

# LESSON 4: There Is No “Away”

## LESSON’S CONCEPTS

- Items that become solid waste are made from a variety of natural resources.
- Most solid waste is buried in landfills.
- Some garbage can be reduced, reused, or recycled (including composting).

**Note:** Composting (including vermicomposting) is considered to be part of recycling. Unit 3 in the K–3 Module contains lessons on vermicomposting; Unit 3 in the 4–6 Module contains lessons on composting.

### PURPOSE

Students will learn that most of the “garbage” in the classroom usually goes to a landfill, but many items considered garbage are actually materials that can be reduced, reused, and recycled (also composted) to conserve natural resources.

### OVERVIEW

In this lesson students will:

- Look at the pictures of a landfill in *Where Does the Garbage Go?* by Paul Showers and describe a landfill.
- Classify classroom garbage according to the kinds of natural resources used to make the garbage.
- Listen to the story *Katherine and the Garbage Dump* by Martha Morris and relate the actions of the character to actions they can take with the garbage in the classroom.
- Classify items that can be reduced, reused, or recycled.

### CORRELATIONS TO CALIFORNIA’S CONTENT STANDARDS AND FRAMEWORKS AND TO BENCHMARKS FOR SCIENCE LITERACY

- Students classify garbage according to the kinds of natural resources that were used to make the items being discarded.
  - “Students collect information about objects and events in their environ-

ment.” (*Mathematics Content Standards for California Public Schools, Kindergarten Through Grade Twelve*, page 3)

- Students listen to the story *Katherine and the Garbage Dump* by Martha Morris and relate the actions of the character to the actions they can take with the garbage in the classroom.
  - “Students identify the basic facts and ideas in what they have read, heard, or viewed.” (*English–Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve*, page 2)
- Students categorize classroom garbage items into those that can be reduced, reused, or recycled.
  - “(People) need to exercise judgment, care, and planning in their use of natural resources, including plants, animals, soil, and water, and in their practices of disposing of wastewater and materials.” (*Science Framework*, page 125)
  - “Discarded products contribute to the problem of waste disposal. Sometimes it is possible to use the materials in them to make new products, but materials differ widely in the ease with which they can be recycled.” (*Benchmarks for Science Literacy*, page 189)
  - “Properties of materials can be observed, measured, and predicted. As a basis for understanding this concept, students know: objects can be described in terms of the materials they are made of . . . and their physical properties . . .” (*Science Content Standards, Grades K–12; Kindergarten; Physical Sciences, Standard 1a*)

- "To participate effectively in society, students need to: Develop personal skills (and) . . . group interaction skills." (*History–Social Science Framework*, page 24)

### SCIENTIFIC THINKING PROCESSES

observing, communicating, comparing, classifying, relating

### TIME

30 minutes to prepare for the lesson; 60 minutes to implement the lesson

### VOCABULARY

landfill

## PREPARATION

1. Read the "Background Information for the Teacher" at the end of this lesson.
2. Obtain clean classroom garbage that you began collecting during Lesson 1. Try to include paper towels, candy wrappers, short pencils, small pieces of chalk, bent paper clip, aluminum can or tray, plastic container, milk carton, polystyrene meat tray, paper used on one side and used on both sides, dried up markers and glue sticks, banana, or orange peels.
3. Obtain information about what can be recycled in your community.

## MATERIALS

- \_\_\_ Clean classroom garbage
- \_\_\_ Plastic tarp on which to spread out the garbage
- \_\_\_ Four hula hoops, or yarn to make four large circles (*Note:* If your students are familiar with composting, obtain a fifth hula hoop.)
- \_\_\_ Names of the following natural resources on separate pieces of cardboard: plants, animals, minerals, petroleum
- \_\_\_ The book, *Where Does the Garbage Go?* by Paul Showers
- \_\_\_ The book, *Katherine and the Dump* by Martha Morris
- \_\_\_ If available, the video, *Kids Talking Trash* (available from the California Integrated Waste Management Board)

## PRE-ACTIVITY QUESTIONS

*Note:* The answers in *italics* below are possible students' answers and might not always be correct, especially with the "Pre-Activity Questions" when teachers are assessing their students' understanding about a topic or concept.

- A. Spread the garbage that you have collected from the classroom on a tarp for students to

see. Ask students:

- What should we do with this garbage? *Throw it in a garbage can; throw it away; recycle it.*
  - What happens to our garbage when we throw it in a garbage can? *Someone picks it up and takes it to a dump; it gets buried.*
  - Where is this place where our garbage goes, the place that we call "away"? *A dump; a landfill; a transfer station.*
- B. Students should already be familiar with how a landfill looks if they completed Lesson 3 in Unit 1. If needed, show students the first part of the video, *Kids Talkin' Trash*, to remind them of a landfill's appearance. (They will also see a picture of a landfill in a book in the "Procedure" section of this lesson.)

