

Curriculum Activities to Develop Young Children's Environmental Awareness

THE ACTIVITY DESCRIPTIONS THAT FOLLOW are abbreviated. To complete a full activity teachers and children will use the processes described in this introduction. Begin any activity with a question and follow up with listening, discussing, drawing, more questions, and more listening! Keep the questions simple and brief and focus on the children's answers.

When doing any of the activities, teachers should collaborate with children. In talking with the children before, during, and after an activity, listen to what they have to say rather than offering information; too much talk by the teacher can dampen children's interest. Even when children's theories are incorrect, the focus is on getting them involved. Interest and participation are more important than giving right answers. The goal of each activity is for children to experience the general processes of conducting an experiment. These processes are part of the way we test ideas and eventually learn. Over time as discussions and observations continue, one or another child in the group will develop a theory that is right on the mark.

A good technique for encouraging observation is asking the children to draw their ideas. Have the children describe these ideas and save the drawings so that you and the children involved in the activity can compare the actual outcome to what the children thought would happen.

The following steps apply to all of the activities.

- 1. Observe and question**—Provide something for the children to inspect carefully or read them a book related to one of the activities below. It is best if the object or topic is related to something that you have noted is particularly interesting to the children. Encourage the children to voice their thoughts.
- 2. Discuss**—Hold a conversation with the full class or a small group about the object they have observed or the book you have read. At the start of every activity include a discussion to determine what children already know. Note the children who seem most interested, and pursue related activities with them as a small group.
- 3. Hypothesize and experiment**—Each of the following processes involves thinking; if you use specific vocabulary for each process, children will become more reflective about their actions. Preschool children will experience these processes in many different ways, not usually in sequence nor all in one activity.
 - a.** Have the small group think about the possible results of the activity or a related experiment. Ask the children to predict what will happen during the activity, then have them draw their ideas. Ask each to describe his or her drawing.
 - b.** Gather materials for the activity with the children.
 - c.** Conduct the activity/experiment with the small group.
 - d.** Encourage the children to observe. This can take place over varying lengths of time—minutes, hours, days, weeks, or months.



Ann Lewin-Benham, AB, was founder/director of the Model Early Learning Center (MELC) and Capital Children's Museum in Washington, D.C. Her recent book, *Possible Schools: The Reggio Approach to Urban Education*, tells MELC's story. Ann writes and lectures on early education.

Illustrations © Marti Betz.

- e. Record what the children (and adults) observe. The record may be children’s drawings, children’s descriptions written down by the teacher, or photographs.
- f. Have the children compare the recorded observations and the outcome to the initial hypothesis. Ask them, “What do you think happened?” Record their answers, and ask them to draw what they see. On another day, get out the children’s original drawings and ask them to compare what they thought might happen—their predictions—to what did happen.

4. Continue exploring the topic. Use reference books as well as books from the children’s section when doing library research. Refer to the vast resources on the Internet. Neither the sites referenced below nor the suggested books are exhaustive.

Any of these activities can be done with any age group as long as the children involved are really interested. The questions children ask will tell you what they want to know more about. Your careful listening and your deepening of their interests by repeating their words back to them— “Remember yesterday you said . . .” —are the keys to success for any activity, whether from this list or created in your classroom.

Note: Web site descriptions appear at end of this document. Annotations for the children’s books appear at <http://journal.naeyc.org/btj/200603/lewinresourcesBTJ.pdf>.

**Activities,
by subject**

LAND



Soil

- Examine the contents of a patch of earth 3” square and 12” deep. Compare to samples from patches in other locations. Save soil samples to compare in different seasons.

Decomposition

- Bury small raw potatoes 6” deep in eight different holes. Dig up in eight successive months. Compare changes in the potatoes.

Acidity

- Bury three copper pennies in soil. Dig up one after several days, another after several weeks, another after several months; compare.

Vocabulary: *Composition, decomposition, impact of time, acidity*

Web sites:

EEK! Our Earth, State of Wisconsin. www.dnr.state.wi.us/org/caer/ce/EEK
Energy, The Environmental Literacy Council.

www.enviroliteracy.org/category.php/4html

Environmental To Do’s for Young Children, National Network for Child Care.

www.nncc.org/Curriculum/envir.todo.html

The One-Inch Square Project, San José Children’s Museum.

www.hhmi.org/coolscience/inchsquare/index.html

**Activities,
by subject
(cont'd)**

The Great Plant Escape, University of Illinois Extension.

www.urbanext.uiuc.edu/gpe/index.html

Smithsonian Soils Exhibit, Smithsonian Institution. www.soils.org/smithsonian

Super Science Soil Sleuths, USDA Agricultural Research Service.

www.florence.ars.usda.gov/kidsonly/element/pg2.htm

WATER

Evaporation

- Fill a glass with water and mark the level using a rubber band. Observe the water level daily. Record changes by adding a rubber band whenever water reaches a new (lower) level.
- Measure water; pour into a pot; boil; observe steam rising; let remaining water cool; measure the water again.

