What is a Digital Library?

- Documents
- Exhibits
- Remotely Operated Instruments
- News
- Tools
- Animations
- Interactives
- Maps
- Communities of Practice
- Lesson Plans
- Images
- Videos
- Data Sets
- Professional Development
- Visualizations
- Services
Resources are Scattered across the Internet

- Articles from ENC
- Data Sets from USGS
- Teachers’ Guides from PBS
- Online Exhibits from the Exploratorium
- Publications from AAAS
- Interactive Models from Universities
- Ask Dr. Math
Digital Libraries Offer Coordinated Access

NSDL Repository
NSDL is a work in progress being built by community participation...
NSDL Grant Funding

Pathways
Assemblages of resources to serve a particular audience

Services
Tools supporting NSDL users and developers

Targeted Research
Investigations of new technologies and evaluations of educational impact

NSDL’s 159 funded projects represent 92 different institutions in 32 states and the District of Columbia.

Next Solicitation due April 2004 with notification expected by October 2004.
Four Facets of NSDL

A library of exemplary educational collections and services

Collections & Services

Educational Innovation

Technical Innovation

Leveraged partnerships

A center for innovation in science education

A locus of technical innovation for educational digital libraries

A leveraging partnership among resource/service providers

THE NATIONAL SCIENCE DIGITAL LIBRARY
NSDL in Support of the K-12 Community

An organized point of access to the Internet

A trusted source for high quality, relevant, accurate, and appropriate information

Peer reviewed materials

Resources that support standards
The National Science Foundation’s online library of resources for science education ...

...established to catalyze and support continual improvements in STEM education at all levels (K-12, Higher Education, and Lifelong Learning).
NSDL in Support of the K-12 Community

Collaborative online environments for dialogue, document sharing, and idea exchange

Connections to real scientific data, scientists, and the scientific process
**Venus**

**Venus** was named after the Roman goddess of love and beauty, but is now known to be very different from Earth. **Venus** Introduction...

Description: From "Views of the Solar System".

Category: **Science > Astronomy > Solar System > Venus**

[www.solarviews.com/eng/venus.htm](http://www.solarviews.com/eng/venus.htm) - 32k - **Cached** - Similar pages

---

**Magellan Mission to Venus**

Description: News and images on the **Venus** radar mapping mission terminated in 1994.

Category: **Science > Technology > Missions > Unmanned > Venus > Magellan**


---

**Venus**

**Venus** Fact Sheet Images of **Venus** - from the Catalog ... Missions to **Venus**.


[nssdc.gsfc.nasa.gov/planetary/planets/venuspage.html](http://nssdc.gsfc.nasa.gov/planetary/planets/venuspage.html) - 7k - **Cached** - Similar pages
**Venus**

Venus... Please click to enter. New and used full-figured clothing for women sizes 14 and up. Store Hours Tuesday - Thursday Noon - 8pm ...

www.venusclothes.com/ - 6k - Cached - Similar pages

**The Planet Venus**

... Earlier Views of Venus. In earlier times, there was considerable speculation ... its conjectured inhabitants. Modern views of Venus. In the last 30 ...

Description: Details on this planet.
Category: Science > Astronomy > Solar System > Venus
csep10.phys.utk.edu/ast161/lect/venus/venus.html - 4k - Cached - Similar pages

**Venus** - [Translate this page]

Estas recibiendo este mensaje porque hemos detectado que tienes una versión antigua del programa que usas para navegar la Internet. ...

www.venus.com.ar/ - 4k - Cached - Similar pages

**Solar System Exploration: Bodies: Venus**

Romanticized as the morning and evening star, Venus is actually a cauldron of blistering heat and noxious gases! ...

solarsystem.nasa.gov/features/planets/venus/venus.html - 33k - Cached - Similar pages

**Plus Size Clothing, Plus Size Modeling & Venus Diva Attitude**

Plus size clothing in all sizes and styles, free plus size modeling seminars and resources, curvy lifestyle, curvy health and more -- The Venus Diva! ...