## PROCEDURE

- A. Show students the cover of the book, *Where Does the Garbage Go?* by Paul Showers.
  - Ask the students what they think this book is about.
  - What information might be in this book?
  - Show students pages 12 through 14 from *Where Does the Garbage Go?* which show pictures of a landfill.

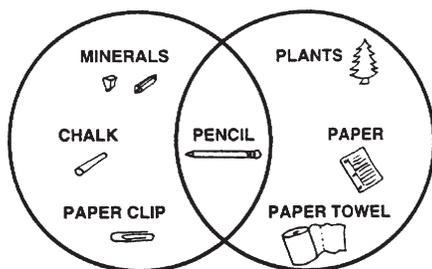
*Note:* You do not need to read the entire book.

- Ask students to describe a landfill.
  - Tell students that people in most cities and other communities depend on landfills to get rid of their garbage.
  - Discuss: Do people get rid of garbage when it goes to a landfill? The garbage does not just disappear or go away. Does the garbage remain in the landfill?
- B. Focus students' attention on the garbage that you have collected from the classroom. What

natural resources were used to make the items that someone placed in the garbage? *Plants, minerals.*

- C. Tell students that they will separate items into groups, based on the natural resources that were used to make the items.
- Use hula hoops or make circles out of yarn.
  - Ask students to label each hula hoop with one of the following categories of natural resources: plants, animals, minerals, fossil fuels.
  - Have students place each piece of garbage in the appropriate circle representing the natural resource from which the garbage came from. Make sure that students realize that all of these items came from one or more natural resources.

**Note:** If an item is made from two natural resources, you could show your students how a Venn diagram works. Overlap a portion of two circles representing natural resources and place the item in the overlapped area. This is recommended for older students only.

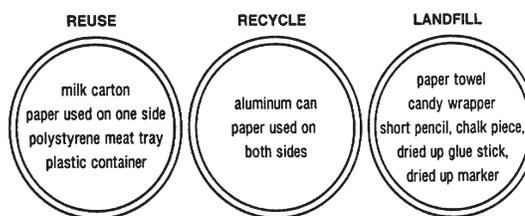


- Were any items made from more than one category of natural resources? If so, which ones? *Answers will vary.*
  - Which natural resource had the most number of items? *Answers will vary; for example, minerals.* Why do you think this is so? *There are many different types of minerals on Earth which are used to make many different items.*
- D. Tell students to suppose that the place where your classroom’s garbage used to be thrown “away” can no longer be used because it is full. They have to keep all of the classroom garbage in the classroom until they figure out what to do with it. Is there anything that they can do with it? *Recycle it; reuse it; give it away to someone.*
- E. Ask students to remove the garbage from each hula hoop and place it in one area.

- F. Read to students *Katherine and the Dump* by Martha Morris.
- Discuss the story with the class.
  - What did Katherine end up doing with the garbage that was thrown into her yard? *She reused and recycled many items. She made things with it.*
  - What can we do with our classroom’s garbage? *Some items can be reused; some items can be recycled; some items will need to be taken to another landfill that is open.*

**Note:** Lessons on recycling are included in the K-3 Module, Unit 2.

- G. Relabel three of the hula hoops based on students’ suggestions of what could be done with the items. *Recycle, reuse, place in landfill.* Note that “reduce” is not described in the book, *Katherine and the Dump*. Keep the fourth hula hoop for the “reduce” category to use later in the lesson.



HULA HOOPS FOR STRING CIRCLES

## DISCUSSION/QUESTIONS

- A. Ask students:
- What items do we still have in the “landfill” hula hoop? *Paper towel, candy wrapper, short pencil, dried up marker and glue stick, banana peel.*
  - What could we have done to reduce the number of items we had there in the first place? *Close up the tops of the markers to keep them from drying out; use only the number of paper towels that you need to dry your hands; use a sponge or cloth towel instead of paper towels to clean up spills.*
  - What items in the classroom can we use less of in the first place? *We can use less new paper by using paper previously used on one side; we can use fewer paper towels by using cloth towels or use one paper towel instead of two or three each time we wash our hands.* What items in our homes can we use less of? *We can use fewer paper towels; we can use fewer paper cups by*

using plastic or glass cups; we can use fewer plastic bags if we reuse the ones we have and not buy many more.

