

VOCABULARY

Bedding: material such as dried leaves or shredded paper used to retain moisture, create air space and cover food scraps in a worm composting system.

Big Four: the four main ingredients necessary in a composting system: air, water, greens (nitrogen) and browns (carbon).

Biodegradable: organic materials that can decompose or decay, such as wood, food scraps, paper and grass clippings.

Blood: the fluid in an animal's blood vessels that carries food and oxygen to the cells throughout the body.

Carnivores: animals that eat other animals.

Compost: the process or end result of living organisms digesting and reducing organic material into a dark, rich, soil amendment.

Compost tea: an aerated liquid solution made from compost for use on plants.

Conserve: to protect something from harm or destruction.

Consumers: animals that get their food or energy from other living things, plants or animals.

Crop: a pouch-like compartment to store food, before it is ground up, that is found in many birds and insects.

Data: information gathered to find the answer to a scientific question.

Decay: the gradual breakdown of dead organic material.

Decomposers: an organism, including fungi, bacteria and invertebrates, that breaks down organic waste.

Decomposition: the process of materials being digested and broken down into simpler substances, making nutrients more available to plants. Decomposition happens all the time in nature and in human-managed systems such as compost bins.

Digestion: the process of breaking down food into small molecules that can be absorbed by the intestine and used by the body.

Ecosystem: the interacting system of a biological community and its nonliving environment; also, the place where interactions occur.

Electricity: the electric current used or regarded as a source of power.

Endangered: a species that is in danger of extinction in the foreseeable future.

Energy: the capacity for doing work. Forms of energy include thermal, mechanical, electrical, and chemical. Energy may be transformed from one form into another.

Equilateral: a triangle having all sides or faces that are equal.

Esophagus: the muscular tube that leads from the pharynx to the stomach (or in some animals to the crop) and pushes food through this part of the canal.

Evidence: facts that indicate whether something is true.

Experiment: the collection of data to discover whether a variable makes a difference.

Extinct: a species or subspecies that no longer exists in living form.

Food chain: the sequence of one organism eating another organism. An example of a food chain is the following: green plants (using sunlight to grow) are eaten by sheep, which are eaten by wolves, which die and are eaten by decomposers, which free fertilizing material into the soil, which is needed by the plants to grow.

Food scraps: food that can be put into a compost bin, typically fruit and vegetable scraps. Meat, dairy and oils are excluded because they can attract pests.

Food web: many food chains that are interconnected.

Garbage: things that people throw away.

Gizzard: a second stomach with a thick muscular lining found in birds and other animals where food is ground up. Worms sometimes store small stones in their gizzard to help grind up their food.

Habitat: the place where an organism normally lives and thrives.

Heart: the muscle in animals that pumps blood through the body.

Herbivores: animals that eat plants.

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Hierarchy: a ranking system according to relative importance.

Hypothesis: a scientific guess based on observations.

Inference: how we interpret what we observe or what we think our observations mean. Scientists draw conclusions from both direct observation and inference.

Inorganic: any material that is not composed of matter that was once living or produced by a living organism.

Intestine: the long tube in animals where food is digested and absorbed into the body.

Invertebrates: animals that do not have a back bone. They are cold-blooded so they depend on the temperature of their environment to regulate their own body temperature.

Isosceles: a triangle having two equal sides.

Landfill: an area of land designed to handle the disposal of solid waste. The garbage is usually spread out, compacted and covered with dirt or other material in order to protect the environment in and around the landfill.

Life cycle: a series of changes that an organism undergoes throughout its life. For example, a frog life cycle usually includes the following stages: egg, tadpole, immature frog and adult frog. A life cycle can also describe the steps to producing a product, which usually includes the following stages: extraction of raw materials, production, distribution and use of a product and final disposal or recycling of remaining materials.

Litter: waste materials that are carelessly discarded or put in the wrong place.

Manufacture: to make or process a raw material into a finished product, usually by a large-scale industrial operation.

Natural resources: living or non-living materials that come from the Earth such as fossil fuels, minerals, plants, animals, water, air, sunlight, and other forms of energy.

Nonbiodegradable: inorganic materials that do not decompose, for example, glass, metal and plastic.

Nonrenewable resources: minerals or sources of energy that can be mined or collected from the Earth, such as coal, petroleum, iron ore, copper, etc. The processes of their formation are so slow that these resources may be considered gone forever once they are used up.

Observation: using our senses and sometimes equipment that extends our senses to notice characteristics and observe change.

Oil: a liquid substance, usually black and sticky, that is used to produce fuel and products such as plastic.

Omnivores: animals that eat both plants and animals.

Opinion: a person's thoughts or beliefs about something that may not be based on facts.

Organic: materials that were once living or material produced by a living organism such as food, leaves, plant trimmings, hair, clothing fibers, paper, etc. Organic may also be used to describe food

grown using sustainable agricultural methods.

Organic waste: wastes made of natural products such as food, leaves, hair, clothing fibers and yard trimmings.

