

Environmental Lessons Plans

by

 SCHOLASTIC



Our Water, Our Planet

Protecting our natural resources, fragile ecosystems, and local environment is the responsibility of every citizen. **Our Water, Our Planet** reinforces core science, language arts and math skills while teaching students about simple steps they can take to reduce plastic waste and make a difference in the health of their local community. This national standards-based educational program, created by Scholastic and Brita, features a series of free lessons and turnkey printables, as well as family activities.

Lesson 1: Everything's Connected

Simple actions can change the health of an ecosystem. Help students discover how different kinds of trash decompose in a landfill.

OBJECTIVE

Science Goal: Students will learn about ecosystems and the process of decomposition. They will also understand what it means to reduce, reuse, and recycle, and how these human behaviors can impact ecosystems.

Language Arts Goal: Students will practice reading comprehension skills.

Math Goal: Students will practice graphing skills.

MATERIALS

[Everything's Connected Lesson Printable 1 \(PDF\)](#) , pencil, paper

DIRECTIONS

1. Ask: *What does it mean to be at the 'top of the food chain'?* Explain that humans are the most influential members of the planet because of our ability to influence our surroundings and the lives of every plant, animal, and environment. Discuss whether students think that this power comes with a responsibility to the overall health of our environment.

2. Review with students how an ecosystem works, including:

- The **sun** is the source of energy for all living things—plants and animals.
- Plants are called **producers** because they use light energy from the sun to make their own food from air and water.
- Animals cannot make their own food, so they eat plants and animals for energy. They are called **consumers**.
- **Decomposers** are another important link in the food chain. Decomposers are the bacteria and fungi that feed on decaying matter.

3. Ask: *Think about old, moldy food that you have seen. Mold is a decomposer. Do you know why things decompose?* (Decomposition releases nutrients back into the soil to be absorbed by plants.) Explain that water and oxygen are needed for materials to decompose. That is why frozen or tightly stored food does not decompose. Tell students that this lesson will focus on **decomposers** and how they work within a landfill.

4. Explain how landfills work including the following facts:

- Every day people throw trash away. Some is recycled, but most of it will be picked up by garbage trucks and dropped into a landfill to move it away from the areas where people live and work.
- When trash is brought to a landfill, bulldozers cover it with dirt so that it won't smell and so that animals and bugs will stay away.
- Given enough time, the trash will decay naturally, in a process called **biodegradation**. But not everything in a landfill is biodegradable, and some things take a very long time to decay.
- Modern landfills are lined on the bottom with clay and plastic, to help prevent poisons from seeping out of the garbage and getting into the groundwater that people, plants, and animals need to survive.

- Water or oxygen is needed for things to decay, so heat (which brings water out of organic trash) and dirt (which allows oxygen to penetrate the tightly packed landfill) allows the decomposition process to happen more quickly.
- After landfills close, they are carefully monitored for up to thirty years to make sure the trash does not damage the water, soil, or air quality of nearby ecosystems.

Using the Printable:

5. Ask: *Why is it important to reduce our waste?* (Our natural resources are limited, we are running out of landfill space, and our actions have an impact on other living things and future generations.)

6. Explain that students will now read a series of journal entries that describe the changes in a landfill ecosystem over time.

7. Distribute [Everything's Connected Lesson Printable 1 \(PDF\)](#) to each student. Read the introduction together and provide students with enough time to read the journal entries and complete the graph.

8. Ask: *In your opinion, is it important to reduce plastic waste to protect the environment? Why or why not?* Discuss why reducing plastic waste makes environmental good sense. Compare plastic to the biodegradable power of paper and food waste like orange peels. Reinforce the following concepts:

- Reducing (using less or using the same things again, like carrying a reusable bag to the grocery store)
- Reusing (using things more than once in the same way or in a completely new way, such as using a coffee can to hold pens and pencils)
- Recycling (turning old, used things into different, new things, such as fleece made out of old plastic bottles)

Extending the Lesson to Home:

Help your students gain an understanding of how much plastic waste their families generate in one day. Go to [Tracking Your Trash Activity](#) and review the instructions. Then distribute copies of [Tracking Your Trash Activity Printable 1 \(PDF\)](#) and send it home with students. Instruct your students to bring the filled out printable to class with them for the next lesson.

Lesson 2: A Day in the Life of Bottled Water

Students will find out how natural resources like oil are used to bring bottled water to their school.

