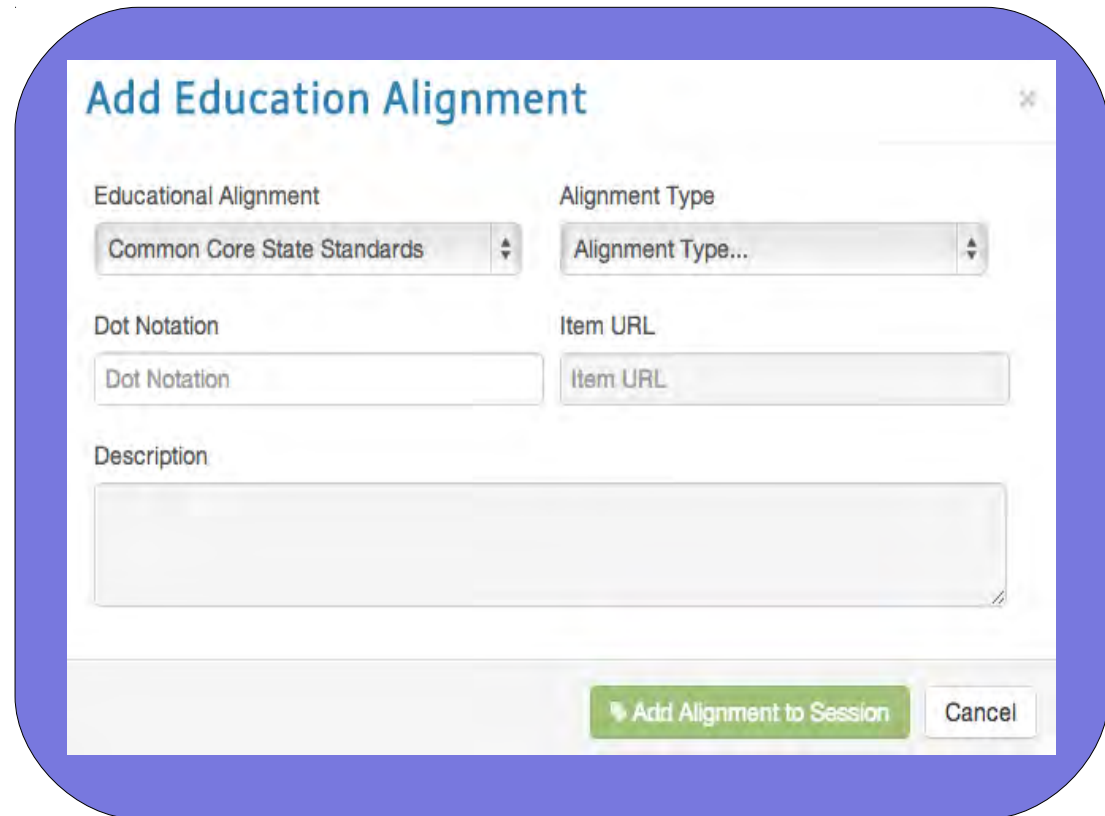
Description

Alignment in LRMI

Educational Alignment – Currently Common Core State Standards (National Only)

Alignment Type – Teaches, Assesses, Requires (also other choices but these are most appropriate at this point)

Dot Notation – from either CCSSO site or ASN

Item URL – location of the standard on the CCSSO site (auto-populates)

Description – text of the standard (auto-populates)

Making Alignments

- Decide how you want your material to be discovered

- Think like the person searching for your materials

- Because CCSS Standards are so broad, an asset can address a portion of the standard

- Use all three types of alignment: Teaches, Assesses, Requires

"… Districts, administrators, and teachers are seeking ways to turn the corner toward Common Core… what's needed in classrooms all over the U.S. as we make this historic shift to the Common Core is "Content, Content, Content.""

