

Waste Management Lessons

<http://web.archive.org/web/20050404071934/www.tnrcc.state.tx.us/waste/lessons/index.html>

Making a Mini-Landfill

Objective:

To have students examine the materials that comprise the products they use, describe whether these materials are renewable or nonrenewable resources, observe what happens to materials when placed in a landfill and decide whether they should be disposed of in a different way.

Focus:

Give some statistics about the amount of garbage each person generates in one year.

Materials:

four large, clear-glass jars
soil
miscellaneous solid waste
crayons
masking tape

Procedure:

1. Choose one item you threw away today. What is your item made of? Into which of the following four categories of solid waste does your item fit?

- a. organic (e.g. potato peels)
- b. renewable resource/recyclable (e.g. newspaper)
- c. nonrenewable resource/recyclable (e.g. aluminum cans)
- d. nonrenewable resource/hard to recycle (e.g. plastic toothpaste tube)

2. What happens to the item you threw away? Discuss: Where is away? What is a landfill? How might the material that a piece of trash is made of determine how you should dispose of it?

3. List ways you can avoid disposing of your item in a landfill.

4. If your goal is to save natural resources and reduce solid waste, from which category (a-d) would you buy products? Which category would you avoid?

5. With crayons and masking tape, label each glass jar with one of the four category headings.

6. Fill each jar about half full with soil.

7. Sort each miscellaneous solid waste item into its proper category. Put a small sample of each into the jar with the corresponding label. Cover with soil. Leave the lid off and place the jar on a shelf away from people and out of direct sun.

8. Predict what you think will happen to the solid waste in each jar. Record your predictions.

9. Observe and record what changes occur during a 2-3 week period, if any.

Discuss:

What happened to the items made of organic and renewable resources?

What happened to the items made of nonrenewable resources?

How did what happened compare with your predictions?

What comparisons can you make between your mini-landfill and a real landfill?

Ask students to keep a record of family purchases from the grocery store.

Discuss:

**What does your family do with the waste from its purchases?
Is there anything else your family could do with this waste?
If your goal is to reduce solid waste, which items would you eliminate from your shopping list?**

Acknowledgements:

**B'Ann Beam, Stephen F. Austin State University TES course, 1994
Recycling Study Guide, Wisconsin Department of Natural Resources, Madison, WI 53707, PUBL-IE-020, Jan., 1988.**

Fireplace Logs from Newspapers

Purpose:

To help people learn that energy can be recovered from trash.

Grade level:

1st through 6th grade

Essential Elements:

Health

3B - Recognizing personal responsibility for protecting the environment

Fine Arts

1A - Awareness / sensitivity to natural / man-made environment

Objective:

To help the students learn how to re-use materials in environment

Focus:

Begin by talking about recycling. Name ways and things we recycle. Hold up newspaper and ask how many people recycle their newspaper. Tell the students we are going to learn how to make fireplace logs from newspaper. This saves trees.

Materials:

containers large enough to hold several soaking logs

newspapers

used twine or string

broomsticks

scissors

water

Procedure:

1. Take eight pages of newspaper and lay unfolded on a table lengthwise. Lay broomstick at the top of the paper.
2. Tightly roll the newspaper around the broomstick to about 8" from the end. Overlap another eight pages and continue rolling until you have a good size log.
3. Tie with used string or twine (3" from each end).
4. Soak overnight in water. The water will break down the paper's fibers and reduce the amount of fly ash when the logs are burned.

5. Take the logs out of the water and bang them on the ground to pack the paper.
6. Remove the broomstick and dry thoroughly.

Enrichment:

1. Discuss how burning newspaper logs illustrates the concept of waste to energy. Show examples of how waste to energy plants burn "garbage" to generate electricity.
2. Discuss whether these "logs" burn clean. Do they produce a lot of ash? What happens to the ash that is produced?

Acknowledgements:

Stacy Butler, Stephen F. Austin State University TES course, 1994

Paper Capers

Objective:

Students will calculate how much paper is thrown away in their classroom each week.

Focus:

Show students a bag of trash. Have them look inside and identify the most common trash--most likely paper. Have the students guess the weight of the amount of paper one classroom throws away in a week.

Materials:

clean receptacle for paper, scale

Procedure:

1. Ask the students how the class could find out the total paper it throws away in a week. Most likely they will suggest having a separate container just for paper. Discuss what kinds of paper to keep. For the purpose of this activity, ditto paper or notebook paper should be kept. Explain why some kinds of paper isn't readily recyclable.
2. Have each student write down his estimate of how much paper, by weight, is thrown away each week.
3. At the end of the five-day period, weigh the paper in the paper box. Have the students sort the waste paper into two categories: A) paper they could still use in the classroom (example, they could write on the blank side), and B) paper that has no additional classroom use (example, already written on both sides). Weigh the amount of paper in each category.
4. Use paper from category A for scratch paper and notes. Put the reused paper in a separate container for recycling. Weigh the container at the end of 5 days.
5. Relate the classroom experience to the idea of source reduction.

Discuss how students can use less paper. Think of ways the whole school could cut down on paper use. Plan to share the results of this demonstration with the school.

Enrichment:

1. Investigate how paper is recycled. Give a talk to your classmates about the process.
2. Make your own recycled paper. (There are lesson plans available from other sources to show you how to do this in the classroom, with or without using a blender.) Use the recycled paper for Christmas cards or valentines.

Acknowledgements:

Reducing Cafeteria Waste

Grades 4-6

Objectives:

Students will survey and analyze waste in the school cafeteria.

(Optional: Students will propose plans to reduce cafeteria waste.)

Background: School cafeterias used to provide reusable dishes and flatware. Of course, they had to be washed after each use. This method of food service has its costs. First, the school must have the space to store and funds to buy the dishes, flatware, and dishwashing equipment. Second, it must pay for the labor involved in washing and storing the dishes. Third, there's the cost of water, chemicals, and energy expended to clean and dry the items.

Many schools now use disposable items due to cost and sanitary considerations. Unseen costs include increased landfilling, use of nonrenewable resources, and the labor involved in collecting and transporting the trash and recyclables, not to mention the air pollution emitted by transport vehicles.

There's obviously a great deal of waste in school cafeterias. The question is *reusable* or *disposable*. What's the answer? Challenge the class to find ways to reduce the trash.

Activities

- 1 Inform the students that they will observe the cafeteria trash habits of their peers during lunch periods for the next five days.
- 2 Give each student a copy of the [Data Table](#) for collecting information. Students will keep track of what other students at their tables throw away or waste.
- 3 At the end of the week, students will total the data. As an option, you might keep a master data table in the classroom for collating student data and displaying results. You might also calculate a ratio of trash items per student.

Questions

Do most students bring lunch or buy lunch, and is there any difference in waste generated by either?

What type of food is wasted the most, the least?

Is it less expensive to buy larger amounts of food or snacks and pack them in reusable containers, or to buy individual servings in disposable packages?

Scientific Survey of Cafeteria Trash and Waste

<http://web.archive.org/web/20021123214831/www.mcswmd.org/kids/datatabl.html>

	Day 1	Day2	Day3	Day4	Day5
Number of Students at my table					
Paper					
Foil					
Cans					

Bottles					
Juice Boxes					
Milk Cartons					
Plastic					
Food Scraps					
Other					
Reusable Items (trays/plates/ spoons/forks/cups)					