

# 72 Hours – How Much Do You Use?

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WR teacher training 2003-2004/Lessons for CD-Jan. 2004/Lesson—72 hours

- **Grade level:**  
Upper Elementary, Middle School, High School
- **Subject areas:**  
Science, Social Studies, Math, English Language Arts
- **Instructional strategies** (from *Classroom Instruction That Works—Research-Based Strategies for Increasing Student Achievement* by Robert J. Marzano, Debra J. Pickering, Jane E. Pollock)  
Identifying similarities and differences  
Summarizing and note taking  
Homework (preparation for other lessons)  
Nonlinguistic representations  
Setting objectives and providing feedback
- **Estimated duration:**  
Preparation time: 20 minutes  
Session one: 10-15 minutes to introduce assignment (give students up to 7 days to complete assignment, some may wish to do it over a weekend) Session two: 50 minutes for class discussion. You will need more time if garbage is weighed and analyzed.
- **Setting:**  
Classroom for discussions, weighing and analyzing garbage; School, home and community for collecting waste
- **Skills:**  
Comparing similarities and differences, data collection, discussing, estimating, generalizing, graphing, observation skills, recording, self evaluation
- **Vocabulary:**  
recyclables, consumables, composting

## Summary

In the process of collecting their personal “trash” for a consecutive 72-hour period, students will develop an understanding for the need for waste reduction.

## Objectives

Students will:

- Collect 72 hours worth of their trash, which they will carry around with them for the entire time period.
- Reflect on what they have learned about themselves while undertaking this project.
- Sort and record the trash generated.
- Compare similarities and differences between the trash they generated and that of their classmates or family members.
- Graph collected waste.

- Draw conclusions about the accuracy of their collection, the time period in which they collected it, and the waste collected.
- Extrapolate this over a longer period of time (say 1 year), average the class waste, and determine what impact they might have as a group in one year's time.

### Materials

- Personal instruction sheet with examples of ways to collect and store the trash. (found at the end of this lesson plan)
- 1 large-handled trash bag, and 2 quart-sized zip-lock freezer bags for food items.
- Scales

### Background

Students, and the general population, are aware of and often participate in recycling—resulting in tremendous successes with that waste management strategy. Few people, however, are aware of or understand the Iowa State Legislature's **most preferred waste management strategy. That is, *reduction or preventing the generation of waste.***

In spite of the increase in recycling over the last 40 years, U.S. residents still are *generating* more waste, per person, than in 1960. Way more. Sixty-eight percent more. Though more of this waste is recycled, **we are discarding 25% more waste, per person, than in 1960.**<sup>1</sup> Waste prevention simply is not widespread.

Convenient disposal methods, a consumer culture and more single-person households have caused the rise in waste generation and disposal. Some of the other factors contributing to this rise include planned obsolescence, a disappearing repair industry, a shift to disposables and the booming economy of the 1990s.

It is easy to underestimate how much waste we produce, because much of it is hidden. For example, any waste that is produced in the workplace/school is disposed of there, usually at no visible cost to the worker/student. When one eats at a restaurant, the waste in making the meal is not obvious, nor is the food waste from the meal itself.

Getting students to think about what they are wasting will help to foster critical thinking and problem-solving skills. When students physically carry their own waste with them, it makes them acutely aware of garbage issues.

Of course, in the process of carrying out their assignment, there will be students who eat everything on their plates to avoid carrying around food leftovers. Others

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<sup>1</sup> News about waste during the past 40 years is mixed. The good news is that, in 1960, only six percent of the United States' trash was recycled or composted, while 40 years later 30 percent was recycled or composted.

The bad news is that, during this same time period, the amount of waste generated increased by 68 percent—from 2.68 pounds per person to 4.51 pounds per person. Therefore—*even with great successes in recycling*—**the United States is discarding about 25 percent more now, per person, than in 1960.** Adding to the problem is that, from 1960 to 2000, the country's population increased by 56 percent (*Municipal Solid Waste in the U.S.: 2000 Facts and Figures*. Retrieved on September 12, 2003, from [<http://www.epa.gov/epaoswer/non-hw/muncpl/report-00/report-00.pdf>] ).

will decide to keep crumpled paper until the exercise is over, or forgo an item to reduce their “load.” These decisions are generated as a result of the exercise and may be as valuable as when the waste is collected.

## **Procedure**

### ***The Activity***

1. Distribute handout, “72 hours of Trash” found at the end of this lesson. Discuss the assignment with the students. Give students several days, and preferably a weekend, to complete the assignment.
2. Ask students to complete the portion of the handout: “I want to learn/know...” (found on page 2 of the handout) before the class period is over.
3. When the assignment is completed, weigh each student’s trash.
4. Discuss what students found when conducting research. The following are possible discussion questions<sup>2</sup>:
  - What did you learn about yourself doing this activity?
  - Did you meet the learning objective that you set for yourself (from the 72 Hours of Trash handout)?
  - What types of trash did you collect the most of?
  - Were any of your types of trash recyclable, compostable or reusable?
  - Did you do anything differently because of the activity – for example, did you become a member of the “clean plate club” so that you wouldn’t have to carry around your food waste for three days?
  - Did you collect more or less than you thought you would?
  - Do you think you generate more or less trash than your parents, siblings, grandparents, friends? On what evidence do you base this opinion?
  - If you kept track of water usage – how much of the water you used was consumed? How much was used for hygiene? Cooking? Recreation? Is there any way you could significantly reduce your water usage?
  - What other types of waste do you produce that you were not able to measure doing this activity (i.e. petroleum)? What are some ways you could reduce your use of these resources?