Vocabulary: *liquid, gas, evaporation*

Composition

- Fill a glass with tap water. Examine a drop of the water under a microscope. Let the glass stand overnight and repeat examination. Let the glass stand several nights and repeat.

Vocabulary: *magnification, organism*

Acidity

- Put one copper penny in lemon juice, one in vinegar, and one in water. Leave the pennies in place for several days. Measure the acidity of the three liquids; compare findings. (The easiest way to measure acidity is with litmus paper strips, which are inexpensive and available from www.scientificsonline.com or other outlets for science supplies.)

Vocabulary: *acid, effect*

Web sites:

Energy, The Environmental Literacy Council.

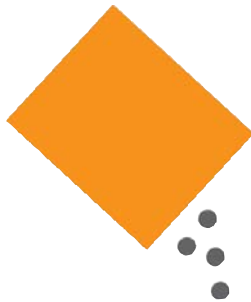
www.enviroliteracy.org/category.php/4html

Children's books:

Duvall, J.D. 1997. *Who keeps the water clean? Ms. Schindler!* New York: Grolier.

Seuling, B. 2000. *Drip! Drop!* New York: Holiday House.

Webb, A. 1986. *Talk about water.* New York: Watts.



Activities, by subject (cont'd)

AIR

What is air?

- Blow up a balloon. Slowly let the air out while giving each child a chance to feel it on his or her skin. Discuss.

Vocabulary: *invisible*

What's in air?

- Smooth aluminum foil over 3" x 3" pieces of cardboard; spread a thin layer of Vaseline on the foil-covered pieces. Hang some pieces inside and some outside. Leave some in place for two days, others for five days. Examine under a microscope.

Vocabulary: *pollution, particulate matter*

Web site:

Energy, The Environmental Literacy Council.
www.enviroliteracy.org/category.php/4html

Children's books:

Anthony, J. 1997. *The dandelion seed*. Nevada City, CA: Dawn.
Milne, A.A. 1927. "Wind on the hill," in *Now we are six*. New York: Dutton.



ECOSYSTEMS

Communities

- Visit a stream or pond. Note everything living in the stream and nearby. Collect water and soil samples in any container suitable for liquids (baby food jars, small jelly jars). Examine under a microscope.
- Visit a forest or park and note everything living under the trees and nearby. Collect samples of soil and other items in a small plastic bag to examine under a microscope.

Fish environments

- Visit the library and look in books for information about and pictures of fish in ponds, rivers, ocean, coral beds, and other habitats. Learn how they swim and spawn; what they eat and what eats them; how they hide and how they rest. Compare what was learned about the lives of fish to the lives of humans.

Vocabulary: *environment, organisms, diversity, spawn, habitat, food chain, coloration*

Web sites:

EEK! Our Earth, State of Wisconsin. www.dnr.state.wi.us/org/caer/ce/EEK

Activities, by subject (cont'd)

Energy, The Environmental Literacy Council.

www.enviroliteracy.org/category.php/4html

Environmental To Do's for Young Children, National Network for Child Care.

www.nncc.org/Curriculum/envir.todo.html

The One-Inch Square Project, San José Children's Museum.

www.hhmi.org/coolscience/inchsquare/index.html

The Great Plant Escape, University of Illinois Extension.

www.urbanext.uiuc.edu/gpe/index.html

Smithsonian Soils Exhibit, Smithsonian Institution. www.soils.org/smithsonian

Super Science Soil Sleuths, USDA Agricultural Research Service.

www.florence.ars.usda.gov/kidonly/element/pg2.htm

Children's books:

Cherry, L. 1992. *A river ran wild*. New York: Harcourt.

Cherry, L. 2000. *The great kapok tree*. New York: Harcourt.

George, J.C. 1982. *The grizzly bear with the golden ears*. New York: Harper & Row.

George, L.B. 1995. *In the woods*. New York: Greenwillow.

George, L.B. 1996. *Around the pond*. New York: Greenwillow.

George, W.T. 1989. *Box turtle at long pond*. New York: Greenwillow.

Guiberson, B. 1991. *Cactus hotel*. New York: Holt.

Lauber, P. 1995. *Who eats what?* New York: HarperCollins.

London, J. 1999. *Baby whale's journey*. San Francisco: Chronicle.

