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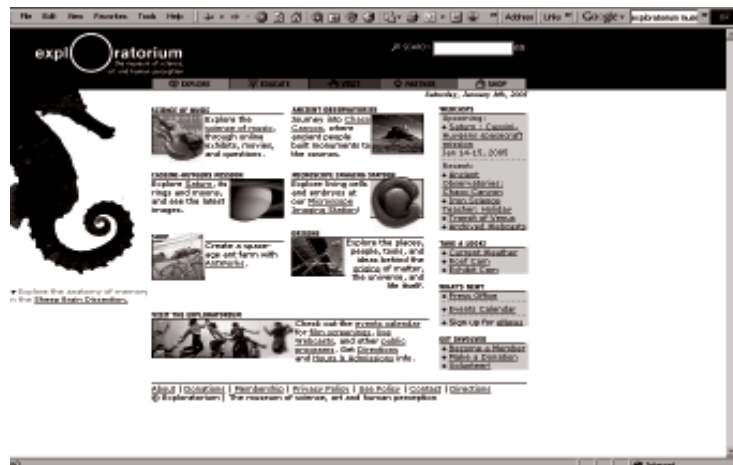
# Hands-On Science

As educators we have all seen the natural curiosity and enthusiasm our youngest students have for science as they ask questions about the universe, the color of the sky, why some dogs have spots and others do not, where snow comes from, and more. We all encourage their questions even though we are often stumped to come up with satisfactory answers. And so we teach our young students to look things up and to experiment with the world around them, hoping they will continue to wonder. We often see, however, the waning of this innate childhood curiosity, especially among young girls.

Some new and recently expanded science resources on the Internet can be an effective antidote to children's fading excitement about science, particularly in light of their keen interest in the Web. We've included sites that are highly interactive, some focusing

on developing inquiry skills, others on presenting content in imaginative and enticing ways. What they have common is the pursuit of science knowledge and skills in authentic ways. Our two all-time favorite sites, San Francisco's Exploratorium Museum and Philadelphia's Franklin Institute, provide an amazing array of interactive experiences and continue to be places where educators, as well as their students, can become curious, active learners.

These sites have applications within the curriculum and beyond. Many of these sites lend themselves to independent exploration, fun with friends, and given a chance, could compete with the latest video games. One click in the Exploratorium can so easily lead to another, resulting in the natural development of new interests. It's time to explore. Lets go!



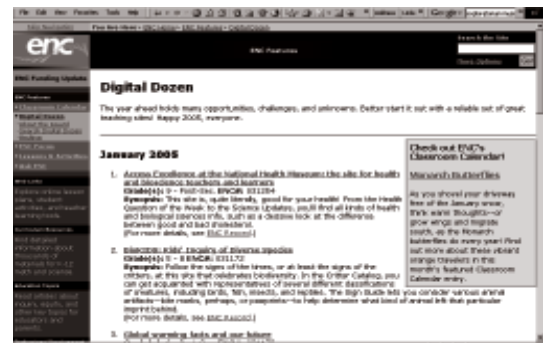
## K-12 Resources

**Eisenhower National  
Clearinghouse (ENC)**  
<http://www.enc.org/>

ENC is a clearinghouse of resources to support teaching math and science, K-12. It includes a Classroom Calendar, Digital Dozen, ENC Focus, Lessons & Activities and Ask ENC.

**Digital Dozen**  
[http://www.enc.org/  
weblinks/dd/](http://www.enc.org/weblinks/dd/)

Part of the ENC, this site includes a new list each month of exemplary web sites for educators. Included here is a searchable archive.



## The Science Learning Network

<http://www.sln.org/>

SLN is an international online community of educators, students, schools, science museums and other institutions demonstrating a new model for inquiry science education using museums and teacher resources developed by educators.

### SCIENCE LEARNING NETWORK

[www.sln.org](http://www.sln.org)

Check out news and info

FLASH! REWIND THIS MUSEUM'S "The Great Silence."