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<sup>2</sup> Note: Pause briefly after asking a question. Research shows that it increases the depth of student answers (Varlas, Laura. “Getting Acquainted with the Essential Nine,” *Curriculum Update*, Winter 2002).

5. For more accurate data, sort and weigh trash into categories such as paper (including but not limited to cardboard, cereal boxes, newspaper and notebook paper), plastic, food, glass, and tin/aluminum. Determine which categories have the most waste by weight. (Note which categories have the most waste by volume, as well.) Graph data and analyze trends.

### **Assessment**

Students graph their waste, and use the graphs to compare the different types of waste they produced. They may also write a reflection that answers one or a number of the above questions. As a group, they can extrapolate and graph the amount of waste they might produce as a class over a longer period of time. It would be important to note variables that might affect their results. For example, if a student cleaned their room (as in spring cleaning), this would not reflect their average waste generation.

### **Extensions**

- 1) Using the information about the waste they generate as baseline data, have the students devise a plan for reducing the amount of waste they generate. Follow through with the plan and keep a journal of their trials and progress.
- 2) Taking the information from various classes, compare and contrast the data. Make graphs, and possibly draw conclusions based on the data.
- 3) Student could challenge someone in their family to do the same exercise to see if they come up with the same types of trash/waste.
- 4) Try to determine how much waste your school generates in different areas—for example, in the office, cafeteria, janitorial supplies area and classrooms. After determining this, help to formulate a plan to reduce the waste—and toxicity of the waste—generated, where appropriate. Present the plan to the appropriate authorities (administration, school board) and try to institute a change in the system.

### **Resources**

*Municipal Solid Waste in the U.S.: 2000 Facts and Figures*. Retrieved on September 12, 2003, from [<http://www.epa.gov/epaoswer/non-hw/muncpl/report-00/report-00.pdf>] .

# 72 hours of Trash

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_ Due \_\_\_\_\_

## Instructions

1. You must collect the trash YOU produce a consecutive 72-hour period. You must carry the trash with you in an appropriate container (plastic bags provided, use zip lock bags for food items). Exceptions are worship areas (church sanctuary) and hospitals. You also may leave your garbage beside your bed; no need to sleep with it as well!
2. You must also keep a log of your collected materials. Record the beginning time and date, and all other logging times.
3. Spend a few minutes at least 3-4 times a day remembering and writing what you have put in your bag.
4. For liquids (like milk from cereal) that are not in a plastic container that can be sealed, measure the amount and record it before pouring down the drain. For food items, place in a zip lock baggie and seal. **OPTIONAL:** To track water, carry a logbook and record how and when you use water. You will also need to find out the capacity of your toilet, washing machine, and the water flow of your shower, and sink faucets.
5. Collect EVERYTHING (even recyclables) except body fluids! (i.e. pee, blood, vomit!)
6. Make sure you note anything that you cannot put in the bag that you had to dispose of another way (like body fluids, motor oil, etc.).
7. You will be sorting, weighing and graphing your trash when you are done collecting. In order to make this easier and less messy, take about 15 minutes 2 times a day to log what you have collected in the table below. The first row has been filled in as an example:

Date/Time/ Items	#	Recyclable	Reusable	Waste/Landfill
12/01 -- Noon-8pm				
sheets of paper	5	X		
banana peel	1	X - compost		
KitKat wrapper	1			X
Gum wrapper	1			X
Gum	1			X
Chicken bones	3	X - compost		
Paper napkins	2			X

Add rows to the table as needed.

8. Bring all of your trash, and the completed table (example shown above) with you to class on the day it is due.

Through doing this activity, I want to learn/know \_\_\_\_\_

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**This activity is worth 100 points, and will be graded on the following scale:**

\*90-100 points – an extensive (thorough) log noting times at least 4 times a day, and all that was in the bag, as well as a complete bag of trash

\*80-89 points – a fairly thorough log of 3 times a day of recording, and a trash bag that is 90% complete

\*70-79 points – a complete (thorough) log, but lacking trash bag, or thorough bagful, and incomplete log

\*60-69 points – missing either log or bag – or collection over 24-hour period

59 points or below – woefully inadequate participation in this activity

## "Please excuse my trash" Note for Students

My (name of subject you teach) teacher is making me collect my trash for 72 consecutive hours as part of a unit on waste reduction. Please excuse my trash.

### Idea for writing assignment after collecting trash:

Write at least 1 paragraph (4-6 sentences) on **each** of the following questions. This will be due \_\_\_\_\_. Spelling, punctuation, capitalization, and grammar count! It **MUST** be word-processed.

- 1) What did you learn about the trash you produce?
- 2) Did this seem like a typical sample, or were you being more careful because you knew you had to carry it around with you?
- 3) Did you produce more or less trash than the average person on your block—use examples to explain your answer.
- 4) Pick someone in your family (parent or sibling) and compare your production of trash. Do you think you produce more or less trash than that person? Again, use anecdotal evidence to back yourself up.