LRMI: using schema.org to describe open educational resources

Phil Barker & Lorna M Campbell
Motivation

Promote the sharing of educational resources by helping people find content that meets their specific needs.

Where do you think people go most often to find open educational resources?
Motivation

Meet Pam, let’s say she wants to teach a lesson about the *Declaration of Arbroath (1320)*
Motivation

She might search Google:

**Declaration of Arbroath** - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Declaration_of_Arbroath
The Declaration of Arbroath is a declaration of Scottish independence, made in 1320. It is in the form of a letter submitted to Pope John XXII, dated 6 April 1320, ...

**Declaration of Arbroath** - The National Archives of Scotland
www.nas.gov.uk/about/050401.asp
13 Jan 2012 - This is a translation of part of the Declaration of Arbroath, foremost among Scotland's state papers and perhaps the most famous historical ...

**Declaration of Arbroath 1320** - Constitution Society
www.constitution.org/scot/arbroath.htm
The Declaration of Arbroath was and has been unequalled in its eloquent plea for the liberty of man. From the darkness of medieval minds it shone a torch upon ...

**BBC - History - Scottish History**
www.bbc.co.uk/history/.../features_independence_arbroath.shtml
The Declaration of Arbroath is without doubt the most famous document in Scottish history. Like the American Declaration of Independence, which is partially ...
Motivation

There are many educational parameters Pam might use to narrow the search results to those which are more appropriate, but Google doesn’t support them. She is forced into a fragmented world of specialist search services based on (often siloed) metadata.

Photo by Vgrigas
Metadata and resource description

Metadata is **structured** information that describes, explains or otherwise makes it easier to retrieve, use, or manage and information resource

NISO, 2004, “Understanding metadata”
Metadata and full text search

------------- REVIEW ------------

... I'd also like to see real examples where just free-text content isn't enough to describe the resource and meta-data materially adds value.

Anon. Peer review comment for this paper
Author J. Cetis?

[PDF] Open educational resources–Opportunities and challenges for higher education
J CETIS - 2008 - muele.mak.ac.ug
Page 1. 1 Open Educational Resources – Opportunities and Challenges for Higher Education
Li Yuan; Sheila Mac eill; Wilbert Kraan JISC CETIS 1. Introduction Higher education institutions
around the world have been using the Internet and other digital ...
Cited by 69  Related articles  All 14 versions  Cite  Save  More

[PDF] Learning Material Application Profile Scoping Study–final report
P Barker, J Cetis - JISC CETIS, 2008 - publications.cetis.ac.uk
1. Summary This report details the findings of a scoping study carried out for the JISC to
investigate a potential metadata application profile for learning materials. The objective of
the study was to synthesize and analyse the advice that is currently available to managers ...
Cited by 3  Related articles  All 6 versions  Cite  Save  More

The JISC Design for Learning Experience: Perspectives on Creating, Developing and ...
for Learning.
S MacNeill, L Corley, J CETIS - ICALT, 2008 - doi.ieeecomputersociety.org
Abstract This paper will a provide a summary of the current effort in the UK, through the Joint
Information Systems Committee (JISC) funded Design for Learning Programme, to
synthesize the approaches of e-Learning developers providing systems, services and ...
Cited by 2  Related articles  All 4 versions  Cite  Save  More

Screen shot from Google Scholar. NB, J CETIS = JISC CETIS, the author’s affiliation
Schema.org

a joint effort, in the spirit of sitemaps.org, to improve the web by creating a structured data markup schema supported by major search engines.

Learning Resource Metadata Initiative: using schema.org to describe open educational resources.

By Phil Barker, Cetis, School of Mathematical Computer Sciences, Heriot-Watt University
Lorna M Campbell, Cetis, Institute for Educational Cybernetics, University of Bolton. April 2014

Abstract
This paper discusses the Learning Resource Metadata Initiative (LRMI), an international project that aims to facilitate the discovery of educational resources through the use of embedded metadata that can be used by search engines (e.g. Google, Yahoo, Bing, Yandex) to refine the search services they
What the computer sees

<h1>Learning Resource Metadata Initiative: using schema.org to describe open educational resources</h1>

<p>by Phil Barker, Cetis, School of Mathematical and Computer Sciences, Heriot-Watt University</p>

<p>Lorna M Campbell, Cetis, Institute for Educational Cybernetics, University of Bolton. April 2014</p>
What the computer needs