Description: A virtual community for women and teens sizes 12+. Offers information and instruction on plus-size...
Category: Business > Arts and Entertainment > ... > Modeling > Resources
www.venusimaging.com/ - 53k - Cached - Similar pages

**www.pantheon.org/mythica/articles/A/venus.html**

Similar pages

**Amazon.com: Books: Men Are from Mars, Women Are from Venus: A**

Men Are from Mars, Women Are from Venus: A Practical Guide for Improving Communication and Getting What You Want in Your Relationships, John Gray. ...

www.amazon.com/exec/obidos/tg/detail/-/006016848X?vi=glance - 77k - Cached - Similar pages

**Venus Envy | Welcome page**

Venus Envy is a Women's book, health, and sex store in Halifax, Nova Scotia, Canada. Venus Envy is an education-oriented sex shop and book store. ...
National Science Digital Library
Educational resources for science, technology, engineering, and mathematics.
Funded by the National Science Foundation.

Resource of Interest
Build a DNA Molecule
This online click-and-drag simulation, part of the Genetic Science Learning Center, uses sound and interactive graphics effectively to introduce DNA building blocks. ...

New in the Library
Geotech. Rock & Water DL
The Geotechnical, Rock & Water (GROW) Digital Library was created by the University of Arizona's Department of Civil Engineering, Center for Campus Computing, University Library, and a host of other c ...

NSDL Headlines
GROW Project Wins Award and Recognition
October 2003—The GROW project, has been named a Civil Engineering Coolsite by Emerald Abstracts. Only exceptional sites are included in Coolsites and are eligible to display this award. Emerald Ab ...
<table>
<thead>
<tr>
<th>Title/Description</th>
<th>Resource Format</th>
<th>Found in Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venus</td>
<td>[text]</td>
<td><em>COMET</em></td>
</tr>
<tr>
<td>This section of the Windows to the Universe web site provides information and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>images about Venus inc ... more info [Archived Version]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earth/Venus Rotation Movie</td>
<td>[text]</td>
<td>NASA EDMall</td>
</tr>
<tr>
<td>This site provides the learner with a short video of the rotation of Earth and</td>
<td>[image]</td>
<td></td>
</tr>
<tr>
<td>Venus. more info [Archived Version]</td>
<td>[video]</td>
<td></td>
</tr>
<tr>
<td>Earth/Venus Rotation Movie</td>
<td>[text]</td>
<td><em>COMET</em></td>
</tr>
<tr>
<td>This site provides the learner with a short video of the rotation of Earth and</td>
<td>[image]</td>
<td></td>
</tr>
<tr>
<td>Venus. more info [Archived Version]</td>
<td>[video]</td>
<td></td>
</tr>
<tr>
<td>A General Purpose Rule Language as the Basis of a Query Optimizer</td>
<td>[text]</td>
<td>NSDL</td>
</tr>
<tr>
<td>We present an overview and initial performance assessment of a rule-based query</td>
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<td></td>
</tr>
<tr>
<td>optimizer written in ... more info [Archived Version]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrating Database Concurrency Control into the Venus Rule Language</td>
<td>[text]</td>
<td>NSDL</td>
</tr>
<tr>
<td>This paper describes a practical means of allowing rule-based applications to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>execute against standa ... more info [Archived Version]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pioneer Venus Orbiter, SIGMA, WATCH, and PHEBUS</td>
<td></td>
<td></td>
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<td>Comment: Accepted for publication in the Astrophysical Journal Supplements,May</td>
<td>[image]</td>
<td></td>
</tr>
<tr>
<td>2000 more info [Archived Version]</td>
<td>[video]</td>
<td>arXiv</td>
</tr>
<tr>
<td>Rummaging through Earth's attic for remains of ancient life</td>
<td>[text]</td>
<td>arXiv</td>
</tr>
<tr>
<td>Comment: 51 pages, 6 tables, 4 figures more info [Archived Version]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Why are there no oceans on the surfaces of Venus and Mars?</td>
<td>[video]</td>
<td>informedia</td>
</tr>
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<td>Segment: #15 of 33, start 0:23:47.467, duration = 0:1:27.888 more info [Archived</td>
<td>[interactive]</td>
<td></td>
</tr>
<tr>
<td>Version]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comment: 20 pages, 21 figures, Monthly Notices (in press) more info [Archived</td>
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<td>Asteroids in the Inner Solar System II - Observable Properties</td>
<td>arXiv</td>
<td>[text]</td>
</tr>
<tr>
<td>Interactive exploration and modeling of large data sets: A case study with Venus light scattering data</td>
<td>NSDL</td>
<td>[text]</td>
</tr>
<tr>
<td>The Solar System</td>
<td>Amherst</td>
<td>[text]</td>
</tr>
<tr>
<td>Ice On Venus</td>
<td>DL*ESE</td>
<td>[text]</td>
</tr>
<tr>
<td>Far-ultraviolet Spectroscopy of Venus and Mars at 4 Å Resolution with the Hopkins Ultraviolet Telescope on Astro-2</td>
<td>arXiv</td>
<td>[text]</td>
</tr>
<tr>
<td>Planet Venus project (PV1)</td>
<td>ICON</td>
<td>[pdf]</td>
</tr>
<tr>
<td>Two-Proton Correlations from Pb+Pb Central Collisions</td>
<td>arXiv</td>
<td>[text]</td>
</tr>
<tr>
<td>Imaging the Imagined</td>
<td>Drexel</td>
<td>[image]</td>
</tr>
<tr>
<td>Blue Planet</td>
<td></td>
<td>[text]</td>
</tr>
<tr>
<td>Two-proton correlations from 158 AGeV Pb+Pb central collisions</td>
<td></td>
<td>[text]</td>
</tr>
</tbody>
</table>

