

Pack It Up



OBJECTIVES:

Students will:

1. define “reduce” and describe at least three ways to reduce unnecessary packaging.
2. analyze different types of packaging found at home.



STANDARDS: Science



SKILLS: Analysis, classification, description, problem solving



SETTING: Homework assignment and Classroom



TIME: Day One: 45 minutes
Day Two: 60 minutes



VOCABULARY:
Packaging
Reduce

Introduction

Overview:

In this lesson, students will learn how to reduce packaging waste by comparing products that have minimal or excessive packaging. Students will bring in examples of packaging from home and work in groups to create a poster depicting ways to reduce waste from packaging.

Teacher Background:

Packaging serves a number of purposes. It is used to hold or contain a product such as bottles, bags, and molded plastic or paper packaging. Packaging also protects products from damage, prevents theft and makes it easier to display or transport products.

Making packaging consumes a great deal of resources. Paper, steel, glass, aluminum, and plastic are all used to package products. Californians produce 66 million tons of solid waste per year and approximately one-third of it is packaging.¹ Ten cents of every dollar spent on a product goes towards the cost of packaging. Reducing the need for packaging can greatly reduce the amount of paper and plastic waste in Alameda County. We can reduce waste from packaging by purchasing products that have the least amount of packaging (e.g., not purchasing single-serve packages).

¹ California Integrated Waste Management Board’s website www.ciwmb.ca.gov/Packaging/



Materials:

Students:

- “Pack It Up Homework” sheet (one per student)
- One or two packages from home
- “Pack It Up” worksheet (one per group of four students)
- Poster paper and markers or crayons

Teacher:

- Contrasting packaged items (i.e., single-serve juice containers and a large juice jug and an overpackaged item toy)
- “Pack It Up Homework” sheet overhead
- “Pack It Up” worksheet overhead
- Rubric overhead
- Rubrics (one per student)

Preparation:

Be prepared to divide the class into groups of four for the in-class activity. Assign students to bring in packaging from home as homework the day before the lesson.



ACTIVITY

Discussion

1. Tell the students that they will be learning about the top of the 4Rs hierarchy. Ask students whether they can define “reduce.” Put a definition on the board, e.g., “to decrease the amount of waste generated.”
2. Ask the students what they know about packaging. Ask them to share examples of something they buy that comes in packaging.
3. Describe how packaging protects products, conveys important information about the product and prevents theft. For example, a CD case protects the CD from being broken and provides a place to display information and to insert anti-theft devices.
4. Show the students contrasting packaged items, e.g., a single-serve juice container and a large juice jug. Ask the students what is left over from the single-serve juice pack after the juice has been consumed (the juice packaging and the plastic straw and plastic wrapper on the straw).
5. Ask the students what would be left over if they used reusable cups for everyone to get juice from a large juice jug. Disposing of one large juice jug requires fewer resources than discarding dozens of small juice packages and straws. Show other examples of excessive packaging that you brought to class.

Procedure

For Homework:

1. Ask students to share examples of packaged items they might find at home. For example, in the kitchen they might find cereal, snack food, chips, and ice cream. Other items may include gum wrappers, shoe boxes, containers for toys, etc.
2. Have a few students estimate how many of these items come in bulky or unnecessary packaging.
3. Assign students to bring two items to class from home that they think have minimal or excessive packaging for the next day’s in-class work.
4. Distribute the “Pack It Up Homework” sheet, and model how to complete it using an overhead.
5. Show an overhead of the lesson rubric, and review the expectations for this lesson.

In-Class:

1. As a whole class, discuss some of the findings from their homework sheet.
2. Ask students how their estimates of minimal or bulky packaging they might find at home compare to their findings on the homework sheet.
3. Place students in groups of four, and give each group a copy of the “Pack It Up” worksheet.
4. Show the overhead of the group worksheet and model how to complete it. Ask the students to place their packaging items from home in one pile. Redistribute packaging as necessary.
5. In groups, have students share the packages they brought in and have them identify ways to reduce the packaging, if it’s possible. For example, toys are usually sold in unnecessary packaging. Cereal can often be bought in bulk or large boxes. Soup can be made at home from fresh vegetables, water and seasoning. Lunch food can be placed in reusable plastic containers. Bananas and apples don’t need to be put into plastic bags before they are purchased.
6. Have each group share with the entire class one item they chose with ways to reduce its packaging.
7. Have each student make a poster that says and depicts one way of reducing packaging. On the back of the poster, have the students list two more ways of reducing the need for packaging.

