

# Lesson Plans, Teacher Guides, and Online Environmental Resources for Educators

## [EPA.GOV- Air, Climate Change, Ecosystems, Energy, Health, Waste, & Water:](#)

### **AIR:**

- [Acid Rain: A Teacher's Guide](#) (PDF 56 pp, 4.6 MB)  
Lesson plan and activities from EPA for teachers on acid rain.  
**Grades:** 6-8  
**Type of Resource:** Lesson plan
- [Acid Rain Student Pages](#)  
Find the acid rain student pages, as well as general information for older students or adults.  
**Grades:** K-12  
**Type of Resource:** Lesson plans and experiments
- [Carl Gets Some Rest](#) (PDF 12 pp, 765 KB)  
This EPA coloring and story book, for children in pre-school through 2nd grade, teaches a simple lesson: there are many transportation alternatives to using a car.  
**Grades:** K-2  
**Type of Resource:** Coloring Book
- [Creating Healthy Indoor Air Quality in Schools](#)  
This EPA page provides information on indoor air quality in school buildings and how to order the Tools for Schools Action Kit. The kit shows how to carry out a practical plan of action to improve indoor air quality at little or no cost using common-sense activities and in-house staff.  
**Grades:** K-12  
**Type of Resource:** Toolkit
- [Noise Pollution for Kids](#) (PDF 15 pp, 6.54 MB)  
This EPA booklet for your students will teach you how to identify which sounds are loud and ways to protect your hearing and health.  
**Grades:** K-5  
**Type of Resource:** Activity book
- [Particulate Matter \(PM\) Air Sensor Kits](#)  
Particle pollution known as particulate matter (PM) is one of the major air pollutants regulated by EPA to protect public health and the environment. A PM air sensor kit has been developed by EPA researchers as an educational tool to teach children about air quality and air science.  
**Grades:** 5-12  
**Type of Resource:** Hands-on activity guide
- [Basic Ozone Layer Science](#)  
Find a straightforward explanation of the ozone layer and ozone depletion.  
**Grades:** 9-12  
**Type of Resource:** Website

- **[Plain English Guide to the Clean Air Act](#)**  
A brief introduction to the 1990 version of the Clean Air Act, to help you understand what is in the law and how it may affect you.  
**Grades:** 9-12  
**Type of Resource:** Booklet
- **[RadTown USA](#)**  
EPA's RadTown USA is a virtual community that aims to educate students about the sources of radiation in our daily lives.  
**Grades:** 9-12  
**Type of Resource:** Virtual activity
- **[Why is Coco Orange?](#)**  
Coco has a problem. He is a chameleon, but he cannot change colors, and his asthma is acting up. Read how Coco and his friends at Lizard Lick Elementary solve this mystery as they learn about air quality and how to stay healthy when the air quality is bad.  
**Grades:** Pre K-2  
**Type of Resource:** Book
- **[AIRNOW](#)**  
Get up-to-the-minute information about air pollution in your community, through a joint project from EPA, the National Oceanic and Atmospheric Administration, the National Park Service and other partners. The AIRNOW website includes maps, forecasts, and information about the health effects of air pollution.  
**Grades:** 9-12  
**Type of Resource:** Website
- **[AIRNOW Air Quality Resources](#)**  
Find air quality curriculum materials and activities from AIRNOW, including a toolkit and workshop opportunities for teachers.  
**Grades:** K-8  
**Type of Resource:** Curriculum guide
- **[AIRNOW's Ozone: Good Up High, Bad Nearby](#)**  
Ozone acts as a protective layer high above the Earth, but it can be harmful to breathe. This publication provides basic information about ground-level and high-altitude ozone. See a [quick animation on Ozone too](#).  
**Grades:** 6-12  
**Type of Resource:** Booklet/Brochure
- **[NOAA's Education Resources Website](#)**  
Explore this site to find the information you need to teach students about weather, climate change, and oceans. You'll find activities, background information, and much more!  
**Grades:** 6-12

## CLIMATE CHANGE:

- **[Generate! Game](#)**  
An interactive board game developed by EPA scientists called Generate! enables players to explore energy choices and the environment and gets students "energized" in some friendly competition. The game is a teaching tool that can be used to understand the costs and benefits of the energy choices we make; find out what happens if the mix of energy sources changes in the future and learn what energy choices mean for our climate, air, water, and overall environmental quality.  
**Grades:** 6-12

**Type of Resource:** Board game and teacher guides.

- [\*\*Climate Change, Wildlife, and Wildlands Toolkit: A toolkit for formal and informal educators\*\*](#)  
EPA, in partnership with the National Park Service and with input from the U.S. Fish and Wildlife Service, developed a kit for use when talking with the public about how climate change is affecting our nation's wildlife and public lands.  
**Grades:** all
- [\*\*NASA's Climate Kids\*\*](#)  
Geared toward students, the multimedia-rich Climate Kids site uses games, humorous illustrations and animations to help break down the important issue of climate change.  
**Grades:** K-12
- [\*\*NOAA's Education Resources Website\*\*](#)  
Explore this site to find the information you need to teach students about weather, climate change, and oceans. You'll find activities, background information, and much more!  
**Grades:** 6-12
- [\*\*NOAA's Discover Your Changing World Activity Book\*\*](#)  
This free activity book will introduce your students to the essential principles of climate science and what you can do to protect our Earth.

## **ECOSYSTEMS:**

- [\*\*America's Wetlands\*\*](#)  
This resource will give you a better understanding of the rich variety of wetlands, their importance, how they are threatened, and what can be done to conserve them for future generations.  
**Grades:** 9-12  
**Type of Resource:** Website
- [\*\*Coral Reef Protection: What are coral reefs?\*\*](#)  
Explore EPA's resources on coral reef protection to learn why coral reefs are important and what is being done to protect them.  
**Grades:** 6-12  
**Type of Resource:** Website
- [\*\*EnviroAtlas\*\*](#)  
Ecosystems such as forests and wetlands provide many essential benefits, including clean air and water, food, fiber, and recreational opportunities. The benefits people receive from nature, called "ecosystem goods and services," are critically important to human health and well-being, but they are often overlooked due to lack of information. EnviroAtlas is a freely available web-based resource that combines an interactive mapping application, analysis tools, and interpretive information on ecosystem goods and services. EnviroAtlas allows users to visually interpret ecosystem services and understand how they can be conserved and enhanced.  
**Grades:** K-12  
**Type of Resource:** Website
- [\*\*Estuaries: Fundamentals\*\*](#)  
What is an estuary? Why are estuaries important? Find core information from EPA on estuaries and the National Estuary Program.  
**Grades:** 9-12  
**Type of Resource:** Website

- [Exploring Estuaries](#)  
 This EPA site, aimed at children, provides introductory information on estuaries for students of various ages and background information for teachers. Includes activities, games and a glossary.  
**Grades:** 6-12  
**Type of Resource:** Interactive website
- [Hazardous Waste and Ecosystems](#)  
 A classroom activity to help students recognize that hazardous waste may have far-reaching impacts on ecosystems and that these impacts are not always easy to identify.  
**Grades:** 9-12  
**Type of Resource:** Lesson plan
- [Save Our Species: Endangered Species Coloring Book](#)  
 Coloring book about endangered species.  
**Grades:** K-5  
**Type of Resource:** Activity book
- [Wetlands Education](#)  
 Everything you need to help your student understand wetlands and how they fit into the water cycle and the environment. A portal site of links to activities, curriculum, education programs, resources and teaching tools to assist you in wetlands and habitat education.  
**Grades:** K-12  
**Type of Resource:** Website, curriculum guides, teaching tools
- [Dig In](#)  
 Explore a world of possibilities in the garden and on your plate using ten inquiry-based lessons that engage 5th and 6th graders in growing, harvesting, tasting, and learning about fruits and vegetables.  
**Grades:** 5-6  
**Type of Resource:** Lesson plans
- [Everglades National Park for Teachers](#)  
 Are you interested in teaching your students about the Florida Everglades? Check out this site to find activities and background information that will help you tell the story of this fascinating natural ecosystem. Even if you don't live near the Everglades, you will find valuable information that can be applied to many ecosystems throughout the country.  
**Grades:** All
- [Forests Lesson Plan](#)  
 A lesson plan from the U.S. Fish and Wildlife Service.  
**Grades:** K-5  
**Subtopic:** ecosystem  
**Type of Resource:** Lesson Plan
- [Resources To Learn More About Endangered Species](#)  
 From the Fish and Wildlife Service, a list of materials that may give you some ideas to help a species near you get on its road to recovery, because recovery is the ultimate goal for each threatened and endangered species.  
**Grades:** All
- [NASA Educational Resources and NASA Wavelength](#)  
 Search NASA for teaching materials on: earth science, general science, history, math, physical science, and space science.  
**Grades:** K-12

