K-12 Environmental Education Activities

Here are some ideas, separated into grade levels and subject areas, that you can use to instill environmental learning when you are looking for something to fill a gap in your activity plan.

GRADES K-2

Science

Animal Ingenuity

Explore how animal use materials from the environment in building homes. Start by looking at a bird's nest. Examine the nest carefully. Use a hand lens. List all the materials you find in the nest. How is it held together?

Social Studies

Careers Notebook

Make a "Careers Notebook" of environmentally-related careers. You can start with a fisherperson, mechanic, newpaper reporter, and a fish and game officer. Keep going from there.

Seafood Survey

Many cultures depend heavily on food from the sea for their sustenance. Have students survey family members and friends about the types of seafood they like to eat. This can be graphed on the chalkboard as well. Follow up survey with a visit to a local fish market or grocery to look at varieties of fish and shell fish up close.

Mathematics

How Many Legs?

Post pictures of an octopus, a seastar, a crab, and a gull. Review as a class the number of legs each animal has, and discuss the ways each animal's legs help it to survive. Next challenge students with addition problems, such as: How many legs would there be if we had added the legs of the octopus and the gull? The seastar and the crab?

Geometric Shapes in Nature

Geometric shapes can be found in twigs, rocks, leaves, insects, and feathers. Look for cubes, cylinders, pyramids, cones, ovals, spheres, spirals, etc. have students put specimens in like piles. *Variation:* Human-made shapes. Triangles, squares, dcircles, rectangles, etc., can be found at school in sidewalks, buildings, clothing.

Language Arts

Appropriate Stories About Nature

Storytelling about nature, the outdoors, and the environment is fun. School and public libraries can be of great help in selecting books. Build a story repertoire as you would with songs.

Finding Adjectives

Give each child a small piece of paper with one or more adjectives that describe something in nature (e.g., smooth, slimy, triangular, expanded, cool, soft and green, round and gooey). Have students explore a natural area to find items that meet these descriptions. Let students take turns sharing what they found. —JOD

Fine Arts

Be a Tree

Have students identify characteristics of trees. Visit trees in a back yard, in an orchard, in a park, or in the school year.

Have the students do tree dramatizations, using their arms as the branches and their legs as the trunk. How does the tree look during a storm? How does a fruit tree look in the spring? How does a young tree look in comparison with an old tree? What would happen to change the tree in different kinds of weather or during the different seasons?

After feeling what it might be like to be a tree, have the students paint pictures of them. — EGO

Make a Refracting Telescope

Use two small convext lenses, a toilet paper tube, cardboard, rubber cember, and paper.

1. Find the focal length of one of the lenses.
2. Cut a lens-size hole in the cardboard
3. Glue the lens over the hole.
4. Trace around the toilet paper tube with a pencil over the spot in the cardboard where the lens is located.
5. Cut on this line, and glue the cardboard-mounted lens in the end of the tube.
6. Wrap a sheet of paper around the tube.
7. Tape it in place.
8. Mount the other lens in the end of the paper tube.
9. Slide the tubes back and forth.

Natural Balance

Collect natural materials, or have students collect them. Suspend them with string under a crossbar of two sticks. Driftwood, acorns, and pine cones are among materials that are effectively used. Hang these in the classroom to brighten the scenery.

GRADES 3-5

Science

Evaluating Growth

Growing plants in crowded and uncrowded situations will show the effects of overpopulation. Fill milk cartons about three-fourths full of soil. Plant several cartons with seeds — some with two or three seeds, several cartons with a small handful and several cartons with a large handful. Varying the amounts of seed in the different cartons creates different conditions under which the plants will grow. After the seeds have become seedlings, measure and record their heights on a piece of paper and draw a line graph on graph paper to represent each group of seedlings. Evaluate the plants' growth periods in terms of the number of plants under the different conditions. —CTE

Forest Community

Discuss as a group the items a city has and make a list. Suggestions include people, factories, subways, cemetery, apartments, treffic, plumbing, stores, garbage collectors, streets, etc.

Divide the group into smaller ones of 3 to 4 each. Send each group out in a forest or wooded area and have them try and identify the natural item that corresponds to the ones on the list. —ECO

Social Studies

Non-Pointing the Finger

Take a walking tour of the neighborhood. List possible examples of non-point source pollution, both natural and human-caused. Back in the classroom, compile a class list to see how many sources were pin- "pointed." Use magazine or newspaper pictures to make an informational display of possible sources of non-point water pollution. — FSS

Water, Water Everywhere...NOT!