Packaging: a container or wrapping such as paper, plastic, metals, etc., used to protect, transport, display or store a product.

Paper: a thin material made of pulp from wood, rags or other fibrous material often used for writing, printing or packaging.

Perpetual resources: forms of naturally recurring energy that are beyond human management, e.g., sun, wind, falling water, tides.

Petroleum: a substance occurring naturally in the Earth in solid, liquid, or gaseous state that is composed of a complex mixture of hydrocarbons used to make products such as oil, natural gas, plastic, and fuel.

Pharynx: the part of the canal between the cavity of the mouth and the esophagus.

Pictograph: a picture or symbol showing an idea.

Plastic: a material made from petroleum. It can be molded, extruded, or cast into a desired shape.

Prediction: a broad statement based on an observation, experience, or scientific reason of what will happen in a given circumstance or situation.

Producers: plants that make their own food using energy from the sun.

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Product: something produced by human or mechanical effort or by a natural process.

Quilt: a bed coverlet of three layers: a top, middle, and bottom. The middle layer is a filling of wool, cotton, down, etc.

Raw material: a material or natural resource that is mined or harvested for use in producing a product such as bauxite (aluminum), iron ore, silica, or trees.

Recyclable: discarded materials, such as paper, aluminum, tin, plastic, cardboard and glass, that in most cases can be recycled and remanufactured into new products.

Recycle: the process of producing new products from used material or the process of remanufacturing used materials into new products. Some used materials can be made into new items of the same thing. Others are made into entirely new items.

Recycling bin: container for accepting items that will be recycled into new products.

Red worms: the type of worm typically used in worm composting systems. Red worms can be found in leaf mold and manure piles and can be purchased in bait shops and some gardening stores. Their Latin (scientific) name is *Eisenia fetida*.

Reduce: use less “stuff” and produce less waste.

Refine: the process of purification or transformation of a substance. Refining is often used with natural resources that are almost in a usable form but that

are more useful in pure form. For example, most types of petroleum will burn straight from the ground but will burn poorly and quickly clog an engine with residues and byproducts.

Renewable resource: naturally occurring raw materials or form of energy that has the capacity to replenish itself within a relatively short amount of time (e.g., a human lifetime) through ecological cycles and sound management practices, e.g., trees, agricultural crops, grasses.

Reuse: extending the life of an item by reusing it again as it is or creating a new use for it.

Rot: to decompose.

Scalene: a triangle having all three sides of unequal length.

Soil amendment: something added to soil to increase nutrients, improve soil texture or improve how well the soil can hold onto or drain water.

Species: a group of plants or animals that have common characteristics.

Threatened: a plant or animal species that is likely to become endangered in the near future.

Triangle: a plain figure that has three sides and three angles.

Value: the quality of an object that makes it desired or wanted; the beliefs of a person or social group; the fundamental beliefs or guiding principles that guide behavior and decision making.

Variable: a factor that might affect the results of an experiment. To draw conclusions from an experiment, it is important to change only one variable at a time.

Vermicompost: compost produced in a worm composting system. It is a mixture of partially decomposed organic waste, bedding and worm castings. When finished, it is a balanced, nutrient-rich compost for the garden.

Waste prevention: not making so much waste in the first place.

Water cycle: sunlight evaporates water that condenses to clouds that produce rain that falls on the land, flows to an ocean or lake and evaporates again. The water can flow through other routes such as through sand underground or through an animal. But the cycle begins with evaporation and ends with the water returning to a place for evaporation to occur again.

Worm bin: a container used to hold worms, food scraps and bedding for composting.

Worm castings: worm manure or the final product of worm composting. It is a high-quality, rich soil amendment that is used to fertilize plants.

Worm leachate: liquid waste excreted by worms or excess moisture that leaches to the bottom of the worm bin. This can be applied to plants directly once diluted. Worm leachate can also be made by placing worm castings in water and straining any worms or remaining food scraps from the liquid.

Children’s Fiction and Nonfiction Books

The following children’s books include content related to the 4Rs (Reduce, Reuse, Recycle and Rot/Compost). The books below are available through the lending library at the StopWaste.Org office, bookstores and most public libraries. These books may be used in conjunction with the lessons in this guide as an extended language arts activity to reinforce the 4R concepts presented in each lesson.

Reduce

Aani and the Tree Huggers

by Jeannine Atkins. (1995). ISBN: 1- 880000-24-5. Published by Leed & Low.

Aani gets the women from the village to save their forest from men sent to cut down the trees.

Cloudy with a Chance of Meatballs

by Judi Barrett. (1978). ISBN: 0-590-30384-8. Published by Scholastic.

A town receives its food falling from the sky. When the weather changes, the people there must come up with creative solutions.

Common Ground: The Water, Earth and Air We Share

by Molly Garrett Bang. (1997). ISBN: 0-590-10056-4.

Published by Scholastic Trade. A story about sheep and the common ground they graze that reveals how a community must work together conserve the common resources they use.