**Type of Resource:** Searchable database of teaching materials

- [\*\*National Estuarine Research Reserve System K-12 Educator Resources\*\*](#)  
Estuaries, where rivers meet the sea, are fascinating ecosystems. Find out about what makes estuaries special, the threats to estuarine ecosystems and explore estuaries around the U.S.  
**Grades:** 9-12
- [\*\*National Wetlands Research Center\*\*](#)  
This site from the U.S. Geologic Survey explores the many factors that affect wetland health, and provides resources for teachers on preserving our wetlands.  
**Grades:** 9-12
- [\*\*National Park Service Education Resources\*\*](#)  
Classroom materials, field trip opportunities and professional development programs for educators from the National Park Service.  
**Grades:** All
- [\*\*Teachers on the Public Lands/ Hands on the Land\*\*](#)  
Hands on the Land partnerships provide hands-on field experiences, such as citizen science and environmental monitoring projects, that connect the next generation to our forests, parks, waterways, and wildlife refuges.  
**Grades:** All  
**Type of Resource:** Website
- [\*\*The USDA Farm to School Planning Toolkit\*\*](#)  
The kit is designed for use by schools, school districts, and community partners and filled with tips and examples, insights from others, and lists of resources for further research. It guides you through questions to consider and helpful resources to reference when starting or growing a farm to school program  
**Grades:** All  
**Type of Resource:** Planning Toolkit
- [\*\*U.S. Forest Service Education Toolbox\*\*](#)  
The Educator Toolbox from the U.S. Forest Service is jam-packed with helpful resources to make your challenging job just a little easier. Here you will find background resources to help you understand forests and grasslands, professional development opportunities and resources, and a collection of great materials and programs organized by grade-level.  
**Grades:** K-12  
**Type of Resource:** Toolkit
- [\*\*Where Rivers Meet the Sea\*\*](#)  
This game depicts the ecosystem of an estuary on the west coast of the United States. To succeed, players must learn about the factors that produce healthy estuaries, food webs, and why estuaries are essential to both ocean life and to humans. Find related curriculum, tutorials, and classroom resources.  
**Grades:** 9-12  
**Type of Resource:** Online Game
- [\*\*Wildlife Fact Sheets\*\*](#)  
From the Fish and Wildlife Service, basic information about species of regular public interest. Scroll to the bottom of the page for the factsheets.  
**Grades:** 9-12

## ENERGY:

- **ENERGY STAR Kids**  
Students can learn to use energy wisely and be an energy star. Find [related publications](#) for download and order.  
**Grades:** K-8  
**Type of Resource:** website
- **Fuel Economy and Environment Labels: High School**  
This activity lets students learn about fuel economy and environment labels, and how to calculate the cost and emissions associated with cars. Students will understand the concept of fuel economy and compare and contrast various fuel types.  
**Grades:** 9-12  
**Type of resource:** Lesson plan
- **Fuel Economy and Environment Labels: Middle School**  
This activity lets students learn about fuel economy and environment labels and calculate the cost and emissions associated with cars. Students will understand the concept of fuel economy and compare and contrast various fuel types.  
**Grades:** 5-8  
**Type of resource:** Lesson plan
- **[Generate! Game](#)**  
An interactive board game developed by EPA scientists called Generate! enables players to explore energy choices and the environment and gets students “energized” in some friendly competition. The game is a teaching tool that can be used to understand the costs and benefits of the energy choices we make; find out what happens if the mix of energy sources changes in the future and learn what energy choices mean for our climate, air, water, and overall environmental quality.  
**Grades:** 6-12  
**Type of Resource:** Board game and teacher guides.
- **[Join the Lorax](#)**  
From the ENERGY STAR program, familiar characters like the Lorax will help students understand energy efficiency and how to use energy wisely. Download the accompanying [activity book](#).  
**Type of Resource:** Website and activity book.
- **Energy Efficiency and Renewable Energy Kids Home Page**  
Kids Saving Energy. Games tips and facts for kids who want to save energy.  
**Grades:** 6-8  
**Type of Resource:** Website
- **Department of Energy Educator Resources**  
Find the complete set of lesson plans, student competitions, workbooks, videos and more from the Department of Energy. Grades: k-12  
**Type of resource:** Website

## HEALTH:

- **[Asthma](#)**  
Asthma and upper respiratory illnesses information from EPA's Office of Children's Health Protection.  
**Grades:** 9-12

**Type of Resource:** Website

- **[Chemical Safety Resource for Middle School Teachers](#)**  
In this lesson students will participate in a chemical survey activity regarding the household chemicals and cleaners used in and around their house. They will conduct a simple survey with parental supervision and answer questions about how many and what kind of chemicals they found. Students will also brainstorm on how chemical safety can prevent pollution at home.  
**Grades:** 5-8  
**Type of resource:** Lesson plan
- **[Environmental Health Science Education](#)**  
Lesson plans and classroom activities for teachers on environmental health science from the National Institute of Environmental Health Sciences.  
**Grades:** K-12  
**Type of Resource:** Lesson plans, activity guides, factsheets
- **[A Citizens Guide to Radon](#)**  
A complete guide to taking action to lower the radon level in your home. It offers strategies for testing and discussions of what steps to take after you have tested, discussions of the risk of radon and radon myths.  
**Grades:** 9-12  
**Type of Resource:** Guide
- **[Health Effects of Exposure to Secondhand Smoke](#)**  
Secondhand smoke can cause health problems in children and adults. Read about the risks of environmental tobacco smoke and find links to research studies about the issue.  
**Grades:** 9-12  
**Type of Resource:** Website
- **[Help! It's a Roach!](#)**  
Roaches are one of the most common household pests. Once they move into your home, they multiply quickly. That makes them even harder to control. Use this Web site and complete the activities to learn what kids and adults can do.  
**Grades:** K-5  
**Type of Resource:** Interactive website
- **[Hold the Mold](#)**  
In this lesson, students will learn about the different kinds of mold and how it grows. They will conduct an experiment to grow and observe the growth of different kinds of food molds and understand the health effects of mold and how to recognize and prevent mold growth.  
**Grades:** 5-8  
**Type of Resource:** Lesson plan
- **[Lead Blockers](#)**  
In this lesson students will learn about the health effects of lead and through a game of tag. Students will model the process of certain nutrients that can block lead absorption. As part of the activity, students will brainstorm on ways to prevent lead exposure at home.  
**Grades:** K-8  
**Type of resource:** Lesson plan
- **[Lead in Paint, Dust and Soil](#)**  
Find information about lead hazards and lead poisoning prevention in the home.  
**Grades:** 9-12  
**Type of resource:** Website

- **[Mercury Bioaccumulation Tag](#)**  
This activity lets students model the processes of mercury bioaccumulation and biomagnification in an aquatic food chain. Students will understand the health effects of mercury and demonstrate an understanding of how mercury becomes present in fish.  
**Grades:** 5-8  
**Type of resource:** Lesson plan
- **[Recipes for Health Kids and a Healthy Environment](#)**  
A nine-lesson program designed to excite kids about environmental health and to empower them to take steps in their everyday lives to improve the environment for their community and reduce environmental risk.  
**Grades:** 4-8  
**Type of Resource:** Curriculum guide
- **[The Ultraviolet Index](#)**  
Several publications explaining the Ultraviolet Index and steps you can take to minimize the risks from overexposure to the sun's rays. Each is available for reading online and downloading.  
**Grades:** 9-12  
**Type of Resource:** Website and database
- **[Water on Tap: What You Need to Know](#)**  
Where does your drinking water come from? How is it treated? How do you protect it? This is the place to get the answers to these and other drinking-water questions.  
**Grades:** 9-12  
**Type of Resource:** Factsheet/brochure
- **[Environmental Health Science Education](#)**  
Portal site for students, teachers and scientists on environmental health information, activities, jobs, and developmental opportunities.  
**Grades:** 6-12
- **[National Pesticide Information Center \(NPIC\)](#)**  
Everything you ever wanted to know about pesticides in one easy location. This cooperative effort between EPA and Oregon State University provides information from EPA, state agencies, academia and Canada, including information for health care providers.  
**Grades:** 9-12
- **[Ready Kids!](#)**  
Disasters happen everywhere, and every member of the family can prepare. Preparedness for the future starts today.  
**Grades:** All ages  
**Type of Resource:** Website
- **[Sunwise: Sun Safety for Kids and Educators](#)**  
SunWise Partner Schools sponsor classroom and school-wide activities that raise children's awareness of stratospheric ozone depletion, UV radiation, and simple sun safety practices. The SunWise Toolkit is free to registered schools.  
**Grades:** K-8  
**Type of Resource:** Website and toolkit

## WASTE:

- **[Basic Information about Waste Management, Recycling, and Pollution Prevention](#)**  
Find core information on sustainable materials management and pollution prevention at the source.

