

GARBAGE PIZZA

Understanding Integrated Waste Management

Objectives

Students will be able to 1) identify the five options for solid waste management: source reduction and reuse, recycling, composting, waste-to-energy, and sanitary landfills; 2) identify appropriate methods of waste management for items commonly found in the municipal solid waste stream; and 3) learn that these methods can vary in different communities.

Web-Directed Research

These activities correlate with the Keep America Beautiful “Clean Sweep U.S.A.” web site targeted to grades 6-8, and are designed to expand on the objectives in this lesson. The web site can be found at www.kab.org/cleansweepusa.

1. Locate one or more sites on the web that describe the five ways to handle waste. Define the terms “**municipal solid waste**” and “**integrated waste management**”. Locate the solid waste management plan for their community.
2. Create a “garbage pizza” (using the activity on the Keep America Beautiful web site) that reflects the waste stream in their house. They could also select just one room in the house, such as a bedroom, kitchen, or living room. Use a visual estimate, or complete a quick sort of materials in the trash can. Include parents and other family members in this activity.
3. Find the total amount of solid waste generated in their city or community and how different materials are managed. Select one method to manage waste used in their community and gather information about it. Report back to the class.

Web sites to consult:

- U.S. Environmental Protection Agency Office of Solid Waste (<http://www.epa.gov/osw/>) and state municipal solid waste data (<http://www.epa.gov/epaoswer/non-hw/muncpl/states.htm>)
- Earth 911 (www.earth911.org) environmental glossary and search by zip code for local recycling opportunities
- How Stuff Works trash audit (<http://home.howstuffworks.com/composting4.htm>)
- Completing a waste audit at school (<http://www.cuyahogaswd.org/classroom/audit.shtml>)
- Web site of the City or County government that handles solid waste

In-Class Activity

Method

Students will participate in an activity in which they select waste items and identify the best waste management option.

Materials

items from the “Trash List” at the end of this lesson printed on 35 index cards or note paper backed with re-usable adhesive (or masking tape)

Vocabulary

composting, light weighting, recycling, sanitary landfill, source reduction, waste-to-energy

Procedure

1. Before class, post the items from the “Trash List” on the chalkboard or a wall of the classroom. Arrange the items randomly.
2. Discuss with students the five methods of managing municipal solid waste: source reduction and reuse, recycling, composting, waste-to-energy, and sanitary landfill. Have students describe each method. Clarify any misconceptions students may have about what each method involves. Review the “Teacher Backgrounders” on the Keep America Beautiful web site (www.kab.org/cleansweepusa) to help prepare for this discussion.
3. Divide the class into five teams. Assign each team one of the five methods of waste management. For example, Team 1 would be Source Reduction and Reuse, Team 2 would be Recycling, Team 3 would be Composting, Team 4 would be Waste-to-Energy, and Team 5 would be landfill. Team members will decide in what order they will take a turn for their team.
4. Instruct students that on your mark the first person in each team will go to the chalkboard and choose a waste item that would be appropriate for their group to manage. For example, the composting team would choose a banana peel but not a glass jar. If necessary, discuss two or three examples with the students. Some extra explanation may be needed for the Source Reduction and Reuse Team. The items they choose will primarily be objects that could be reused rather than disposed of. After the first player chooses an item, the next member chooses a card for their team, until all the items have been selected.
5. When all of the items have been removed from the chalkboard, have students return to their seats. On the chalkboard draw five columns, one for each team (representing each waste management method), and label them at the top with the team name. For example, Recycling, etc. Call on a member of the team to place the cards from their team under the correct heading.
6. At this point some lively discussion should be generated. Some of the items on the list should obviously be recycled, composted or landfilled, etc. Some of the items can be handled in a number of ways. For instance, automobile tires can be reused as swings or playground equipment. They can be ground and recycled into a number of products. For items such as this, ask the class to discuss and/or research these items based on what waste management options are available in your community. Remember that waste management options may change from time to time in a community

Assessment

Ask students to name five items they have thrown out as garbage recently. Have the students decide which waste management method would be most appropriate for each item.

Materials

Trash List

aluminum beverage can
apple core
ash (from a waste-to energy facility)
automobile tire
automotive oil
cereal box
chicken bones
clock
coffee grounds
doll
egg shell
glass jar
grass clippings
HDPE milk jug
hub cap
music cassette
newspaper
notebook paper
orange peel
paper clip
paper egg carton
paper grocery bag
paperback book
pencil stub
PETE soda bottle
piece of aluminum siding
piece of lumber 2"x4"
plastic container marked
"other"
plastic grocery bag
pumpkin seeds
rubber band
shirt button
steel can (soup)
t-shirt
telephone book
used bandage
used dental floss
used facial tissue

Standards of Learning

The North American Association for Environmental Education (NAAEE) Guidelines for Excellence in Environmental Education can be found at <http://naaee.org/npeee/learnerguidelines/8th.html>. The Guidelines for Learning which correlate to this lesson are: Strand 1 A, B, C, D, E, F; Strand 2.3 A, C, E; Strand 3 A, B, C, D; Strand 4, A, B, C, D.