

G4 NSTA Reports



FROM U.S. GOVERNMENT SOURCES

U.S. Department of Agriculture (USDA) Forest Service

Natural Inquirer Scientist Cards

The *Natural Inquirer*, a free online science magazine for middle level educators from the USDA Forest Service, has produced a series of scientist cards highlighting the men and women working at the Forest Service. Resembling a baseball card, each scientist card presents photos and facts describing scientists and their jobs. Featured careers include aquatic ecologist, hydrologist, soil scientist, research botanist, landscape fire ecologist, wildlife biologist, ecophysiological, social scientist, and natural resource sociologist. Currently, the series has 28 cards, with more to come.

An accompanying lesson plan can help teachers incorporate the cards into their classroom. The cards could also be used before, during, or after career-day events. Access the cards at www.naturalinquirer.org/scientists-v92.html.



National Aeronautics and Space Administration (NASA)

Activities From NASA Education

- Comet Mystery Boxes introduce K–8 students to the physical characteristics of comets through

a tactile learning experience. Using only their hands, students reach into a series of boxes and feel the variety of materials and structures within. Each box contains an object that represents a quality of comets. Accompanying educator materials at <http://1.usa.gov/wsI8o0> include a teacher's guide with background information, activity directions, and extensions; student worksheets; and sample comet photographs.

- In a lesson called A Dusty Dilemma (see <http://1.usa.gov/wB274s>), students in grades 8–10 learn the concepts of averages, standard deviation from the mean, and error analysis. Students explore the concept of standard deviation from the mean before using data from the Student Dust Counter, an instrument aboard the NASA New Horizons mission to Pluto. This data is used to determine the issues associated with taking data, including error and noise. Questions are deliberately open-ended to encourage exploration. The website includes teacher and student pages.
- The Lunar Reconnaissance Orbiter (LRO) is a spacecraft orbiting the Moon. The primary instrument on LRO for analyzing the Moon's radiation environment is the

Cosmic Ray Telescope for the Effects of Radiation, or CRaTER. An educator guide, *Cosmic Ray Telescope for the Effects of Radiation (CRaTER) Educational Kit—Grades 6–8* (see <http://1.usa.gov/qK13vw>) presents four standards-aligned lessons exploring a different aspect of cosmic rays or their effects on humans. Each lesson includes background material for teachers, questions, misconceptions, and assessment.

- Some spacecraft return to Earth with valuable data as part of their cargo, but all require some periodic remote communications as they travel. And for those spacecraft that do not return to Earth, the communication system is the only link to the valuable data collected during its journey. In this activity—titled Earth Calling and found at <http://1.usa.gov/wT6fW6>—students in grades 6–8 simulate spacecraft radio communication concepts, including the speed of light and the time-delay for signals sent to and from spacecraft.
- Some of the heftiest known stars in the universe reside in the nebula NGC 3603, a large gas cloud in the Milky Way galaxy. The Star-forming Nebula NGC 3603 Lithograph presents the image of the nebula on the first page and background information and an inquiry activity in which students in grades 11–12 research how stars form on the second page (see <http://1.usa.gov/wna83G>).

ISS Live! Mobile App

See what happens aboard the International Space Station (ISS) and in the Mission Control Center at the Johnson Space Center in Houston through NASA's Space Station Live! web page (<http://spacestationlive>.

[nasa.gov](http://1.usa.gov/9iBBOv)) or ISSLive! mobile app (<http://1.usa.gov/9iBBOv>). With these resources, users—primarily middle to high school educators and space enthusiasts of all ages—can learn about the groundbreaking research and technology development occurring every day in the microgravity environment of space. Streaming data from the ISS provides the latest information on temperatures, communications, and power generation. Students and teachers can use the data to solve classroom problems in their science, technology, engineering, or mathematics (STEM) courses, or tour the space station and mission control operator consoles through virtual 3D view models.