Grades: 9-12

**Type of Resource:** Website

- **[Reduce, Reuse, Recycle Resources for Students and Educators](#)**  
Find games and classroom resources like Recycle City and the Planet Protector series, including a teachers guide.  
**Type of Resource:** Website
- **[Pack a Waste Free Lunch](#)**  
Find easy ways to encourage students (and parents) to reduce waste at lunchtime.  
**Type of Resource:** Toolkit
- **[Life of a CD/DVD](#)**  
Lifecycle of a CD/DVD-Help your students explore the lifecycle of a familiar object, from how it's made to ideas for extending its life in new ways.  
**Type of Resource:** Poster/Flyer
- **[Life of a Soccer Ball](#)**  
Help your students explore the lifecycle of a familiar object, from how it's made to ideas for extending it's life in new ways.  
**Type of Resource:** Poster/Flyer
- **[Consumer's Handbook for Reducing Solid Waste](#)**  
This document describes how people can help solve a growing problem...garbage!  
**Grades:** 9-12  
**Type of Resource:** Website
- **[The Quest for Less: Activities and Resources for Teaching K-8](#)**  
Use this resource to develop lesson plans, incorporate a range of activities into various subject areas throughout the school year.  
**Grades:** K-8  
**Type of Resource:** Curriculum guide
- **[Science Fair Fun: Designing Environmental Science Projects](#)** (PDF 245K, 16 pp)  
Resource booklet designed to generate ideas for students and teachers interested in solid waste science fair projects  
**Grades:** 6-8  
**Type of Resource:** Curriculum guide
- **[Science Fair Fun: Designing Environmental Science Projects en Español](#)** (PDF 223K, 16 pp)  
Resource booklet in Spanish designed to generate ideas for students and teachers interested in solid waste science fair projects.  
**Grades:** 6-8  
**Type of Resource:** Curriculum guide
- **[Superfund Basics](#)**  
This page provides an overview of the Superfund program, highlights key steps in the Superfund cleanup process, explains how the program is enforced, describes EPA's Superfund offices, and links to other EPA hazardous-waste programs.  
**Grades:** 9-12  
**Type of Resource:** Website
- **[Tools to Reduce Waste in Schools](#)**  
EPA's Tools to Reduce Waste in Schools helps your school and school district reduce the amount of

waste you generate. You'll learn how to start a waste reduction program or expand an existing one. The guide will show you how your program can benefit your school, your community, and the environment by reducing, reusing, and recycling your waste.

**Grades:** 9-12

**Type of Resource:** Curriculum guide

- [Where Can I Take My Computer?](#)

Web sites and organizations that can provide information on opportunities for donating and recycling computers and other electronics.

**Grades:** 9-12

**Type of Resource:** Website

## **WATER:**

- [Acid Rain: A teacher's guide for grades 6 through 8](#) (PDF 56 pp, 4.6 MB)

A lesson plan and activities from EPA for teachers on acid rain.

**Grades:** 6-8

**Type of Resource:** Lesson plan

- [Acid Rain Educational Resources from EPA](#)

Experiments and activities, a review of basic acid rain concepts, factsheets, and things you can do about acid rain.

**Grades:** K-12

**Type of Resource:** Lesson plans and experiments

- [Darby Duck and the Aquatic Crusaders](#)

Find seven experiments from EPA to learn about the characteristics of water.

**Grades:** K-5

**Type of Resource:** Lesson plan and experiments

- [Drinking Water & Ground Water Kids' Stuff](#)

Games, activities, and art projects from EPA about the water cycle and water treatment.

**Grades:** K-12

**Type of Resource:** Lesson plans

- [Ground Water Contamination](#) (PDF 10 pp, 0.2MB)

Find a general review of groundwater contamination and where it occurs.

**Grades:** 9-12

**Type of Resource:** Factsheet

- [How's My Waterway?](#)

Learn the condition of local streams, lakes, and other waters anywhere in the U.S., searching EPA's database of water quality monitoring reports.

**Grades:** 9-12

**Type of Resource:** Website/app

- [How People Get Their Water - Reservoirs: "Holding Tanks" for Drinking Water](#)

Let your students "Ride the Water Cycle" with this activity from EPA. Help them understand the role of reservoirs in maintaining a reliable supply of drinking water.

**Grades:** 4-8

**Type of Resource:** Lesson plan

- [Magnificent Ground Water Connection](#)

This ground-water activity guide is applicable to a wide range of subject matter and the topics

include basic concepts on the water cycle, water distribution, treatment, and stewardship. This page includes five sample lesson activity plans.

**Grades:** K-12

**Type of Resource:** Curriculum guide and lesson plans

- [\*\*On Your Mark, Set, Evaporate\*\*](#) (PDF 4.73 MB, 398 pp)  
This EPA lesson plan covers transpiration as part of the hydrologic cycle.  
**Grades:** 6-8  
**Type of resource:** Lesson plan
- [\*\*Thirstin Builds an Aquifer\*\*](#)  
This activity illustrates how water is stored in an aquifer, how ground water can become contaminated, and how this contamination ends up in a drinking water well. Ultimately, students should get a clear understanding of how careless use and disposal of harmful contaminants above the ground can potentially end up in the drinking water below the ground. This particular experiment can be done by each student at their work station. **Use the [interactive website](#) or [PDF version](#)** (PDF 240 KB, 2 pp)  
**Grades:** K-3  
**Type of resource:** Website and lesson plan
- [\*\*Thirstin's Groundwater Movement Activity\*\*](#) (PDF 332 KB, 2 pp)  
This class activity demonstrates that ground water must be able to move through underground materials. The students will act as molecules of water and the underground materials.  
**Grades:** K-5  
**Type of resource:** Lesson plan
- [\*\*Tracking Pollution - A Hazardous Whodunit\*\*](#)  
A Thirstin lesson plan to teach students to make a topographic map, use it to predict ground water flow and investigate the most likely source of ground water contamination.  
**Grades:** 9-12  
**Type of resource:** Lesson plan
- [\*\*Water Sense Resources\*\*](#)  
Resources for educating students about "Fix a Leak Week," EPA's WaterSense Partnership program and water efficiency.  
**Grades:** K-8  
**Type of resource:** Lesson plan
- [\*\*Watershed Academy\*\*](#)  
The Watershed Academy is a focal point in EPA's Office of Water for providing training and information on watershed management. The Academy's self-paced training modules and webcast seminars provide current information from national experts across a broad range of watershed topics.  
**Grades:** 9-12, College, Adult Learners  
**Type of Resource:** Self-paced online modules
- [\*\*National Wetlands Research Center\*\*](#)  
This site from the U.S. Geologic Survey explores the many factors that affect wetland health, and provides resources for teachers on preserving our wetlands.  
**Grades:** 9-12
- [\*\*NOAA's Education Resources Website\*\*](#)  
Explore this site to find the information you need to teach students about weather, climate change, and oceans. You'll find activities, background information, and much more!

**Grades:** 6-12

- **[National Ocean Service Education](#)**

Find case studies, tutorials, games, and more from NOAA's National Ocean Service.

**Grades:** K-12

**Type of Resource:** Website

- **[Water Science for Schools](#)**

This site provides extensive background information on a wide variety of water topics. It also includes on-line activities, data tables, maps, and a glossary of terms.

**Grades:** 6-12

## **[Department of Environment, Great Lakes, and Energy \(EGLE\) Online Activity Resources for Teachers:](#)**

- **[The American Geophysical Union's Outreach Resources](#)**

The American Geophysical Union (AGU) has made available presentations, lectures, classroom activities and videos from last fall's GIFT workshop in San Francisco. The workshop, cohosted by the National Endowment for Science, Technology and Arts, is for K-12 classroom teachers. Presentations and activities at the 2011 workshop included tsunamis, clouds, climate science, Antarctic glaciers and volcanic ash. You will find links and descriptions for all of the materials within this valuable web site.

