ENC Online is a K-12 math and science teacher center. Visit Classroom Calendar, Digital Dozen, ENC Focus, or Lessons & Activities. Or just Ask ENC.

Web Links
Explore online resources--ENC's Digital Dozen, Lessons & Activities, and arranged by Math and Science Topics. More...

Education Topics
Read articles about Assessment, Equity, and Inquiry and Problem Solving. More...

Curriculum Resources
Find information on teaching materials using a Basic or Advanced Search, and through a Browse list. More...

Professional Development
Plan your learning in By Your Own Design, find Funding Opportunities, and use Standards. More...

New from ENC:
- A Baker's Dozen Entries in the November Classroom Calendar
- Digital Dozen Adds Variety to Math and Science Topics
- Don't Miss a Single Weekly Issue of ENC Focus! More...

Education Headlines, November 06, 2003:
- Computer projects let students teach the world
- High school students prepare for county Envirothon [in Howard County, Maryland] More...

Education Bulletins:
- Applications Now Being Accepted for the Albert Einstein Fellowship Program
- Hewlett-Packard Grants $4.5 Million for K-12 Teaching of Math, Science and Engineering
- New Study Calls for Research on the Impact of TV and Computers on the Very Young More...

Poll:
- Other than face-to-face conferences, I most frequently communicate with parents by ...
Informal education

1. **Science Museum of Minnesota**
   - Featured in ENC Focus
   - Date: 2003 Grade(s): K - 12 Cost: Free ENC#: 011381
   This World Wide Web (WWW) site, maintained by the Science Museum of Minnesota, provides information about the museum and its educational programs. In addition to general visitors' information, a schedule of OmniMax movies, and links to science related Web sites, the site also offers information about a variety of educational resources.
   (For more details, see ENC Record.)

2. **Explore the estuary live on the Web**
   - ENC Digital Dozen Site
   - Date: 2000 Grade(s): 03 - 12 Cost: Free ENC#: 016992
   This World Wide Web (WWW) site, produced by the North Carolina National Estuarine Research Reserve Program, has materials designed for grade K to 12 students to explore an estuary and are related to a live Internet broadcast from the Rachel Carson Reserve. The broadcast allows participants to interact during their reserved time with a scientist at the research site.
   (For more details, see ENC Record.)

3. **Nature Science and the Web (NSW)**
   - Featured in ENC Focus
   - Date: 1997 Grade(s): K - 12 Cost: Free ENC#: 011584
   This World Wide Web (WWW) site, developed for grades K to 9, is the online home of the Education Department of the Chicago Academy of Sciences (CAoS). CAoS provides a variety of science learning experiences for teachers, students, adults, and the general public.
   (For more details, see ENC Record.)

4. **Toshiba/NSTA laptop learning challenge**
   - Featured in ENC Focus
   - ENC Digital Dozen Site
Free Multimedia Teaching Resources

Go to our Multimedia Collections prototype to:

- **search or browse** for health sciences multimedia files that you can download and use for free
- **contribute** your high-quality health sciences images, audios, videos, and other multimedia files to our library for others to use

Digital multimedia files, such as images and videos, have become essential teaching aids in health sciences education. Educators, however, often do not have the time or resources to create new materials, and web-based searches are unlikely to yield suitable, high-quality materials.

To meet this need, the Health Education Assets Library (HEAL) is creating a national repository of free, web-based multimedia teaching materials in the health sciences. The prototype version of the HEAL application is available for use online. The prototype is a fully functional, multi-tiered application for searching, browsing, and contributing to the library of files.

We are also beginning the development of the content of HEAL beyond the initial prototype collection. This work will involve both adding to the core HEAL collection and building "bridges" to existing other specialized libraries of health sciences materials.
6. **Title:** Respiratory System
   **Description:** A macrophage rests on the alveolar wall. It is difficult to differentiate between type I pneumocytes...
   **File Size:** 600.00 KB

7. **Title:** Respiratory System
   **Description:** Meta lung showing developing airways and a... 
   **File Size:** 600.00 KB

8. **Title:** Respiratory System
   **Description:** A small number of a few macrophages is found in alveolar spaces of normal healthy lungs. They are...
   **File Size:** 47.00 KB

9. **Title:** Respiratory System
   **Description:** Branch-associated lymphoid tissue in intermediate and... 
   **File Size:** 47.00 KB

10. **Title:** Respiratory System
    **Description:** A low power view shows the small bronchi. Remember...
    **File Size:** 47.00 KB
Atmospheric Oxygen

Most organisms have evolved to live in an environment that has a very specific set of conditions. These creatures that breathe only, for example, have to rely on air containing about 21 percent oxygen. If this percentage were to change suddenly, most organisms would have difficulty coping with the new conditions.

Some of the early animals, for example, reacted to changes in oxygen levels by evolving into the more interactive mammalian Earth. But for us, it is important not only the moment but the presence of oxygen in Earth's atmosphere.

From the article: Atmospheric Oxygen

Effects of Environmental Change

Produced by WGBH
What is a digital library?

Question: What is a digital library?

