

PULL-OUT SECTION

SCIENCE TEACHERS' GRAB BAG



Inside this Convenient Pull-Out Section you will find:

Freebies for Science Teachers

IBN Online Science Fair. A new web platform from the science nonprofit Informed by Nature (IBN) allows students and teachers in grades 7–12 to upload, share, and store science fair projects online. To encourage participation and better reach underserved populations lacking access to local science-themed competitions, IBN will hold an annual virtual science fair competition with educational prizes for winners. In addition to sharing experiments, students can interact with peers through comments and by voting for favorite entries. Learn more at <http://bit.ly/173qMZq>.

Physics With Portals. High school science educator Cameron Pittman likes teaching physics with video games. At <http://physicswithportals.com>, he shares his experiences using the 3D puzzle game Portal 2 to help students learn about the physical world. His posted lesson plans allow students to build their own experiments, which they then use to collect data. Titles include Terminal Velocity; Building an Oscillator; Gravity; Man on the Moon! (grades 9–12); Getting Faster as You Fall; and Conservation of Momentum.

Fire Safety e-Book, Grades 3–5. Produced by the National Fire Protection Association, *Rescue Dogs, Firefighting Heroes, and Science Facts* reinforces fire-safety messages while building critical skills in reading comprehension, fluency, and vocabulary. The e-book, available at <http://sparkyschoolhouse.org>, features nonfiction and fictional stories, scientific diagrams, and poetry and addresses Common Core State Standards in English language arts, social studies, and science. You'll also find a teachers guide, white-board activities, and parent printables.



STEM-Works. K–12 teachers, mentors, volunteers, and others passionate about inspiring students to pursue science, technology, engineering, and math (STEM) fields will appreciate www.stem-works.com. Content is organized into high-interest subjects such as Crime Scene Investigation, Extreme Weather, Medical Innovations, Robotics, Space, The Animal Kingdom, Under the Sea, Video Games, and Wind Energy. Within each subject, users can access related articles,

educational events, advocacy opportunities, activities, and interviews with STEM professionals (Cool Jobs). Click on Locations for an interactive map highlighting STEM-related destinations and related organizations around the country.

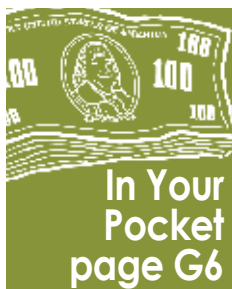
Sesame Street STEM. Preschoolers (and the adults in their lives) have a new digital destination: <http://sesamestreet.org/STEM>. Elmo and his Muppet friends help young scientists learn age-appropriate information about everyday science topics like Experiments, Sinking or Floating, Measurement, Properties of Matter, Engineering, and Force and Motion. The content is presented through short video clips and online games; an educators guide and a parent newsletter for each topic reinforce STEM learning in the classroom and at home.

My Science Box. K–college teachers will find high-quality, classroom-tested hands-on science lessons at My Science Box (<http://bit.ly/1g4knUS>). This site offers individual lessons for various grade levels as well as “curriculum boxes,” or units, for middle level and high school students. The resources address ecology, watersheds, plate tectonics, geology, genetics, and physiology. Each “box” contains everything needed to teach the unit: lesson plans, assessments, field trip planning materials, resources, and even Sub Plans with independent activities like webquests.

EcoMUVE. A new curriculum research project from the Harvard Graduate School of Education uses immersive virtual environments to teach middle level students about ecosystems and causal patterns. The two-week modules Ponds (Module 1) and Forests (Module 2) have the look and feel of a video game, and their multi-user virtual environments (MUVE) re-create

authentic ecological settings within which students explore and collect information. Students work individually at computers and collaborate in teams within the virtual world. Register to access EcoMUVE at <http://ecomuve.gse.harvard.edu/JoinEcoMUVE2.php>.

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Freebies, from pg G1

GLOBE Environmental Science Resources. Broaden students' perspective and understanding of our environment through student-scientist activities from the Global Learning and Observation to Benefit the Environment (GLOBE) program. GLOBE provides opportunities for elementary to high school students to collect environmental data in five areas of scientific investigation—Atmosphere, Earth as a System, Hydrology, Land Cover/Biology, and Soils—and share that data with the worldwide scientific community. Students must follow required data collection protocols for their data to be valid, providing them with valuable real-world experience in what it means to be a scientist. To learn more, visit www.globe.gov/home.

“Feathered Friends” Activities. These resources from Pennington Wild Birds and the Cornell Lab of Ornithology will keep the science content flying high year round in elementary classrooms! The materials at <http://bit.ly/165HEC7> provide a wealth of bird information, including facts about bird biology, behavior, and identification. A combination of simple activities, cool facts, kid-friendly bird book recommendations, and links can help students discover the pleasures of wild bird feeding and bird-watching and ignite an interest in citizen science.

K–12 Soil Science. The Soil Science Society of America (SSSA) offers lessons, activities, and other resources at www.soils4teachers.org. The vetted materials are culled from SSSA and other Earth science education organizations; a hyperlinked lesson matrix puts all the resources conveniently in one place. Students will appreciate the Ask a Scientist feature, where they can post questions about soil and receive a response within 48 hours, while teachers will enjoy the opportunity to invite a certified professional soil scientist to visit the classroom (click on Contact Us).