- **[American Museum of Natural History Online Courses](#)**

Registration is open for Seminars on Science from the American Museum of Natural History for anyone seeking professional development and graduate credit. Each six-week course is fully online, coming to the museum is not necessary, and they can be taken for up to 4 graduate credits each. All courses are led by both an experienced classroom teacher and a PhD research scientist. Courses include: Evolution; Climate Change; Earth: Inside and Out; The Solar System, Genetics, Genomics, Genethics; The Diversity of Fishes; Water: Environmental Science and more. Sign up today and get \$50 off your registration cost! For more information, visit: [www.amnh.org/learn](http://www.amnh.org/learn).

- **[ARKive.org - Bring the Natural World into the Classroom](#)**

Arkive.org offers an extensive collection of videos and images of plants and animals. You can navigate the galleries by selecting one of the broad categories and then choose a subject within that category. The videos can be downloaded for classroom use. ARKive also offers dozens of online games and age-appropriate activities for students. For example, Butterflies and Blooms challenges students aged 7-11 to think about the relationship between summer flowering plants and the butterflies that depend on them. Design a Conservation Program helps students aged 14-16 to learn about the importance of biodiversity as well as the economic benefits and services ecosystems provide. The Animal Survival game requires students to keep a sand lizard alive by correctly answering questions about the lizard's daily life.

- **[BirdSleuths](#)**

BirdSleuth aims to help educators build science skills while inspiring young people to connect to local habitats, explore biodiversity, and engage in citizen science projects. Studying birds is an accessible and fun way to bring real science to students! From making observations and asking questions to collecting data and publishing results, BirdSleuth creates practicing scientists with resources that engage youth in their own investigations! For more information, please visit: [www.birdsleuth.org](http://www.birdsleuth.org)

- **[Climate and Energy - Free and Vetted Online Teaching Resources](#)**

In order to further advance your students understanding of the climate and topics in energy science. The CLEAN (Climate Literacy and Energy Awareness Network) collection offers 500+peer-reviewed,

online teaching resources on climate and energy for grades 6-16. These offer activities, visualizations and even videos. You will be able to search the collections based on the topic, resource type, or grade level. The CLEAN site will provide guidance on climate and energy using strategies and principles in relation to teaching different aged groups. Join the CLEAN network today and fill in on educational policies, science, and discussions with experts in the field. Weekly telecons, conferences and workshop announcements are also in the network. With an ever more increasing emphasis on Earth systems in the NGSS standards, CLEAN resources have become even more relevant. Visit the link below and share with colleagues and students or even bookmark it for yourself!

- **[ClimateChangeLIVE: A Distance Learning Adventure](#)**

ClimateChangeLive offers a series of webcasts, webinars and online climate education resources. This distance learning adventure will provide an amazing collection of science-based resources and programs that are aligned with national science education standards. These "electronic field trips" are a great way to learn about climate change science directly from climate experts and educators, and to have the chance to interact with them during the live webcasts. Don't miss this free learning opportunity for your classroom. The Webinar series "Teaching Climate Change" begins in September, 2013 and will continue until February, 2014. The two-part Webcast for Middle and High School students takes place on March 5 and 12, 2014. To register and for more information on webinar and webcast content, as well as great climate change resources, please visit [www.climatechangelive.org](http://www.climatechangelive.org).

- **[Climate Literacy and Energy Awareness Network \(CLEAN\) Resources](#)**

The Climate Literacy and Energy Awareness Network (CLEAN) provide a digital collection of evaluated teaching materials for students in grades six to college. The materials contain activities, visualizations, and videos on climate science, climate change, and energy concepts. In addition to searching through the various topics, users can join the CLEAN community to participate in webinars, workshops, and discussions about climate change.

- **[Climate Research Applications Online Course - Stipends Available](#)**

Take advantage of this newly opened online graduate course in Climate Research Applications. Students will receive a \$1,500 tuition stipend upon successful completion. This three-credit-hour course, offered through the University of Nebraska-Lincoln, begins August 20<sup>th</sup>. Designed for science educators, the course uses climate-change issues to develop research questions and design a discrete, locally oriented research project aimed at potentially impacting decision-making in their community. The credits earned from this course may be taken on its own, used as transfer credits, or used towards the university's 36-credit-hour Master of Applied Science specialization in Science for Educators - a 100% online master's degree program. The course was developed through a grant from the NASA Innovations in Climate Education Program. Stipends are only available on a first-come basis. Apply now at [www.unl.edu/gradstudies/prospective/steps](http://www.unl.edu/gradstudies/prospective/steps) by clicking the "Non-degree, Post-baccalaureate" option. For more information, contact Dr. Russanne Low: [rlow2@unl.edu](mailto:rlow2@unl.edu).

- **[Community Space for Educators](#)**

Bioneers has a new community space for educators to provide inspirational and practical materials and events. Read articles and interviews with educational innovators and visionaries. Explore and share curriculum and teaching ideas. Create a blog to share articles and thoughts. Propose and conduct interviews with Bioneers speakers.

- **[Cornell Lab Bird Cams - Virtual Bird Watching at Its Best](#)**

Check out the birds at the feeders at the Cornell Lab Feeders in Ithaca, NY. Please visit: [http://cams.allaboutbirds.org/channel/40/Cornell\\_Lab\\_FeederWatch\\_Cam/](http://cams.allaboutbirds.org/channel/40/Cornell_Lab_FeederWatch_Cam/)

- **[Dawn Junior Wildlife Champions](#)**

Dawn has committed itself to helping to save wildlife for more than 30 years. To continue this tradition, Dawn and Discovery Education have launched the Junior Wildlife Champions education and activity program to help teach student the importance of saving wildlife. The program gives

access to new in-class lesson plans (available in English and Español) that range from investigative research projects to hands-on experiments and offer innovative and engaging ways to get involved. Participating teachers will also receive a free gift for the classroom from The Marine Mammal Center, in return for their honest feedback. For more information or to view lesson plans, visit the [Dawn Junior Wildlife Champions](#) Web site.

- **[Discovery Education STEM Camp Content](#)**: Free Urban Infrastructure Curriculum Now Available  
As part of Discovery Education's commitment to STEM education for all students, Discovery Education STEM Camp is a dynamic series of standards-aligned curricula available to schools at no cost. It is a 5-day, 40-hour curriculum that combines hands-on labs, engineering challenges, digital investigations, and more! Each segment is designed to immerse kids in the grand challenges of science set forth by the National Academy of Engineering. Simply login with your existing Discovery Education account, or create a free account and access the world of STEM Camp. Stay tuned for the third curriculum in the series - Energy (coming soon). Check out the newly released Urban Infrastructure curriculum if you are interest in helping students understand the challenges designing cities of the future.
- **[Earn a Master of Environmental Management Online](#)**  
The Duke Environmental Leadership Program offers a two year Master of Environmental Management degree through both an online and on campus program. It provides a broad perspective of interdisciplinary and global themes, strategic approaches to environmental management, and effective leadership and communication skills.
- **[Facing the Future: Educating & Inspiring a Global Generation](#)**  
Are you interested in continuing professional development? Would you like to learn at your own pace? "Facing the Future: Educating & Inspiring a Global Generation" is an online, independent continuing education course for educators of grades 5-12, to build upon their teaching expertise and to think creatively about how to integrate global issues, sustainability, and local solutions into their curricula.
- **[Free Award-Winning Science Publications, Videos, and Materials](#)**  
The Howard Hughes Medical Institute makes science publications, videos and materials available to K12 teachers. These materials are intended to enhance science education at all levels. There is no specified deadline for applying for these materials.
- **[Free Scientific Method Poster](#)**  
This free classroom poster offers a great visual overview of the six steps of the scientific method as described on the Science Buddies Web site. Request a free copy for your classroom today. There are no shipping and handling charges and supplies are limited.
- **[Free Summer Online Course Using Technology in Environmental Education](#)**  
The online course "Using Technology in Environmental Education," is free and developed by the EPA to teach and update environmental educators with new and useful technologies to enhance and improve educational programs. The course lasts 8-weeks and is self-paced, allowing users to choose which technologies they wish to learn.
- **[GLOBE Virtual Student Conference is Online Now](#)**  
There are 50 extraordinary student projects in: Atmosphere, Earth as a System/ Phenology, Hydrology, Land Cover/Biology and soils. On May 6 through 31, you will have the opportunity to learn about how students use GLOBE to engage in scientific research to impact the quality of life in their communities. This is the programs largest interactive online student conference yet. These are accessible to anyone but if you already have a GLOBE website login you will be able to post comments and post questions to our student presenters.

