# Environmental Education Activities K-12

## a potpourri of teaching ideas for the classroom

# GRADES K-2

## Science

### Flannel Beach Life

Cut out pictures of intertidal animals from calendars or a cheap field guide. Laminate pictures and use stick-on velcro to turn them into flannel board creatures. (You can also purchase a set of flannel patterns from the Seattle Aquarium). Use the flannel board to introduce the intertidal animals. If possible, have students act out the movements of each, for example, pretend to be anemones and wave arms as tentacles during high tide, cover up tight at low tide.

### Garbage Gardens

Have students bring in an egg carton and empty halved egg shells from six eggs. Pierce the bottom of the egg shells and fill them with composted soil. Place the egg shells in the egg carton to keep upright. Plant various types of seeds in the egg shells. Make sure to label each student's egg carton with their names and the types of seeds they planted. Extend the learning by creating experiments dealing with the effects of natural environmental variations such as light and water as well as "artificial" variations including the application of household hazardous wastes found in the classroom (check out areas around your sink for these products). — TGP

## Social Studies

### Nautical Neighbors

If there is a marina area, take the class on a tour of it. Arrange a tour of a fishing boat, and have the skipper explain all the different equipment and the variety of jobs aboard the craft.

### 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

### Whale Milk Math

A newborn blue whale gains 200 lbs per day (9 lbs. per hour) by drinking up to 50 gallons of milk each day. In one day, a blue whale calf would drink the amount of milk in 800 school-sized milk cartons! Have students rinse and save milk cartons each day. Count the new ones daily and add the total to the previous day's total until you reach 800.

### 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?

## Language Arts

### What Do You See?

Students view several pictures of beach/ocean wildlife, then choose one to study. After examining closely, each student writes a description of his/her animal. Later, teacher reads written description and class guesses which animal picture it was based on.

### World Music

You and your students can listen to, discuss, learn the lyrics and sing along with international artists of world music. Johnny Clegg and Savuka, Raffi, Peter Gabriel, Midnight Oil, Sting (song composed in the video, Spaceship Earth), Julian Lennon ("Salt Water Tear") and Paul Simon ("Boy in the Bubble") are only a few. Kid's Eye View of the Environment, presented by Michael Mish, is a delightful audio cassette with clever lyrics and catchy melodies that will make everyone want to sing and dance. — TPE

## 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

# GRADES 3-5

## Science

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

## Social Studies

### Pick a Package, Any Package

Visit a supermarket and find the following products: cereal, laundry soap, milk, fruit juice, vegetables, soup, cake mixes, spices, candy, and toothpaste. In what different kinds of packages can they be bought? Are they available in the bulk food section? Why are products available in so many different packages? Which packages have the least amount of throw-away packaging? Which packages cost the least for each product? Which one does your family usually buy? Back in class, make a wall chart. Can some of the packages be reduced or avoided, reused or recycled? Circle in green all the reusable items, in yellow all the recyclable items, and in red all the disposables. -NTW

### 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

## Mathematics

### Milk Carton Madness

In an attempt to determine how much potential space milk cartons take up in a landfill, students measure and calculate the volume of one milk carton. Students also determine the volume of their classroom. Using the milk carton volume figures, have the students determine how many cartons it would take to fill up their classroom. Then determine how many milk cartons are generated by the entire school in one day. Determine how long it would take to fill up their classroom. Extend these computations to a volume the size of the school. Follow this by discussing the importance of diversion of materials from the landfill and by exploring the feasibility of milk carton recycling at your school. — TGP

## Language Arts

### 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

## Try THIS! ...and You'll Change the Way You Look at Your Schoolgrounds


**Karen S. Hollweg, North American Association for Environmental Education, Washington, D.C.**


Chances are you've noticed a dead worm or two on the sidewalk around your school at one time or another. But have you ever actually wondered just how many earthworms might live in the grounds around your school? ... or whether there are more earthworms in some places than in others?

Hundreds of students in Seattle have been asking and answering these questions through Seattle Audubon's Finding Urban Nature program. FUN is one of the urban education programs in the North American Association for Environmental Education's VINE Network. Through VINE Programs, children growing up in cities spend time outdoors with trained volunteers (parents and community volunteers in Seattle), who guide the youngsters in investigations of neighborhood ecology.

On a spring afternoon at a Seattle elementary school, you might find as many as nine volunteers, each with a group of about six 3rd, 4th, or 5th graders. They spread out over the school grounds, and their teacher circulates, overseeing all the groups. Each group looks around and decides where they think there may be an abundance of earthworms and where they think there may be only a few earthworms living underground. Then they all use a standard procedure for marking a plot, spraying a mixture of dry mustard and water on the plot, and collecting the worms that wriggle to the surface. It's not only fun and exciting - it's also fascinating!

Last spring, Seattle Public Schools Superintendent John Stanford visited one of the elementary schools while they were in the midst of this schoolyard investigation. He was immediately right down on his hands and knees (even in his suit!) watching the worms wriggle out.

Anita Lagerberg is Coordinator of the FUN Program, which involves approximately 2,000 children in schoolyard investigations annually through the efforts of over 200 volunteers. She says, "Seattle students find all sizes and species of earthworms. The kids squeal with excitement when they find one of the huge foot-long nightcrawlers! Interestingly enough, we haven't found any worms so far living under cedar trees or in chipped areas. And one of our schools has a garden where there are no worms. Yet we've found as many as 350 worms/meter in various grassy areas."

According to Lagerberg, "Some students extended the activity, determined the size of the total grounds and then estimated the total number of worms in the whole area. They decided there were more worms than kids by far!"

The possibilities for using students' findings back in the classroom are numerous. They can graph the data, write about their experiences, and discuss the different habitats they have discovered. In addition, they can do library research to learn more about worms or pose additional questions and plan investigations to answer them. What's certain is that the students, their parents, and teachers will never again look at the schoolground as "boring." Instead, they'll see it as

- a patchwork of habitats supporting many living things, and
- a place where learning can involve lots of people in fun and exciting ways.

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*Karen Hollweg is Urban Program Manager at NAAEE and works with the VINE Network to support and promote use of schoolyards through Volunteer-led Investigations of Neighborhood Ecology.*

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class reach one hundred? Save the list and use it later for creative writing activities.

### Fine Arts

**Water Drop Neckklaces**

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

**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.

**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

**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

**Travel Log**

Design a travel log to show the travelling you do for two weeks. Include the date, where you went, how you travelled, who went with you, how long it took and how many kilometres you travelled round trip. After two weeks, add up how many trips you took by car, transit, bicycle, foot, taxi or other modes. How many kilometres did you travel all together? Which transportation mode is the fastest? The cheapest? Which is you preferred transportation mode for each type of trip? Why?

Now analyze your information and make suggestions as to how you could have reduced the number of trips you made. How many times could you have used transportation other than a car? Compare your results with those of your friends. —LCA

### 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

### 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

### 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

### 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

### Environmental Art

Visit a natural history museum. Or, have students look through books with photographs of paintings depicting the environment. They may analyze, discuss, compare, contrast art works and give critiques. Pupils may be inspired to write poems or stories about ideas generated from the special works and they may then create their own works of art.

Sources of Activities:

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.