Point out that last year water was rationed in parts of California. It was shut off altogether in parts of Rhode Island when a leaking gas station tank polluted it. Our carelessness can hurt the water supply. Also, it is important not to waste water if we want to be sure of having enough for our needs. Have students name some ways each of us can help protect our water supply. (Ideas include using less water, not running water needlessly, not littering near bodies of water. Also some environmentalists suggest eating less meat to save water. A vegetarian diet requires much less water in its production than is used in the raising of cattle, for example.) —KT

Mathematics

Shoot the Moon

Knowing that the moon returns to a given position every 29 1/2 days, have students figure out the dates that will have full moons for the coming calendar year. From this they can make their own calendars and check up on themselves. —JOD

Language Arts

Get Your Story Straight!

Invent or find a story that conveys an environmental message you wish to have your students think about. Divide the story into individual events that have ideas or words that allow the student to sequence them in a particular order.

As a group, or individually, have the students read the passages. Have the students number the passages so that the story can be read in the correct order. Read the story aloud in the correct sequential order.

Use discussion and questioning to strengthen the story's message. —IEEIC

Wet Words

How important is water to our society? Just think how many different words we have to express it. Have students brainstorm words that mean water or a form of water (e.g., splash, drip, etc.) while the teacher lists them on a large sheet of butcher paper. Can your class reach one hundred? Save the list and use it later for creative writing activities.

Fine Arts

Water Drop Necklaces

Give each student a sheet of paper onto which a large water drop has already been drawn on both sides. On one side of the paper, printed inside the water drop are the words, "I'M TOXIC, DON'T FLUSH ME." On the reverse side of the paper, inside the water drop are written the words, "WATER IS PRECIOUS, AS PRECIOUS AS..." Instruct students to draw one or several toxic items that should not be flushed down the toilet (e.g., paint, oil, chemicals) inside the water drop on the "toxic" side of the paper. On the other side instruct them to draw pictures of one or more persons or items that are precious to them (e.g., grandma, grandpa, a pet, a bicycle).

Once the drawings are completed, have the students cut out the water drop, then punch a hold near the top of the drop using a paper punch and finally thread a string of yarn through the hole to create a necklace. The necklace has a positive "precious" side and a negative "toxic" side depicted by the students' drawings. — CON

Torn Paper Art

To help the students understand the fibrous make up of paper, tear a scrap of paper and hold one of the torn edges up to the light. Along that edge will appear a slight fuzz. Here and there tiny strands will project separately, like fine hairs. These strands are cellulose fibers.

Discuss with the children all the different materials from which fibers can be harvested to make paper. Show them fibers from a small piece of cloth to illustrate the point.

Using scraps of construction paper, tear and glue different colors to represent the forest and creatures who depend on the forest for survival. Display these pictures throughout the school to heighten awareness of the need to conserve and protect natural resources. - CON

GRADES 6-8

Science

Rainforest Pyramid

Use artistic talents to create blocks symbolizing rainforest creatures. Build a pyramid, putting the prey species such as insects at the bottom - building up until the top predators like the jaguar and harpy eagle are at the top. Show what happens when prey species are taken away - such as if insects are killed by pesticides, or small rodents are killed as pests. The same activity can be done for temperate forests of the Northwest as well, or any other particular ecosystem. —RC

Adopt a Part of Nature

Adopt part of a stream, creek, river, lake or ocean. Clean up the beaches or shores and spend time there as a class enjoying these special places.

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Shorebird Safari

After introducing the class to common shorebirds and the field marks used to identify them, take your class to a beach. Shorebirds are visible year round, especially as the tide goes out. Students should try to identify special adaptations the birds have and predict the type of food they are seeking.

Social Studies

How Did They Do It?

Have students investigate the lifestyles of Native Americans on the prairie or along the coasts or in your local area. How were their needs met by these different environments?

