INTRODUCTION

We usually choose grocery items based on their taste, usefulness, or cost. But the amount of waste that will be left when we’re finished with the product is also an important consideration. "Precycling" refers to the act of selecting products with efficient packaging and minimal wrapping. To effectively "preciycle" while shopping, we should ask: Was the manufacturer careful to use a container with no more material than necessary? Is the wrapping and packaging excessive or not needed? Did the manufacturer use recycled and recyclable materials wherever possible? Making grocery store selections while considering these questions encourages smaller amounts of solid waste and keeps unnecessary garbage from entering our landfills.

Considering that the average person in the U.S. produces about 4.5 pounds of waste per day (almost twice as much as an average person in Japan), this is a worthy effort that can have big impacts on the planet.

MATERIALS

• Student Worksheets 1 – 6
• Clipboard (optional)
• Calculator (optional)

PROCEDURE

This lesson assumes that students know how to read the price per unit on a grocery store price tag.

1. Take a class field trip to the supermarket. (If a field trip isn’t possible, bring in various grocery items for students to evaluate in-class.)

2. Divide students into six small groups, and assign each group a Student Worksheet to complete: Group 1 – Pop Shop; Group 2 – Package Baggage; Group 3 – Bag Drag; Group 4 – Size Wise; Group 5 – Disposer Exposure; Group 6 – Green Screen. Distribute one copy of the appropriate Worksheet to each group member.

CONCEPT

Each of us can reduce the amount of waste we generate by purchasing products with minimal amounts of packaging and environmentally friendly containers.

OBJECTIVES

Students will be able to:
• Compare different sizes, containers, and packaging of products to determine which produce the least amount of solid waste.
• Create summary statements after completing real-world data collection.
• Identify at least three ways shoppers can make choices that help reduce solid waste and conserve natural resources.

SUBJECTS

Science (Earth and environmental), math, social studies (economics), family and consumer sciences

SKILLS

Collecting and analyzing data, comparing and evaluating, researching, summarizing

METHOD

Students visit the supermarket and investigate products’ containers and packaging options to determine which products would produce the least solid waste.
3. After completing their Worksheets, ask each group to report on their experience and share their summary statement with the rest of the class. Then go over the Discussion Questions.

**DISCUSSION QUESTIONS**

1. What are some specific choices individual shoppers can make to help reduce solid waste and conserve resources?

   Answers may include:
   - If you only buy a few items, ask the cashier not to put your purchases in a bag from the store at all. If you have a book bag or purse with you, you could carry your items there.
   - Use cloth or mesh bags instead of paper or plastic. Many stores sell cloth bags that you can reuse on each shopping trip.
   - Buy items with as little packaging as possible. Choose paper packaging over plastic (if the type of plastic used isn't part of your community recycling program).
   - Buy reusable products rather than disposable ones.
   - Reuse or recycle packaging items as much as possible. For example, reuse glass jars as storage containers for food bought in bulk.
   - If you drive to the supermarket, plan your trips before you go and make a list of what you'll need for the week. That way you'll be sure to get everything you need on the first try, rather than driving to the supermarket more frequently to pick up the things you forgot.

2. Precycling is a term used by the U.S. Environmental Protection Agency. What do you think this term means? Do you think it is an effective way to reduce solid waste?

   Precycling refers to the act of reducing consumer waste by opting to purchase items that are unpackaged, reusable, or recyclable.

3. What factors do you think most shoppers consider when buying products from the grocery store? What other factors do you think shoppers should consider?

   Answers will vary. In addition to price, shoppers may pay attention to brand preference, taste, visual appeal of packaging, nutritional content, etc.

4. What do you think companies consider when choosing packaging for their products?

   Answers may include: visual appeal, durability, cost to produce, convenience for the customer, etc.

5. We looked at the environmental impact of products' packaging in this lesson. What other aspects of a product might have an impact on the planet?

   Answers may include: how much the product is processed, how far the product traveled during production and while being transported to the store, if the product is organic or was made using fertilizers, etc.
ASSESSMENT

Students complete an exit ticket listing three choices grocery store shoppers can make to help reduce solid waste.

FOLLOW-UP ACTIVITY

Students call or write to one or more beverage packaging companies and ask them the following questions about different beverage packaging options (e.g. cans, no-return bottle, returnable bottles). Companies should be asked to consider not only the type of container (e.g. bottle or can), but also the materials used to make it (glass, plastic, aluminum, other metals).

- Which option for packaging beverages uses the least amount of raw materials? Why?
- Which option uses the least water in processing? Why?
- Which option produces the least amount of water pollution? Why?
- Which option produces the least amount of air pollution? Why?
- Which type of packaging costs the least to produce? Why?
MARKET RESEARCH
STUDENT WORKSHEET 1 – POP SHOP

Name: ____________________________ Date: __________________

In the beverage section of the supermarket, compare four different packaging options of the same soda: a 12 oz can and three different volumes of plastic bottles.

1. Fill in the table below.

Soda Name: ____________________________

<table>
<thead>
<tr>
<th>Package</th>
<th>Cost</th>
<th>Cost per unit of volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 oz Can</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume 1:</td>
<td>oz</td>
<td></td>
</tr>
<tr>
<td>Volume 2:</td>
<td>oz</td>
<td></td>
</tr>
<tr>
<td>Volume 3:</td>
<td>oz</td>
<td></td>
</tr>
</tbody>
</table>

2. Which one is the most cost effective purchase? Defend your conclusion below. 1-3 sentences

____________________________________________________________________________________

3. Which one produces the least amount of solid waste? 1-2 sentences

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4. What are environmentally conscious options for disposing of each type of packaging? Describe them in 1-3 sentences

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5. Write a summary statement to share what you’ve learned with the class.

