Personalizing Search

Lynne Davis and Anne Diekema
Panel at the NSDL Annual Meeting
November 19, 2009
DISCOVERING USERS IN THEIR QUERIES
National **SCIENCE** Digital Library?

- edgar allan poe and short prose narrative
- longitudinal pathways and strong african american families
- Pacman
- Rasputin
- focus of attention at work and leader-follower relationships
- ravi chivukula business value information
- jesus and qu'ran
Who wants to know?

- Student?
  - science fair projects
  - trigonometry and help
  - online classes

- Teacher?
  - inquiry learning
  - high school and georgia math and math i curriculum

- Parent?
  - tuition rising: why college costs so much
The short end of the stick

- Symmetry
- Wind
- Microprocessors
- Leaf
- Recycle
- Reptiles
- Piracy
- Nano
- Rocks
- Pacman
- Packages
What would you like to know about ...

- Math
- Mathematics
- Biology
- Physics
- Science
- Geometry
- Algebra
- Engineering
Is there a doctor in the NSDL?

- Antibiotics and essential oils
- Cesarean sections
- Neck disorder
- Knee rehabilitation and acl injury
- Huntingtons disesase and new research [sic]
- Tamoxifen and breast cacer [sic]
- Self mutilation
- Ring worm
- Hepitites
How can we improve search?

• Find out who the user is
  – teacher,
  – student (K-12, university)
  – researcher
  – general public

• Note the different contexts that brings them to the NSDL
Finding out about the user

• Infer the user and his or her context
  – Mining query/search logs
  – Track previous queries
  – Take note of social tagging, bookmarking by user

• Target user intentionally
  – Focus groups
  – Interviews
  – Observations
Personalizing library resources via the Curriculum Customization Service

~ A Rich Learning Application using EduPak ~
First Generation User-Centered Design

Circa 2000

Search by:

- Grade range
- Resource type
- Collections
- Standards

Content in library is heavily reliant on collection builders and metadata cataloging efforts.

But we knew teachers wanted more features to personalize resources.

Discovery Middleware

Searching

Annotating

Teaching tips

Comments

Rating

DLESE

Reviewed

Collection

DCS

DDS

SMS
Second-generation User-Centered Design

- **Collaboration:**
  Denver Public Schools (DPS)
  NSDL
  Digital Learning Sciences and University of Colorado, Boulder
  Curriculum Publisher: It’s About Time (partnering with AGI)

- **User-centered design**
  Focus group/collab design: Early 2008

- **Evaluation:**
  Pilot: Fall 2008: Teacher Advisory Board - 10 middle and high school teachers
  Field Trial and evaluation underway now - 110 middle and high school teachers

- **Evolution of services architecture within NSDL** (EduPak)
What we learned from the Teacher Advisory Board

Ready access to tools and resources to help teachers plan lessons and differentiate instruction in class

- Support district curriculum and learning goals
- Integrate district teaching guides and curriculum text book materials
- Create personal collection and manage resources
- Add personal notes, descriptions, value indicators
- Respect teacher time and accommodate their personal approach to planning
- Access CCS anytime reliably from home or school for planning
- First year teachers want to leverage the experience of seasoned teachers
- Year-to-year reuse to build a successful, sustainable inventory of resources

ccs.dls.ucar.edu
Support district curriculum and learning goals

Earth's Dynamic Geosphere

Volcanoes

Volcanoes are an important part of Earth’s systems which have both hazards and benefits associated with them.

Key Concepts

- Use Maps
- Volcanoes on Land
- Topography
- Volcano Formation/Lava
- Volcanic Hazards
- Volcanoes Influence
- Decisions and Mitigation

Volcanoes Influence

Students investigate connections between volcanoes and the Earth system by considering the widespread distribution of volcanic material that enters the atmosphere. Students explore the connections between winds and volcanic ash transport. Students will draw upon knowledge of the relationship between magma composition and properties of magma to better understand why some volcanoes erupt explosively with widespread, sometimes global effects, whereas others erupt quietly and locally. Students explore some of the most famous recent examples of volcanic eruptions.