Back to the Top

((Displaying results: 21 - 40 of 336))
<table>
<thead>
<tr>
<th>Title</th>
<th>Collection Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>About - Science</td>
<td>A listing of About.com's science resources.</td>
</tr>
<tr>
<td>Access Excellence</td>
<td>Access Excellence, launched in 1993, is a national educational program that provides high school biology and life science teachers access to their colleagues, scientists, and critical sources of new...</td>
</tr>
<tr>
<td>Access Excellence: the site for health and bioscience teachers and learners</td>
<td>This site contains bioscience classroom activities; teaching and learning strategies; health and bioscience news; a biotech section; a student resource section with science and math links and a...</td>
</tr>
<tr>
<td>Advanced Placement Digital Library</td>
<td>This collection is created for teachers and students engaged in teaching and learning of science at the Advanced Placement (AP) and Pre-AP level. Each of the web-based educational resources is...</td>
</tr>
<tr>
<td>Air Quality Index (AQI) -- AIRNow</td>
<td>The AQI tells you how clean the air is and whether it will affect your health. EPA, state, and local agencies work together to report current and forecast conditions for ozone and particle pollution....</td>
</tr>
<tr>
<td>Alexandria Digital Library Project</td>
<td>Welcome to the Alexandria Digital Library Project. The name Alexandria comes from the library of Alexandria, Egypt, which was considered the center of all knowledge/learning. No one place now can...</td>
</tr>
<tr>
<td>All About Birds</td>
<td>Cornell’s Lab of Ornithology in Ithaca, New York provides comprehensive information on identifying birds, where to &quot;bird&quot; and how to report observations, including a dynamic online guide that...</td>
</tr>
<tr>
<td>AllCommunity.com - Science</td>
<td>This site consists of listing of AllCommunity.com's science links. The AllCommunity Network comprises millions of web surfers/online users who have come together to pool their Consumer Power. The...</td>
</tr>
<tr>
<td>American Memory from the Library of Congress</td>
<td>American Memory consists of primary source and archival materials relating to American culture and history...</td>
</tr>
</tbody>
</table>
Resource of Interest

Each month NSDL staff offer a sampling of interesting resources to demonstrate the diversity and innovation of NSDL collections and services.