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MARKET RESEARCH
STUDENT WORKSHEET 2 – PACKAGE BAGGAGE

Name: ____________________________ Date: __________________

In the supermarket, find one kind of non-beverage product that is packaged in two or more different ways. Hint: Check the dairy or meat aisles!

1. Fill in the table below.

<table>
<thead>
<tr>
<th>Product</th>
<th>Package material/size</th>
<th>Cost</th>
<th>Cost per unit of volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

2. Which one is the most cost effective purchase? Defend your conclusion below. 1-3 sentences

3. Which one produces the least amount of solid waste? 1-2 sentences

4. What are environmentally conscious options for disposing of each type of packaging? Describe them in 1-3 sentences

5. Write a summary statement to share what you’ve learned with the class.

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MARKET RESEARCH
STUDENT WORKSHEET 3 – BAG DRAG

Name: ___________________________________________ Date: ______________________

Observe five people who are leaving the supermarket.

1. Fill in the table below.

<table>
<thead>
<tr>
<th>Shopper #</th>
<th>Type of bags used</th>
<th># of bags used</th>
<th>Were all bags necessary? (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Total number of bags used: ______________________

Average number of bags/person: ______________________

What proportion of people left with two or more bags? ______________________

What proportion of shoppers could have walked out with fewer bags? (e.g. The bagger put two items in the bag instead of filling it.) ______________________

2. What types of bags does the store offer? 1-2 sentences

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3. Does the store collect used bags from shoppers for reuse or recycling? Does the supermarket offer a bonus or discount to shoppers who bring their own bags? 2-3 sentences

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4. How do you “get rid of” a bag once it has been used? Where does it go? Which type of shopping bag – paper or plastic – can be disposed of with the least harm to the environment? 4-6 sentences

5. How could paper shopping bags be reused? Plastic ones? Can you think of a way a person could cut down on the use of disposable shopping bags? How could you avoid using them altogether? 3-5 sentences

6. Write a summary statement to share what you’ve learned with the class.
In the supermarket, select four products and check prices per unit of the products across several different sizes of packages (same brand).

1. Fill in the table below.

<table>
<thead>
<tr>
<th>Product</th>
<th>Package size 1</th>
<th>Package size 2</th>
<th>Package size 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Size:</td>
<td>Size:</td>
<td>Size:</td>
</tr>
<tr>
<td></td>
<td>Cost/unit:</td>
<td>Cost/unit:</td>
<td>Cost/unit:</td>
</tr>
<tr>
<td></td>
<td>Size:</td>
<td>Size:</td>
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<td>Cost/unit:</td>
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<tr>
<td></td>
<td>Cost/unit:</td>
<td>Cost/unit:</td>
<td>Cost/unit:</td>
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</tbody>
</table>

2. Select two items that are sold in bulk. Compare the cost per unit of weight with the cost of the same item pre-packaged in the largest quantity available. Fill in the table below.

*Hint: Try toilet paper or paper towels!*

<table>
<thead>
<tr>
<th>Product/Brand</th>
<th>Individual</th>
<th>Bulk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Size:</td>
<td>Amount of units in package:</td>
</tr>
<tr>
<td></td>
<td>Cost:</td>
<td>Cost/unit:</td>
</tr>
<tr>
<td></td>
<td>Size:</td>
<td>Amount of units in package:</td>
</tr>
<tr>
<td></td>
<td>Cost:</td>
<td>Cost/unit:</td>
</tr>
</tbody>
</table>
3. Are larger or smaller packages generally the more cost effective purchase? Why do you think this is the case? 3-5 sentences


4. Which produces the least amount of after-use waste? 1-3 sentences


5. Write a summary statement to share what you’ve learned with the class.


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STUDENT WORKSHEET 5 – DISPOSER EXPOSURE

Name: ___________________________ Date: __________________

Find three or more products sold in the supermarket that are designed to be disposed of after only one or a few uses.

1. Fill in the table below.

<table>
<thead>
<tr>
<th>Product</th>
<th>Describe how long it is used and how it is disposed</th>
<th>Is there a non-disposable alternative?</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

2. Were there any products that did not need to be disposable? Why or why not? 2-4 sentences

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3. Can any of the products you selected be refilled or otherwise reused? 2-4 sentences

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4. How is each product disposed of? What happens to it when it is disposed of? *3-5 sentences*

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5. Write a summary statement to share what you’ve learned with the class.

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**STUDENT WORKSHEET 6 – GREEN SCREEN**

Name: _______________________________ Date: _______________________

In the supermarket, choose four or more items that are advertised as ‘green.’

1. Fill in the table below.

<table>
<thead>
<tr>
<th>Product</th>
<th>What about it is advertised as ‘green’?</th>
<th>Is it environmentally conscious?</th>
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</tbody>
</table>

2. In the table above, which item has the longest list of ingredients? Which has the most packaging?

   1-2 sentences

3. Are there any items whose amount/type of packaging conflicts with their ‘green’ label? 1-2 sentences

   ____________________________________________
   ____________________________________________
   ____________________________________________

4. Why do you think a company would advertise a product as ‘green’? Describe them in 3-5 sentences

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5. Write a summary statement to share what you’ve learned with the class.