Robert Romano, "Meeting the Needs of the Common Core Standards: Content, Content, Content", *EdNet Insight*, January 11, 2013
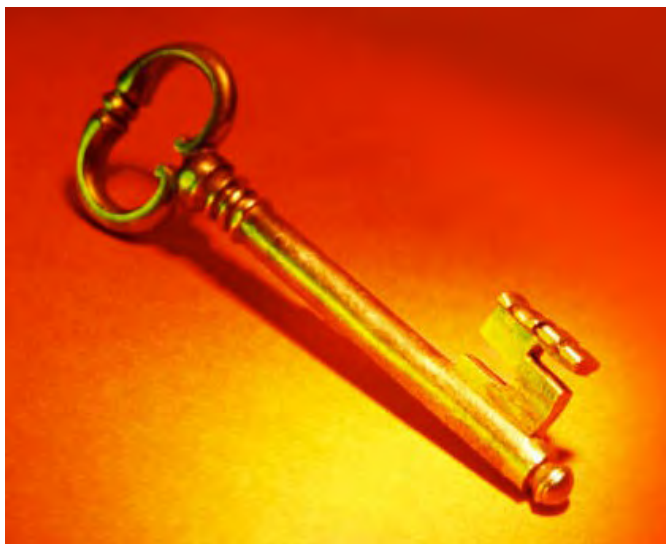
The KEY is to make your content DISCOVERABLE!

Making the Content Search Instructionally Relevant

Trilby Berger

SVP, Strategic Partnerships

MetaMetrics, Inc.

SXSWedu   March 5, 2014

EducationalAlignment

Learning Resources (Content)

Competencies (Objectives, Frameworks, Achievement Standards)

LRMI

EducationalAlignment

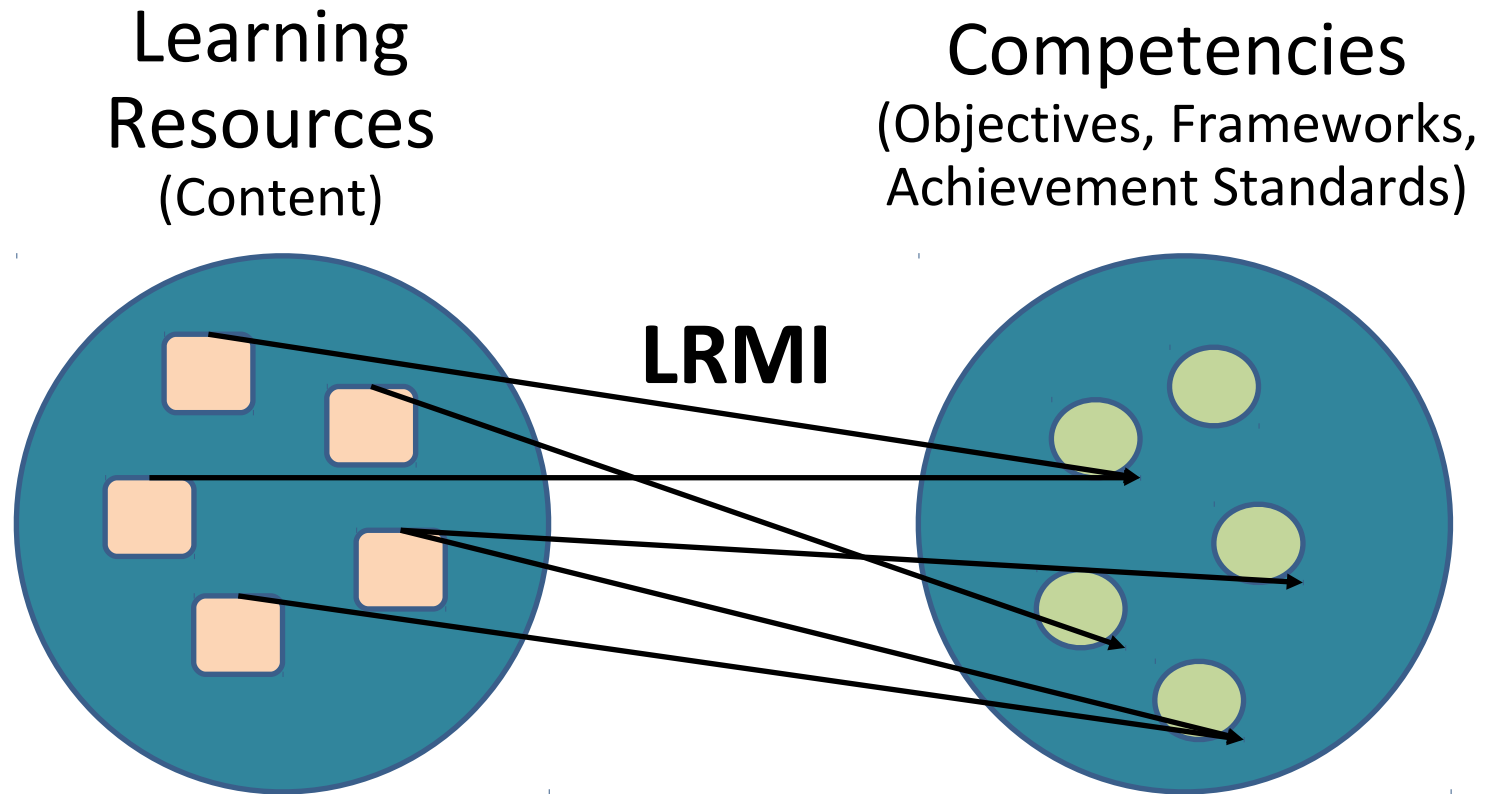- **AlignmentObject:** "An intangible item that describes an alignment between a learning resource and a node in an educational framework."