- **Introducing Teachers and Administrators to the NGSS** - A Professional Educator's Guide, published in May 2014 by Eric Brunsell, offers professional development activities, advice, and tools to enhance a greater teacher understanding of the framework of NGSS for successful implementation practices. Brunsell and colleagues identify shifts in the three the three dimensions of science (core ideas, crosscutting concepts, and science and engineering practices), and how such shifts can be carried over in their instruction. The activities assist teachers in understanding the curricular and pedagogical issues related to teaching the standards, address workshop difficulties, and provide a practical guide for implementing NGSS in the classroom. The entire book can be found at [www.nsta.org/store/product\\_detail.aspx?id=10.2505/9781938946189](http://www.nsta.org/store/product_detail.aspx?id=10.2505/9781938946189).
- **GLOBE - Investigate Seasonal Change in the Environment**  
The GLOBE Seasons and Biomes Project guides students through an investigation of seasonal changes and biomes. Students and teachers have the opportunity to use GLOBE resources to conduct scientific inquiries in their local environments and biomes. By monitoring the seasons in their biome, students will learn how interactions within the Earth system affect their local, regional and global environment while contributing to critically needed science measurements. For more information, visit [www.globe.gov/do-globe/measurement-campaigns/past-projects/earth-as-a-system-projects/seasons-and-biomes](http://www.globe.gov/do-globe/measurement-campaigns/past-projects/earth-as-a-system-projects/seasons-and-biomes).
- **Hubble Web Site for Educators**  
This web resource from NASA provides activities and resources to educators centered on the Hubble Space Telescope. The site offers activities and resources focused on three themes: Hubble Careers, From Galileo to the Great Observatories, and the Hubble Walk: Spacesuits and Spacewalks. The website will continually be updated as it follows the Hubble journey into 2010, Hubble's 20th anniversary year. This site celebrates Hubble as a unique tool of exploration and has been launched in conjunction with the fall 2008 launch of the space shuttle Atlantis as it goes to service the Hubble space telescope.
- **Invitation for New Science Teachers**  
Applications are now being accepted to participate in the online science-mentoring program, e-Mentoring for Student Success (eMSS). The deadline to apply is September 30, but space is limited. eMSS is becoming one of the nation's largest mentoring networks of secondary science teachers. Since its inception in 2002, the eMSS professional learning community has grown to over 300 mentees and mentors from 10 states. In 2008, eMSS will be available nationwide. Applications are currently being accepted from new science teachers in their first through third year of teaching in grades 6-12. In order to apply you must visit the Web site linked above. Click on Beginning Science Teachers and use the enrollment code: MI1S. Then you fill out the online application.
- **K-12 Educational Online Seminars**  
The National Science Teachers Association has come together with a group of providers to offer science educators a chance to engage in some exciting opportunities. A series of free 90-minute online seminars are available to all those interested in furthering their understanding of many important science related issues. Teachers can learn about everything from coral ecosystems and polar bears, to Mars exploration and food science. To register for these events follow the link provided to the NSTA webpage.
- **Launch and Propulsion Educators Guide for Grades 6-12**  
The fifteen lesson plans in this guide help students learn about the science of rockets, principles of rocketry and the laws of motion. Student texts are included so that students may read about variables, forces and motion, and NASA's history and future. Students learn which variables affect the performance of a rocket. In the assessment, students engage in a competition wherein they apply what they have learned about rockets to build a launch vehicle that flies as high as possible.

- [Marine Fisheries Series Activities Guide](#)**  
 This is an online activity guide geared for middle to high school students. It is a guide created by the Marine Fisheries Series project to help students dive deeper into the topics covered in the documentary series. The guide includes six engaging, peer-reviewed activities, correlated to national science and social studies education standards. These activities work well in classrooms as well as non-traditional educational settings such as nature or science centers, aquariums and zoos.
- [Michigan Merit Curriculum Science](#)**  
 In preparation for implementation of the new high school graduation requirements, the Michigan Department of Education, in collaboration with partners across the state, has developed Course/Credit Content Expectations to provide all educators with a common understanding of what high school students should know and be able to do at the completion of each credit/course.
- [Molecular Workbench](#)**  
 Developed by the Concord Consortium the molecular workbench is a free, open-source software tool that helps students grade 5 to college overcome challenges in understanding the science of atoms and molecules. The Molecular Workbench models electrons, atoms and molecules, which make it applicable across physics, chemistry, biology and engineering.
- [Monthly Lessons - September, May - Science of Birds](#)**  
 Pennington Wild Birds in association with the Cornell Lab of Ornithology have created educational and engaging activities to help teach science content year round through bird watching. These innovative resources help build science skills to inspire students to connect and participate in citizen science within local habitats. Free downloads are available. Free Activities can be found here: [www.birdsleuth.org/pennington/](http://www.birdsleuth.org/pennington/). View related activities at [www.birdsleuth.org/penningtonresources/](http://www.birdsleuth.org/penningtonresources/).
- [NOAA Online Ocean Exploration and Research Workshop](#)**  
 From October 5-16 NOAA will be offering a workshop introducing the new Okeanos Explorer Education Materials Collection built around the themes: Why Do We Explore? How Do We Explore? and What Do We Expect to Find? The workshop is free for all participants and will be available 24 hours a day, 7 days a week. Educators will have the option to receive graduate credit (fee for the credit) or obtain a certificate of completion.
- [PreK-4th Grade Activities Needed](#)**  
 U.S. EPA is looking for preK-4th grade activities to be used in its new Kids Club. In the club, kids receive recognition for completing environmental projects and activities. Previous activities have been on water conservation (turning off the water while brushing your teeth) and energy conservation (turning off the lights when leaving a room). We are also looking for activities a teacher can do within their classroom. Recognition will be given on the Web site: [www.epa.gov/students/](http://www.epa.gov/students/)
- [Premiere Presentations of the Cleaning for Healthy Schools Toolkit](#)**  
 The free, online Cleaning for Healthy Schools Toolkit will educate you about green cleaning. It can also be tailored to create state or local educational programs for agencies, education officials, workers, and parents and communities. The externally reviewed training tools are also 'open-source' and 'industry-free' - in short, a unique, comprehensive program to advance policy and practices that help safeguard child and adult health, reduce the use of toxic chemicals, cost-effectively improve cleaning, and improve school IAQ.
- [Schoolyard Habitat Project for Grades 3-5](#)**  
 Through this Schoolyard Habitat Project, students become engaged learners as they research, design, and implement a way to enhance their own school campus. This is done by creating wildlife habitat, planting native plants, or even removing weeds or invasive species from school grounds. Teachers are encouraged to participate in either summer or fall courses. A Schoolyard Habitat Project for

secondary teachers will be available for the Fall course dates. Sign up for a series of online classes designed to walk you through the Project Based Learning (PBL) essentials. With these you can learn how to apply PBL to capstone projects and engage your students in practicing math and language arts while helping the wildlife habitat of their own school campus. Such projects are also implemented through low or no cost strategies. For more details and to register go to [www.pblu.org/projects/schoolyard-habitat-project](http://www.pblu.org/projects/schoolyard-habitat-project).

- **[Solar and Wind Energy Production at Schools](#)**

A total of 34 renewable energy systems have been installed at 28 schools statewide participating in Energy Works Michigan's Renewable Energy Program. The Renewable Energy Program provided incentives for schools that installed one or both of the solar PV or wind systems. Students can compare the daily performance of the solar PV or wind systems that were installed at different schools throughout the state. The performance data is collected by a data logger and weather station that are installed at each school. For more information or to view the live production, visit the [Energy Works Michigan Solar and Wind Systems Web site](#).

- **[Smithsonian National Museum of Natural History - Virtual Tour](#)**

Is it too far away but you wish you could still go? Now you can, and you can take your students right along with you on a virtual field trip to the Smithsonian National Museum of Natural History. The tour is a 3-D virtual, room-by-room walking tour of the whole museum, all while remaining in the classroom on a desktop computer or mobile device. The systems that are compatible include Windows, Mac, Linux, iPad, iPhone, or Android. This self-guided tour allows visitors to navigate room to room in a manner in which they choose, and at a pace that is comfortable to them. But do not worry, there are maps and arrows to follow if one gets turned around. If used on a desktop, there are camera icons that show certain areas in which a close-up view may be seen.