Visit our museums

EDUCATORS! VISIT OUR INTERNATIONAL NETWORK and DISCOVER THE BEST INQUIRY EDUCATION ON THE WEB.

Find out about our network.

Funding Provided by Uniqup and The National Science Foundation  
Miami Science Learning Network

## Elementary Resources

### The Miami Museum of Science & Planetarium

<http://www.miamisci.org>

This site is an amazing resource of interactive activities. The current exhibits, wildlife center, and planetarium each offer engaging activities, some actually created by students.

### For Kids Only (NASA)

<http://kids.earth.nasa.gov/>

Includes a section on how people affect the earth, how NASA studies land, water, air, hazards, and more. There are links to ask-an-expert sites, games, teacher guides, and send a NASA postcard.

### NASA Quest

<http://quest.arc.nasa.gov/index.html>

This site connects children with NASA's people and their roles. Here, children can observe scientists at their work, visit the International Space Station, build an aircraft, and become a NASA researcher. They can also search for and design a habitable planet (grades 5-8) and can accompany Robin Whirlybird on her Rotorcraft Adventures (grades 1-4) See: <http://rotored.arc.nasa.gov/>

MIAMI MUSEUM OF SCIENCE & PLANETARIUM

Experience the Real!

Home

Your Visit

Exhibits

Wildlife Center

Planetarium

Education Programs

Event Rentals

Membership

Support the Museum

Museum Information

Online Store

Sitemap

What is it? Where does it occur? What is its purpose? There are a few questions you may ask when you view this month's GYMBOREE OBJECT. The Museum holds over 33,000 objects and every month one will be featured here.

The ATLAS FAMILY: Learn about the principles of atoms and matter; energy conservation; kinetic and potential energy; the properties of light; mass and particles; and much more in the fun and educational interactive site, which includes The Museum's Tomb, The Planetarium's Central Park, DeSoto's Library, The Wolf March Society (Sawyer) and Fredericson's Lighting Laboratory.

Gymboree Play & Music programs: Gymboree is back! Our new session begins on January 28th and will go through March 12th. Please join us every Saturday an hour of fun and music with our Gymboree Play & Music program. Classes are \$10 and include admission to the Museum. For more information or to sign up please call (305) 674-0282.

Sharkfest: A Line of Sharks from A to Z January 2 - May 8, 2005 Shark! Just seeing the word gets your heart racing! The truly magical exhibit is based on renowned artist

Find out about our network.

FOR KIDS ONLY NASA

Earth Science Enterprise

Send Out a Postcard

People

Land

Water

Air

Hazards

Did you know...? Did you know that you can tell the temperature by looking at the color of a star? Find out how!

Responds to NASA 2004 of Curator: Updated: October 30, 2004

NASA Ames Research Center

WELCOME TO NASA QUEST!

An educational website dedicated to bringing NASA people, space and science to classrooms through the Internet.

HOME

EVENTS

CALENDAR

GBA

SEARCH

ABOUT

FOUNDATIONS

Public might Design Computer model of the Titan

PSA The world's best PSA! NASA's search for the best of kids, magazines, and more!

Virtual Space We build them! Explore the exciting world of energy technology and do a little engineering!

PLACES TO GO

FEATURES

WANTED: Individuals and organizations of grade 5-8, ages 10-18, to become the members of the National Cyber-Explorer Club. Check out the NASA Quest site for application and information!

Check out the Quest calendar!

COOL FACTS

Be-Of-the-Week: George H. Brown

Journal of the Week: A Day in the Life of a NASA Scientist

### Amazon Interactive

<http://www.eduweb.com/amazon.html>

This site supports an integrated science/social studies unit. Includes information about the rainforest, geography; a feature is an interactive eco-tourism game.

### Web Weather for Kids

[http://www.ucar.edu/educ\\_outreach/webweather/](http://www.ucar.edu/educ_outreach/webweather/)

Brought to us by the National Center for Atmospheric Research and the Boulder, Colorado schools, this site provides a question and answer approach for youngsters to understand climate change. There are fun activities, weather related stories and interactive games along with teacher tips for success.