Asked by: Primary

Asked on: Wednesday, August 29, 2002

Category: AskNSDL User Build-It

Question Purpose: short answer

Audience: Undergraduate

Answer:

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 researchers that bring 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 community, structured to facilitate access to its content, and equipped with aids to navigate the global network... with user and holding locally distributed, but managed as a coherent whole."

ICON, or the Innovation Curriculum Online Network, is a resource 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 invented world.

ICON also provides a broad and deep collection of technological literacy resources for teachers and educators. Digital resources informed by educational and digital literacy standards, necessary descriptors, include, and developmentally-appropriate content on 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.
The irYdium Project

IrYdium Chemistry Lab – Default Lab Setup

Tips:
The Alsos Digital Library for Nuclear Issues, balanced range of annotated references for the study of nuclear issues. This searchable collection includes books, articles, films, CD-ROMs, and websites. All annotations have been reviewed by members of the library's prestigious National Advisory Board.

Beginning with the Manhattan Project, the massive scientific and technological effort that produced the first atomic bombs, nuclear issues have had a profound effect on every aspect of society. Those issues have influenced the evolution of science and technology, domestic politics and international relations in many countries, as well as the arts and humanities.

It is the mission of the Alsos Digital Library for Nuclear Issues to make the history and current status of nuclear issues more accessible and comprehensible to the general public as well as to students and educators in the many fields influenced by the forces of the nuclear age.

- The Atomic Age: Historical Overview
- The Atomic Age: Scientific Overview
- About Alsos

The annotations were last updated on October 8, 2003. The bibliographic information in this website is freely available except for the text of the annotations, for which credit must be given; permission must be obtained for commercial use of the annotations. This work is licensed under a Creative Commons License.
The Gorilla Skeleton

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

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

- Cribiform Plate
- Thorax & Vertebrae
- Hind Limb & Foot

Click on this button to launch the bone viewer:

Launch Bone Viewer
In This Issue

Research

- 
- A Virtual Internet Architecture
- Federal Communications Commission, Release of Data on High Speed Internet Access
- Theory and Application of Cryptography
- 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 Thumb 2 Secure Embedded System

Education

- Linux Assembly HOWTO
- Count On
- Coded Tour on World Energy
- Graphing Tutorial
- www.mom.com: New in Java Programming Center
- Course Tutorial: STATICS
- Welcome and Guide to Web Site
- Practical Algebra Lessons

General
What's new at DLESE

- Final report available: DLESE Developers' Workshop 2003
- Welcome to Version 2.0 of DLESE!
  - Search by National Science and Geography Standards
  - Search multiple collections of resources; Review DLESE resources; Please give us feedback

Resource of interest

The Marine Realms Information Bank (MRIB) is a digital library designed to classify, integrate, and facilitate access to scientific information about the oceans and the adjacent parts of the atmosphere and solid Earth, as well as to the people, techniques, and organizations involved in marine science. By integrating information science and communication technology, the MRIB creates a new vision of libraries and scientific publishing and provides a dynamic environment for the global sharing of digital information. Data resources are searchable by location as well as numerous other classifications, including biota, discipline, research method, and author.

View previously featured resources of interest. Catalog or suggest an interesting Earth system site.
Cafe Wall Illusion  Bird in a Cage  Depth Spinner
Squirming Palm  Changing Illusions  Sliding Gray Step
Fading Dot  Postcard Exhibits  Shimmer
Trapezoidal Window  Mix-n-Match  The Temple Illusion
Mona
Certain patterns confuse your eyes and brain, causing you to misjudge the size of a circle, or the length of a line. Though hundreds of optical illusions have been recorded and studied over the last century, people do not agree on why these patterns cause errors in perception. Scientists are fascinated by illusions because, by figuring out how the eye and brain can be tricked, they can better understand the normal workings of the visual system. As Purkinje, a noted 19th-century Czech ophthalmologist, put it: "Deceptions of the senses are the truths of perception."

This exhibit requires the newest Shockwave plug-in and a Power PC or Pentium processor for all aspects of the exhibit to work.

This online exhibit is still under development, pending input from perceptions and feedback.
Geometric and Kinematic models

Today's Computer-Aided-Design (CAD) systems allow engineers to create accurate and realistic geometric models of products. These models serve both to visualize new concepts and to analyze their performance, long before a physical model is created. The model's kinematics and dynamics can be viewed.

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Download your physical replica now

How can you download a physical replica? 3D printers are machines that can print arbitrary three dimensional structures. Just like an inkjet printer spits droplets of ink, a 3D printer spits droplets of solid material. Layer by layer, it gradually prints a physical three dimensional model.
Are you a student who would like to do an astronomy research project? If so, you came to the right place.

VTIL 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.
- Writing 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 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 VTIL computer.

Description of VTIL

- Providing a Glossary Tool to help you understand astronomy vocabulary words. If you are researching 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 research. You can use the Lab Notebook to make notes.
Why Use this Site?

Just a cute kid with a great imagination... or an aspiring engineer with talent that will shape our world?

Why use this site?

- **The Future of Engineering Lies within the Minds of our Nation’s Youth**
  The TeachEngineering curriculum steers students towards science, technology, engineering, and mathematical endeavors as a mechanism to solve real-world problems.

