DLESE as NDR Use Case

Tamara Sumner
Michael Wright
Karon Kelly
Mary Marlino
Overview

How can we leverage the NDR data model and API to support Pathway-type services?

- Replicate targeted aspects of DLESE’s data model and services in the NSDL Data Repository
- Motivation for, and potential value of, this work
- Our ‘use case’ as springboard for discussion of common needs, issues and concerns
About DLESE

- Operational since 2001
- About 1.5 million sessions/year, approx. 60% K-12 teachers and learners
- High availability (99.7%)
- Rich metadata and annotations
- Rich support for educational standards
- Architectural approach emphasizing ‘contextualization services’
DLESE: Motivation and Value

- **Operations**: Lower costs, while preserving high availability
- **Impact**: Focus more on education and outreach, less on maintaining infrastructure
- **Standards**: “end-to-end” support, 3\textsuperscript{rd} party assignments, correlations (NSES, AAAS, state)
- **Interdisciplinary views**: Improved NSDL integration, share rich descriptions and annotations
- **Next generation services**: From metadata-centric search to learning environments (e.g., Teaching Boxes, which mix concepts, metadata, services, and primary content)
NSDL: Potential Value

NDR is a significant investment and opportunity

– Demonstrate economies of scale, lower technical and operating costs
– Common approaches to critical core services like support for standards (saves money, improves user experience)
– Demonstrate rich educational services leveraging Fedora's relationship model and the potential to more flexibly solve existing challenges (e.g. 3rd party assignment of standards, or Teaching Box-like products)
– Develop critical mass of users to support social tagging, recommender engines, etc. by pooling our user base
– Test the readiness, expressiveness and facility of the NDR API (so you don’t have to)
**Contextualization Services**

- Resource-centric discovery and presentation
- Integrating view over multiple collections & annotation sources

**Knowledge Organization Services**

- Making connections between resources, ideas, and people
- Concept to concept
- Standard to standard
- Terms to user groups

**Characterization and Enriching Services**

- Multiple, flexible ways of adding value
- Many frameworks
- Major standards
- Content alignment
- Rich annotations
Down the Drain: How Much Water Do You Use?  
http://www.k12science.org/curriculum/drainproj/

This Internet-based collaborative project will allow students to share information about water usage with their classmates, students in other classes, and the world. Based on data collected by their household and their classmates, students will calculate how much water is used by one person in a day. They will compare this to the average amount of water used per person per day and make a presentation on their results.

Grade level: Intermediate (3-5), Middle (6-8), High (9-12)
Resource Type: Project, In-situ dataset
Subject: Environmental science, Human geography, Hydrology

Educational standards associated with this resource:
National Science Education Standards (NSES): Read

Teaching Tips and Comments
Read

Reviews
General reviews: Read
Meeting special needs: Read
Summaries: Read
Scores: Read

Related resources and collections
This resource is referenced by:
Center for Improved Engineering and Science Education (CIEE) - Read

This resource is included in the following collections:
Digital Water Ed Library (DWEIL) - Browse collection
DLESE Reviewed Collection (DRC) - Browse collection
Community Annotated Collection - Browse collection
DLESE Community Collection (DCC) - Browse collection
Standards Hierarchy

- Unifying Concepts and Processes Standards
- Content Standard A Science as Inquiry Standards
  - Abilities necessary to do scientific inquiry
    - Identify questions and concepts that guide scientific investigations.
    - Design and conduct scientific investigations.
    - Use technology and mathematics to improve investigations and communications.
    - Progress in science and technology can be affected by social issues and challenges. Funding priorities for specific health problems serve as examples of ways that social issues influence science and technology.

- Content Standard B Physical Science Standards
- Content Standard C Life Science Standards
- Content Standard D Earth and Space Science Standards
  - Properties of earth materials
    - The sun, moon, stars, clouds, birds, and airplanes all have properties, locations, and movements that can be described.
  - The sun provides the light and heat necessary to maintain the temperature of the earth.
  - Changes in earth and sky
    - The surface of the earth changes. Some changes are due to slow processes, such as erosion and weathering; changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes.
Discussion

• What are the annotations, comments, reviews, etc that you are already supporting, or plan to support, to enrich your resources and collections?
• Are you associating standards with resources? What standards and at what level? How are you making assignments?
• How are these annotation and standards information being exposed to your users?
• What sorts of contextualization services are you currently offering or considering offering?