- B. Have students place any item they could have “reduced” (used less of) from the landfill pile into a new hula hoop pile called “reduce.”
- C. Tell students that some people recycle yard waste and kitchen scraps (like banana peels) by composting. Ask if anyone knows what composting is. Tell students that they will learn more about composting in another lesson.

**Note:** If your students are familiar with composting, use a fifth hula hoop in which students can place items that can be composted, which includes banana peels and paper. Lessons on composting are included in the K-3 Module, Unit 3.

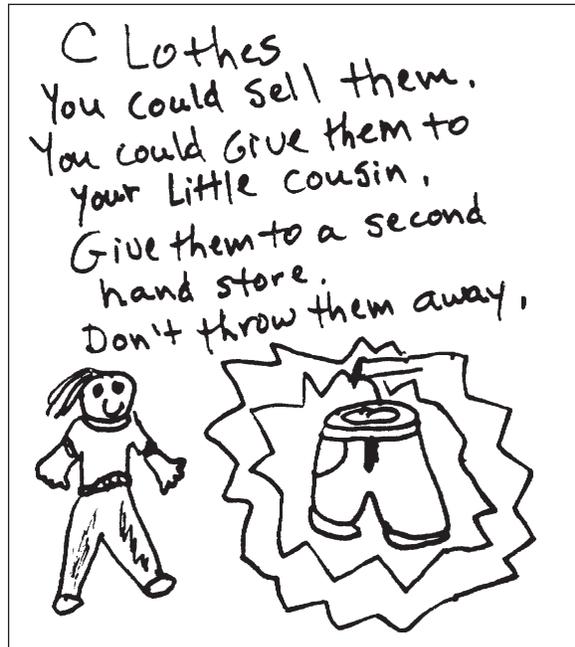
- D. Ask students to look at what’s left in the landfill hoop and ask what natural resources these came from. Make certain that students realize that when items end up in the landfill, it means that someone took the natural resources from their natural environment and placed them in an area where they can no longer be used by people or other living things. Discuss:

- What happens to the natural resources when they end up in the landfill? *They are buried and can no longer be used.*
- If we throw paper in a landfill, can that paper be used again? *No.* How are we wasting this paper? *We can't reuse it or recycle it.* What can we do to keep from wasting it? *Reuse it or recycle it. Keep it out of the landfill.*

## APPLICATION

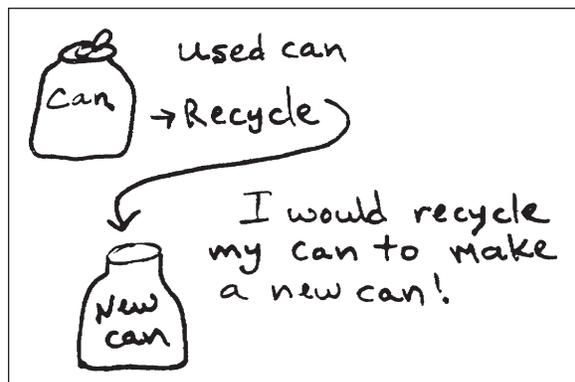
- A. Ask students to look at what has been separated from the garbage that was going to the landfill and to appreciate how much they have conserved. Discuss with students what they learned in this activity.
- B. Ask students to select an item they often use. Discuss:
  - What happens to that item when we no longer want it?
  - What can we do to keep that item from going to the landfill?
- C. Ask students to list things they can do to re-

duce the number of natural resources that are being wasted. Younger students can draw pictures showing what they can do, or they can ask an older person to write for them as they dictate their ideas. They can do this in their journals.



Submitted by Lana Best, kindergarten, first- and second-grade teacher, Pacific School, Lincoln Unified School District.

- D. Have students add to the list they began in Lesson 2 concerning what people can do to conserve natural resources. They can circle those actions that they think they could do. Students will add to this list in Lesson 5.



Submitted by Christine Lucas, second- and third-grade teacher, Baywood Elementary School, San Luis Coastal Unified School District.

**Project Idea:** Have students come up with a plan on how to reduce waste in the classroom. For example, monitor the use of paper and paper towels; check that lids are on markers and glue

sticks to keep them from drying out.

**Note:** The topic of reusing and recycling is addressed in the K-3 Module, Unit 2.

## RESOURCES

### Videos

*Kids Talkin' Trash.* Alameda County Waste Management Authority, 1995. Distributed by the California Integrated Waste Management Board (14 minutes).

Students learn how to make less garbage and protect the environment by practicing the four R's: reduce, reuse, recycle, rot. Shows a landfill.

*Tinka's Planet.* Distributed by The Video Project (12 minutes).

Tinka discovers that not all garbage needs to be thrown away. She visits a recycling center and learns how recycling can help to conserve natural resources.