Nature's Tool Box

Pass out to individuals or small groups of students an assortment of simple tools: paper clips, sewing needle, letter opener, hair brush, straight pin, comb, and so on. Have students examine the tools carefully and decide what kinds of natural objects could be used or modified to make them. After students hike through an outdoor setting and collect materials, have them use the materials to make specific tools. —EGO

Mathematics

Graph the Tide

Purchase a tide table wherever fishing supplies are sold. Enlarge and photocopy each month's chart on a separate page. Make enough copies so that each student will have one month to chart on graph paper. Post the papers in a line along the wall to see the rise and fall of the tide for the year. Teacher may want to designate a place on the paper for the base point (0.0).

Language Arts

Opposites Attract

Here is a thought-provoking idea: Collect photographs, illustrations and/or paintings from magazines — some that graphically portray a healthy, balanced environment and others that depict a damaged, unhealthy Earth. Hang these on opposite walls in the classroom to stimulate discussion and inspire writing. How does each set of images make students feel? Encourage them to think about how the healthy can be changed into the damaged and how they can help to change the damaged back into the healthy. As students learn about environmental problems and the solutions, they may go to the appropriate sides of the room to record their thoughts and ideas in two separate notebooks. For example, if a student is studying about an extinct animal, that student may record his/her concerns in a notebook located next to the unhealthy Earth artwork. If he/she knows of possible solutions and actions that can be done to help, they may be recorded on the other side of the room next to the healthy Earth artwork. Eventually, your class will have two useful notebooks filled with concerns and solutions to many environmental problems. Prioritize these and use your computer to record the top ten items that can be posted in the room for reference and distributed to family members. - TPE

Expectations

Students can write a paper that expresses their feelings about going to outdoor schooll. By knowing their anxieties, fears, and excitement, you may be able to better understand their individual needs. It is always fun for students to reread their own papers upon returning home. —JOD

Fine Arts

Touch of Color

While visiting a wooded area, pass out paper to the class and have each student, using natural materials (soil, berries, flowers, leaves, moss), draw a picture of the forest setting. Give the class an opportunity to display their work and describe their feelings about the surroundings. Encourage the students to discuss what materials were used to add color. —EGO

GRADES 9-12

Science

Symbiosis

Working with a partner, students research symbiotic relationships amongst intertidal and ocean organisms and choose one to report on. One example would be the anemone and the clownfish.

Human-created Habitats

Assign one water-dwelling animal to each student or team. Students then must design (on paper) an artificial habitat which would suite the living requirements of the animal. To do so, they must investigate and establish the characteristics of the animal's natural habitat, including food, water, shelter, space, climate, etc. This assignment could be followed by creating models of artificial habitats.

Social Studies

Move Over!

To begin this activity, tell your class they are going to try an experiment dealing with classroom arrangements. Don't mention the idea of overpopulation or limited resources. These concepts will surface as the outcome of the activity.

Select an area of the classroom to be used in this overpopulation experiment. an area approximately 10'x10' should be marked with masking tape on the floor and two desks should be placed inside the area. Also provide a "Resources Box" with 4 pencils, 2 pens, 6 sheets of paper and 1 pair of scissors.

Select two volunteers to work in the square. They should take with them only the books they will need. One half hour later, select two more students to work in the square and add their desks to the other two. (Make sure to remove all "resource" from the desks first).

Continue to add students to the area in shorter intervals of time similar to the way population grows rapidly. When the area can no longer hold additional desks, add students and have them share desks. Make sure the tasks the children are involved in will require the use of resources in the "Resources Box."

When the limited resources and overcrowded conditions lead to bedlam, bring the class together for discussion. How is this like the real world? What "resources" are in short supply? —LLC

Environmental Careers

Plan an Environmental Careers Day. Research various careers associated with the environment and invite people in to speak about their jobs. Try to get a variety of speakers to reflect the diversity of careers and educational requirements. Prepare an outline for the speakers to they will address the questions you are most interested in.

Both Sides Now

A forest management specialist, touring a watershed area, notes that in one part of the forest many diseased trees have fallen and are covering the ground. This is a serious fire hazard for the forest. The specialist recommends logging this area and replanting with young, healthy seedlings. A concerned citizen's group protests the logging, saying that clearcutting the area will erode the soil, which will make our drinking water unclean.

