THE EDUCATION FUND

FOR EXCELLENCE IN MIAMI-DADE PUBLIC SCHOOLS

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Reduce, Reuse, Save Money!

REDUCE, REUSE, SAVE MONEY!

Key Concepts
Connections between good environmental stewardship and saving money; opportunity costs

Summary
In this lesson, students consider the intersection between being good stewards of the environment and saving money. The discussion and exercises allow students to explore ways of satisfying their needs and wants that are both good for the earth and for their ability to save.

Overview & Lesson Objectives
This lesson is intended for middle school students in sixth, seventh and eighth grades. Students explore the lifecycle of consumer goods and consider ways to extend the post-purchase life of products. Doing so can be advantageous both to the environment and to consumers' ability to save.

Students will be able to:

- Identify pre and post-purchase steps in the creation and use of consumer products
- Consider the environmental impacts associated with pre and post-production processes of consumer goods
- Consider ways to extend the post-purchase life of consumer products
- Identify the connections between extending the life of consumer products and saving money
- Calculate the potential savings associated with extending the life of consumer products

Time Allocation:
15 - 20 Minute Prep
35 - 40 Minutes Engagement

Materials:

- Copies of Student Worksheet (one per student)
- Answer Key Worksheet (for Facilitator)
- Optional: Access to the internet or sale circulars

State the Objective: Tell the students what they will be able to do upon conclusion of the lesson.

"Today we are going to talk about the lifecycle of consumer products. Following this lesson, you will be able to identify the various stages of production and distribution associated with consumer goods. You will be able to see the numerous ways in which energy is used and waste is produced during these processes. You will be able to identify the benefits associated with extending the lifecycle of consumer products--both for the environment and for your savings account."

Lesson Begins: Setting the Stage

Ask the students what the term "lifecycle" means. Answers should center on the beginning (birth) and endpoint (death) of a living thing. But these days, attention is being brought to the lifecycle of consumer products. Here, consideration is given to the entire journey of consumer goods from the extraction of raw materials to create goods through to their deposit into a landfill or incinerator. Ask the class to consider the various steps or stages through which consumer products may go. These may include:

- Extraction of raw materials (e.g., wood, minerals, cotton, wool, etc.)
- Creation of synthetic materials (e.g., plastic)
- Transportation of raw or synthetic materials to manufacturing facility
- The manufacturing process
- Creation of packaging materials for shipping
- Transportation to a warehouse
- Transportation to a retail outlet
- Use in a household
- Item is dumped in a landfill

Note that energy is used and waste that must be disposed of is created in each of these various stages.

One way that consumers can help the environment is by extending the life of consumer products. Ask the class to imagine an item going through this entire process to be used once (or even just a few times) and then thrown away. Then, ask them to imagine the item going through this process to be used many, many times. It will have gone through all of that energy and resource used for good reason!

Lesson Continues

Part I: "Taking It to the Bank"

"Going green," by extending the life of consumer items, is not only good for the environment; it's good for your bank account too! Let's consider the example of single-use bottled water vs. refillable bottles.

Ask the class how much a refillable bottle might cost. If computers are available for use, students can look up prices on the websites of major retailers. Alternatively, the instructor can supply circulars that include prices and other information or simply suggest prices. The class can either be instructed to come up with an *average* price based upon a number of choices presented or can simply rely upon a "ballpark" figure.

Depending upon the goals of the instructor, the class may be directed in a discussion of why one bottle might cost more than another (e.g., size, style, logo, material, features such as stainless steel, plastic, wide-mouth, straw or squirt top--ask the students if they think such features are useful; are they necessary? desirable? how do such issues factor into their decision of which to buy?).

Once an average or ballpark price is decided upon, have the students work in groups of 2-3, on their own, or as a class to determine the following:

- Let's say Sara buys a refillable water bottle for [agreed upon average price]. And, let's say she uses it for one year. If she used it one time per day every day of the year, that would be 365 uses.[1] How much would each use cost her? Answer: [agreed upon average price] divided by 365.

- Let's say Sara's friend, Victoria does not use a water bottle. Instead, she buys single-use bottles. If each bottle costs her $1 and she drinks as much water as Sara, how much will she spend on water over the course of a year? *Answer: 365 x 1 = $365*.

How much less would Sara spend on water than Victoria? Answer: $365 – [$ agreed upon average price] = Sara's savings.

In thinking about these consumer decisions, students are using the economic concept of *opportunity costs*—what is given up to get something else, or the value of the best alternative. The $365 that Sara spent on water is $365 that she does not have for other purchases or for savings.

Have students work on additional problems (see Worksheet). Review answers as a class.

Part II: Consumer Decision Making

In the example of the water bottle, consumers choose to buy a product that is designed for re-use. In other instances, consumers can decide to forego or delay a new purchase as a means of extending the life of a given product. Doing so can both help the environment and increase one's savings. It's all about being creative.