### Volcano World's Kids' Door

<http://volcano.und.edu/vwdocs/kids/kids.html>

Includes a variety of activities, project ideas, virtual field trips, games and more about volcanoes. International volcano art is an unusual collaborative feature.

### Amazing Space

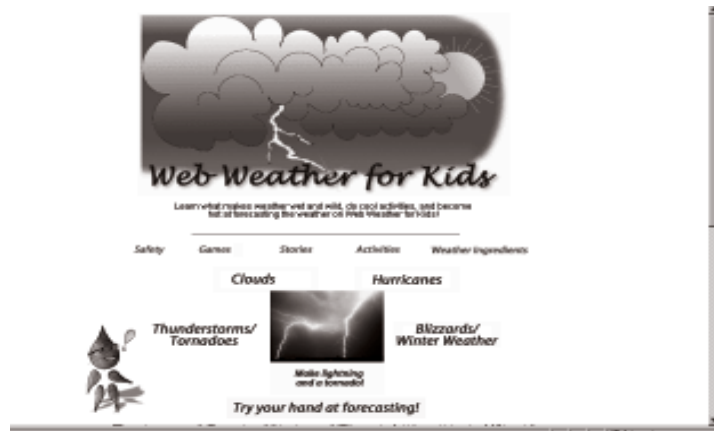
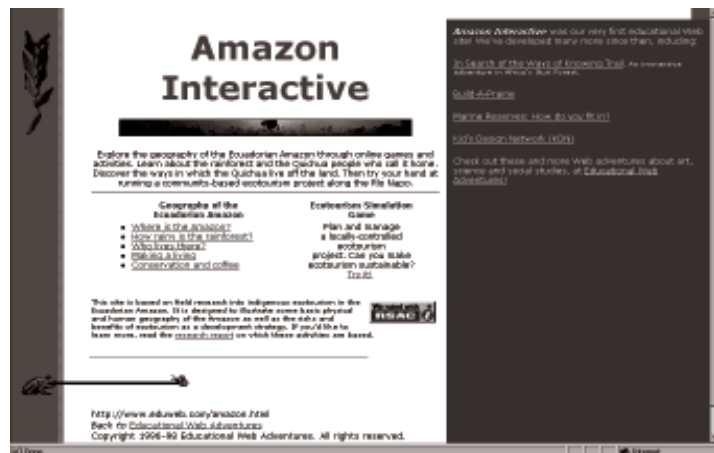
<http://amazing-space.stsci.edu/>

Courtesy of the Space Telescope Science Institute's Office of Public Outreach, this site provides a wealth of activities, ideas, resources, and more. The 'Star Witness' brings you "tele-scoops" from the Hubble Space Telescope.

### The Why Files

<http://whyfiles.org/>

Courtesy of the University of Oregon, this site seeks to answer the question why? It includes the science behind the news for young learners. Includes current news stories (e.g., climate change, ice in Antarctica), plus four interactive animations relating to lightening, tornados, snowflakes, and hitting a home run.

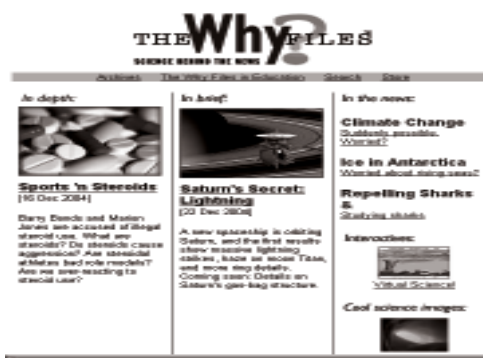


Welcome to VolcanoWorld's

# Kids' Door



**Rocky's Adventures**  
**Kids' Volcano Art Gallery**  
**Volcanic School Project Ideas**  
**Games & Fun Stuff**  
**Legends about Volcanoes**  
**Virtual Field Trips**  
**Schools' Volcano Homepages**



### Rock Hounds (with Rocky)

<http://www.fi.edu/fellows/fellow1/oct98/index2.html>

From the Franklin Institute, this site has been around for years and it remains a top geology site for K-5. Make sure you check out the animations of how different types of rocks are formed. Very engaging.