- **[Solar and Wind Energy Production at Schools](#)**

A total of 34 renewable energy systems have been installed at 28 schools statewide participating in Energy Works Michigan's Renewable Energy Program. The Renewable Energy Program provided incentives for schools that installed one or both of the solar PV or wind systems. Students can compare the daily performance of the solar PV or wind systems that were installed at different schools throughout the state. The performance data is collected by a data logger and weather station that are installed at each school. For more information or to view the live production, visit the [Energy Works Michigan Solar and Wind Systems Web site](#).

- **[SOPHIA](#)**

SOPHIA is a first-of-its-kind social education platform that offers more than 25,000 free tutorials created by multiple teachers. The activities encourage students to learn in their own way. For more information or to enter the SOPHIA Summer Challenge please visit their Web site [www.sophia.org/](http://www.sophia.org/)

- **[The Online Science Assessment Tool](#)**

This site provides access to released items from various state and national standardized tests. All items have been coded to current Michigan Benchmarks and Assessment Standards. The database contains both multiple choice and constructed response questions and can be searched to develop a test built around specific content or assessment standards. After making your selections, a test will be created as an editable Word document. [www.misd.net/scienceassessment/](http://www.misd.net/scienceassessment/).

## **[National Service Center for Environmental Publications:](#)**

- **[Click here to visit](#)**

## [The National Environmental Education Foundation \(NEEF\) Environmental Education Resources at Home](#)

# ENVIRONMENTAL EDUCATION AT HOME

In response to the COVID-19 pandemic, NEEF is committed to helping parents and educators following "social distancing" guidelines to slow the spread of this dangerous virus. However, even if you have to stick close to home, there are still many activity guides and citizen science projects available for children of all ages to learn about environmental education.

The following list of resources includes selected NEEF toolkits and activity guides that require minimal outdoor time. Visit our [Environmental Education Resources](#) page for more activities, infographics, and educator resources. Please note that **we will be updating this page regularly** with new resources and activities. Please check back weekly to view updated resources!

You can also [sign up for our NEEF Connect newsletter](#) to have new resources delivered directly to your inbox each month.

## GROUP GAMES & ACTIVITIES

### [Environmental Education Group Games & Activities](#)

Games can be used as fun and interesting ways to engage folks of all ages. While having fun, participants develop skills and gain knowledge about a topic. Using games in environmental education is especially beneficial, as it can convey complex concepts and relationships found in ecosystems. Players can come into a game with any level of knowledge. NEEF has curated a selection of games suited for both formal and informal environments. Have fun!

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## ACTIVITY GUIDES AND EDUCATIONAL PROJECTS

### [Going, Going... Gone?\(link is external\)](#)

Students learn about extinct and endangered species. They explore how climate change, habitat loss, pollution, and other facts contributed to these species' population loss. From our friends at the [American Museum of Natural History\(link is external\)](#).

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### [Saving Energy with the IMS HEROes](#)

This incredibly creative Saving Energy challenge activity encourages students to conduct a home energy audit incorporating worksheets, comic strips, and more. Developed by Stephanie Fletcher of Ionia Middle School, one of our [2019 Climate Superstars winners](#).

Grades 6-8

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### [The Legend of the Flying Frog\(link is external\)](#)

Imagine you discovered an animal that scientists have long thought to be extinct! And this animal, the flying frog, needs protection. This is your chance to draw and write a story about a make-believe endangered species. From our friends at the [American Museum of Natural History\(link is external\)](#).

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### [Water Quality Backyard Activity Guide](#)

Explore the topic of water quality in your area! With activities to do both on and off the worksheet, it's perfect for your next environmental investigation. You can use this activity guide at a park (remember to practice "social distancing") or at home.

Grades 3-5

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### [Animal Migration Activity Guide](#)

Designed for elementary-age children, this guide can be used at home for some fun and educational entertainment ideas. Activities include encouraging kids to use STEM skills to learn more about the topic, whether they are using math to plot the coordinates of monarch migration paths, engineering to design a birdfeeder, science to understand the phenomenon of animal migration, or technology to get involved with online citizen science.

Grades 3-5

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### [Pollinator Backyard Activity Guide](#)

Look for a patch of flowers and watch closely to see what sort of animals visit them. Then, follow the activities on your worksheet to record your observations, monitor what types of pollinators you see, and help attract more pollinators.

Grades 3-5

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### [Watershed Sleuth](#)

In this Watershed Sleuth Challenge, you will learn more about your watershed—what it is, why it's important, and what you can do to help protect it—as you earn badges at each level of this three-part course.

Grades 3-5

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### [Improve the Environmental Quality of Your Home\(link is external\)](#)

Use this questionnaire to help you identify various factors that affect indoor air quality in your home.

Grades 3-5

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### [Learn to Compost\(link is external\)](#)

Turn your yard waste and food scraps into organic "black gold" by learning how to compost. You can add this rich organic material to gardens to help plants grow. According to the Environmental Protection Agency (EPA), food scraps and yard waste make up about 30% of household waste.

Grades K-5

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### [Learn About Energy in Your Home](#)

This guide offers some creative ways to help kids understand the concept of energy, including a fun [home energy audit](#) from NEEF and the National Hockey League.

*Grades K-5*

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### [At-Home Upcycle Projects from Climate Superstars](#)

Celebrate environmental education with these easy upcycle projects you can do at home from Climate Superstars.

[Climate Superstars](#) is a 10-day online environmental challenge presented by NEEF, Samsung, and ENERGY STAR® that gets kids excited about the environment.

*Grades K-5, 6-8*

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### [Free eBird Lessons from The Cornell Lab\(link is external\)](#)

These stand-alone guides provide educators with fun, hands-on lessons that connect kids to nature through the world of birding. Children will learn how to make careful observations of avian life, collect and explore data and patterns, and build STEM practices.

*Grades K-2, 3-5, 6-8, 9-12*

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### [What Makes Birds Unique?\(link is external\)](#)

Explore the fascinating science behind feathers with this interactive tutorial with this unique activity from The Cornell Lab of Ornithology.

*Grades 3-5, 6-8*

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### [Urban Trees Lesson\(link is external\)](#)

In this Urban Trees lesson, presented by the Nature Conservancy, students learn how trees renew our air supply by absorbing carbon dioxide and producing oxygen, and how they clean our air by filtering out dust and greenhouse gases.

*Grades 6-8*

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### [SunWise Toolkit](#)

These activities are standards-based, cross-curricular, and encourage students to explore, assess, and understand their natural environment and the factors that affect their health.

*Grades K-8*

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### [Scholastic Learn at Home\(link is external\)](#)

Scholastic is offering free daily projects to keep kids reading, thinking, and growing while home from school.

*Grades preK-K, K-2, 3-5, 6-8*

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[\*Khan Academy\(link is external\)\*](#)

Free online lessons for Pre-K to grade 12 students in math, science, and history.

*Grades K-12*

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[\*Activities to do with Children at Home\(link is external\)\*](#)

Project Learning Tree has assembled this list of (free!) family activities that you can do at home—both inside and close-by in a safe space outside.

*Grades preK-12*

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[\*Explore Living Landscapes\(link is external\)\*](#)

Featuring outdoor superhero TurfMutt, these K-8 science activities will help kids and families understand the importance of living landscapes and how to take care of the green spaces around them.

*Grades K-8*

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[\*National Science Teacher Association \(NSTA\) Free 30-Day Membership\(link is external\)\*](#)

NSTA is offering a free 30-day membership (requires registration), providing access to more than 12,000 digital professional learning resources and tools.

*Grades K-12*

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[\*Miacademy Learning Channel from Arizona State University\(link is external\)\*](#)

Miacademy offers hundreds of original lesson videos across every K-8 content area, including language arts, math, science and history and extending into art, music and foreign language learning.

*Grades K-8*

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[\*Amplify K-8 Free Resources\(link is external\)\*](#)

Amplify has pulled from its top-rated programs to create a series of remote learning experiences that are high-quality, easy to use at home, and totally free

*Grades K-8*

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[\*Natural Inquirer\(link is external\)\*](#)

Natural Inquirer is a free, peer-reviewed science journal for elementary, middle school, and high school students. Each article follows the same format as a scientific journal article by including an Introduction, Methods, Findings, and Discussion section.

*Grades K-8*

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### [\*New York Hall of Science\(link is external\)\*](#)

The New York Hall of Science (NYSCI) offers free, informal, hands-on learning through various videos, apps, and games that bring delight and play to learning science, technology, engineering and math (STEM).

*Grades K-8*

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### [\*Project WET\(link is external\)\*](#)

Project WET provides free educational resources, digital lessons, and tutorials that promote awareness of water and water issues.