- **Examples of Educational Frameworks**
  - Achievement Standards like the Common Core, individual state standards (TX, VA, AK, as examples)
  - Organizational frameworks such as grade level or age range
  - Text Complexity (e.g. F&P, AR, Fog Factor, Lexile Framework for Reading)
  - Content area frameworks, as in mathematics with NCTM Focal Points and Quantile Framework for Mathematics
  - Activity Types (e.g. Bloom's Taxonomy)
  - Subject classifications like those used in higher education
  - Library classifications such as LCC, or Dewey Decimal Classification

- **Properties**
  - alignmentType
  - targetDescription
  - targetName
  - targetUrl

EducationalAlignment Samples

alignmentType: teaches
targetName: Rounding
targetDescription: Use place value understanding to round whole numbers…
targetUrl: http://corestandards.org/Math/Content/3/NBT/A/1
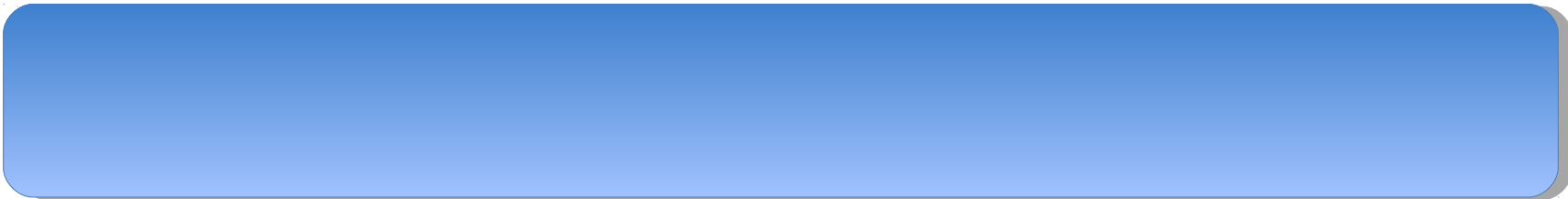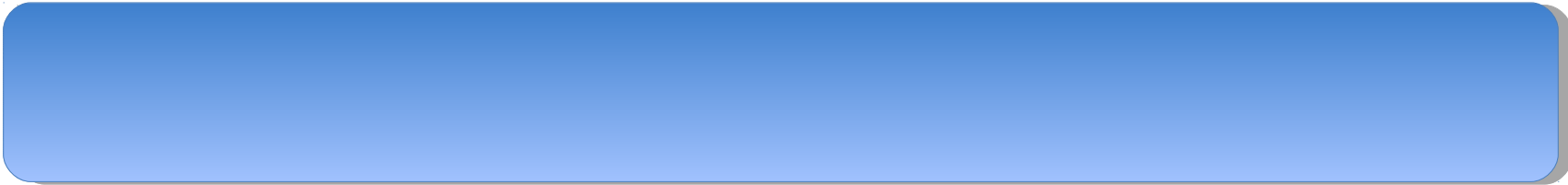
Important caveat: EducationalAlignment supports richer markup than current practice. The Common Core example matches the Identifiers and URLs published on http://corestandards.org. However, official names have not been set for individual standards. The names and URLs in the other examples are samples of what might be done. To date, MetaMetrics has not published a URL format for Lexile measures, Massachusetts has not assigned URLs for grade levels and Contoso College doesn't exist. Markup tags match the LRMI 1.0 specification.