### Children's Butterfly Site

[http://www.mesc.usgs.gov/resources/education/butterfly/bfly\\_start.asp](http://www.mesc.usgs.gov/resources/education/butterfly/bfly_start.asp)

From the U.S. Geological Survey folks, this site includes an overview of the butterfly and moth life cycle, a gallery of international butterfly photographs, coloring pages, and links to other butterfly sites.

### The Mystery Spot

<http://www.accessexcellence.org/AE/mspot/>

Sponsored by The National Health Museum, this site provides mysteries relating to health and bioscience for your students to solve. Check out the rest of this organization's teacher resources at: <http://www.accessexcellence.org/>

### Cool Science for Curious Kids

<http://www.hhmi.org/coolscience/>

For children in grades K-3, this site includes a variety of science activities that are designed to make science fun, practical, and realistic.

### Brainsrule

<http://www.brainsrule.com/>

Courtesy of the University of Nebraska at Omaha and others, this site promotes learning about the brain and nervous system for children. Includes animation, activities, glossaries, news, and lesson plans.



### PowerPlay (Science NetLinks)

<http://www.sciencenetlinks.com/interactives/powerplay.html>

Power Play is an interactive activity that helps students in grades 3-5 learn about harnessing energy from different power sources.

### The San Francisco Exploratorium Online Exhibits

<http://www.exploratorium.edu/explore/index.html>

The museum has put together an amazing collection of online exhibits that are sure to entice children. Be sure to investigate the "Seeing" exhibits including Fading Dot, Changing Illusions and Bird in a Cage.

### National Geographic Kids

<http://www.nationalgeographic.com/kids/index.html> and <http://magma.nationalgeographic.com/ngexplorer/0403/adventures/>

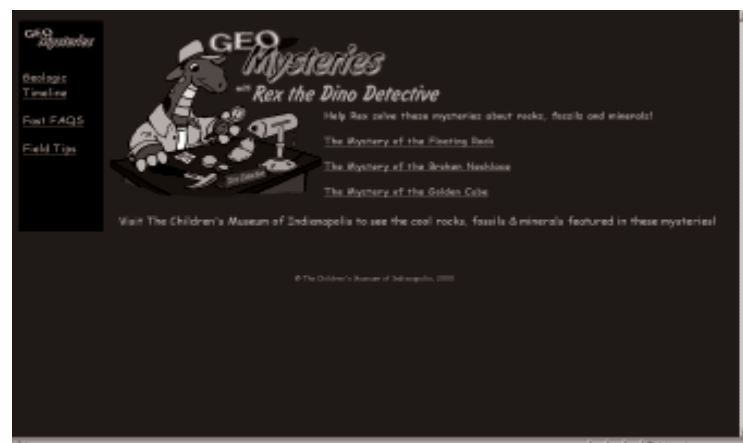
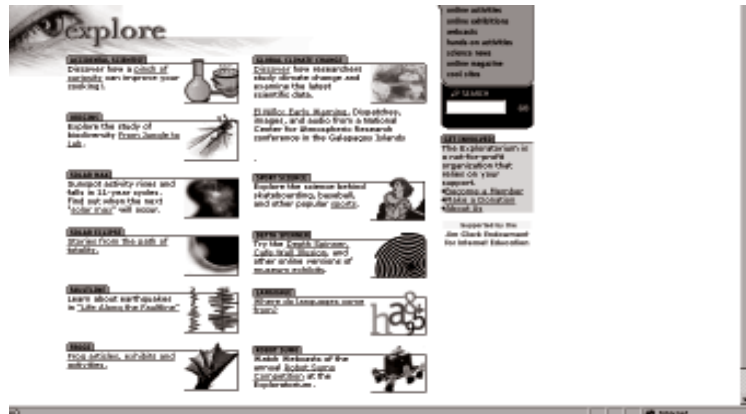
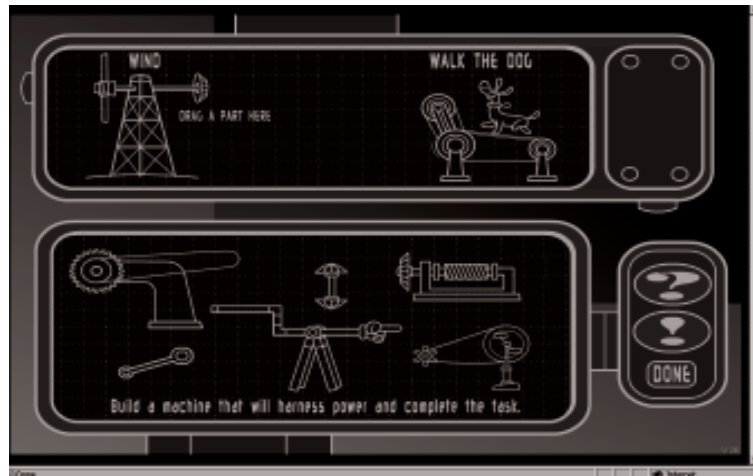
(Online Exhibits)