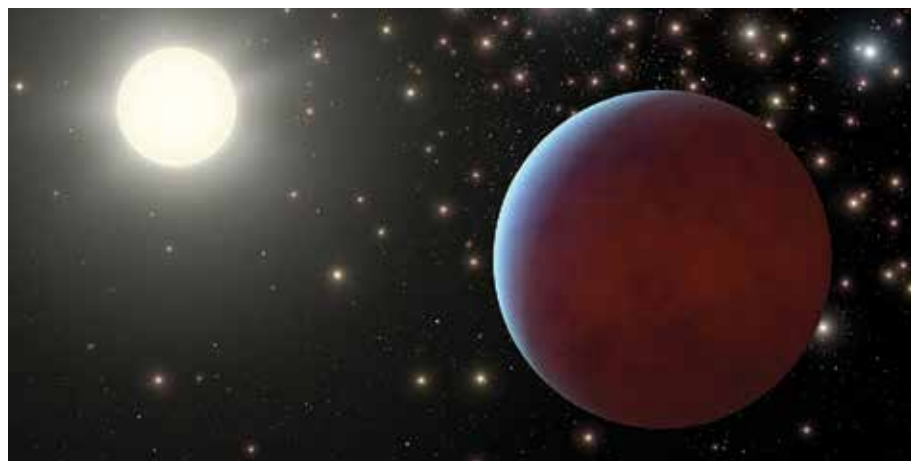
Biodiversity Game. In M-EOL, a new app from Encyclopedia of Life, middle and high school students are explorers,

discovering different plant and animal species by traveling around the world. Players can increase their knowledge about each species through descriptions, images, distribution information, and conservation status from the Encyclopedia of Life website (<http://eol.org>). Explore how organisms in each game collection are related to one another by browsing a dynamic, interactive graph. M-EOL is available on iTunes (<http://bit.ly/1fRvrBN>) and Google Play (<http://bit.ly/GzKzZT>).

Science Video Podcasts. Teachers will find a library of 920 video podcasts (and growing) for K–12 students at www.mcsdpodcast.net. Produced by Muscogee County School District in Columbus, Georgia, through Department of Defense Education Activity Grants, the podcasts address core subjects. Selections from the science collections include Force Using a Soccer Ball and Weather Instruments (elementary); The Rock Cycle and Differences Between Animal and Plant Cells (middle level); and Waves and Evidence of Evolution (high school). The podcasts can be used for homework assistance, classroom explanations, “bell ringers,” and other activities.

National STEM Centre. Based in the United Kingdom, this science education website at www.nationalstemcentre.org.uk has an e-library of more than 7,000 digital resources for STEM educators. The site features a mix of instructional materials for K–college students (ages 5–19), including quizzes, fact sheets, lesson plans, videos and animations, and career advice. The site also offers news articles and opportunities for teachers to connect with an international community of STEM education enthusiasts.

Exoplanets Resource Guide. This annotated guide highlights written, web, and audiovisual resources for teaching high school and college students about exoplanets, a rapidly changing branch of astronomy focusing on planets that orbit other stars. Resources include video and audio files of lectures and interviews with leading scientists in the field; phone and tablet apps; a citizen-science website; and books and articles. Published by the NASA



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Astrophysics Education and Outreach Forum and the Astronomical Society of the Pacific, the guide is available at <http://bit.ly/191mxQk>.

Educade. For lesson plans incorporating today's technologies—apps, games, and other innovations—into instruction, visit www.educade.org. The website offers hundreds of ready-to-use lesson plans in core subjects, each of which is aligned to Common Core State Standards for English language arts, math, and science. Science highlights include Classify Wildlife in Your Community with Project NOAH (elementary), Construct a School Wide Scale Solar System With Scale of the Universe (middle level), and Conservation of Momentum with Portal 2 (high school).

Perfect Picnic. The Partnership for Food Safety Education's app at <http://bit.ly/1hlvuGw> offers a fun way to teach students in grades 3–5 how to prevent food poisoning. In the game, students must build the best picnic park in town. But nothing spoils a picnic like harmful bacteria on dirty hands, in food left sitting out, and in undercooked meat! Park operations go awry when basic food safety practices are ignored. The educators guide reinforces the message with a food safety quiz and a “Ten Least Wanted Pathogens” poster.

LearnBIG. A community-based website for learners from preK to college contains more than 14,000 digital educational resources, including apps, videos, games, and courses. At www.learnbig.com, visitors can search for resources by parameters to meet specific needs (e.g., subject, grade, format, standard) or by Career Path (e.g., web

developer, software engineer, infrastructure technologies, etc.). LearnBIG offers a unique way for middle and high school students to learn about the skills needed in various fields and start developing them. Educators who join the community can comment on the resources as well as add their own to the site.

Fraction Calculator Plus. Help elementary and middle level students get comfortable with fractions! This app features an innovative three-keypad layout to enter fractions and a large, easy-to-read display that shows fractions the way you write them. Students will find the app useful for checking homework: The answers to the problems are written in the simplest form, and the decimal equivalents are included. The app is available for iPad and iPhone (<http://bit.ly/1fXE94h>), Android (<http://bit.ly/YqCk5b>), and Amazon's Kindle Fire (<http://amzn.to/14YMDUh>).

Rethinking School Lunch Guide. This revised publication from the Center for Ecoliteracy explains the rationale for reforming school food programs and provides a planning framework for change. The document at <http://bit.ly/d6SAIp> discusses 10 key areas to consider when reforming school food programs: teaching and learning; food and health; wellness policy; the dining experience; procurement; finances; facilities; waste management; professional development; and marketing and communications. The goal is to teach nutrition, improve school food, support sustainable food systems, and help individuals make connections among food, health, culture, and the environment. ●