Discuss either as a class or in groups how consumers might delay or forego the purchase of new items in the following scenarios:

Scenario 1: Marisol's cousin is graduating from college. Marisol needs a dressy outfit to attend the event. Instead of buying something brand new, what might she do? (Possible solutions: borrow from a friend or relative; buy something at a consignment shop or thrift store; make do with the outfit in her closet, even if it is not her favorite; wear the dress in her closet but buy a new sweater or belt and a hair piece to jazz up her look).

[1] A "use" is defined as consuming the contents of a filled bottle.

Scenario 2: Jessica and Nick just got married. They are trying to save money to buy a house. Instead of buying new furniture with a credit card, what might Jessica and Nick do to furnish their apartment? (Possible solutions: ask relatives and friends for items they no longer need –and refurbish them (e.g., paint a dated dresser and add new knobs; put a table cloth over a damaged side table); buy second-hand goods; use their small budget for new throw pillows and other accessories. (Note: when Jessica and Nick are ready to purchase newer items, they can donate the ones they've used –or sell them at their local consignment shop or at their own yard sale and make money!).

Scenario 3: Alexander's cell phone battery is starting to die. He wants to get a new phone. The new features are so cool! (Possible solutions: Ask yourself if you really need those features. Is it worth it? Does it fit within your budget? Can you find an inexpensive battery online? What about a refurbished/almost new phone? Think about something you can start saving for with the money you DON'T spend on a new phone).

Remember, in each of these situations there are ways to accomplish one's goals while staying within one's budget (*see TD Financial Education, Grade 6-8, lesson 3*). Remind the students that doing so will help the environment AND their savings accounts! Summarize the solutions for the students.

- Making do with what you already have (Do you *really* need a new jacket? Could you use the one you have for another season? Do you really need (or want) that new cell phone feature?)
- Borrowing an item from someone else (swapping helps everyone!)
- Being creative with what you have (using it in a new way; updating it)
- Looking for second hand goods (e.g., yard sales, online sources, consignment shops, thrift stores)
- Selling things you are done with (or donating them) rather than throwing them out.

Lesson Closes

Review the basic parameters of the lesson. Note that extending the lifecycle of consumer products helps the environment and saves money. In the first part of the lesson, students learned about the value of purchasing items designed for long-term use. In the second part of the lesson, students considered creative ways to extend the life of consumer goods. In each instance, money is saved and can be used for other purposes. See the suggestion page for "Additional Engagement Opportunities/Resources", for additional ideas.

Additional Engagement Opportunities / Resources

Act it Out:
Have students work in pairs with one student trying to convince the other to give up his/her single-use water bottle habit.

Pair and Share:
Group students into pairs and ask each pair to exchange two or three new things learned during the day's lesson. Call on select pairs to share with the whole class what has been learned.
Sample questions:

- What do we mean by lifecycle of a product?
- What other examples can you think of to extend the lifecycle of goods? (example: borrowing from a Library, saving leftovers from meals, etc.)
- How can extending the lifecycle of a product be beneficial?
- What are some things you can do with items you no longer need or want, or just don't use very often?

Misinformation: Quote information from the day's lesson purposely erroneous. Call on various students to restate the information correctly.

Samples:

- Using products once and throwing them away is good for the environment
- There is no value in purchasing items designed for long-term use.

What's left out? Supply students with statements that have some information missing. This can be done verbally or it can be done on a board. Ask students to provide the missing information.

Samples:

- "Going green," by extending the life of consumer items, is not only good for the environment; it's good for your _____too!
    - *Answer is "bank account", or "budget"*
- One way that consumers can help the environment is by extending the _____of consumer products.
    - *Answer is " life cycle", "life" , or "use"*

TD Bank **Financial Education**

REDUCE, REUSE, SAVE MONEY! STUDENT WORKSHEET

1. Tyler buys a water bottle for $12.99. The sales tax is 7%.
   - How much does the water bottle cost?

     _____

2. Denise buys two (2) water bottles. One costs $9.99 and the other costs $5.29. The sales tax is 8%.
   - How much does she spend on water bottles?

     _____

3. Carlo's school year is 180 days long. At the start of the school year, he bought a water bottle for $12, including tax. He uses his refillable water bottle at least once every school day. On half the school days, he refills it one time. On one-quarter of the school days, he refills it two times.
   - How many times does he use his water bottle over the course of the year?

     _____

   - If he paid $12 (including tax) for the bottle, how much does each use cost him? If he uses the bottle in the same way for two years and then loses it, how much will each use have cost him?

     _____

   - Given his water consumption, over the course of one school year how much would he have spent on water if he bought single-use bottles instead at $1.25 per bottle?

     _____

   - How much would he save after one year of using his refillable bottle?