Look at pictures in Dick Mills's *Understanding freshwater fish*. Surrey, UK: Interpet (2001).



FOOD

Growing

- Visit a farm or garden to observe a crop harvest; go to an apple orchard, a pumpkin patch, a small farm that sells produce, or (in a city) a rooftop garden. Ask the grower to describe the process from soil preparation to harvesting, eating, and marketing.

Vocabulary: *crop, harvest, fertilizer, pesticides, irrigation, erosion, quantity*

Grocery store

- Conduct several trips to the store, each time visiting a different section. During each trip note the variety of foods available. Watch as trucks are unloaded and shelves stocked. Look for trucks from the grocery store in the neighborhood. Back at the center discuss where food comes from and how it gets to the store.
- Visit the grocery store again. This time read food labels and record unfamiliar words. Later, research the meanings of the new words.

Vocabulary: *additives, packaging, preservation*

**Activities,
by subject
(cont'd)**

Production

- Visit a bakery or other food production facility. Use the yellow pages to locate one; call to find out if school groups are welcome. Some companies do special tours during which they show children all the raw ingredients that go into a product and provide a full demonstration of the production process. Children might even get to taste the finished product. If allowed, take photos to remind children of what they saw and write down their comments during the tour.

Web sites:

Energy, The Environmental Literacy Council.

www.enviroliteracy.org/category.php/4html

The Great Plant Escape, University of Illinois Extension.

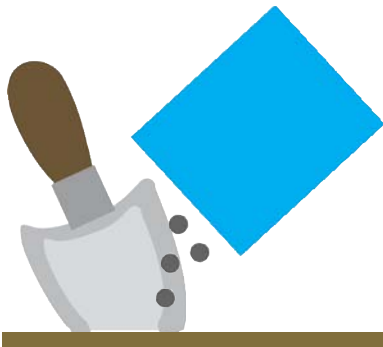
www.urbanext.uiuc.edu/gpe/index.html

Super Science Soil Sleuths, USDA Agricultural Research Service.

www.florence.ars.usda.gov/kidonly/element/pg2.htm

Children's books:

- George, W.T. 1991. *Fishing at long pond*. New York: Greenwillow.
- Henderson, K. 1989. *I can be a farmer*. Chicago: Children's Press.
- Hill, L.S. 1997. *Farms feed the world*. Minneapolis: Carolrhoda.
- London, J. 2001. *Crunch munch*. New York: Harcourt.
- Mallet, D. 1995. *Inch by inch*. New York: HarperCollins.
- Schomp, V. 2001. *If you were a farmer*. Tarrytown, New York: Cavendish.
- Temple, C. 1992. *On the riverbank*. Boston: Houghton Mifflin.
- Theobald, J. 2003. *Marvin wanted more*. London: Bloomsbury.



ENERGY

What is energy?

- Meet as a full group and invite several children to carry something heavy. Discuss how it feels to carry a heavy object. Then have the children move the same load in a wagon (or other wheeled equipment). Again, ask how it feels to move the weight. Ask the children why it feels different. Encourage children to form theories and to build on them. Some of the theories children come up with will be closer to reality than others.

Vocabulary: *energy, strength, weight, work, hard, easy*

Where does energy come from? How does it get from place to place?

- Discuss how cars move. Read books that describe the journey of fuel from the oil field to the local gas station or other destination.
- Discuss what makes heat. Find the radiator in the school or center. Talk with the building engineer and visit the boiler room. If the building uses oil, find the fuel line. Watch when the fuel truck delivers the fuel.

Vocabulary: *source, oil, gas, miner, coal, shaft, underground, thermostat, electricity, fuel*

**Activities,
by subject
(cont'd)**

Where does energy to support humans come from?

- After a small group of children have engaged in a physically exerting activity ask them: Where does your energy come from? Have them draw and describe their theories, and discuss. Continue with other small groups at various times. One group is likely to come close to naming food as the answer; share and discuss with the whole class.

Vocabulary: *convert, strenuous activity, exercise*

Children's books:

- Burton, V.L. 1939. *Mike Mulligan and his steam shovel*. New York: Houghton Mifflin.
 Cook, B. 1981. *Gas*. New York: Watts.
 Fowler, A. 1997. *Energy from the sun*. New York: Grolier.
 Fowler, A. 2001. *Simple machines*. New York: Grolier.
 Frost, H. 2000. *The meat and protein group*. Mankato, MN: Capstone.
 Rockwell, L. 1999. *Good enough to eat*. New York: HarperCollins.
 Look at Graham, Ian. *How things work*. New York: Time-Life Books, 1953.

POLLUTION

What is pollution?