*Grades K-8*

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### [\*The Nature Conservancy\(link is external\)\*](#)

The Nature Conservancy offers interactive nature-based lessons, curriculum, and weekly, thematic family teaching guides.

*Grades K-12*

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### [\*Personal Water Eco-Audit Activity\(link is external\)\*](#)

With this at-home activity from EcoRise, students chart their personal and household water usage in a day, a month, and a year. This activity helps students understand how to apply scientific inquiry and math skills in a real-life, meaningful way. They then learn about the implications of their water use as they study principles of water conservation.

*Grades K-12*

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### [\*EcoRise Freemium Lessons\(link is external\)\*](#)

EcoRise is offering a handful of free lessons to PreK-12 educators who are looking to foster environmental literacy, social entrepreneurship, interest in green careers, and student innovation. These standalone lessons have been adapted from their five curriculum suites: Sustainable Intelligence, Design Studio, Business of Social Good, LEED Prep, and Biomimicry and Science. Each lesson includes a detailed lesson plan, presentations, rubrics, and/or student worksheets.

*Grades preK-12*

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### [\*Nature for All\(link is external\)\*](#)

This online collection of curated materials range from videos to lesson plans, comic books to coloring books for all ages..

*All ages*

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## CITIZEN SCIENCE PROJECTS

### [Pondlife: Our Tiny Neighbors\(link is external\)](#)

Join microbiologist Sally Warring as she explores the giant world inside of a pond. From our friends at the [American Museum of Natural History\(link is external\)](#).

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### [Snapshot Safari\(link is external\)](#)

Citizen scientists from around the world are needed to identify wildlife caught on camera. With millions of images ready to be classified, participants have the opportunity to search for wildlife in remarkable ecosystems featuring a variety of habitats, such as the unique Karoo and Fynbos vegetation of South Africa, the great wildebeest migration of Tanzania, and the recovering wildlife populations of Mozambique.

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### [ISeeChange\(link is external\)](#)

Join a global community that posts about what they notice changing in the environment. Each post is synced with weather and climate data and broadcast to the community to investigate bigger picture climate trends. Over time, community members can track how climate is changing season by season and understand its impacts on daily life.

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### [SciStarter\(link is external\)](#)

Browse over 3,000 projects and events searchable by location, scientific topic, and age level. SciStarter also supports researchers in managing projects, including best practices for engaging participant partners. [This link\(link is external\)](#) is filtered to show online projects for kids 6-13 years old.

## EDUCATIONAL APPS

### [Environmental Education Apps](#)

NEEF and our partners have recommended some environmental education-focused apps to help kids develop skills through technology.

## MUSEUM AND NATIONAL PARK TOURS

### [Virtual Field Trip to the Hall of North American Mammals\(link is external\)](#)

Take a virtual tour of the Bernard Family Hall of North American Mammals. Students can select from one of three dioramas to observe closely and complete a worksheet on what they learned. There are even extension activities associated with the exhibit.

*Grades 3-5*

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### *Museum Visits*

Many museums and research centers offer virtual tours.

Check out the [National Museum of Natural History\(link is external\)](#), [NASA’s Langley Research Center\(link is external\)](#), and the [Museum of Flight\(link is external\)](#). For more recommendations of virtual museums resources, e-learning, and online collections worldwide, visit [MCN\(link is external\)](#).

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### *Virtual Field Trips*

Take an “electronic field trip” from home.

[FSNatureLIVE\(link is external\)](#)’s offers distance learning adventures for all ages. Through a partnership with the USDA Forest Service, Prince William Network, and other sponsors, these videos were initially designed to help classrooms access remote locations and speak directly with experts as if they were really there. No matter where you are in the world, you can learn about bats, butterflies, climate change, wetlands, and more.

[Virtual Field Trips from Arizona State University\(link is external\)](#) are topic based interactive and educationally rich experiences captured during real expeditions with scientists doing current research.

[The Nature Conservancy\(link is external\)](#) offers virtual field trips along with a teacher's guide, and student activities.

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### *National Park Visits*

Many major national parks like [Yosemite\(link is external\)](#) offer online interactive tours, and aquariums like [Monterey Bay\(link is external\)](#) have several live webcams full of beautiful, soothing sea life.

The National Park Service has created five unforgettable, ranger-led tours: [Hawai’i Volcanoes National Park \(Hawai’i\)\(link is external\)](#), [Bryce Canyon \(Utah\)\(link is external\)](#), [Carlsbad Caverns \(New Mexico\)\(link is external\)](#), [Dry Tortugas \(Florida\)\(link is external\)](#), and [Kenai Fjords \(Alaska\)\(link is external\)](#).

Google Earth also offers [stunning visits to 31 US National Park sites\(link is external\)](#).

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### *Zoo Visits and Nature Adventures*

The [Cincinnati Zoo\(link is external\)](#) and [Elmwood Park Zoo\(link is external\)](#) in Pennsylvania are holding “home safaris” on Facebook Live every day, providing entertainment that’s fun and educational for children stuck indoors. Contact your local zoo to see if they’re offering similar programming.

The [San Diego Zoo \(link is external\)](#) has live-stream video cameras that let you catch a number of the zoo's inhabitants—from koalas to penguins to the new baby orangutan.

[Virtual Deep-Sea Dives\(link is external\)](#) lets you immerse yourself in the ocean and national marine sanctuaries without getting wet! NOAA offers virtual reality voyages to highlight the amazing habitats, animals, and cultural resources you can find in each national marine sanctuary.

## INFOGRAPHICS FOR DISCUSSION

### *[Biomonitoring with Benthic Macroinvertebrates](#)*

Explore how you can conduct pollution tests through biomonitoring in streams using benthic macroinvertebrates.

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### [Understanding Different Water Quality Tests](#)

Discover the different types of water quality tests available and what their measurements can tell you about local watersheds.

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### [Engineering and Our Planet](#)

Explore the past, present, and future of environmental engineering, from the ancient Roman aqueducts to the renewable energy sources of tomorrow.

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### [Surrounded by Science](#)

Explore some of the many ways science connects the world around us. Help increase our understanding of the environment through citizen science.

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### [Rooted in Math](#)

When you take a closer look at the world, you might be surprised to find out how much of what we know about the environment is rooted in math.

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### [Wall of Birds Project](#)*(link is external)*

Envisioned by Cornell Lab ornithologists to showcase biodiversity and evolutionary change, the project features 270 species from all surviving bird families accompanied by a ghostly parade of extinct ancestors.

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### [Beneath the Horizon](#)*(link is external)*

Beneath the Horizon is an interactive web site about oil spills in the Gulf of Mexico and the way people and the environment react and recover.

## BOOKS & ACTIVITIES FOR PURCHASE

**The book recommended below are available for purchase through the**  
[Environments of Our Earth](#)*(link is external)*

Environments of Our Earth is part of the I Wonder Why book series, written to ignite the curiosity of children in grades K–6 while encouraging them to become avid readers.

*Grades K-6*

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### [Next Time You See a Bee](#)*(link is external)*

Next Time You See a Bee reveals the big impact these little insects have on the world. It shows how the physical features of bees make them pros at collecting and spreading pollen.

Grades Pre-K-5

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[\*The Beaks of Birds\(link is external\)\*](#)

The Beaks of Birds is the story of a child and two grown-up friends on a jaunt across their yard, in a park, past a pond, and through the pages of a photo album.

Grades 3-5

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[\*Dark as a Shadow\(link is external\)\*](#)

Dark as a Shadow is part of the I Wonder Why book series. These books explore the marvels of light, color, machines, sound, and other phenomena related to physical science.

Grades Pre-K-6

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[\*Notable Notebooks: Scientists and Their Writings\(link is external\)\*](#)

Notable Notebooks: Scientists and Their Writings brings to life the many ways in which everyone from Galileo to Jane Goodall has used a science notebook, including to sketch their observations, imagine experiments, record data, or just write down their thoughts.

Grades 3-5

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*The activity recommended below is available for purchase.*

[\*Point of No Return Educational Experience\(link is external\)\*](#)

The Point of No Return Educational Experience is available as a distance learning program. This hands-on environmental STEM enrichment curriculum uses the documentary, Point of No Return - the story of the first solar powered flight around the world - as a springboard to explore renewable energy, sustainability, and global climate solutions. (Cost \$100 to \$135).