Lexile – AlignmentObjectProperties

- **alignmentType:** textComplexity
- **educationalFramework:** Lexile
- **targetDescription:** **http://map.lexile.com/lexilemap**
- **targetName:** 600L
- **targetURL:** http://map.lexile.com/600

So, why is this important?

- Range of learners in every classroom makes instruction challenging for teachers
- Targeting to a particular instructional need
- Personalization
- Simplifies the search for educators, parents and learners
- Result = more meaningful, instructionally relevant content searches

The LRMI Properties v1 (lrmi.net/the-specification)

General Terms (Schema.org):
- title/name
- URL
- description
- image
- about
- created (date)
- Creator
- Publisher
- inLanguage
- useRightsUrl*
- isBasedOnUrl

Educational Terms:
- educationalRole
- educationalUse
- timeRequired
- typicalAgeRange
- interactivityType
- learningResourceType

Competency related:
- educationalAlignment
- educationalFramework
- Alignment Type
- targetDescription
- targetName
- targetURL

* part of LRMI spec but not yet adopted by Schema.org

Educational Role

Administrator
Mentor
Parent
Peer Tutor
Specialist
Student
Teacher
Team

Educational Use

Activity	Homework	Problem Solving
Analogies	ID similarities & differences	Problem-based
Assessment	Inquiry	Project
Auditory	Interactive	Questioning
Brainstorming	Interview/Survey	Reading
Classifying	Interviews	Reciprocal teaching
Comparing	Introduction	Reflection
Cooperative Learning	Journaling	Reinforcement
Creative Response	Kinesthetic	Research
Demonstration	Laboratory	Review
Differentiation	Lecture	Role Playing
Discovery Learning	Metaphors	Service learning
Discussion/Debate	Model & Simulation	Simulations
Drill & Practice	Musical	Summarizing
Experiential	Nonlinguistic	Technology
Field Trip	Note taking	Testing hypotheses
Game	Peer Coaching	Thematic instruction
Generating hypotheses	Peer Response	Visual/Spatial
Guided questions	Play	Word association
Hands-on	Presentation	

Interactivity Type

Active
Expositive
Mixed

Typical Age Range

0-2
2-5
5-8
8-10
10-12
12-14
14-16
16-18
18+

Learning Resource Type

Activity
Audio
Broadcast
Calculator
Discussion
E-Mail
Field Trip
Hands-on
In-Person/Speaker

Kinesthetic
Lab Material
Manipulative
MBL
Model
On-Line
Podcast
Presentation
Printed

Robotics
Still Image
Video
Wiki
Worksheet
Lesson Plan
Test
Quiz

Alignment Type

assesses
teaches
requires
textComplexity
readingLevel
educationalSubject
educationLevel

FAQs From the Field

From this…

to this!