     _____

4. Miranda's class received free refillable bottles from a local retailer. The students decide to start using the bottles and to donate the savings to a favorite charity. At their school, single-use water bottles cost $1.
   - There are twenty (20) students in Miranda's class.
     - Twelve (12) students used to buy a single-use water bottle for their school lunch every day.
     - Five (5) students used to buy single-use bottles three times a week.
     - Three (3) students are on the track team. They used to buy single-use bottles for every practice. Practice is held four days a week.
   - After **4 weeks** of using refillable bottles, how much was the class able to donate to their favorite charity?

     _____

5. Sam switched to using a refillable water bottle and saves about $15 a month.
   - How much will he have saved by the end of the calendar year (12 months)?

     _____

   - If he puts that money in a savings account earning 1% simple interest per year, how much will he earn in interest at the end of a year?

     _____

REDUCE, REUSE, SAVE MONEY! WORKSHEET (ANSWER KEY)

1. Tyler buys a water bottle for $12.99. The sales tax is 7%.
   - How much does the water bottle cost?

     ($12.99 x .07) = .91 cents tax. $12.99 + .91 = $13.90
     Alternately, ($12.99 x 1.07) = $13.90

2. Denise buys two (2) water bottles. One costs $9.99 and the other costs $5.29. The sales tax is 8%.
   - How much does she spend on water bottles?

     ($9.99 x .08) = .80 and $9.99 + .80 = $10.79
     ($5.29 x .08) = .42 and $5.29 + .42 = $5.71

3. Carlo's school year is 180 days long. At the start of the school year, he bought a water bottle for $12, including tax. He uses his refillable water bottle at least once every school day. On half the school days, he refills it one time. On one-quarter of the school days, he refills it two times.
   - How many times does he use his water bottle over the course of the year?

     180 days once, then refills:
     90 days 1 refill
     45 days 2 refills
     180 + (90 x 1) + (45 x 2) = 360 times

   - If he paid $12 (including tax) for the bottle, how much does each use cost him? If he uses the bottle in the same way for two years and then loses it, how much will each use have cost him?

     1 year: $12 ÷ 360 times = $.033 or 3 cents per fill
     2 years: $12 ÷ 720 times = $.016 or less than 2 cents per fill

   - Given his water consumption, over the course of one school year how much would he have spent on water if he bought single-use bottles instead at $1.25 per bottle?

     Single-use: ($1.25 x 360 bottles) = $450

   - How much would he save after one year of using his refillable bottle?

     ($450 - $12) = $438.
     Alternatively, ($1.25 - .03) x 360 = $439.20 because of rounding of .03

4. Miranda's class received free refillable bottles from a local retailer. The students decide to start using the bottles and to donate the savings to a favorite charity. At their school, single-use water bottles cost $1.
   - There are twenty (20) students in Miranda's class.
     - Twelve (12) students used to buy a single-use water bottle for their school lunch every day.
     - Five (5) students used to buy single-use bottles three times a week.
     - Three (3) students are on the track team. They used to buy single-use bottles after every practice. Practice is held four days a week.

- After **4 weeks** of using refillable bottles, how much was the class able to donate to their favorite charity?

  (12 students x 5 times per week at lunch) = 60 bottles
  (5 students x 3 times per week) = 15 bottles
  (3 track team students x 4 times per week) = 12 bottles
  (60 + 15 + 12) = 87 bottles out per week
  (87 bottles x 4 weeks) = 348 bottles
  So (348 bottles x $1.00) = $348 donated to charity

5. Sam switched to using refillable water bottle and saves about $15 a month.
   - How much will he have saved by the end of the calendar year (12 months)?

     ($15 x 12 months) = $180

   - If he puts that money in a savings account earning 1% simple interest per year, how much will he earn in interest at the end of a year?

     ($180 x .01) = $1.80, so savings would be $181.80 at the end of the year

The interest that Sam earned on his savings account would be the opportunity cost of drinking bottled water. [The direct cost of the new bottled water was $180, but the opportunity cost is the $1.80 in interest earned during the year. Every time you spend instead of saving money, your opportunity cost is the foregone interest.]

Educational Standards

NJ Core Curriculum Content Standards for Personal Financial Literacy 2014:
Standard 9.1: 21st Century Life and Careers
Standard 9.1 Personal Financial Literacy
Becoming a Critical Consumer 9.1.8.E.4
Civic Financial Responsibility 9.1.8.F.1, 9.1.8.F.2

National Standards in K – 12 Personal Finance Education (from Jump$tart Coalition) 2017:
Spending and Saving:
Standard 4: "Apply consumer skills to spending and saving decisions."
Financial Decision Making:
Standard 1: "Recognize the responsibilities associated with personal financial decisions."

National Content Standards in Economics (from Council for Economic Education) 2010:
Standard 2: Decision making