

Take Out the Trash

Teacher Lesson Plan

Overview

Students will complete a series of Web-based activities to learn how their choices when packing lunch affect trash production. Students will “pack” a lunch online, learn how to make less trash, and work with real data regarding previous students’ trash.

Lesson Characteristics

Use the table below for lesson planning purposes.

Grade Level(s)	3 rd -6 th
Time Required	Pre-Field Study: 1 class period, best if completed 1 week before field study Post- Field Study: 1 class period
Key Concepts/Terms	The Four Rs, Compost, Data Analysis
Prerequisites	Understanding of how to use the Internet, Internet Access
Setting	Classroom with Internet Access or Computer Lab; Individual Students or Student Pairs

Learning Objectives

After completing this activity, students will be able to...

- Discuss why trash production is an environmental problem;
- Use the Four Rs (rethink, reduce, reuse, and recycle) in order to be better environmental stewards by making good choices that result in less trash;
- Describe how following the Four Rs helps conserve renewable and nonrenewable resources; and
- Explain how their actions affect the environment.

Materials Required

For each pair of students, you will need:

- Pencil
- *Trash Free Lunch Worksheet* (pg. 6-7)
- *Trash Data* (tables available at www.fergusonfoundation.org)
- *How to Plan a Trash Free Visit* Guide (pg. 8-9)
- *Trash Data Analysis Worksheet* (pg. 11-12)
- *Trash Reduction Home Challenge* (pg. 13-14)
- Internet Access (for **online activities**)



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Background Information

Why Trash is a Problem

We live in a throwaway society and trash seems to magically disappear after we put it out for the garbage trucks. Those trucks take our trash to the landfill, where it is collecting at an alarming rate. This trash does not decompose, because it is removed from sunlight, water and oxygen, which are necessary for decomposition. In addition, many of the items sent to the landfill could have been recycled or used for something else, saving renewable and nonrenewable resources for the future.

What Can We Do About It?

We all make choices about which products to buy and how we handle our trash. Two decisions that students make are what items they purchase and how they pack their lunch. By learning to choose items with less packaging material, and reuse or recycle whatever possible, students can make a difference every day by sending less trash to the landfill.

Procedure

Follow the steps listed in the table below to complete the activity.

Phase	Step	Action
Engage		Pre-Field Study
	1	Instruct students to think about packing a lunch. Why did they choose certain items? (Note: If your class includes children who receive school lunches, phrase the question to include them. Example: If you had the opportunity to pack your lunch, why would you choose certain items? If appropriate, suggest that students who do not already pack their own lunches take on that responsibility.)
	2	Hand out <i>Trash Free Lunch Worksheet</i> (pg. 6-7) to each student.
	3	Have students complete the first section.
4	Discuss the answers as a group. All answers are acceptable. <i>Typical responses might include: food I like, stuff that is easy to make, healthy food, things that are on sale, etc.</i> Make sure to include the following questions in your discussion: <ul style="list-style-type: none">• Did anyone consider trash or packaging?• Were student estimates of the weight of trash their class would produce in one day realistic? Are they curious?	

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Take Out the Trash, Continued

Phase	Step	Action
Explore	5	<p>Explain to the students that they will use a computer activity to learn more about trash and lunches. They are expected to read all the information from the computer screen and follow the instructions given to complete the activities.</p> <p><i>Note:</i> Determine the level of computer/Internet experience among students. Consider pairing inexperienced students with those who have more experience.</p>
	6	Write the website address on the board in the computer lab - www.fergusonfoundation.org . Instruct students to access the website using the school's Internet browser.
	7	When the Alice Ferguson Foundation Webpage appears on the screen, have students go to: <ol style="list-style-type: none"> 1. Hard Bargain Farm Kids' Zone tab, then 2. Take Out the Trash
	8	Have students read the Introduction and then complete the Four Rs section and Trash Sorting Activity . Students should read all information on the screen.
	9	Students complete the Trash Free Lunch Activity online and record scores as indicated on the <i>Trash Free Lunch Worksheet</i> (pg. 6-7).
	10	Students complete the Lunch Ranking Activity and record which lunch was best.
	11	Students complete the rest of the activity back in the classroom or as a homework assignment and then discuss as a class.
	12	Hand out the <i>How to Plan a Trash Free Visit</i> guide (pg. 8-9) to each student. Read the guide with the students and answer any questions. Explain that this guide: <ul style="list-style-type: none"> • is for students to share with their parents. • will help students and adults pack trash free for their trip.
	13	Field Study at Hard Bargain Farm Environmental Center, or other outdoor educational facility: Students and adults pack trash free for their visit. Staff aids in weighing trash and recording data. Trash weight data is available in the Trash Data section of our website (www.fergusonfoundation.org).