Check out the home page for activities and experiments, and also the online exhibits, including Explore the Fantastic Forest, where you will encounter a variety of habitats, the Rain Forest, and more.

### GeoMysteries at the Children's Museum of Indianapolis

<http://www.childrensmuseum.org/geomysteries/mysteries.html>

A terrific site to help young children understand rocks and minerals! Young children can solve three mysteries with Rex the Dino Detective, explore a timeline, and access Fast FAQs.



## Secondary Resources

### PLoS

<http://www.plos.org/>

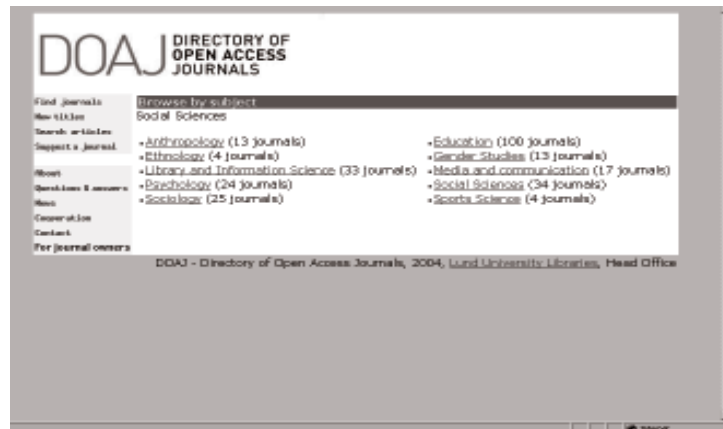
The Public Library of Science (PLoS) is a non-profit organization of scientists and physicians committed to making the world's scientific and medical literature a freely available public resource. The resources are always growing.



### Directory of Open Access Journals

<http://www.doaj.org/>

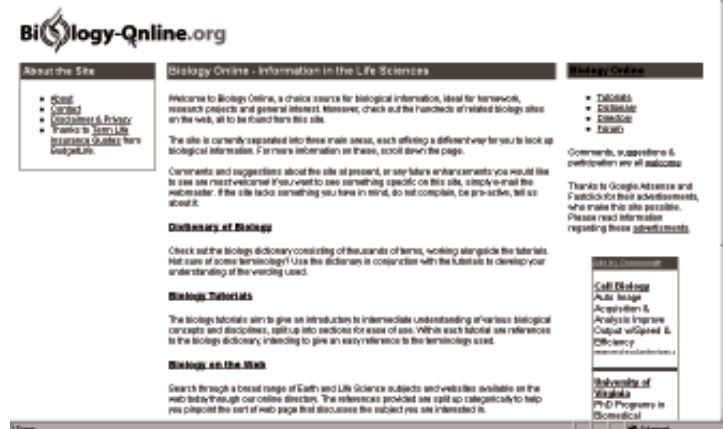
The aim of the Directory of Open Access Journals is to increase the visibility and ease of use of open access scientific and scholarly journals thereby promoting their increased usage and impact. The Directory aims to be comprehensive and cover all open access scientific and scholarly journals that use a quality control system to guarantee the content.