Keywords from Denver Public Schools: ash
+ essential learning: must grade
From: It’s About Time
Integrate district teaching guides and curriculum text book materials
Create a personal collection and manage resources

**Volcanic Hazards**

- **EarthComm Activities**
- **Interactive Resources**
- **Education Standards**
- **My Stuff for this Concept**
- **Shared Stuff for this Concept**

### Types and Effects of Volcano Hazards

**http://volcanoes.usgs.gov/hazards/**

This United States Geological Survey (USGS) website discusses volcano hazards by type (gas, lahars, landslides, lava flows, pyroclastic flows, and tephra) and by the effect volcanoes have on people and land. This site gives an overview of volcano hazards and links to selected case studies listed by country, volcano, year, and type of hazard. Links to more USGS information about volcanoes, such as a photo glossary, a site index, observatories, and an educator's page are also provided.

From: DLESE Community Collection (DCC)

**My notes:**

> Great source of info. and vocab. No interactive stuff or animations.

**Grade fit:** Above grade 9

**Saved to My Stuff in:**

- » Volcanoes » e_Volcanic Hazards | Activity 4: Volcanic Hazards: Airborne Debris+

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**Volcanic Ash Fall**

**http://pubs.usgs.gov/fs/fs027-00/**

This United States Geological Survey (USGS) on-line publication discusses volcanic ash fall in terms of composition and effects. This report discusses the negative effects of volcanic ash fall on machinery, human health, weather and man-made structures, using the Mount Saint Helens eruption of 1980 as an example. The composition of volcanic ash is discussed, as well as ancient and modern ash falls that have occurred in the United States.

From: DLESE Community Collection (DCC)

**Report**

**Map**

**Photograph**

**Rating:** (not yet rated)

**Saved by 2 users**

**Tags:**

- At grade 9 (1)
- 5-15 min. (1)
Create a personal collection and manage resources
Create a personal collection and manage resources.
Personal notes, descriptions, value indicators

Volcanic Hazards

Geo-Educational Animation Clips: Downloads (title provided or enhanced by cataloger)
http://emvc.geol.ucsb.edu/downloads.php

This collection features animations of global tectonic movements, regional plate histories and geologic histories of western North America and California, and the Ice-Age Earth. There are also animations of the origin of petroleum deposits in the Santa Barbara Channel, formation of geologic features at Craters of the Moon National Monument, and the relationship between pore fluids in sediments and tectonic movements. The animations are available for download, or they can be played from the website.

From: DLESE Community Collection (DCC)

My notes:
Lots of links to animations. Includes anims on tectonic plates also.

My tags: Extension
Grade fit: At grade 9
Saved to My Stuff in:
  » Volcanoes » e. Volcanic Hazards | Activity 3: Volcanic Hazards: Flows
Personal notes, descriptions, value indicators

Volcanic Hazards

EarthComm Activities
Interactive Resources
Education Standards
My Stuff for this Concept
Shared Stuff for this Concept

All resources

All resources
ELA
GT
Extension
Math skills

At grade level 9
Above grade level 9
Below grade level 9

5-15 min.
15-45 min.
45-90 min.
90+ min.

Extension (2)
At grade 9 (1)

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Discussion

• Think of own search systems how you’re using search systems
  – Content providers (pathway)?
  – Users of info systems?
• How to best understand and support the context of your audience?
• What customization can you talk about?
• What personalization or search features do your users like/not like, wish you had?
CCS Middleware

Resources & Metadata

Curriculum & District Guides

Searching

Tagging

Rating

NSDL Collection System (NCS)

Curricula, Customizations Repository & Information Model

NSDL Search Services

Strand Map Service (SMS)

Authentication layer

Denver Public Schools Curriculum User Interface