

**TEACHING KATE
TEACHING KIDS ABOUT THE ENVIRONMENT**

**INTERDISCIPLINARY UNIT BETWEEN SCIENCE AND HOME
A GLOBAL VIEW**

Grade Level: 5

Time Required: 3 class periods

SC Science Standards

This lesson plan was correlated with only the grade level specified unless otherwise noted.

Grade 5:

- I. A. 4. a
- II. B. 4. e

Grade 6:

- I. A. 7. a
- II. C. 3. a

*Note: This activity serves as a good introduction to a recycling program

Purpose

The students will learn about demonstrating responsible buying decisions. They will practice resource and energy conservation by supporting integrated solid waste management, especially source reduction, recycling and composting.

Skills

Citizenship, cooperative learning, critical thinking, oral and written communication, organization, problem solving, research and data collection, vocabulary building.

Concepts

Source reduction means making less garbage. Recycling and composting are waste management methods that conserve natural resources, save energy and reduce the strain on incinerators and land fills. A significant portion of all garbage can be handled by recycling or composting.

Materials Needed

hot tap water	knife
scissors	marking pen
needles	candle
clear tape	mesh fabric
rubber bands	inorganic material
organic material - vegetable or fruit kitchen scraps	
three 2-liter plastic beverage bottles	

Definition of Terms

<u>Composting</u>	The decomposition of solid waste materials into useful soil called humus or mulch for landscaping.
<u>Conserve</u>	To use wisely.
<u>Efficient</u>	Using the most effective and least wasteful means of accomplishing a task.
<u>Inorganic</u>	Non-living material.
<u>Lifestyle</u>	Ways of living, daily habits which affect the environment.
<u>Natural Resources</u>	Include forests, wildlife, land, water, air and minerals.
<u>Non-renewable Resources</u>	Resources that cannot be replaced.
<u>Organic</u>	Material of, relating to or derived from living organisms.
<u>Reduce</u>	To make or use less of something.
<u>Reclaimable</u>	Able to be recycled. Includes paper and other wood products, glass, most metals and all types of plastic.
<u>Recycle</u>	A resource recovery method involving the collection and treatment of a particular waste product so it can be used again to make a new product.
<u>Renewable Resources</u>	Resources that can be replaced.

Repair To fix or mend.

Reuse To use again.

Before the Session

Gather materials needed. Review the vocabulary.

Background Information

Source reduction involves using products, packaging, manufacturing processes and ways of living which minimize the amount of waste created. By reducing the amount of garbage we create, we will also be reducing the amount of solid waste that must be incinerated or buried in a landfill.

Containers and packaging are a significant portion of the waste stream - more than 30 percent. Packaging could be considered a key source of unnecessary waste. However, while there are certain areas in which packaging can be reduced or even eliminated, there are many reasons why packaging is necessary and beneficial.

The good news about containers and packaging is that their percentage in the waste stream has actually been declining since 1970. This reduction is due in part to efforts of consumer products manufacturers to design products and packaging that create less waste.

Recycling is a technology that involves four very important steps: collection, separation, processing of new products and developing end-use markets for these new products. Separation and collection alone do not make a recycling program. This process is not completed until a material is processed, purchased by consumers and used again. Also, consumers need to read labels and buy products packaged in recycled materials such as: aluminum, steel, glass, plastic and paper.

Composting is a special type of recycling where organic wastes are converted to a rich humus or mulch by natural decay. Composting is an attractive waste management option today. For example, components of disposable diapers can be composted with other municipal solid waste to produce humus, a useful material for the agricultural and landscaping industries.

There is a long way to go in increasing the number of composting systems, but there is no doubt that composting can play a big part in U.S. recycling efforts. After source reduction, recycling and composting are good ways to handle our garbage in the future.

Suggested Lesson Plan

Day 1

1. Introduce the concept of source reduction and the related vocabulary.
2. Have each member of the class list 5 things they can do that will help in the area of source reduction. Hints: Use both sides of your school paper. Donate an old toy to charity. Leave grass clippings on the yard or compost them instead of bagging them up for the land fill.
3. Then have each student list and illustrate the suggestion.
4. Compile these illustrations into a source reduction booklet for each member of the class.

Day 2

1. Introduce the concept of composting, along with related vocabulary.
2. To teach students to identify materials that are suited for recycling versus composting, it is important that they understand the difference between organic and inorganic items. Show students examples of organic and inorganic materials.
3. Then divide the class into pairs to construct models of a compost system to observe the decomposing activity which takes place. Follow the instructions provided in “Making a Model,” which simulates the conditions in a back yard compost bin.

Day 3

1. Introduce the concept of recycling, along with related vocabulary.
2. Allow each student in the class to share a recycling tip with other students and families. The idea may be a recycling activity that the family is currently doing, or it may be an original idea that helps a family set a recycling goal. Collect the “pointers” and compile them into a format that can be photocopied and sent home with each child. You might include this information in the school’s newsletter.
3. Follow up this activity by having your class organize a recycling effort in your school. (Example: Recycle aluminum drink cans and use the money to help defray the costs of certain field trips.)

Application

Many cities and towns across South Carolina have begun curb side pick-up of recyclable materials. Recycling has cut down on the amount of materials sent to the landfill. Since the amount of garbage is reduced, only one garbage pick-up is required each week. Materials which can be recycled are picked-up instead of garbage on a second day. Therefore, cities and towns which picked-up garbage two days per week do not have extra costs except for the original start-up costs for special trucks. The recyclable material can be sorted within these special trucks and eventually each type of recyclable is collected together and taken to a recycling facility. Profits from the recycling can pay for the system. Many cities and areas outside of cities which do not pick up recyclable materials have set up recycling centers. Although the material that is accepted is limited (often only certain plastics - milk jugs and soft drink bottles - are accepted) awareness of the programs are growing and the total amount of garbage being sent to landfills is decreasing.

Extension

Take students on a field trip to a recycling facility.

Resources Available

Proctor and Gamble, Education Services, P.O. Box 599, Cincinnati, Ohio 45201.

Prepared by: Jane Graham

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MAKING A MODEL

Composting is based on the biological process of decomposition. What turns plants and animals into compost? Microscopic bacteria and fungi, which feed on dead tissue, are the important organisms.

What affects the composting process? The amount of moisture and air, temperature, amount of bacteria and fungi and the nature of decomposing material are all critical. The presence or absence of air (oxygen) is one of the most important factors in composting. The practice of composting allows air and moisture to speed the process of biodegradation. In a backyard composting system, it is customary to run a pole or stick through the compost heap regularly or to turn the material with a shovel to allow air circulation.

Procedure

Remove the bases from two bottles, and the labels from all three, by pouring about two cups of hot tap water into the bottles. (Columns can also be made from bottles that do not have removable bases.) Replace the cap, tilt the bottle so the water softens the heat-sensitive glue, peel of the label and twist off the base. Pour out the water and draw cutting lines around the bottle. Most columns will require air holes for ventilation. These can be poked into the plastic with a sharp needle or paper clip that has been heated with the flame of a candle. Alternatively, larger holes can be cut into the sides with a knife and covered with a fine mesh fabric held in place with tape. This mesh fabric allows for the appropriate drainage. Add ingredients for composting through the top of the column.