Crosby by Dennis Haseley. (1996). ISBN: 0-15-200929-2.

Published by Harcourt Brace and Company.

Crosby is creative in using or repairing broken items.

Earth to Matthew

by Paula Danziner. (1991). ISBN: 0-385-30453-6. Published by Delacorte Press.

Matthew and Jill are assigned to the Recycling committee that does a project. They learn about reducing waste and helping our environment.

Gift of the Sun

by Dianne Stewart. (1996). ISBN: 0-374- 32425-5. Published by Farrar, Straus, and Giroux.

A South African folktale shows how simplifying life with fewer possessions can result in great benefits.

How Come the Best Clues Are Always in the Garbage?

by Linda Bailey. (1992). ISBN: 0-8075-3410-2. Published by Albert Whitman & Co.

Garbage Busters has collected \$1,000 to save the environment, and now the money has been stolen. Investigations lead to the dumpster that must be explored.

Just a Dream

by Chris Van Allsburg. (1990). ISBN: 0-395-53308-2. Published by Houghton Mifflin Co.

Walter is careless with litter and garbage. He has a dream of the future that is not at all what he expected.

The Lorax by Dr. Seuss. (1971). ISBN: 0-394-82337-0.

Published by Random House.

This Dr. Seuss rhymed story has Lorax trying to save trees from being cut down.

Pee Wee Scouts Trash Bash

by Judy Delon. (1992). ISBN: 0-440-40592-0.

Published by Bantam.

The Pee Wee Scouts are earning their Save the Earth badge by having a community recycling drive. Their scout leader has offered a prize to the scout who does the most creative thing with the trash.

The People Who Hugged the Trees

by Deborah Lee Rose. (1990). ISBN: 0-91197-80-7.

Published by Roberts Rinehart, Inc. Amrita and the people who live in her village try to save valuable trees surrounding the village from being cut down by the Maharaja who want to build a new fortress.

Sweet Clara and the Freedom Quilt

by Deborah Hopkinson. (1993). ISBN: 0-679-92311-X.

Published by Alfred A. Knopf. Before age 12, Clara is taken away from her mother and sold to a neighboring plantation to work as a field hand. She learns from others how to gather scraps of fabric, sew them together into a quilt and help her people to find their way to freedom.

Why the Sky Is Far Away

by Mary-Joan Gerson. (1992).
ISBN: 0-316-30874-9.

Published by Little, Brown and Co. In this Nigerian folktale, villagers get all of their resources from the sky. When they take more than they need, the sky begins to get angry and the villagers are forced to find their own resources.

Windows by Jeannie Baker.

(1991). ISBN: 0-688-08917-8. Published by Greenwillow Books. This wordless picture book describes a view of a landscape that changes over many years from wilderness to a city.

The Wump World by Bill Peet.

(1970). ISBN: 0-395-19841-0. Published by Houghton Mifflin Co. The Wumps lived happily on a planet where they had plenty to eat and drink, shelter, and no natural enemies. One day some new monsters arrived to their planet and began destroying it.

Reuse

Angel's Kite / La Estrella de Angel

by Alberto Blanco. (1994).
ISBN: 0-89239-121-9. Published by Children's Book Press.

In a Mexican small town, Angel makes kites from waste materials.

A Chair for My Mother

by Vera B. Williams. (1982).
ISBN: 0-688-04074-8.

Published by Greenwood Books. After a fire, neighbors come together and give many items to a family in need.

Cloudy with a Chance of Meatballs

by Judi Barrett. (1978). ISBN: 0-590-30384-8.

Published by Scholastic. A town receives its food falling from the sky. When the weather changes, the people there must come up with creative solutions.

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The Electric Kid by Garry

Kilworth. (1994).
ISBN: 0-380-72-847-8.

Published by Avon Books. Hotwire and Blindboy are orphans who survive on what they salvage from the garbage dump. Blindboy can locate discarded electronic devices buried under the garbage. Hotwire is a girl who can repair anything electronic.

Galimoto by Karen Lynn

Williams. (1996).
ISBN: 0-688-10991-8.

Published by Mulberry Books. A boy in West Africa makes a wire toy.

How Come the Best Clues Are Always in the Garbage?

by Linda Bailey. (1992).
ISBN: 0-8075-3410-2.

Published by Albert Whitman & Co. Garbage Busters has collected \$1,000 to save the environment, and now the money has been stolen. Investigations lead to the dumpster that must be explored.

Junk Pile by Lady Bolton.

(1997). ISBN: 0-399-22728-8. Published by Philomel Books. Jamie and her family live in a trailer in her father's junkyard. She arranges hubcaps like flowers around the trailer.

The Mushroom Center

Disaster by N.M. Bodecker. (1978). ISBN 0-689-30424-2. Published by Atheneum.

The Mushroom Center is a little bug town located just beyond the Mole Hills. One day disaster strikes as some careless picnickers carelessly throw away their garbage.

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