- **Inquiry-Based Lessons and Activities**
  TeachEngineering provides an easy way to find substantial inquiry-based lesson plans and activities that integrate engineering content with standards-based course materials.

- **Not an Engineer? No Problem!**
  Engineering is all around us. This site uses engineering as a vehicle to integrate math and science fundamentals. All lesson plans have been created for teachers with little or no prior engineering experience.
Coleoidea Bather, 1888

Octopods, squids, cuttlefishes and their relatives

Richard E. Young, Michael Vecchione and Katharina M. Mangold

The Coleoidea contains all living cephalopods except for species of pearly nautilus.

Belemnoidea
Neocoleoidea

Decapodiformes (squids, cuttlefishes and their relatives)
Octopodiformes (vampire squid and octopods)

Containing group: Cephalopoda Cuvier, 1797

Table of Contents

- Introduction
- Characteristics
## Advanced Search

Use one or more of the following search categories. See **Search hints** if you can’t find what you want.

### 1. Subject:
- Abacus
- Achievement
- Addition of Fractions
- Addition of Whole Numbers
- Agriculture

### 2. Geographical Area:
- Central America
- China
- Chuuk (Micronesia)
- Congo
- East India

### 3. Cultural Group:
- Greek (Gypsies)
- Guatemalan
- Hawaiian
- Hispanic American
- Igbo (Nigeria)

### 4. Creator or Publisher:

### 5. Date of Publication:
- Before
- After

### 6. Audience Level:
- Public/Others
- Researchers
- Students
Hand measurements:

Measure your hand and see how close it comes to these measurements. Measure a doorframe, piece of plywood etc. with hand measurements and then measure with a tape measure. See how close the hand measurements come. Can you combine these to make 10"? 12", 16" etc?

To this day, horses are measured in hands. A horse over 14 hands is a true horse. One smaller than 14 hands is a pony. If a hand is 4," how tall is a horse 15 hands? A pony 13 hands? A horse 14.5 hands?

Fathoms and net length

Nets are measured in fathoms. A fathom is supposedly the length of a man’s outstretched arms.

One fathom equals 6’.

How long is a 150 fm net?
How long is a 350fm net?
How long is a 20 fm net?

How many fms is a 150’ net?
How many fms is a 250’ net?
National Science Digital Library
Educational resource for science, technology, engineering and mathematics.
Funded by the National Science Foundation.

The eternal mystery of the world is its comprehensibility.
-Albert Einstein

Resource of Interest
The Invention Factory: Thomas Edison's Laboratories
This resource is a teaching plan for a unit study on Thomas Edison and the history of his inventions. Teachers will find activities, photos, suggested readings, maps and the like to go along with the ...

New in the Library
Journal of Chemical Education Digital Library
The Journal of Chemical Education (JCE) Digital Library will develop four major new collections that will add to JCE Online. Each collection will be carefully reviewed by this established and respectable ...

NSDL Headlines
NSDL Content Reuseability and Interoperability Workshops
November 2003--To promote and enhance content reusability and interoperability, a series of workshops will be held in 2004 with support from the NSF NSDL program. These workshops are part of a project ...
Photosynthesis [No link available]
This video segment from Interactive NOVA looks at photosynthesis, the chemical process where light energy is converted into chemical energy. More info

On the Mechanism of the Primary Charge Separation in Bacterial Photosynthesis

Anoxygenic photosynthesis, a BioMi 290/291 MicroWeb movie page
This web page presents an animation of anoxygenic photosynthesis in bacteria accompanied by sound effects. More info

Energy, Oxyogenic photosynthesis
This page presents an animation with sound effects that shows the structure of a bacterial membrane. More info

Thylakoid Membranes, The
This is a webpage describing the thylakoid membrane. There is a graphic showing the organization of the membrane. More info

Effects of light on photosynthesis
In this activity, students will be using control technology, design and construct a light chamber that creates a light gradient. More info

‘Photosynthetic’ Quantum Computers?
Comment: 12 pages, no figures More info

Electron flow in photosynthesis
This page presents a two-part laboratory exercise on electron flow in photosynthesis that teaches students how to perform experiments. More info

The first photosynthesis was purple
[No description available] More info

Probing photosynthesis
[No description available] More info

Charge separation in photosynthesis via a spin exchange coupling mechanism
Comment: 12 pages Latex, 5 postscript figures, accepted for publication by Europ. Biophys. J. (1997) More info
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 website 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 experiences that bring water to the classroom. Its rich free online resources include: data for analysis, historical information, and interactive activities to help students understand water.
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...
Today in the NSDL

"... 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...

Welcome to AskNSDL!

Categories:

**Education (General)**
- Careers
- Instructional issues

**Mathematics**
- Algebra
- Applied mathematics
- more...

**Technology**
- Educational media
- Educational technology
- more...

**Health**
- Aging
- Body systems and senses
- more...

**Science**
- Agriculture
- Astronomy
- more...

**The NSDL: Use, Build, Join**
- Collection Builders
- NSDL Community
- more...

About AskNSDL | AskNSDL Policies | Tips for Students

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