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Phase	Step	Action
Explain	14	<p><u>Post – Field Study</u></p> <p>Note: It is highly recommended to complete the <i>Trash Data Analysis Worksheet</i> as a computer lab assignment.</p> <p>Provide students with Trash Data tables (available online at www.fergusonfoundation.org) and the <i>Trash Data Analysis Worksheet</i> (pg. 11-12). Review how the data was collected and answer any questions about terminology.</p>
	15	<p>Have students complete the <i>Trash Data Analysis Worksheet</i> using the <i>Trash Data</i> tables (available at www.fergusonfoundation.org).</p> <p>Note: If students have trouble getting started, write the average trash weight per person for the class on their visit. This number goes in the first blank space in the <i>Word Problems</i> section of the <i>Trash Data Analysis Worksheet</i>.</p>
Elaborate	16	<ul style="list-style-type: none"> • Have the students find some things that weigh the same as the amount of trash calculated on the <i>Trash Data Analysis Worksheet</i>. For example, would the amount of trash the whole class would produce in 12 years of school weigh as much as the average elephant? • If your school does not have a recycling program, could your students be instrumental in starting one? Ask the students to brainstorm about this and present ideas to the administration or parents group. • Visit a recycling center or the nearest landfill operation. The sights, sounds, and smells are unforgettable. • Explore whether bulk buying really does make a difference in the amount of trash produced. Is bulk buying really more economical? Purchase the largest bag of chips available and a similar quantity of individually packaged chips of the same type. Weigh the packaging and perform the mathematical operations for a fair comparison. (Don't forget to let the kids eat the chips!) • Examine the trash produced in your classroom and then discuss how your class can produce less trash. Make it a fun challenge for the students by weighing their trash periodically and rewarding improvements. Classroom lesson plans are available at the Resourceful Schools Project website: www.resourcefulschools.org/teachers/lesson-plans. Activities include a "Classroom Waste Audit" and "What's In Your Trash Bag."

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Take Out the Trash, Continued

Evaluate	17	<ul style="list-style-type: none">• Distribute <i>Trash Reduction Home Challenge</i> (pg. 13-14) to students as a weeklong homework project. Alternatively, select one challenge on the sheet for the whole class to complete at home together.• Use scores from online activities and the <i>Trash Data Analysis Worksheet</i>.
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Trash Free Lunch Worksheet

In The Classroom

1. List three things (factors) you normally consider or think about when you pack a lunch.



2. Rank these factors from the most to the least important by writing a 1, 2, or 3 next to your factors on the lines in question 1.
3. Estimate the weight of trash your class might produce from packed lunches for one day.

In The Computer Lab

4. Read the *Introduction* and *Four Rs* sections.
5. Do the *Trash Free Lunch* activity. Choose items you might use to pack your own lunch. (Be honest!)

Record your score here. _____



6. Do the activity again, but this time try to get the best score you can by packing a lunch with the least amount of trash.

Record your score here. _____

7. Is there a difference in the two scores? What is the difference between your original lunch and the one that has the best score?



8. Do the *Lunch Ranking* activity. Which lunch had the least amount of trash? Why?

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Trash Free Lunch Worksheet, Continued

Back in the Classroom

9. How did choices for your lunch change after thinking about trash free lunches?
How will choices for your real lunch change?



10. How can making earth friendly choices can have a positive impact?

11. What would be your greatest challenge in packing a trash free lunch every day?

12. Give an example of how you will use the Four Rs to have less trash.

13. In the chart below, list the foods you had in your lunch today and the type of container or wrapping they came in. For each container check if you reused, recycled, or threw it away as trash. For trash items, list an alternative you can use next time that would not be trash.

Food	Container Type	Re-Use	Recycle	Trash	Idea For Next Time



How to Plan a Trash Free Visit

At Hard Bargain Farm Environmental Center (HBF), we are working to become a trash free facility. You may already be planning to bring a trash free lunch, so we are challenging you to plan a trash free stay. When deciding what to bring for lunch and snacks during your trip it is important to consider the packaging your food comes in. Please use the following as a general guideline when planning for your trip:

- Think ahead to have the least amount of trash. Use the Four Rs (rethink, reduce, reuse, recycle) before you buy an item. *Visit our website for more information on the Four Rs.*
- Bring items you can reuse during and/or after your trip, such as a reusable water bottle and reusable containers.
- Buy items packaged in recyclable materials (see list of items recycled at HBF).
- Buy items in bulk. At HBF our biggest source of trash is food packaging from individually wrapped items, please buy items in bulk when possible.
- We have plates, bowls, cups, and silverware available for you to use.
- Please bring only what you can consume during your stay, our pigs have enough to eat!
- We do not allow any Styrofoam at our facility.