Library of Congress (LOC) Science Reference Services

LOC's Science Reference Services website (<http://1.usa.gov/eK4Myz>) has a collection of science, technology, and business resources of interest to K–college educators. The site features everything from technical reports and “tracer bullets” (research guides that help you locate information on various science and technology subjects), to webcasts, classroom materials, and more. Fact sheets examine Everyday Mysteries: Did you know *The Three Little Pigs* had it all wrong; you can build a durable home with dry, tightly baled straw! A blog, Inside Adams, highlights new resources and helps readers navigate the site.



National Oceanic and Atmospheric Administration (NOAA) Science Olympiad Resources

As a sponsor for the Meteorology event for Science Olympiad's Division B (grades 6–9), NOAA has collected web-based resources to help middle level coaches and students preparing for the



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2013 team-based competition. Organized into three categories—Meteorology: Everyday Weather; Dynamic Planet: Glaciation and Long-Term Climate Change; and Water Quality: Freshwater and Estuaries—the resources include multimedia links, lessons and activities, real-world data, background information, and career profiles. For example, students can browse the National Snow and Ice Data Center's website, All About Glaciers, to find background information about glaciers, science and data resources, and photo galleries showing glacier types, features, and landforms. Read an annotated description of all the available resources at <http://bit.ly/MMIZQ6>.



U.S. Environmental Protection Agency (EPA)
The Bold for Kids Website

The Bold—a former U.S. naval ship, now an EPA marine environmental research ship—uses high-tech equipment

to take samples of water, bottom sediment, and marine creatures to monitor the health of oceans and coastline. At www.epa.gov/boldkids, elementary and middle level students and teachers can learn about the vessel and its mission. Click on the Science tab to learn about ocean issues; access descriptions and photos of the various sampling instruments used aboard, and read about green activities on the ship. Visit the gallery for a photo tour of the ship, watch video interviews with crew members, or view side-scan sonar images of the ocean floor taken from the ship.

U.S. Department of Education (ED)
NAEP Report: Activity-Based Science Assessments

ED's National Center for Education Statistics has released *Science in Action: Hands-On and Interactive Computer Tasks*, a report detailing findings about student performance on activity-based tasks administered to students at grades 4,

8, and 12 as part of the 2009 National Assessment of Educational Progress (NAEP) science assessment.

The report revealed that students were successful on parts of investigations that involved limited sets of data and making straightforward observations of that data; students were challenged by parts of investigations that contained more variables to manipulate or involved strategic decision making to collect appropriate data; and the percentage of students who could select correct conclusions from an investigation was higher than for students who could select correct conclusions and explain their answers. Download the full report or browse an interactive executive summary at <http://1.usa.gov/NfzDIU>.

National Institutes of Health (NIH)
Environmental Health Teaching Resources

At <http://1.usa.gov/LyfTbU>, K–12 educators can access environmental

health resources for the classroom on topics such as air pollution, toxicology, water quality, and epidemiology. Teachers can use curriculum resources like lesson plans, web-based activities, and presentations, and lesson resources like fact sheets, websites, and news articles to enhance background knowledge. Much of the content targets the middle or high school levels, but some elementary material is included.

For example, *In My World and Me: Living Things and Their Needs*, K–4 students investigate the basic needs of plants and animals, including humans. Highlights from the other levels include *Investigation of an Outbreak*, in which students in grades 5–8 model working epidemiologists as they use real data to investigate an outbreak of gastroenteritis in southern Oregon, and *I Can't Hear You*, in which students in grades 9–12 investigate the environmental health risks associated with MP3 player use and overuse. ●



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Makedo

Turn cardboard boxes, paper cups, plastic bottles, lids and other household packaging into amazing recycled artworks with the Makedo sets of connectors. Makedo's Kits provide all the tools and reusable connectors to build your own masterpiece. The Freeplay Packs include a plastic safe-saw for punching holes in thick cardboard or plastic and cutting it down to size; and the clever re-clips and lock-hinges let you connect materials together quickly and easily. Makedo parts are reusable so next time create something totally different. And then do it all again. The Studio Kits have safe-saws and lots (lots!) of connectors to make as many projects as your imagination can conjure!

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MKD-200	MakeDo Studio 10 Kit	\$49.95
MKD-210	MakeDo Studio 30 Kit	\$139.95



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