Public lands comprise approximately one-third of the acreage of the US and are rich in historical, archeological, and environmental learning opportunities. Through the Hands on the Land (HOL) network of field classrooms, federal agencies are providing a diverse array of hands-on learning opportunities for teachers and students. In addition to the field activities at each site, teachers and students are learning from each other through the HOL website and resources such as this Toolkit.

This Toolkit is designed to share just a few of the many educational lesson plans, activities, and curriculum available through Hands on the Land to help educators discover effective strategies and model programming for teaching about the environment through connections with public lands.

Browse the resource descriptions and subject connections to find one that fits your needs. Then use the “Go to Resource” link to view the full resource or the “Related Resources” link to connect to the Hands on the Land website.

You can join the HOL network by registering to become a member online at www.HandsontheLand.org

Hands on the Land is a network of field classrooms sponsored by Partners in Resource Education, a collaboration of five federal agencies, a non-profit foundation, schools, and other private sector partners.
PRarie Wetlands

Originally submitted by the US Fish & Wildlife Service in Minnesota

SUBJECTS Science, Language

Designed by the Prairie Wetlands Learning Center (PWLC) in Minnesota, these environmental education activities help students gain a better understanding of the Prairie Pothole Region through place-based field experiences.

For each elementary grade level, PWLC offers three programs for fall, winter, and spring, that teach students about seasonal changes within the prairie and wetlands. Subject matter advances appropriately for each grade, progressing through topics of exploration, observation, animals and habitat, animal life, plant and animal behavior, ecology, and naturalists, with opportunities for additional nature journaling at each level.

Each field investigation includes instructional lesson guides with information for both the teacher and the public land staff, including background information, procedure, weather alternatives, extensions, and direct connections to Minnesota Academic Standards in Science and Language Arts. The PWLC also offers residential experiences for upper elementary students and older as well as a model and approach for teaching in the outdoor classroom.

Related Resources

https://www.handsontheland.org/educator-resources/view/?rowid=618
PREPARE FOR COLD AIR
Originally submitted by the National Park Service

SUBJECTS Science, Technology, Engineering, Math

This hands-on project-based activity introduces the concept of insulation, a critical animal adaption for winter survival. Students will observe the difference in heat loss between a well-insulated object and a poorly-insulated object, as well as how to prepare themselves for a winter snowshoe hike.

The project uses simple materials and comes with a worksheet for each student to track results and record conclusions.

The activity employs Science and Engineering Practices from the Next Generation Science Standards, such as developing and using models and constructing explanations (for science) and designing solutions (for engineering).

This activity was designed with a visit to Craters of the Moon National Park in mind, but can be adapted as a lead-up activity for winter school visits to any public land site.

Related Resources
https://www.handsontheland.org/educator-resources/view/?rowid=457
URBAN FORESTRY LABORATORY EXERCISES
Originally submitted by the US Forest Service

SUBJECTS
Science, Math, Social Studies

This curriculum has been developed as a supplemental activity guide that can be used in any science or interdisciplinary class. The hands-on activities are designed to be data gathering exercises leading the student to make judgments based on analysis and synthesis of the gathered data.

An urban school site may not be a completely natural habitat, but it is still an environment worthy of in-depth study. Students can measure dynamic growth of trees within the changing patterns of human habitation. The guide has five areas of activity:

1. Tree identification and inventory
2. Characteristics of the trees
3. Soil conditions for trees
4. Condition of the trees
5. Tree care and planting

Exercises found within the curriculum are not limited to use by school systems and can be used by park districts, after-school science clubs, gardening clubs, and state and local conservation programs.

Related Resources

http://www.handsontheland.org/educator-resources/view/?rowid=575
HABITATS AND WILDLIFE - CLASSROOM INVESTIGATION SERIES

Originally submitted by the Bureau of Land Management

SUBJECTS  Science, Social Studies, the Arts

This middle level teaching guide helps students understand why habitat conservation is important, how changes to habitats’ health affect wildlife, and how the BLM monitors and promotes healthy habitats. Four activities offer students speaking, research, and teaching roles as they progress through the unit. Afterward, students design an experiment based on their research of wildlife and habitats in the previous activities.

The full unit aligns with the Next Generation Science Standards and supports education strategies such as inquiry-based instruction, social and emotional learning, and interdisciplinary instruction. Each lesson includes background information and teacher prep, learning objectives, and an “In the Field” extension suggestion.

The unit can also be adapted for high school and upper-elementary levels. If you find this resource helpful, look for the rest of the BLM Classroom Investigation Series.

Related Resources

https://www.handsontheland.org/educator-resources/view/?rowid=608
ACID RAIN
Originally submitted by the National Park Service

The National Park Service Air Resources Division, in an effort to increase public awareness of air quality issues, has developed a series of five activities for schools. The activities are for grades six through eight and help teach students about acid rain. The lesson plan was prepared as part of The Uplands Field Research Laboratory, Volunteer in Parks, and Interpretation of Science Project. Included are links to the background for each of the lesson plans and the five activities designed for the students.

Under the umbrella question of “What is Acid Rain and how is it measured?” students learn about pH, contributing factors, measurement, monitoring, and mapping. Lessons are presented with direct relevance to Great Smoky Mountains National Park, but can be adapted for anywhere.

Related Resources

https://www.handsontheland.org/educator-resources/view/?rowid=470
CAVES AND KARST
Originally submitted by the National Park Service in Colorado

SUBJECTS
Science, Technology, Language Arts, Math,

“Views of the National Parks” is a multimedia education program that presents stories of the natural, historical, and cultural wonders associated with America’s parks. Through the use of images, videos, sounds, and text, “Views of the National Parks” allows the public to explore the national parks for formal and informal educational purposes.

This educational curriculum guide was designed to align national park resources pertaining to caves and karsts with National Education Standards through the use of interactive activities and reading guides. This guide was developed as an introduction to caves and karsts, and all activities are designed to be used together in a two-week unit. Activities, although designed as a unit, may also be used independently at a teacher’s discretion.

Related Resources
http://www.handsontheland.org/educator-resources/view/?rowid=635
WETLAND FIELD WORK ACTIVITIES

Originally submitted by the Bureau of Land Management

SUBJECTS: Science, Technology, Engineering, Arts, Math

This guide is geared toward middle and high school science teachers who are looking to teach with a place-based or expeditionary learning modality. Meaning, that every student goes into the field and takes qualitative and quantitative measurements.

In addition, every student prepares by making an apparatus to assist them in their field work; which is where STEAM (science, technology, engineering, art, mathematics) comes into action. Each activity includes: a STEAM prep-lab activity, field work activity, and post-lab activity. In addition, the following sections exist for each prep-lab, field work, and post-lab activity: background knowledge, difficulty, materials, procedure, and student handout. The student handout is designed to walk them through the lab including helping them to build background knowledge by researching.

This guide was written with the intention for teachers to use it as they see fit, catering to their students’ needs. However, suggestions are provided for different ways you can use it with your students.

Related Resources

https://www.handsontheland.org/educator-resources/view/?rowid=615