### Biology Online

<http://www.biology-online.org/>

This site has offered various methods of tracking down information concerning the diverse field of biology to introduce its concepts in layman's terms via an online directory of websites, a dictionary and a range of tutorials.



### Science Daily

<http://www.sciencedaily.com/>

Breaking science news is updated every 15 minutes with daily news stories and a detailed directory of science and health news items which is also searchable, or browse by topics such as space, mind and brain, fossils, technology, aging, and robotics. The "encyclopedia" is based on reader-contributed content.



## How Everyday Things are Made

<http://manufacturing.stanford.edu/>

Provided by Stanford University, this site requires Flash, and includes video and audio. It covers the manufacture of many everyday things from airplanes and motorcycles to jellybeans, packaging, clothing and more.

## Reading the Human Map

<http://www.nsls.info/genome/>

The North Suburban Library System Human Genome Grant Project was funded by a grant from the U. S. Department of Energy and provides links to basic scientific information about the human genome project to social and ethical issues. Even includes a toolkit for librarians to better understand this field.

## Cornell's Digital Earth

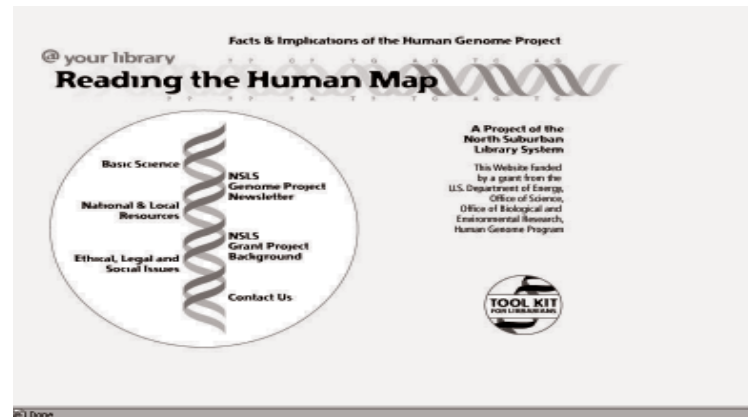
<http://atlas.geo.cornell.edu/webmap/>

With this interactive atlas you and your students will create maps displaying land, oceans, borders, roads, lakes, rivers, railroads, faults, mines, and other geological and geographical data. In the *Users' Guide*, the section, *Making Your First Map*, provides a great introduction to data sets, layering, and other map-making concepts and the opportunity to download your map.

## Earth Science World

<http://www.earthscienceworld.org/>

Brought to us by the American Geological Institute, this site MUST be used by all Earth Science Teachers. Search the ImageBank's photographs of all aspects of Earth Science; explore an interactive geological time scale; and view climate data from weather stations around the world since 1994. You must play Virtual Oilwell- an interactive game in which you drill for oil.



## WebExhibits

<http://webexhibits.org/>

This is an online museum with exhibits that encourage people to ask questions and examine issues from several points of view. Topics include color vision and art, a study of calendars, and the ways we study the past through art.



## US Geological Survey

<http://www.usgs.gov/>

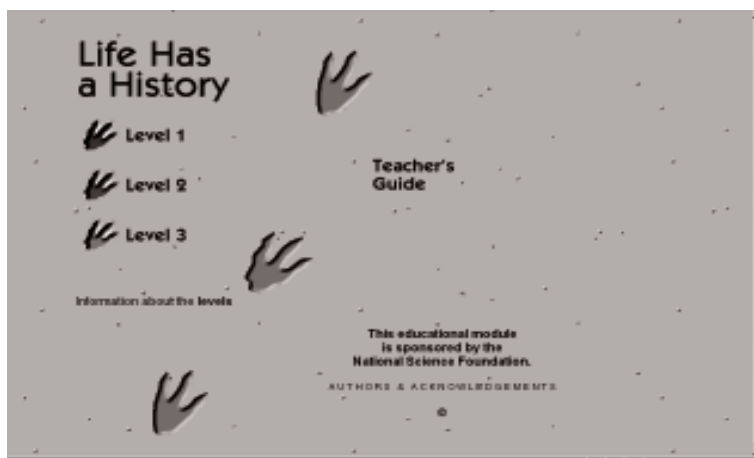
A federal source for science about the Earth, its natural and living resources, natural hazards, and the environment. Spotlight on the news, an interactive map for Regional Studies and State information. An excellent source of biological and geological information as well as water resources for each state.