Wrap-Up

Write the word “reduce” on the board. Ask the students to help write a definition for “reduce.” Ask the students why “reduce” is at the top of the hierarchy. (By generating less waste in the first place, we are conserving natural resources, e.g., trees used for paper packages, petroleum used for plastic, etc.).

Final Assessment Idea

Provide students with three types of packaging choices for a product, e.g., orange juice in a 58oz. plastic jug, gallon paper carton and six pack of individual containers. Have students write an essay explaining which packaging has the least amount of waste and which choice they would buy, justifying why they would choose to buy it.

RESOURCES

Extensions:

Have students calculate the cost per serving for the products used in the assessment section.

Have students choose a product they like that they think comes in excessive packaging. Have them describe, in writing, how they would redesign the packaging to reduce waste. They must design packaging that protects the product and makes it easy to store and transport the product.

Have students research how a particular product's packaging has changed or been reduced over time using the Internet. For example, the weight of aluminum cans has decreased by 52 percent since 1972; twenty-nine cans can be made from a pound of aluminum, up from twenty-two cans in 1972.² The EPA's website has fact sheets for common commodities or materials listed at www.epa.gov/epaoswer/non-hw/muncpl/comm.htm.

Teacher Materials:

California State Content Standards

The standards below represent broad academic concepts. This lesson provides connections to these academic concepts through hands-on activities and exploration. This lesson is not designed for a student to master the concepts presented in the standards. Additional lessons in the classroom that build on this lesson or the standard(s) ensure that students will have the opportunity to master these concepts.

SCIENCE	CONTENT STANDARDS
Grade 4	Investigation and Experimentation 5.a. Students know some changes in the Earth are due to slow processes. 6.a. Students will differentiate observation from inference (interpretation) and know scientist's explanations come partly from what they observe and partly from how they interpret their observations.
Grade 5	Investigation and Experimentation 6.a. Students will classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria.

² Aluminum Association website www.aluminum.org





Teacher

Pack It Up Rubric

A rubric is a scoring tool that defines the criteria by which a student's work will be evaluated. This rubric is provided to assist you in setting expectations for students and assessing their performance and engagement during the lesson based on specific tasks. Ideally, a rubric is developed with the cooperation of the students. Two blank rows have been provided for you and your class to develop and add your own assessment criteria.

CATEGORY	4	3	2	1
Homework: Brings in packaging from home and describes it	Student describes the packaging for five items and brings to class two examples of packaging.	Student describes the packaging for four items and brings to class one example of packaging.	Student describes the packaging for at least two items and brings to class one example of packaging.	Student describes the packaging for at least one item and does not bring to class an example of packaging.
Group work: Writes ways to reduce packaging	Students write three ways to reduce packaging.	Students write two ways to reduce packaging.	Students write one way to reduce packaging.	Students do not attempt assignment.





Pack It Up Homework

Directions: Describe packaging of five different items from home.

Name of item	Describe packaging	Is this packaging needed?	Why is this packaging used?
1			
2			
3			
4			
5			

Write a definition of Reduce: _____

Name: _____ Date: _____





Student

Pack It Up

Directions: Select five of the items that the group members brought from home, and answer the questions below for each item.

Name of item	Does this item come in unnecessary packaging ? Yes or No	If yes, how would you REDUCE this item's packaging?
1		
2		
3		
4		
5		

Poster Directions: Make a poster that says and shows one way to reduce packaging. On the back of the poster, list two more ways to reduce the need for packaging.

Name: _____

Date: _____



DEFINITIONS

Vocabulary:

Packaging: a container or wrapping such as paper, plastic, metal, etc., used to protect, transport, display or store a product.

Reduce: to use less “stuff” and produce less waste.