Learning Resource Metadata Initiative: using schema.org to describe open educational resources

Phil Barker
Cetis, School of Mathematical and Computer Sciences, Heriot-Watt University

Lorna M Campbell
Cetis, Institute for Educational Cybernetics, University of Bolton
What schema.org provides

<div itemscope itemtype="http://schema.org/ScholarlyArticle">
<h1 itemprop="name">Learning Resource Metadata Initiative: using schema.org to describe open educational resources</h1>
<p itemprop="author" itemscope itemtype="http://schema.org/Person">
    <span itemprop="name">Phil Barker</span>,
    <span itemprop="affiliation">Cetis, School of Mathematical and Computer Sciences, Heriot-Watt University</span>
</p>
<p itemprop="author" itemscope itemtype="http://schema.org/Person">
    <span itemprop="name">Lorna M Campbell</span>,
    <span itemprop="affiliation">Cetis, Institute for Educational Cybernetics, University of Bolton</span>
</p>
</div>
What schema.org provides

An agreed hierarchy of resource types.
An agreed vocabulary for naming the characteristics of resources and the relationships between them. 
Which can be added to HTML to help computers understand what the strings or text mean.
What schema.org lacked (2011)

A way of tagging the educational parameters Pam might use to narrow her search results to those which are most appropriate.
LRMI: Learning resource metadata initiative

Funded by the Bill and Melinda Gates Foundation since June 2011 (three phases)
Co-led by Creative Commons and AEP (preK-12 learning group division of the Association of American Publishers)

Working group including educators, publishers, metadata specialists

Aim:

*make it easier to publish, discover, and deliver quality educational resources on the web*
LRMI

schema.org didn’t have a way of naming the educational parameters that could have helped Pam narrow her search, so LRMI added them.

• Educational alignment (more later)
• Educational use
• Interactivity type
• Is based on url
• Learning resource type
• Time required
• Typical age range
• Use rights URL
• Educational role (of target audience)

http://www.lrmi.net/the-specification
LRMI

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http://www.lrmi.net/the-specification

*except use rights URL
Educational alignment

An alignment to an established educational framework, e.g.

- Shared curriculum or syllabus
- Shared framework of competency requirements
- Set of educational levels
- Modules making up a course

Allows encoding of statements like
“this resource teaches X”
“this resource assess X”
“this resource requires knowledge of Y”
Educational alignment

An alignment to an established educational framework
Educational alignment

LRMI elements identify something in an educational framework, they do not describe it.
Google custom search engine

Google custom search allows you build a Google-powered search limited to a list of domains or schema.org types, and filtered according to schema.org properties.

For example:

- limit searches to pages that have an Alignment Object (pages that describe learning resources)
- filter by alignment with what you want to teach

Plain Google search

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The Declaration of Arbroath is a declaration of Scottish independence, made in 1320. It is in the form of a letter submitted to Pope John XXII, dated 6 April 1320, ...

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Google custom search

Photo by Vgrigas
Google custom search

Feel free to try it out, try “grammar”

but remember:
It’s a proof of concept, not a service
It doesn’t used all parameters available through LRMI

Questions?

• Educational frameworks tend to be local, if something is aligned to a UK standard how do people in the South Africa find it?
• How do you describe the educational frameworks?
• What vocabularies should we use for other LRMI elements?
• How can you describe someone else’s resources?
• Can you use LRMI/schema.org for creating stand-alone metadata records?
• Can you use LRMI/schema.org in other resource formats (e.g. EPUB)?
• Can you use LRMI to describe other types of things (events, OpenBadges...)?
Conclusion

• LRMI have enhanced schema.org so that it better supports open web searching for learning resources.
• What is really needed for success is for
  1) more search services &
  a) more resource dissemination channels to use it.
• We will support that with advocacy, advice, sharing best practice, stable governance for LRMI
Attributions

• Photo of Pam Robertson, teacher, by Vgrigas (Own work) [CC-BY-SA-3.0 (http://creativecommons.org/licenses/by-sa/3.0)], via Wikimedia Commons
  Pam really is a teacher but I have no idea whether she would want to teach anything related to the declaration of Arbroath
• Reproduction of Tyningham (1320 A.D) copy of the Declaration of Arbroath, 1320, via Wikimedia Commons
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