Teila Evans, Project
Manager
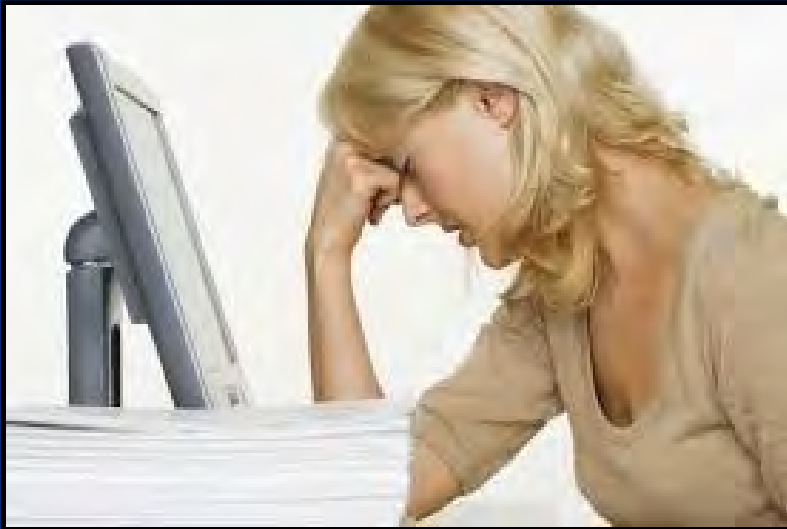
Support Process

1. Introduction meeting

2. Provide you with LRMI data dictionaries and template

3. Review sample metadata

4. Technical support

5. You've got it!

What's the best level of granularity?

Use Rights

Contact

Teila Evans, Project Manager
E-mail: teila@edusystemics.com
Phone: 253-514-2748
Twitter: @teilaevans

EDUCATIONAL
SYSTEMICS

Hands-on Tagging Activity

The task

Complete one or more set of metadata for an instructional resource.

Discuss issues associated with resource digestion and representation.

Share initial thoughts for different types of resources.

Select A Resource

Either:

   Supplied by us or

         One you have with you or

               A digital resource you can access

   Ideally groups of 4 or 5

         25 minutes to work

         20 Minutes to share

BrainPOP

Math > Algebra > Angles
http://www.brainpop.com/math/geometryandmeasurement/angles/

Math > Algebra > Interest
http://www.brainpop.com/math/ratioproportionandpercent/interest/

English > Writing materials
http://www.brainpop.com/english/writing/mainidea/

English > Parts of Speech
http://www.brainpop.com/english/grammar/partsofspeech/

Rosen Publishing

Chameleons: Masters of Disguise
http://booksample.net/Chameleons
http://booksample.net/resources/textfile.html

Causes and Effects of the Texas Revolution
http://www.booksample.net/Causeeffects

EDUCATIONAL SYSTEMICS

Illinois Shared Learning Environment (ISLE)

Visit: http://www.ilsharedlearning.org.

Select 'resources.'

Select 'search' to filter through tagged resources.

Tag an asset that you've brought to the workshop or use one that the workshop has provided.

> To tag using the ISLE tool, you must sign-up, and select 'contribute' in the main menu.

For further information and a link to the OER tools, visit: http://ilsharedlearning.org/Pages/Illinois-Open-Education-Resources.aspx

Discussion

So, How Can You or Your Organization Participate?

Ask us

We're here to help you...
- Gain support for LRMI within your organizations
- Provide support in finding ways to integrate this into your existing processes
- Facilitate access to technical resources if needed

To do this we can...
- Present to you and those teams with whom you work
- Review and provide feedback on metadata you are creating
- Provide information to show benefit to your organization for participation

More Information

Schema.org: http://schema.org

Joint Google/Yahoo/Bing project to define common metadata to enhance search effectiveness.

LRMI: http://lrmi.net

Schema.org extensions specific to education.

Learning Registry: http://learningregistry.org

Another way to distribute metadata about content, standards, effectiveness, etc.

A11Y

Accessibility metadata standards