BRIDGE, the Ocean Sciences Education Teacher Resource Center
Bridge, the Ocean Sciences Education Teacher Resource Center, is a growing collection of on-line marine education resources. It provides educators with accurate, useful, content-correct and content-current marine and data information on global, national, and regional marine science topics, and gives researchers a contact point for educational outreach. --From the DLESE Collection

Culturally Situated Design Tools
This web site resource allows the learner to explore math through culturally-focused crafts and other creative activities. --From the Ethnomathematics DL Collection

Water on the Web
Water on the Web (WOW) offers unique opportunities for high school and first year college students to learn basic science through the use of the World Wide Web. --From the Environmental Literacy Collection
LabView

Automatic Enhancement of Metadata
With very little expenditure of effort we could improve on some of the metadata in the NSDL, using automatic methods. This demonstration shows how existing technologies such as metadata scraping tools and a Static OAI Gateway could be used to augment NSDL metadata.

Discovering existing NSDL resources to be improved using a "Bookmarklet."

Searchable Star Tree of NSF NSDL Awards
The NSDL Awards Star Tree works in Internet Explorer on a Windows box, and in Netscape on a Macintosh (but not as well). It does not work with IE 5.2, Safari or Opera on the Mac.

The Star Tree is organized by subject. Specifically, by GEM subjects present in collection records in the NSDL Metadata Repository, when those collection records matched an NSF NSDL award.

All leaf nodes represent NSF awards and are named by award number and by title; hovering over a leaf node will display a description of the project. When an NSF award matches no collection record, it is filed under the "unknown" subject. Non-matching award nodes in the graph are hot linked to the appropriate NSF award page; awards that match a collection are hot linked to the URL provided in the collection record. Note that most NSF awards do not have collection records in the MR.
“... man will occasionally stumble over the truth, but usually manages to pick himself up, walk over or around it, and carry on.”

-- Winston Churchill

Systems Status
All Systems have been reported stable in past 15 minutes.

Community Highlights
NSDL CI Middle School emphasis...

Project Profile
Read about the Collaboration Finder...

Suggest a Resource
Contribute your collection ideas...

NSDL Resources - Examples...

- Interactives
- Documents
- Exhibits
- Remotely Operated Instruments
- News
- Tools
- Animations
- Maps
- Communities of Practice
- Lesson Plans
- Images
- Videos
- Data Sets
- Professional Development
- Visualizations
- Services
Technology in the Classroom

Educators share how they use technology, including graphing calculators, motion detectors, and software, in their classrooms.

Beyond Point and Click: The Search for Gender Equity in Computer Games
Computer games have the power to educate. What does a good game---for both boys and girls---look like?

Handheld Technology: The Essential Ingredient in Teaching and Learning Mathematics
by Terese Herrera
Handheld computers that can solve equations with the push of a button naturally raise questions about what and how we teach mathematics. This educator believes this technology may be the key to richer mathematics content.

Learning in Motion
by Kathleen D. Hogan
This first-grade teacher believes in trying the newest tools and techniques to engage her students and help them learn.

Piloting the Navigator
by Laura K. Brendon
Math teachers take new classroom technology for a test drive.

The Shape of Things to Come
This veteran teacher describes how she and a colleague used computer software to teach geometric reasoning to elementary students.

T3-Teachers Teaching with Technology
This web site offers resources and information about professional development courses to improve teachers’ use of technology in the classroom.
<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory System</td>
<td>A macrophage rests on the alveolar wall. It is difficult to differentiate</td>
</tr>
<tr>
<td></td>
<td>between type I pneumocytes.</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>Fetal lung showing developing airways and alveoli.</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>A small number of alveolar macrophages is found in alveolar spaces of</td>
</tr>
<tr>
<td></td>
<td>normal healthy lungs. They are.</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>Bronchus-associated lymphoid tissue in intermediate and small bronchi.</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>This high power view shows the small bronchus. Remember to.</td>
</tr>
</tbody>
</table>

FileSize: 60000 bytes
The Gorilla Skeleton

To select the bone in the gorilla body that you want to view in detail. Once you are able to investigate various aspects of the bone as well as compare the gorilla features to those of the human and baboon.

