



Title: Reusing or Recycling

Grades: 5

Subjects: Science, Social Studies, Language Arts

Time: Two 45 minute in class sessions, additional outside of class time for each group

Objectives:

- Identify and describe the difference between recycling and reusing materials.
- Identify and describe how an individual's action in regards to waste management can affect change and improve the environment.
- Make oral presentations related to the topic of study.

Standards:

Geography Standard 16: Understand the changes that occur in the meaning, use, distribution and importance of resources.

- Benchmark # 5: Know advantages and disadvantages of recycling and reusing different types of materials.

Geography Standard 18: Understand global development and environmental issues.

- Benchmark # 2: Know ways in which resources can be managed and why it is important to do so (e.g., conservation practices, recycling non-renewable resources).

Technology Standard 3: Understand the relationship among science, technology, society and the individual.

- Benchmark # 4: Know that new inventions reflect people's needs and wants, and when these change, technology changes to reflect the new needs and wants.
- Benchmark # 5: Understand that technology may affect the environment both negatively and positively (e.g., the introduction of plastics).

Language Arts Standard 8: Use listening and speaking strategies for different purposes.

- Benchmark # 3: Respond to questions and comments (e.g., gives reasons in support of opinions).
- Benchmark # 5: Use strategies to convey a clear main point when speaking (e.g., express ideas in a logical manner, use specific vocabulary to present information).
- Benchmark # 7: Make basic oral presentations to class (e.g., use subject related information and vocabulary; include content appropriate to the audience; relate ideas and observations; incorporate visual aids and props; incorporate several sources of information).

Materials:

- Cards with waste items recorded
- Empty container or plastic bag
- Pencils and paper
- Empty plastic drink bottle
- Sample of waste materials to be reused (see list provided)
- "What Are We Wasting" Worksheet provided below
- Pictures of items made from recycled and reused plastic water bottles
- Magazines showing ways to reuse materials
- Internet access

Overview: Waste is part of everyday life. As we go about our daily tasks we create waste. The average US citizen generates approximately one ton of trash annually, but seldom gives it any thought once they throw it away. This trash goes into the waste stream where it is collected and hopefully, disposed of in a manner that least impacts the environment. This process is known as solid waste management.



The Environmental Protection Agency has designed a plan for this process, which they refer to as “integrated solid waste management”, and has identified five ways to properly handle waste materials: a) source reduction and reusing, b) recycling, c) composting, d) converting to energy through incineration, and e) burying it in a sanitary, engineered site. The EPA emphasizes that there is no definitive approach to waste management and encourages communities to combine these five methods to effectively address the issue.

In most communities across the country waste materials end up in at least one of three locations: a) a materials recovery facility, b) a waste-to-energy facility, or c) a landfill. While the technologies driving these methods have greatly improved in recent years, they still present a number of environmental problems; so source reduction is, by far, the most preferred method of solid waste management. It uses fewer resources, less energy and is essentially free. Unfortunately, it is also the most difficult concept to communicate to consumers. For manufacturers, source reduction means looking at and reducing the waste they generate during production, and the materials they use in packaging products. For individuals, it means reevaluating current practices, learning to do more with less, using what already exists responsibly, and recognizing the difference between needs, wants and what is ultimately best for the environment and the future of mankind.

Kid’s Speak: Trash takes up space, uses valuable resources and harms the environment. People make a lot of trash. Every day they throw it away without even thinking about where it will go or what will happen to it. People need to understand the consequences of making all that trash, make better choices so the amount of trash they make is reduced, and have a plan to properly dispose of the trash they do make.

Not all trash needs to go in the garbage. There are other things that can be done. Some of it can be reused it in a different way, some of it can be recycled so it can be made into something else, and some of it, like scraps of food, leaves and grass clippings, can be composted and added to the garden. But there are also things that people can do so there isn’t as much trash. They can use fewer items that make trash. Instead of using plastic sandwich bags to put snacks in, they can use a reusable container. Instead of a plastic drink bottle, they can use a reusable water bottle. Instead of paper napkins and plastic utensils, they can use cloth napkins and washable forks and spoons. There are lots of things that people can do to make less trash. They just have to think about the choices they have and try to make the best ones for the environment.