- Ask: What is pollution? Elicit theories.

Vocabulary: *pollution, source*

What are the sources of pollution?

- Ask: Where does pollution come from? Elicit theories, Discuss, draw, describe.

Vocabulary: *chemicals, toxins, poisons*

How can we lessen the amount of pollution?

- Read labels on everything in the room. Identify pollutants. Ask: What can we use instead of these? Research in library or online to find cleaning materials with no poisons and what they are made from. Experiment to see how they clean.
- Ask: How can we dispose of containers safely? Visit a recycling center. Research your city's plan for disposal of harmful materials. Take a walk to look at trash in park or on streets. Children may spontaneously create a pollution patrol.

Vocabulary: *recycle, disposal, biodegradable, vinegar, baking soda*

Web sites:

- EEK! Our Earth, State of Wisconsin. www.dnr.state.wi.us/org/caer/ce/EEK
 Energy, The Environmental Literacy Council.
www.enviroliteracy.org/category.php/4html



Environmental To Do's for Young Children, National Network for Child Care.

www.nncc.org/Curriculum/envir.todo.html

The One-Inch Square Project, San José Children's Museum.

www.hhmi.org/coolscience/inchsquare/index.html

The Great Plant Escape, University of Illinois Extension.

www.urbanext.uiuc.edu/gpe/index.html

Roots and Shoots, Jane Goodall Institute. www.janegoodall.org

Smithsonian Soils Exhibit, Smithsonian Institution. www.soils.org/smithsonian

Super Science Soil Sleuths, USDA Agricultural Research Service.

www.florence.ars.usda.gov/kidonly/element/pg2.htm

Children's books:

Glaser, L. 1996. *Compost! Growing gardens from your garbage*. Brookfield, CT: Millbrook.

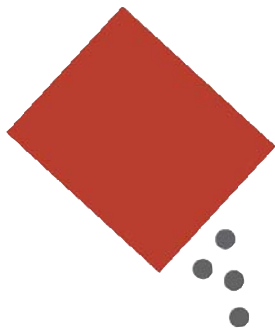
Johns, T. 2003. *What if everybody did?* Atlanta: Atlanta Publications.

Owens, D. 1999. *Deforestation*. New York: Grolier.

Sanders, N.I. 2003. *Earth Day*. New York: Scholastic. (Note: When reviewing children's books about Earth Day [celebrated each year on April 22], look for ones that provide information about what the environment is, how humans have damaged it, and what we must do to help it— not just on Earth Day but every day.)

Showers, P. 1974. *Where does the garbage go?* New York: HarperCollins.

Van Allsburg, C. 1990. *Just a dream*. Boston: Houghton Mifflin.



Web site descriptions

EEK! Our Earth, State of Wisconsin. This site's lessons on the environment contain good information for teachers in simple language they can use to explain complex ideas to children. There are also ideas for activities.

www.dnr.state.wi.us/org/caer/ce/eeek

Energy, The Environmental Literacy Council. This well-organized site has comprehensive information on the environment to help teachers understand unfamiliar concepts. The site includes descriptions of ecosystems, pollution, air, water, and so on. It also has links to many other resources.

www.enviroliteracy.org/category.php/4html

Environmental To Do's for Young Children, National Network for Child Care. This site has a wealth of outdoor activities geared to older children; many are readily adaptable for preschoolers. www.nncc.org/Curriculum/envir.todo.html

The One-Inch Square Project, San José Children's Museum. This project has a good description of how to examine a small patch of earth or part of a natural object. www.hhmi.org/coolscience/inchsquare/index.html

The Great Plant Escape, University of Illinois Extension. Simple explanations of what soil is, how to examine it, and its relation to food. There are some good animations. The site requires teacher involvement for children not yet reading. www.urbanext.uiuc.edu/gpe/index.html

Roots and Shoots, Jane Goodall Institute. There is a \$35 fee to join the Institute, but the site has enough information that can be viewed at no cost to make it worth visiting. www.janegoodall.org



Copyright © 2006 by the National Association for the Education of Young Children. See Permissions and Reprints online at www.journal.naeyc.org/about/permissions.asp

Smithsonian Soils Exhibit, Smithsonian Institution, Washington, D.C. A Web site about a major new exhibit that the Smithsonian plans to open in the year 2008. The site contains a wealth of links to other sites. www.soils.org/smithsonian

Super Science Soil Sleuths, USDA Agricultural Research Service. Simple definitions of many aspects of soil. Good activities for young children ages five to eight. A teacher can easily choose those at the younger age range. Only readily available materials are required for the experiments and activities. www.florence.ars.usda.gov/kidonly/element/pg2.htm
