World of Waste

Grade: K-3rd

Objectives:

- Students will collect and record data of the trash they generate.
- Students will describe strategies for using resources wisely (reduce, reuse, recycle, and recover).

Time Needed to Complete: 60 minutes (more for the optional extensions)

Materials Needed:

- Various items made of plastic, glass, metal, and paper
- Student Lunches
- Recycling Bins
- Graph paper for class graph
- Copies of Student Pages:
  - Lunchtime Trash Tally
  - Crossword Puzzle
  - Exploring the World of Waste (for extension)
  - Home Trash Survey (for extension)

Background:

Students begin the lesson by examining items to determine what they are made of—glass, paper, plastic, or metal. Next, students collect data to determine what types of trash they produce at lunch time. After making a class graph of this information, students discuss what happens when trash is thrown away and discover four strategies for using resources wisely (reduce, reuse, recycle, and recover). As an extension, students learn more about recycling by exploring the web and display their new learning on a mini poster. And as a final extension, the lesson is brought home, where students analyze the trash they produce and brainstorm strategies for reducing waste.

Photo Credit: TreeHugger

Procedure:

1. Hold up some items from around the classroom for students to see. Ask the students if the items are made from paper, plastic, glass, or metal. Ask students to identify words or phrases to describe each of the materials and write the descriptors on the board (i.e. metal = hard, rigid, shiny…; plastic = see-through, shatter-proof…; paper = easy to tear and crumple)
2. Tell students that they are going to look for items made from paper, plastic, glass, and metal from the trash they generate at lunchtime. Be sure students understand that they will NOT be looking through any trash cans. Rather, students will eat their lunch as normal, but before disposing of any of the material, they will take notes of all the trash they have generated. Provide students with a tally sheet (Lunchtime Trash Survey below). Prior to cleaning up, ask students to tally the number of paper, plastic, glass, or metal items they have collected as trash from their meal. Refer them to the words or phrases on the board to help identify each material. Encourage students to place the sorted items into an appropriate recycling bin. (Note: If recycling bins are not yet available at your school, provide students with labeled boxes in which to place the recyclables.)
3. Create a class graph (bar graph, pictograph, or circle graph) to show the amounts of paper, plastic, glass, and metal generated from the lunchtime trash. Analyze and discuss the graph as a class. What type of trash was generated most by the students' lunches?

4. Discuss the concept of a treasure. (e.g. A treasure is something valuable. Sometimes a treasure is hidden. You may not see a treasure right away, but when you find it, there is great value.) Discuss how many of the items that people throw away are actually quite valuable. Many of these items can be recycled or used for energy. Could any of these items be used again before being thrown away or recycled? For example, could a plastic yogurt cup be rinsed out and used as a water cup? Are there other items in your lunch that could be reused and considered valuable?
5. Discuss the importance of using scarce resources wisely. As natural resources become scarce, recycling is more important than ever (however, reducing waste and reusing that which we already have are the first and second lines of defense, respectively). Recycling saves landfill space. It generally takes less energy to make recycled products. Thinking creatively about waste can help save energy.
6. Write the vocabulary words on the board (Reduce, Reuse, Recycle, and Recover). Explain each term to the students.
    a. Reduce refers to using less of an item.
    b. Reuse refers to using an item more than once before discarding it.
    c. Recycle refers to taking out useful materials that otherwise might be thrown away so that they can be used again (often in a different form.)
    d. Recover refers to changing waste into useful products like compost or energy.

Read the following examples to students. Students should shout out the correct vocabulary word to match each example. Ask students to explain their thinking.

Example	**Answer**
Using a cloth bag at the grocery store instead of plastic	REDUCE the number of plastic bags
Using composted soil for gardening	RECOVER
Using newspaper for gift wrapping	REUSE
Mashing up a paper carton and using the paper fibers to make tissue	RECYCLE

7. Students complete the Student Page – World of Waste Crossword Puzzle and check their knowledge

Extensions:

1. 3rd Grade: Allow students to explore the web to research what happens to our waste and solutions to reducing waste. Provide students with the Student Page - Exploring the World of Waste to help them organize their notes and guide their research. Then students make a small poster showing facts about waste in their communities, and about reducing, reusing, recycling and recovering waste to solve the problem. Finally, students share their poster with the rest of the class.

2. K-1st Grades: Provide students with some common items found in student lunches (aluminum foil, yogurt cups, napkins, bottle caps, bottles, etc), scissors and glue and encourage them to reuse this "trash" by making it into art. Visit www.kid-at-art.com for ideas.

3. K-3rd Grade: Students collect data from home to compare with the data collected at school. What types of trash are produced when preparing and eating one meal at home? Remind students again that they will NOT need to go through any trash cans to complete this assignment. Rather, students should take note of any items before they are discarded. Encourage students to recycle if they already do so at home. If not, students can encourage their families to investigate how they might participate in any local recycling programs.

Standards Correlation:

This lesson may be used to address the National Science Education Standards listed below.

NSES 4FSPSP3.3: The supply of many resources is limited

Student Page – Lunchtime Trash Survey

Directions: After eating your lunch, what trash is left behind? Count the different types of trash you've made from you lunch on the chart below

Type of Trash	How Many?
Paper	
Plastic	
Metal	
Glass	
Other (describe)	

Student Page – World of Waste Crossword Puzzle

Can you find all of the words below in the crossword puzzle?

COMPOST
GLASS
LANDFILL
METAL
PAPER
PLASTIC
RECOVER
RECYCLE
REDUCE
RESOURCE
REUSE
SCARCE
TREASURE
WASTE

K O F Q K O N G N S X T E N T
C I T S A L P N E L O C O C S
E C R U O S E R R E U S E I O
R S L A S Y G E L C Y C E R P
E T A U C K X B O S I N K L M
V H T B A U H X S E W W L S O
O N E J R S Q A W K T I L C C
C T M X C G L E E S F S T E Y
E R P B E G W L M D H O A K R
R E E T D T O I N P B T Y W T
P A C X E T L A V A D A M O V
M S U P T S L Y H P T X X V D
C U D Q F K C M G E V I M R V
X R E C R H N O S R H F Q C L
H E R R J Q X G N U W N O G B

Extension #1

Student Page – Exploring the World of Waste

What do you know about waste in your community? How does your community deal with their waste? Use the questions below to guide your research, and come up with at least 2 of your own. Some helpful websites that can help you find your answers are listed below.

- Where does my trash go once I put it in the trash bin?
- What does my city do with all that trash (is it burned? Is it buried?)
- How much of my city's waste is recycled?
- What is composting? Does my city compost?

Helpful Websites to Guide My Research:

United States Environmental Protection Agency
http://www.epa.gov/waste/index.htm

Earth 911
www.earth911.com

My City's Public Works Department
(Google search "[your city] public works department")

Extension #3

Student Page – Home Trash Survey

1. **How much trash does one meal at home make? Record your findings below.**

Type of Trash	How Many?
Paper	
Plastic	
Metal	
Glass	
Other (describe)	

2. **Are there ways you can reduce your trash/waste at home? How?**