Here are some of the most common trash items brought to the farm and their less trashy alternative:

Bring This



Reusable Water Bottle

Not That



Bottled Water

***Save your money! Our water at HBF tastes great and is safe to drink.
Bringing a reusable water bottle also saves resources.***



One Big Bag of Snacks



Many Individually Wrapped Snacks

***For s'mores and snacks, buy in bulk and skip the individually wrapped packages.
It is cheaper, easy to share, and less to throw away!***

Bring This



Recyclable Container

Not That



Non-recyclable Container

Buy items in recyclable containers that do not have to be thrown away and end up in the landfill.



Lunch box



Grocery bag

Bring a reusable lunchbox that can be used over and over again.

HBF's Most Unwanted:

Styrofoam cannot be reused and is not recyclable.
Please do not bring it.



Plastic Flatware is not recyclable. *Instead, use the flatware we have provided for you at HBF!*



Items Recycled at Hard Bargain Farm:

Glass, metal cans and aluminum foil, plastic, cardboard, paper, milk cartons, and juice boxes

Visit ***Take Out the Trash*** on our website for more help, to learn about the Four Rs, and test your trash free packing skills in our ***Trash Free Lunch Game***.

Thank you for helping to make Hard Bargain Farm Environmental Center a trash free facility.
We look forward to seeing you at the Farm.

Teacher Page – Trash Facts

Here are some interesting facts to help your class relate to their trash. Did you know...?

- we throw away more than 160 million tons of solid waste each year in the U.S.
- it takes more than 500,000 trees to make the newspapers Americans read on one Sunday.
- aluminum is America's most recycled product (we recycle 50% of our aluminum cans).
- producing an aluminum can from recycled material takes only 5% of the energy required to make a new one.
- product packaging accounts for 30% of the weight and 50% of the volume in our household waste.
- \$1 out of every \$10 we spend on food pays for packaging.
- when you recycle 1 aluminum can, you save enough energy to run a 100 watt light bulb for about 3 ½ hours.
- recycled plastic can be used to make things like trash cans, park benches, playground equipment, decks, and kayaks.
- special fleece-like fabrics are made out of recycled plastic bottles.





Name _____

Trash Data Analysis Worksheet

Trash Data is available in the **Take Out the Trash** activity online at www.fergusonfoundation.org.

1. What was the average weight of trash per person (in ounces) that your class produced from your visit to Hard Bargain Farm Environmental Center? _____
2. Look at the **Trash Data** to view data from other classes. Write a statement about the amount of trash your class had in comparison to other classes. Explain your statement. Include numbers (data figures) from the **Trash Data** tables.
3. The data can be organized in other ways to learn more. Certain patterns or trends can be observed. Rearrange the data from the **Trash Data** by filling in the chart below.

CLASSES WITH THE LEAST AND MOST TRASH PER PERSON ON THE OVERNIGHT FIELD TRIP TO HARD BARGAIN FARM

Least Lunch Trash		
School Year	Class	Average Trash Weight (oz. / Person)

Most Lunch Trash		
School Year	Class	Average Trash Weight (oz. / Person)

Look for patterns in your charts. What did you observe?



Trash Data Analysis, Continued

4. Some classes received instructions on how to pack trash free before coming to Hard Bargain Farm Environmental Center and some schools did not. With this in mind, can you draw any conclusions from the data about the importance of learning how to pack trash free? Support your answer.



Word Problems

Use your class' information, along with information from other fifth grade classes, to answer the following questions.