Grades 3-12

## EDUCATOR TOOLKITS

### **LEARNING EXPEDITION TOOLKIT**

The toolkit proceeds step-by-step from planning, to conducting, to presenting place-based projects. Additional resources and tips are included.

[\*\*LEARN MORE\*\*](#)

### **GREENING STEM EDUCATOR TOOLKIT**

From designing wind turbines, to tracking invasive species with GPS, environmental projects inspire students to develop innovative STEM solutions.

[\*\*READ MORE\*\*](#)

## **ROOTED IN MATH EDUCATOR TOOLKIT**

This educator toolkit has lesson plans, activity ideas, and informational resources to help bridge the gap between mathematics and the natural world.

[READ MORE](#)

## **SURROUNDED BY SCIENCE EDUCATOR TOOLKIT**

Use this collection of lesson plans and guides to help students discover more of the science going on around them, in and out of the classroom.

[READ MORE](#)

## **EDUCATIONAL ACTIVITY**

### **THE WATERSHED SLEUTH CHALLENGE**

In this Watershed Sleuth Challenge, you will learn more about your watershed—what it is, why it's important, and what you can do to help protect it.

[TAKE THE CHALLENGE](#)

## **ACTIVITY GUIDES**

### **ANIMAL MIGRATION ACTIVITY GUIDE**

Designed for elementary age kids, this activity guide can be used in a classroom or at home for fun and easy ways to learn about animal migration.

[READ MORE](#)

### **POLLINATOR BACKYARD ACTIVITY GUIDE**

Young explorers! Print out a copy of this activity worksheet, grab a pencil, and head outside to start your pollinator investigation!

[READ MORE](#)

### **THREE EASY UPCYCLE PROJECTS**

Our top 3 list of easy upcycling projects to do with children.

[READ MORE](#)

### **WATER QUALITY BACKYARD ACTIVITY GUIDE**

Use this activity guide to explore the topic of water quality. It's perfect for your next environmental investigation!

[READ MORE](#)



### **COMMUNITY CLEANUP ACTIVITY GUIDE**

Get your friends together and plan a community cleanup to help out in your neighborhood or school! This quick how-to guide will get you started.

[READ MORE](#)

## PROJECT LEARNING TREE



### **IMPROVE THE ENVIRONMENTAL QUALITY OF YOUR HOME**

Indoor pollutants can cause headaches, dizziness, nausea, fatigue, dry or runny eyes, congestion, and sore throats. Improve your home health.

[READ MORE](#)

## **PROFESSIONAL DEVELOPMENT FOR ENVIRONMENTAL EDUCATION**

Integrate environmental, sustainability education into your teaching & become comfortable teaching outdoors—in urban, suburban, & rural environments.

[READ MORE](#)

## **NEW ONLINE UNITS FOR GRADES K-2, 3-5, AND 6-8**

Made for teachers, these new online units from Project Learning Tree are designed to engage, explore, explain, elaborate, and evaluate.

[READ MORE](#)

## **APPS FOR ENVIRONMENTAL EDUCATION**

### **APPS FOR ENVIRONMENTAL EDUCATION**

Are you looking for more ways to incorporate technology into your classroom? Here are some engaging, educational apps.

[READ MORE](#)

## **MORE INFORMATION**

### **CITIZEN SCIENCE RESOURCES**

Citizen science calls on the observations and analysis of the public to help scientists gather and interpret real-time information about our world.

[LEARN MORE](#)

## **NEEF PROGRAMS & INITIATIVES**

### **GREENING STEM HUB**

Every classroom has a STEM lab right outside their doors. Our Greening STEM Hub has the resources educators need to engage students with nature.

[LEARN MORE](#)

### **SAMSUNG CLIMATE SUPERSTARS**

Presented by Samsung, ENERGY STAR®, and NEEF, Climate Superstars is an online environmental challenge to get kids excited about the environment.

[LEARN MORE](#)

### **HANDS ON THE LAND**

Hands on the Land (HOL) is the nation's largest network of field classrooms on public lands, stretching across America from Alaska to Florida.

# **TREE PEOPLE- ENVIRONMENTAL TOOL KITS**

## **School Project Toolkits**

Students, teachers, parents, environmental clubs and other school groups are invited to take environmental action through the use of our Project Toolkits. These include guidelines for learning, assessing, completing and maintaining the project. Choose from the following:

- [Planting Trees Project Toolkit\\*](#)
- [Caring for Trees Project Toolkit\\*](#)
- [Native Plant Garden Project Toolkit\\*](#)
- [Rain Barrel Project Toolkit\\*](#)
- [Rain Garden Project Toolkit\\*](#)
- [S.T.E.A.M. Tree Canopy Project Toolkit\\*](#)
- [Stormwater Pollution Project Toolkit](#)
- [EcoClub Guide](#)
- [Generation Earth Waste Reduction and Recycling Toolkit\\*](#)
- [Generation Earth Ewaste Guide](#)
- [Generation Earth Swap Guide](#)
- [Generation Earth Teacher Action Guide](#)
- [Generation Earth Textile Event Guide](#)
- [Generation Earth Waste Education Awareness Guide](#)
- [Generation Earth Water Education Awareness Guide](#)
- [Native Plant Propagation Project Toolkit\\*](#)

## **Sample Outdoor Classroom Landscape Plans**

- [Outdoor Classroom: Butterfly Garden](#)
- [Outdoor Classroom: Chaparral/Coastal Sage Garden](#)
- [Outdoor Classroom: Reading Garden](#)
- [Outdoor Classroom: Serenity Garden](#)

## **Sierra Club Environmental Education Websites**

**Support and Curriculum for Classroom or Outdoor Studies**

- [Acorn Naturalists](#) - books, curricula, equipment and supplies for teachers and naturalists of all ages
- [Bullfrog Films](#) - a leading US publisher of independently-produced, environmental videos.
- [Aldo Leopold Education Project](#) - Lessons in the Land Ethic

### **Environmental Education Organizations**

- [Environmental Literacy Council](#) - The Environmental Literacy Council is an independent, non-profit organization, the Council gives teachers the tools to help students develop environmental literacy: a fundamental understanding of the systems of the world, both living and non-living, along with the analytical skills needed to weigh scientific evidence and policy choices.
- [North American Association for Environmental Education](#) - (NAAEE) - the major organization for environmental education professionals
- [The Environmental Education and Training Partnership](#) - (EETAP) - federally funded environmental education training organization - includes an environmental literacy quiz and an university-level online course in EE.

### **Global Issues**

- [GreenCOM Envirospaces](#)
- [SeaWeb](#) - a multi-media project designed to raise awareness of the world ocean and the life within it.

### **Government Resources**

- [U.S. Environmental Protection Agency](#)
- [National Oceanic and Atmospheric Administration](#)
- [The GLOBE Program](#) (NOAA) - a worldwide hands-on, primary and secondary school-based education and science program.
- [National Park Service, Learning Resources](#)
- [The National Council for Science and the Environment](#) (NCSE) - Earth Portal is a comprehensive, free and dynamic resource for timely, objective, science-based information about the environment built by a global community of environmental experts: educators, physical, life and social scientists, scholars and professional who have joined together to communicate to the world.
- [Encyclopedia of Earth](#)

### **Hands-On Activities for Youth**

- [Earth Force](#) - environmental problem-solving program through which middle-school aged youth identify local environmental issues and create lasting solutions to these problems.
- [Student Conservation Association](#) - engaging high school and college students in hands-on service to the land in national parks, national forests, and other public lands.
- [YouthCaN](#)
- [Nature Journal](#) - Make your own nature journal template
- [EarthEasy](#) - Ideas for simple sustainable living
- [National Envirothon](#) - High school competition offering both in-class curriculum and hands-on field experiences focused around ecology, natural resource management, and current environmental issues.
- [EPA Kids Club](#) - A great site with hands on activities for kids PreK-4th
- [EPA Student Center](#) - Another EPA site geared to middle school students.

## **Biodiversity**

- [World Wildlife Fund, Windows on the Wild](#)
- [National Audubon Society](#) (Educational Topics)
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- [Global Issues](#) - Learn about the issue of biodiversity
- [Conservation International](#) - Learn about 25 of the richest and most threatened ecosystems

## **Energy**

- [Green Schools](#) - helps schools use energy efficiently with retrofits, renewable technology, and bringing the energy efficiency message to students and the community
- [Solar Quest](#)- Solar resources for schools and others
- [Climate Solutions](#) - Practical solutions to global warming

## **Directories**

- [Envirolink](#) - non-profit organization providing access to thousands of online environmental resources
- [Environmental News Network](#)