Choose a bone to view (please choose only one):

- **Cranial**
- **Thorax & Vertebrae**
- **Hind Limb & Foot**

Click on this button to launch the bone viewer:

Launch Bone Viewer
1. **Feature Name**
   - Geographic Name: Copper Mountain Ski Area
   - Source ID: BGN-USGS-1

2. **Feature Type**
   - ADL Feature Type: sports facilities
   - Feature Type Scheme: ADL Feature Type Thesaurus
   - Other Classification Term: LOCALE
   - Classification Scheme: GNIS Feature Classes

3. **Spatial Reference**
   - Geographic Location
   - Footprint

- **Geometry Type:** Bounding Box
- **West-bounding Coordinate:** W 106° 10' 10"
- **East-bounding Coordinate:** W 106° 09' 39"
- **North-bounding Coordinate:** N 39° 30' 01"
- **South-bounding Coordinate:** N 39° 29' 11"

**Measurement Method:** The footprint was derived from the set of points provided by GNIS for this feature.

**Measurement Accuracy:** The footprint does not necessarily represent the actual extent of the feature.
Atmospheric Oxygen

Oxygen is critical for the process of cellular respiration, which produces energy. The oxygen is transported to cells even though most organisms do not breath into their lungs.

Some of the smallest organisms live directly on the surface of food, and these cells by simple diffusion are the most concentrated environments on Earth. Oxygen is critical for these cells, many of which pump oxygen directly to the cell to respiration.

Many multicellular organisms have evolved to live in an environment that has a very specific set of conditions. Those creatures that breathe air, for example, have learned to use that air that contains about 21 percent oxygen. If this percentage were to change suddenly, most organisms would have difficulty coping with the new conditions. In this feature, adapted from Interactive NOVA: "Earth," see how important not only the presence but the precise amount of oxygen is to life on Earth.

Item No.: sci.life.oate.oxygen
Topics Covered: Organisms and Their Environments
Lesson Plan: Effects of Environmental Change
Produced by: WGBH

Help me find out. Click on the plus or minus button in the control panel to change the oxygen level. Then click on the truck, the corn plant, the cow, and me to see more about what happens to us.
Example Image

MMCR Reflectivity Data
21 Jun 2001

Reflectivity (General Mode)

- Radar Attenuation
- Clear Sky
- Cloud
- Rain
- Melting Layer
- Insect Detection

Altitude (km AGL)

Time (UTC)

-30 -20 -10 0 10 20

Reflectivity (dBZ)
What is a digital library?

Question: What is a digital library?

Asked by: Primary

Asked on: Wednesday, August 28, 2002

Category: The NSDL: Use, Build, Join

Question Purpose: short answer

Audience: Undergraduate

Answer

Date: 8/28/2002 4:30:00 PM
User: Primary Administrator

A digital library is a coherent, organized collection of resources, usually accessible on the Web. These resources are more than a collection of online texts, and often represent artifacts that cannot be represented in print, such as large data sets. Digital libraries typically provide services such as search, browse, help and online community discussions. They may appear to be a single entity, but often link to other libraries or information services in an effort to present a unified view of a collection to the end user. Digital libraries often provide added value by supporting activities that brings together collections, services, and people in support of the full life cycle of creation, dissemination, use, and preservation of data, information, and knowledge.

A more formal definition:

digital library: “A managed environment of multimedia materials in digital form, designed for the benefit of its user population, structured to facilitate access to its contents, and equipped with aids to navigate the global network... with user and holding totally distributes, but managed as a coherent whole.”

ICON, or the Innovation Curriculum Online Network, is a central source for information dealing with technology and innovation, and serves as an electronic roadmap to connect users, such as teachers, professors, students, museum staff, and parents with information about the human built and innovated world.

ICON also provides a broad and deep collection of technological literacy resources for teachers and educators, digital resources informed by educational and digital library standards, necessary descriptors, metadata, and developmentally-appropriate content for technological literacy support. The collection is populated and classified according to the Standards for Technological Literacy.