## Life Has a History

<http://www.ucmp.berkeley.edu/education/explorations/tours/intro/>

An introduction to the history of life and how it results in the biodiversity of today. During this tour students learn about geologic time, fossils, ancestral relationships, cladograms, variation, natural selection, and extinction. Includes lesson plans for teachers. From the Museum of Paleontology, University of California, Berkeley.



## Beginner's Guide to Aeronautics

<http://www.lerc.nasa.gov/WWW/K-12/airplane/>

Any high school student interested in airplanes or kites will be delighted in exploring this site, courtesy of the NASA Glenn Research Center. It provides an introduction to the fundamentals of aerodynamics and propulsion and includes diagrams and explanations as well as interactive animated pages.



## NASA – The National Aeronautics and Space Administrations

<http://www.nasa.gov>

The ultimate Web site for space exploration! There are three components: life on earth, humans in space, and exploring the universe plus breaking news and resources for educators. Each section has a flash version to engage students in ‘real’ space study.



## Interactive Museums

### The Franklin Institute Online

<http://sln.fi.edu/>

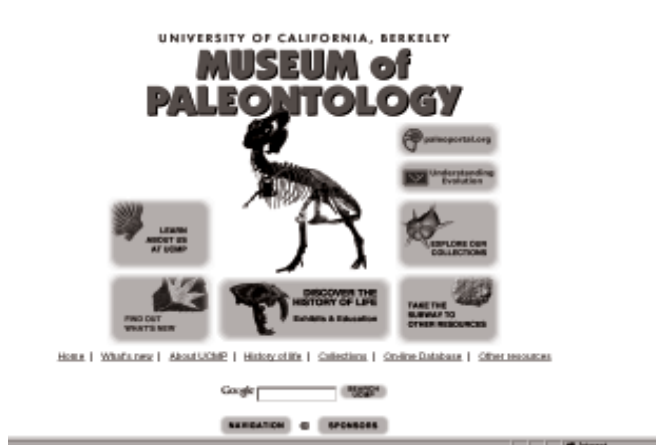
K-12 resources for teachers and students include an ‘Inquiry Attic,’ ‘Case Files’ for investigation, a weather center and a ‘Journey in Time.’ Explore the Learn section for online exhibits (Explore Mars, the Heart), interactive activities (to support Ben Franklin’s coin-flipping research), Community Science Action Guides, ideas, plans and more.



### University of California Museum of Paleontology

<http://www.ucmp.berkeley.edu/>

Education and exhibits on the history of life, a topic that fascinates young children. What’s better than being welcomed by a T. Rex? There are three different areas in which to start your exploration of paleontology: Phylogeny — the “family tree” of life. Geologic Time — the temporal existence of groups of organisms. Evolutionary Thought — evolutionary topics and scientists in their historical context.



### The Exploratorium: The museum of science, art and human perception

<http://www.exploratorium.edu/>

Online since 1993, this was one of the first science museums to build a site on the World Wide Web. The site now contains over 15,000 Web pages exploring hundreds of different topics with many sound and video files. A wide assortment of hands-on activities includes everything from building a spectroscope to exploring the brain and creating a mummy.

### Smithsonian: Science and Technology

[http://www.si.edu/science\\_and\\_technology/](http://www.si.edu/science_and_technology/)

Explore the world of inventors and scientists as well as various interactive exhibits. You can visit the Arctic, learn about brain research and even have an in-depth look at voting machines.