Sharing the Wealth of a Nation: The Learning Registry Project

Steve Midgley
Deputy Director, Office of Ed Tech
US Dept. of Education

Daniel R Rehak, PhD
ADL Technical Advisor
US Dept. of Defense
The Problem
We live in a fragmented world with an abundance of learning resources.
We suspect that for any learning activity, somewhere relevant digital resources already exists.

An Abundance of resources.
One of our fundamental objectives is to be able to “easily” discover and share learning resources.

A Lack of Discoverability and Sharing.
We want to enable contextualized learning experiences: find and deliver just the right, good stuff.

A Question of Quality, A Question of Context.
Ultimately we want to know which learning resources have a positive effect in learning.

A Lack of Feedback.
Users “google”; users “like” and “friend”. We need to differentiate or to embrace and extend.

A Changing Web.
We need to provide what users want and need.

Understanding Incentives.
Moving Forward
Current approaches just don’t cut it.
<table>
<thead>
<tr>
<th>Past</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited computing (availability &amp; power)</td>
<td>Ubiquitous</td>
</tr>
<tr>
<td>Limited bandwidth (speed &amp; connectivity)</td>
<td>Always on, everywhere</td>
</tr>
<tr>
<td>Closed enterprise solutions (lock in)</td>
<td>Connected systems, tools, data</td>
</tr>
<tr>
<td>Learning as a special event (time, place)</td>
<td>Learning as part of all activities</td>
</tr>
<tr>
<td>Predefined learning strategies (by instructor/author)</td>
<td>Dynamic, situational, adaptive learning</td>
</tr>
<tr>
<td>Organizational focus</td>
<td>Individual/community focus</td>
</tr>
<tr>
<td>Just in case</td>
<td>Embedded</td>
</tr>
<tr>
<td>Disconnected learning events</td>
<td>Single life-long learning stream</td>
</tr>
<tr>
<td>Uncoupling content from enterprise</td>
<td>Building linked resources networks</td>
</tr>
<tr>
<td>ROI from reuse</td>
<td>ROI from scale</td>
</tr>
</tbody>
</table>
Current Trends

- Social Networks, Social Media and Web 2.0
- Context
- Linked Data and Semantic Web
- Conventional Repositories and Registries
- Standards, Specifications and Profiles
- Harmonization and Integration
We need to enable a learning layer on Web 2.0.

Innovate the infrastructure, not solutions.
Goals and Principles
Build a shared vision.
Guiding Principles

- Focus on users
- Collaborate widely
- Produce results that work “at scale”
- Address the entire learning resource lifecycle
- Leverage learning resource differentiators: trust, authority, persistence, curation
- Work in today’s web and social environment
- Be agile, sustainable and cost effective
- Understand policy and business imperatives
- Target improved, contextualized learning with measurable learning outcome
Resource Focus Timeline

- (Learning) Resources 1990’s
- Description → Metadata 2000’s
- Context → Paradata 2010’s?
- Use → Analyticaldata ????
We want to address fragmentation to improve learning, using technology and social collaboration.

Guide by Principles.
Learning Registry
A (Community) Project.
Make learning resources easier to find, access and integrate into learning environments “wherever” they are stored.

Functionality.
Enable anyone to build and access better, more interconnected and personalized learning solutions for the 21st century.

Learning Focus.
Can you get me a copy of XYZ?
Do you have any other stuff related to XYZ?
Can you send me updates or new stuff?

Federal Learning Registry

- NASA
- Smithsonian
- Other content repository

Other Service 1

- ABC

Other Service 2

- Content repository

- XYZ

How are you using XYZ or ABC?
Do you have any stuff related to ABC?
Do you know anything more about XYZ?
Scope
What’s the least we can do?
Solution Directions

- Be enabling: provide capabilities, not solutions
- Anyone can publish, use, amplify
- Develop a resource-oriented infrastructure
- Separate resources from transport
- Keep it as simple as possible, but no more
- Address known technical challenges:
  - Rights, Trust, Multiple metadata formats
  - Copy versus link
  - Network transport technologies and self discovery
Be Enabling

- Provide capabilities not solutions
- Let anyone participate
- No default “winners”
- Anyone can provide information on anything
- Identity exists
- Re-aggregation is natural
- Usage/utility is shared
- Trust is known
Resource Oriented Infrastructure

- Single sign on & identity management exist
- Purchasing and license acquisition is easy
- Re-using, re-mixing, re-purposing is easy (or even possible)
- Communities can exist and find each other
- Users control their data and privacy (no more stovepipes)
- Analytics everywhere: it’s possible to see the bigger picture
- Multiple voices speak (e.g., multiple metadata)
- Diverse relevance and recommendation sources
- Value is intensified by diverse parties
Technical Criteria

- Lightweight
- Open access and derivation
- Opt-in & self-assembling
- Easy “on-ramp”
- Simple use-cases have simple implementations
- Workflow is handled but not required
- Decouple resources from transport
- Open “reference” implementations & testing harnesses
- Uses existing standards
- Federated identity of resources (plus provenance)
- Federated discovery
- Semantic models
Known Technical Challenges

- Multiple metadata formats
  - Does it enhance use?

- Rights expressions
  - How to mix OERs and commercial resources?

- Trust
  - What has to be mandated?

- Call-by-value versus Call-by-name
  - When to copy versus when to link?

- Network technologies
  - What works (push, pull, store & forward, call back, HTTP only, …)?

- Network self assembly
  - How to automatically build the network?

- Semantic Technologies
  - Where does the semantic web fit?
Recommender System Challenges

- Can we build an effective metadata-based recommender system for contextualized, personalized, learning resource discovery?
- What metadata, paradata, analytical data do we need?
- Can we get the data?
- What’s the algorithm? Do we care?
- How do we know it works?
- How do we go about building it?
Focus on what differentiates digital learning resources and enables a learning resource ecosystem.

Technical Scope.
No one has exclusivity over learning.

Community Scope.
Activities
We are bringing the community together to benefit learning and learners.

Assembling a Best Practices Community.
We need to work together to build a common technical approach.

Building a Learning Resource Network.
We need to provide sustainable, “industrial strength” tools.

Creating Learning Resource Tools and Applications.
Standardize, if necessary, based on maturity and adoption.

Developing Standards.
Process
Open, Trusted, Sustainable, Transparent, Balanced.
Participation

- Be part of the community
  - Be provider (learning resources, metadata, paradata, analytical data)
  - Be a consumer
  - Help amplify
  - Discuss on open fora
- Help Build the network
  - Come in focus meetings
  - Build and test tools, APIs, specifications
  - Be part of the technical work group
We’ll welcome anyone who wants to make a difference.

+ 

Collaborations.
Open processes,
open data,
open products,
open standards.

Openness.
We must plan for the long term.

Sustainment.
It’s time to “just do it”.

Next Steps.