Your group has been asked to list the pros and cons of logging that area of the watershed. Consider the environmental, economic and social arguments. Can you find a compromise to the problem? How do personal opinions affect your decision? —FSS

Litter Lifelines

Students collect litter in an outdoor setting — school parking lot, playground, camp, or business district. Then each student selects a piece of trash - soda can, chewing gum wrapper, potato chip bag —and makes a life line of the litter, from the origin of its natural materials to its present state. — TGP

Mathematics

Food Chain Figuring

Use the following information to create math problems. A medium-sized whale needs four hundred billion diatoms to sustain it for a few hours! The whale eats a ton of herring, about 5,000 of them. Each herring may have about 6,500 small crustaceans in its stomach, and each crustacean may contain 130,000 diatoms...

Language Arts

Forest Essay

Have students write an imaginary story using one of the following titles: a) The Life of a Pencil; b)An Autobiography of a Tree from Seed to Lumber.

Legends of the Sea

Many cultures have legends about the way the ocean and its life forms were created. Read some of these to the class, then encourage them to create their own legends about how somethings came to be. It would be helpful to have some pictures of marine life forms for the students to view. Some ideas: How the Eel Became Electric; Why Octopi Have Only Eight Arms; Before Whales could Swim; How the Hermit Crab Lost His Shell.

Fine Arts

Mother Earth

Students begin by brainstorming a list of all the ways they are dependent on the Earth. From that list should come some ideas for presenting that information to others. They may decide to have teams of students work on representing different items on the list. They may want to expres their relationship to the land written in story format, in poetry, verbally on tape, through photographs, drawings, paintings, or soft sculpture. They should come up with a theme uch as Native American philosophy, or a celebration of life-giving qualities of the Earth, or getting involved with conservation, and work from there. Ask for volunteers to write letters to local organizations requesting space to set up their display for others to view.

Encourage your students to express their feelings about our responsibility to live in harmony with the land. Is it our responsibility? Can the actions of one person make a difference? What kinds of actions does living in harmony with the Earth require? —LLC

Sources of activities:

CCN — Carrying Capacity Network Clearinghouse Bulletin, June 1992.
KT — *Kind Teacher*, Natl. Association for Humane and Environmental Education
IEEIC — Inegrating Environmental Education Into the Curriculum... Painlessly. National Educational Service, 1992.
RC — Rainforest Conservation, Rainforest Awareness Info. Network, 1992.
ECO — Eco-Acts: A Manual of Ecological Activities, Phyllis Ford, ed.
JOD — Just Open the Door, by Rich Gerston, Interstate Printers and Publishers, 1983.
LLC — Living Lightly in the City, Schlitz Audubon Center, 1984.
EGO- Education Goes Outdoors, Addison-Wesley 1986.
CON - Connections: Life Cycle Kinesthetic Learning. The Energy Office, Grand Junction, CO 1993.
CTE - Consider the Earth by Julie M. Gates, Teacher Ideas Press, 1989.
FSS - From Source to Sea, Greater Vancouver Regional District 1993.
GGC - Growing Greener Cities and Environmental Education Guide
American Forests, Washington DC 1992
LCA - Let's Clean the Air, Greater Vancouver Regional District 1993.
NTW - No Time to Waste, Greater Vancouver Regional District 1993.
TPE - The Private Eye, Kerry Ruef, The Private Eye Project, Seattle, 1992.

Critical Questions

1. What kinds of support are available in your school, district and community for supporting environmental educational activities?

2. In what ways can environmental education activities enhance learning?

3. What are the most effective strategies for integrating environmental education across all content areas?

4. In what ways do students, teachers and communities benefit from classrooms engaged in environmental educational projects?

5. What are compelling environmental issues that can be explored through environmental educational projects?

Possible Actions

1. Become well informed about the characteristics of environmental education, effective models and strategies for integrating across subject areas taught in school.

2. Share this information with your colleagues, friends, and others interested in integrating environmental education into their classrooms or conducting environmental action projects in their communities.

3. Know your national, state, and local school standards. You will find them on the Internet. Consider ways in which environmental education activities can achieve many of the standards across various content areas.

4. Learn effective strategies for guiding students in conducting comprehensive and sophisticated research about environmental issues, solving specific local environmental problems, and acting on their solutions.

5. Encouraged by recent brain research, many educators recognize the value of hands-on, project- and problem-based learning methods, and integrated-interdisciplinary approaches. Use the natural environment and local community as the framework, and integrate environmental education into your everyday teaching.

-from New Horizons for Learning