**My ICON Favorites**

View collections of your favorite resources (registered user only). If you are not a registered user, register with ICON.
Haida Mask

Dogfish sharks figure prominently in the legends and art of the Native Americans of the northwest coast of the United States and Canada. Images of dogfish, such as this Haida mask, are seen in jewelry, totem poles and masks.
<table>
<thead>
<tr>
<th>Creator</th>
<th>Title</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable News Network (CNN)</td>
<td>A Journey Through America's Cold War Heartland</td>
<td>☐</td>
</tr>
<tr>
<td>Center for Defense Information (CDI)</td>
<td>Center for Defense Information</td>
<td>☐</td>
</tr>
<tr>
<td>Greenpeace</td>
<td>Greenpeace Nuclear Campaign Overview</td>
<td>☐</td>
</tr>
<tr>
<td>Nuclear Age Peace Foundation</td>
<td>Nuclearfiles.org</td>
<td>☐</td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>Sandia National Laboratories: Programs</td>
<td>☐</td>
</tr>
<tr>
<td>Think Quest</td>
<td>Fourteen Days in October: The Cuban Missile Crisis</td>
<td>☐</td>
</tr>
<tr>
<td>U.S. Department of Energy</td>
<td>Energy and National Security</td>
<td>☐</td>
</tr>
<tr>
<td>Walker, Gregory (<a href="mailto:gwalker@jump.net">gwalker@jump.net</a>) / Federation of American Scientists</td>
<td>Trinity Atomic Website</td>
<td>☐</td>
</tr>
</tbody>
</table>
In This Issue

Research

- A Virtual Internet Architecture
- Federal Communications Commission Release of Data on High-Speed Internet Access
- Theory and Application of Categories
- Is Software Engineering Training Enough for Software Engineers?
- Optimizing Visible Objects Embedding Towards Realtime Interactive Internet TV
- Technology Today
- Design Flow for HW/SW Acceleration Transparency in the ThumbPod Secure Embedded System

Education

- Linux Assembly HOWTO
- Count On
- Guided Tour on Wind Energy
- Graphing Tutorial
- java.sun.com: New to Java Programming Center
- Course Tutorial: STATICS
- Welcome and Guide to Web Site
- Practical Algebra Lessons

General
Dominoes Activity

Student Page

Teacher Lesson Plan

🌟 Use Matt Wringe's applet, Bricks Activity, to think about this problem. 🌟

⚠️ Part I

In an introductory activity your group will receive the following materials:

1. 2 grid sheets (one for each pair of students)
2. 30 dominoes (15 for each pair of students) or print and cut out these paper dominoes
3. Scissors (if necessary)
4. Recording sheet for discussion questions

Work in pairs within your group to

show if it is possible to cover the 6x5 grid with your dominoes.

Take the time given to thoroughly complete the task.

Compare answers with the other people in your group.

1. Did everyone have the same answer?
2. If yes, can you find more than one answer?
3. If no, how many possible answers there are?
4. Describe how the dominoes cover the grid.
5. Describe the second part's 1 number input and output.
Use case scenarios
Contributed by the community (Posted 02/09/00)

These scenarios and an analysis of actual users' work practices were compiled into a set of use cases that are being used to drive the library's design.

Contents:

1. Oceanography linked to other disciplines, assessment
2. Thematic approach
3. Discovery System
4. The Virtual Paleontologist
5. Multimedia development, evaluation, sustainability
6. Community College, research project
7. Creator services
8. DLESE Brochure, Earth System Approach
9. K-12, NSER
10. User search for images and maps
11. Multidisciplinary, access to datasets and images
12. K-12 Teacher perspective
13. Services for Teacher Preparation, Exposure of Students to Research Activities
14. User Scenarios from the American Museum of Natural History - part 1
15. User Scenarios from the American Museum of Natural History - part 2
16. The idea of the discovery system asking questions of the user to narrow the search

