

Packaging: What a Waste!

Adapted by Susan Salterberg for grades 2-8 from *Packaging: What a Waste!* By Jeff Maxted for the Cedar Rapids-Linn County Solid Waste Agency

- **Grade level:**
2-5th grades
- **Subject areas:**
Family and Consumer Sciences, Science, Math
- **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, Homework and practice, Summarizing and note taking (in assessment), Nonlinguistic representations, Cooperative learning
- **Estimated duration:**
Preparation time: 20 minutes (not including trip to stores to secure products)
Activity: 45 minutes
- **Setting:**
Classroom
- **Skills:**
Analyzing, comparing similarities and differences, discussing, interpreting, investigating, generalizing, listening, recording, researching
- **Vocabulary:**
Recycle
Over-packaging
Petroleum
Reduce
Consumer
Ounces (Oz)
Marketing
Packaging
Natural resources

Summary: Students are introduced to the functions of packaging, and its environmental impacts. They view products packaged in different ways, and calculate the cost/ounce. They then draw conclusions about the cost of products related to the amount of packaging.

Objectives

Students will:

- Discuss types of packaging and reasons for packaging.
- Compare similarities and differences of various types of packaging and the cost per ounce of each.
- Draw conclusions about the cost of products related to the amount of packaging.

Materials

- Various sizes and packaging of a common cereal such as Froot Loops, such as one 15 oz. box, one 15 oz. bag, generic brand, eight individually wrapped 1-oz. boxes, and any other size/packaging variations

Optional:

- Six copies (or one for each group) of grocery store receipts (use only for older grades)
- Scale
- Handout, Excess Packaging is for the Birds

Background

The average American consumes about 66 pounds of packaging annually—in aluminum cans, glass bottles and jars and plastics. Packaging accounts for most of the litter along highways. It also makes up a significant amount of the waste going to landfills. For example, in Linn County, Iowa, packaging makes up 37% of all material landfilled.

Even without including disposal costs, increased packaging increases the cost of products. Generally, packaging accounts for at least 10% of the cost of a product.

In addition to the economic and waste management impacts, the manufacturing of packaging products consumes natural resources. Petroleum products, water and trees are a few that may be used to create packaging.

Procedure

The Activity

- 1) Introduce activity by reviewing vocabulary words.
- 2) Then ask students to list types of packaging: Plastic bottles, plastic bags, cardboard boxes, polystyrene blocks and peanuts, glass jars, steel and aluminum cans, plastic wrappers, aluminum foil, paper bags, wood pallets, shrink wrap, metal and plastic strapping, etc. (Show examples if you have them.)
- 3) Ask developmentally appropriate questions such as the following:

What packaging is used for this box of Froot Loops?

Cardboard, plastic (inner liner)

What is cardboard made of?

Trees

What are some of the natural resources used to produce cardboard?

Trees, water, petroleum products

What is plastic made of?

Oil (petroleum)

Can you think of anything that is not made from products from the earth?

Encourage students to brainstorm. Ultimately, the conclusion should be that no product is made without using materials from the earth. (For an Extension activity, read *Agatha's Feather Bed*, by Carmen Agra Deedy.)

Show a large box of Froot Loops. What do we pay for when we buy a box of Froot Loops?

Ingredients (everything listed on the side of the box), the box, the bag inside the box, the cardboard box that contained individual packages, the pallet that carried multiple cardboard boxes to the store, the shrink wrap around the pallet-load, labor, equipment and resources to make the packaging, marketing (such as paying the creator of Toucan Sam), labor, fuel and equipment to transport the product, labor to stock the item in a grocery store.

What are the reasons for packaging? (Refer to the box of Froot Loops.)

Keeps them together (contains them)

Keeps them from breaking

Keeps them fresh

Keeps us safe (reduces opportunities for product tampering)

Encourages us to buy them (marketing)

Can you think of other functions (reasons for) packaging?

Are all of the functions necessary?

It depends upon the product. In the case of Froot Loops, the reasons for packaging are probably all necessary...except for the marketing.

- 4) Show the various packages of cereal.

For younger students, the focus might be on how much waste is generated with each—a bag, a bag in a box, 8 bags in 8 boxes with shrink wrap around the 8-pack, etc. The price of each could be discussed compared to amount of cereal in each package. (Pouring out the contents of each into three bowls may be a way to emphasize the cost per ounce.)

Older students may calculate cost per ounce. See example found in Attachment A, Excess Packaging is for the Birds. Introduce calculation activity to the students, and provide guidance as needed about where to find the product's weight on the package. Decimals, ounces, rounding, long division and other related math issues may also need to be introduced or reviewed.

Break students into groups of 3-5, and distribute one chart per group (see Attachment A), as well as a copy of the grocery receipt (one of each per group). After calculations are made, ask students if they can draw any conclusions. They should discover that, almost always, more packaging equates to higher cost per ounce.

- 5) Conclude with a question such as, "Why might it be good to reduce the amount of packaging we buy?"

Conserve natural resources (trees, water, petroleum)

Save disposal costs and landfill space

Avoid the cost of litter control

Save money

Extensions:

- 1) Ask students to find other examples of excess packaging, or have them find a product that is packaged in many ways. Ask students to calculate the price per ounce for these products. Possible examples: Potatoes, pop, rice, pens, pasta and macaroni and cheese.

- 2) Have students calculate the weight of the packaging of each variation of packaged cereal. (Subtract the total weight of the product and packaging minus the net weight of the cereal.)

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Attachment A
Excess Packaging is for the Birds

Example:

Type of pkging	Size (no. of oz.)	Price	Cost/oz.	Round to nearest cent
EXAMPLE: Box	15	On sale for \$2.00	$2.00 / 15 = .133$	13 cents
Bag	15	On sale for \$1.50	$1.50 / 15 = .10$	10 cents
Fun Pack	8	\$3.19	$3.19 / 9 = .398$	40 cents

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