5. Use the information from the **Trash Data** table to figure out how much trash you would produce, by packing the same way you did for your trip, for the entire school year (186 days).

$$\begin{array}{r} \text{_____ oz.} \\ \text{Average trash weight} \\ \text{(oz. /person)} \end{array} \quad \mathbf{X} \quad \begin{array}{r} 186 \text{ days} \\ \text{(days/school yr.)} \end{array} \quad = \quad \begin{array}{r} \text{_____ oz.} \\ \text{Average trash} \\ \text{weight/person/school yr.} \end{array}$$

6. Convert your answer for #1 into pounds (lbs.).

$$\begin{array}{r} \text{_____ oz.} \\ \text{Average trash} \\ \text{weight/person/school yr.} \end{array} \quad \div \quad \begin{array}{r} 16 \text{ oz.} \\ \text{per lb.} \end{array} \quad = \quad \begin{array}{r} \text{_____ lbs.} \\ \text{Average trash} \\ \text{weight/person/school yr.} \end{array}$$

7. If you packed the same every day of school, 186 days of school per year, for 12 years (the entire time you attend school) how much trash would you have accumulated in pounds?

$$\begin{array}{r} \text{_____ lbs.} \\ \text{Average trash} \\ \text{weight/person/school yr.} \end{array} \quad \mathbf{X} \quad \begin{array}{r} 12 \text{ years} \\ \text{of school} \end{array} \quad = \quad \begin{array}{r} \text{_____ lbs.} \\ \text{Average trash} \\ \text{weight/person/12 yrs.} \end{array}$$

8. How much trash would your whole class produce in 12 years of school?

$$\begin{array}{r} \text{_____ lbs.} \\ \text{Average trash} \\ \text{weight/person/12 yrs.} \end{array} \quad \mathbf{X} \quad \begin{array}{r} \text{_____} \\ \text{\# students/class} \end{array} \quad = \quad \begin{array}{r} \text{_____ lbs.} \\ \text{Average trash} \\ \text{weight/class/12 yrs.} \end{array}$$

Trash Reduction Home Challenge

Rethink, Reduce, Reuse, Recycle

Do any TWO of the tasks listed below. Choose ONE from “rethink/reduce/reuse” and ONE from “recycle.”
 DISCUSS YOUR OPTIONS WITH AN ADULT BEFORE PROCEEDING. You must choose TWO activities that you do not already do. Each activity you choose beyond the minimum of two will earn +5 points of extra credit.

Rethink/Reduce/Reuse

1. Use cloth shopping bags the next time you go out to the mall or supermarket (find some around your house or purchase them).
2. Go to the “no junk mail” website and register your name and the adults in your home to stop receiving junk mail. (https://www.directmail.com/directory/mail_preference/)
3. Do not eat any fast food for the entire week (go to a sit down restaurant or eat at home).
4. Spend half-an-hour looking through items in your home that you have not used for over one year. Bring them to Goodwill or another thrift store (clothes, tools, electronics, books, furniture). While at Goodwill, look around at the furniture, clothes, and other items they have available.
5. For three school days, do not use any disposable goods in the cafeteria (ask for a metal fork, do not take fruits, salads, veggies, or milk offered in disposable containers).
6. For one week, keep a table of items that you considered purchasing. List whether the items were “wants” or “needs” and whether you decided to “purchase” or “not purchase.” Do not purchase “wants.”
7. Do not use any paper towels for five days. Just dry your hands by waving or wiping on cloth towels.

Recycle

8. The next time you go to the grocery store, buy two products that are more environmentally friendly (for instance post-consumer and/or recyclable packaging) and recycle them when done.
9. Circle ONE item below. Inform your family that you will collect ALL of this item in your home for five days. After five days, count how many you collected, record this number below, and recycle all items.
 - a. aluminum/tin cans
 - b. glass bottles and jars
 - c. office paper
 - d. magazines
 - e. newspaper
 - f. plastic bottles
 - g. paperboard/cardboard (cereal boxes, soda boxes, corrugated, etc.)

Collected _____
10. Start a compost pile by setting a large bowl on your kitchen counter (labeled compost), telling your family that it is for all fruit and vegetable matter, and then dumping it regularly in a special spot in your yard. Continue for one week.
11. Discuss an additional option with your teacher for approval.

Adapted from Home Challenges written by Thomas Kozikowski of Mountain Ridge High School, Maryland

Have an *adult* write 2-3 sentences below explaining:

- which tasks (from the front of this sheet) you completed
- that you were not doing these tasks before this week
- that you discussed the tasks in advance
- how you were successful in the attempt

Include a signature at the end. *If any parents have any major objections to your participation in this task, this is also the place for them to voice their concerns.*

GUARDIAN SIGNATURE

GUARDIAN PHONE NUMBER

Student Evaluation

1. Explain your successes or struggles in completing the tasks.

2. What did you learn?

3. Explain the benefits and disadvantages of your efforts.

4. What resources did you preserve in this short trial? How much would you save if you continued for a year?

5. Would you recommend that students like yourself continue such habits for waste reduction? Why or why not?

6. What other opinions do you have on the “Trash Reduction Home Challenge”?