1. Oceanography linked to other disciplines, assessment

I am designing a network based course in oceanography. I have already created pedagogically strong materials in plate tectonics, but would like to see what specialists in climate and seawater chemistry research have created for their general education students. In particular, I would be looking for data rich, inquiry activities that students can complete about 6 hours. I want to evaluate these materials and may adopt, or adapt portions of them for my own students. I am interested in how students are assessed in these environments and would be looking for good machine-gradeable quiz questions, as well as activities that would be hand-graded. Wouldn’t it be nice if an instructor could select from a bank of online gradeable homework, quiz, or study questions, have his/her class answer the selected questions online, and have a report of the results of the students’ work mailed to the her/him in a database importable format, after a specific date?

Dr. William A. Prothero
Dept. of Geological Sciences
University of California, Santa Barbara
Santa Barbara, CA 93106
prothero@magic.ucsb.edu
http://oceanography.ucsb.edu/
Virtual Telescopes in Education

Are you a student who would like to do an astronomy research project? If so, you came to the right place.

VTIE helps students create astronomy research projects by:

- Providing a Glossary Tool to help you understand astronomy vocabulary words. More about the Glossary Tool...
- Providing a Lab Notebook so you can keep track of what you are doing. More about the Lab Notebook...
- Helping you set up your astronomy observations with a Proposal Generation Interface. More about the Proposal Generation Interface...
- Providing access to online databases of astronomy Observations. More about online Observations...
- Providing an Image Viewer. More about the Image Viewer...
- Providing a Paper Writing Tool to help you write your report. More about the Paper Writing Tool...
- Saving your work for you in case you can’t write on the computer you are using. More about saving your work on the VTIE computer...

Description of VTIE

- Providing a Glossary Tool to help you understand astronomy vocabulary words. If you are searching the web for information about astronomy, and find a web page you like, cut and paste the web address into the Glossary Box on the right sidebar. The astronomy words will be highlighted, and you can run your mouse over them to see the definitions.
- It is a good idea to keep track of what you are doing when you are doing a science experiment. You can use the Lab Notebook to make notes and observations.
“From” View of Technology in Education

- Students learn “from” technology
- Knowledge in transmitted from the media to the student
- Learners passively receive messages
- Occasional and artificial interactions are sufficient
- “Experts” control instructional design
- Materials are thought to be best when they are “teacher proof”
“With” View of Technology in Education

- Students learn “with” technology
- Knowledge is constructed, represented, and shared by student
- Learners collaborate in research and problem solving
- Interaction is authentic
- Instructional design is shared among learners, teachers, and “experts”
Digital Libraries as Cognitive Tools

“Cognitive tools are any technologies that enhance thinking, problem solving, and learning”

- Thomas Reeves

“A Model to Guide the Integration of the WWW as a Cognitive Tool in K-12 Education”
Model of Learning Environment Factors [adapted from Reeves]

Learning Conditions (Inputs) → Learning Processes → Learning Outcomes
Digital Libraries as Cognitive Tools

DLs can help address different learning conditions (inputs):

- Aptitude and Individual Differences (including learning styles, prior experiences, attitudes, disabilities)
- Cultural Habits of Mind
- Origin and Strength of Motivation
Digital Libraries as Cognitive Tools

DLs can facilitate learning processes by providing opportunities for:

- Constructing Learning
- Task Ownership
- Sense of Audience
- Access to Quality Resources
- Instructor Support
- Collaborative Support
- Metacognitive Support
Digital Libraries as Cognitive Tools

DLs can facilitate learning outcomes:

- Knowledge and Skills
- Robust Mental Models
- Higher Order Outcomes (curiosity, creativity, confidence, love of learning)
How to get involved...

SEARCH the Library at http://nsdl.org

Ask NSDL your questions about science, educational resources, or about the Library at http://asknsdl.askvrd.org

CONTRIBUTE resources.

SIGN UP to receive our electronic newsletter, NSDL Focus on Education at http://comm.nsdllib.org/mailmain/listinfo/whiteboard-subscribers
Thank You!

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