Eco-Fact: “Fuzz That Wuzz!” stuffed animals are a new product designed by Mary Meyer to reduce the amount of waste that goes into landfills. The outer fabric and the stuffing of each stuffed animal are both high quality polyester fiber made from 100% recycled plastic PET bottles. Each toy will keep 10 plastic bottles out of landfills.

Procedures:

Note: The Data Collection worksheet and disposable plastic bottle from the previous lesson will be helpful in conducting the following activity.

Before Conducting the Lesson:

- Review the worksheet from the previous day. Discuss the types of products the class was able to move from the disposable column to recycling column.
- Display the plastic drink bottle listed on the sample worksheet. Explain to students that this bottle was originally going to be disposed of, but was moved to the recycling column. Ask students to consider the following questions:
 - Is recycling the only option for this type of waste?
 - How is reusing an item is different from recycling it?
- Show students items and/or pictures of items made from recycled bottles and then items made from reused bottles. Items made from recycled plastic drink bottles may include:



- Fuzz that Wuzz stuffed animals
 - Cagoule Fleece bottle caps (hats)
 - Drink to Wear t-shirts made from Coke Cola bottles
 - Earthpak environmentally friendly backpacks
 - Gaiam Turkish Pattern Reversible All-Weather Rug
- Items made from reused plastic drink bottles may include:
 - <http://www.greenyour.com/lifestyle/food-drink/soda/tips/buy-products-made-from-recycled-soda-containers>
 - Fun water bottle sculptures
 - Roofs made plastic bottles
 - Solar water heater made of bottles
 - Lamp
 - Boat
 - Inhabited floating island made from plastic bottles
 - Chandelier made from plastic bottles
 - Ask students to identify some ways to reuse the plastic water bottle on display other than to refill it. Explain to students that due to toxins, which may leak into a drink, a plastic drink bottle is not recommended for use as a reusable drink container. Some other ways to reuse the bottle may include:
 - Using it as an ice pack
 - Making it into a bird feeder
 - Making a sand bottle
 - Ask students why they should consider reusing a bottle rather than recycling the bottle.
 - Help facilitate the conversation so the students understand that even though recycling a bottle uses far less energy than producing a new plastic bottle, some energy is still used in the recycling process, while reusing a product minimizes energy usage, depending on how it is reused.

Conducting the Lesson:

- Now that the students understand the difference between reusing and recycling waste materials, tell them they are going to find ways to reuse other items. Show them a bin containing each of the items listed below. Divide the class into groups of two.
- Having written each waste item out on a separate card prior to the start of the lesson, place the cards into a container, shake it, and ask one member of each group to reach in and take out a card. Written on the card is the item the group will reuse.

suggestions for **REUSABLE WASTE ITEMS**

old shoe	coffee can
catalog	plastic shopping bag
top of a laundry bottle	used glass jar
discarded CD	ripped plastic tablecloth
bag of corks	used envelope
tattered map	empty cereal box
empty milk carton	a bent spoon
unmatched sock	chipped cup
greeting card	egg carton
a piece of ribbon	paper bag



- Students will conduct research using the Internet, craft magazines, interviews, or any other suitable source to locate ideas for reusing the item in a different way. Students will make a list of suggestions for reusing the item. At least five suggestions should be listed. Students will select one of the suggestions and transform the waste item into the reusable item.
- Internet research sites recommended for this activity:
 - <http://craftingagreenworld.com/>
 - <http://familycrafts.about.com/od/craftsbyproduct/a/trashcrafts.htm>
 - <http://www.kid-at-art.com/>

After Conducting the Lesson:

- Have each group identify the item they reused, make recommendations from the list they generated on ways this item can be reused, and present the item in its new form, describing how it was repurposed.
- Have the students place the word REUSABLE in the header of the third column of their waste management worksheet. Have the students reexamine their waste list for items that can be reused or repurposed and mark them in this column. Now have the students reevaluate their waste management. Is it improving? Have they been able to reduce the amount of material they would throw away?

Adaptation: Brainstorm ways the items could be reused in a whole group session and have students select one to research and reuse as a homework project.

Extension: Host a Reuse Art Show or Museum at the end of the week.

Sample Data Collection Worksheet

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