### Books

Brown, Laurie Krasny, and Marc Brown. *Dinosaurs to the Rescue! A Guide to Protecting Our Planet.* New York: Little, Brown, and Company, 1992.

Dinosaur characters describe what students can do to conserve natural resources and reduce, reuse, and recycle. Includes a section that recommends that children use only as much of the natural resources as they need in order to avoid wasting resources.

Davies, Kay, and Wendy Oldfield. *Waste.* Starting Science series. Austin, Tex.: Steck-Vaughn Company, 1992.

Describes some activities that primary students can do to learn more about waste.

Morris, Martha. *Katherine and the Garbage Dump.* Toronto, Canada: Second Story Press, 1992.

The story of how Katherine's backyard became a dump and how Katherine got people to clean it up by reusing and recycling the garbage.

Showers, Paul. *Where Does the Garbage Go?* Let's Read-and-Find-Out-Science series. New York: HarperCollins Publishers, 1994.

Describes a landfill, the importance of recycling, how things get recycled, and what students can do to reduce the amount of garbage they generate and the amount that goes to a landfill.

### Other Resources

*Environmental Education Compendium for Integrated Waste Management and Used Oil.* Sacramento: California Department of Education and California Integrated Waste Management Board, June, 1999. Copies are available through the California Integrated Waste Management Board.

Contains information about and evaluations of many curricula on waste management and used oil.

The Web site for the California Integrated Waste Management Board contains updated information about solid waste: [www.ciwmb.ca.gov](http://www.ciwmb.ca.gov).

# BACKGROUND INFORMATION FOR THE TEACHER

People have a habit of throwing things away. But where is this “away”? For most people in California, “away” is the landfill. A landfill is a place where people’s garbage is dumped. It is required by law for all modern landfills to be lined with plastic and clay. This keeps the garbage leachate from contaminating ground-water. Leachate is a solution, often rainwater, that has leached through garbage in a landfill.

Every day large trucks deliver garbage to the landfill. Throughout the day the garbage is compacted with heavy machines. Then a layer of soil is placed over it to keep the garbage from creating foul odors and to keep rodents and insects from getting into the garbage and spreading disease.

The garbage, however, does not go away. It occupies space in a landfill. Items buried in a landfill decompose slowly, because the conditions are not ideal for rapid decomposition by decomposers, many of which need oxygen and moisture. (For more information about decomposers, see the K-3 Module, Unit 3 on vermicomposting.) Note that some decomposers, such as anaerobic (those that do not need oxygen) bacteria also decompose garbage in a landfill. Some drier parts of a landfill are “mummified” for awhile, but as time goes by moisture in the site moves around to different locations and decomposition takes place. What takes five or ten years in a wet landfill to decompose might take 30 to 50 years in a dry landfill site.<sup>1</sup> Furthermore, all of the natural resources used to make the items that are now in the landfill are no longer available to people and other living things. To unbury and separate items for reuse or recycling would be cost-prohibitive at this time.

According to Mark Murray, Executive Director of the Californians Against Waste Foundation, “As long as people continue to generate garbage, we will need landfills to contain that garbage and keep it from contaminating the environment. But landfilling is not the best place for materials that can be reduced, reused, recycled, or composted. In 1997 Californians disposed of approximately 35.7 million tons of garbage.

<sup>1</sup> Written communication from Joe Haworth, Information Officer, County Sanitation Districts of Los Angeles County, October 22, 1998.

Ten years ago, 90 percent of that material was landfilled. Today, 68 percent of that material is landfilled. The rest is recycled and composted.”<sup>2</sup>

The California Integrated Waste Management Board (CIWMB) is responsible for implementing the Integrated Waste Management Act, which is a comprehensive set of laws, passed in 1989, designed to address California’s solid waste problems and lessen the demand on natural resources. Students can help to reduce solid waste through reducing, reusing, recycling, and composting. For more information on waste management-related legislation, see “Appendix B-I, History of Waste Management.”

The integrated waste management hierarchy promoted by the California Integrated Waste Management Board emphasizes the following priorities concerning products and packaging:

1. Reducing and reusing
2. Recycling and composting
3. Environmentally safe transformation (waste-to-energy) and environmentally safe land disposal (landfilling)

For more information on waste-to-energy facilities, see “Appendix B-V, Incineration: Waste-to-Energy Facilities.”

Understanding the role landfills play in managing our waste and impacting our environment will enable us to use our natural resources in a more efficient manner.

<sup>2</sup> Written communication from Mark Murray, Executive Director, Californians Against Waste Foundation, October 12, 1998.