OBJECTIVE

Science Goal: Students will learn about natural resources and fossil fuels.

Math Goal: Students will use math skills to solve a series of word problems.

MATERIALS

[A Day In the Life of Bottled Water Lesson Printable 2 \(PDF\)](#), pen or pencil

DIRECTIONS

1. Ask: *Raise your hand if you drink bottled water. Do you recycle the bottles when you are finished? Do you think that new plastic bottles can be made from recycled bottles? (No, but they are used to make fleece and carpets).* Discuss whether there is another way you can get water. Instruct students to raise their hands if they feel drinking bottled water is an environmentally wise choice. Count the number of hands in the air and write it on the board so you can refer to it later in the lesson.

2. Explain that a natural resource, oil, is used to make plastic, including plastic water bottles. A **natural resource** is something found in nature that is valuable to humans, such as forests, wildlife, or water.

3. Tell students they are going to explore the life cycle of a plastic water bottle. On the board, sketch the following steps, discussing each as you move along:

- Oil is extracted from the ground and sent to a refinery to be converted into petroleum.
- The petroleum is shipped to a factory to be made into plastic bottles.
- The empty bottles are sent to the water source to be filled.
- The bottled water is shipped great distances to stores all over the world, where it can be purchased.
- The empty bottle is either put in the trash or recycled.

Using the Printable:

4. Ask: *What do you think are some of the environmental costs involved in creating water bottles?* On the board, make a list that includes items such as:

- Extracting oil from the ground can contaminate water supplies and disrupt wildlife.*
- Transporting bottled water contributes to global warming and air pollution.*
- Throwing away empty plastic water bottles (instead of recycling them) sends plastic to landfills where it takes 500-1,000 years to biodegrade.*

5. Ask: *Since oil is a fossil fuel with limited supply, is there a wiser way to use oil than in the manufacturing of water bottles?* Using oil to provide energy to homes and cars could be a wiser choice.

6. Distribute [A Day in the Life of Bottled Water Lesson Printable 2 \(PDF\)](#) . Instruct students to solve the math problems alone or in pairs. Review the answers as a class.

7. Ask: *Has your opinion about bottled water changed? Why or why not? What are some alternatives?* Discuss the benefits of carrying a reusable, refillable water bottle as an easy and effective way to reduce plastic waste.

8. Ask: *Would you drink tap water? Why or why not?* (negative answers may include taste and worries about cleanliness. Explain that tap water in the United States is tested every day to make sure it is very clean and safe, but it can sometimes still taste funny. This funny taste may come from the chlorine that is added to kill the bacteria or from metals that are picked up from the pipes along the way. Many people use water filters to get rid of this funny taste so that they can enjoy the clean tap water that comes straight to their homes without creating more plastic trash and harming the environment.

Extending the Lesson to Home:

1. Ask students to look at their results from the [Tracking Your Trash Activity Printable 1 \(PDF\)](#).

2. Distribute [The Plastic Plan Activity Printable 2 \(PDF\)](#) and help students create a plastic-waste-reduction action plan to implement at home.

3. Ask students to help their families follow through on their action plan. Provide students with a new copy of [Tracking Your Trash Activity Printable 1 \(PDF\)](#) to track the results of the action plan for one day. Have students bring back the results to share.

Answers to Lesson Printable 2:

1. a) 2,900 miles b) 20,300 gallons c) \$81,200.00

2. a) \$30.00 b) \$20.00 c) 4 times

Lesson 3: Go to the Source: Your Town's Tap Water

Students conduct research to find out how the water in their town or city gets to the faucet.

OBJECTIVE

Science Goal: Students will learn how water gets to the tap and perform a simple experiment.

Language Arts Goal: Students will conduct a local research project using primary and secondary sources.

MATERIALS

[Go to the Source: Your Town's Tap Water Lesson Printable 3 \(PDF\)](#) , pen, paper, [Water Cycle Diagram](#), research materials, tap water, filtered tap water, cups, and markers.

DIRECTIONS

1. Ask: *Do you know where your tap water comes from?* Using a show of hands, count the number of students who have a house with a well; use town or city water; or don't know. Explain that a well links an underground reservoir to an individual home; and city or town water comes from a community reservoir.

2. Tell the class: *Just as we learned about the process involved in producing and transporting bottled water, we will now learn about the process involved in getting water to the tap.* Use the diagram at www.dwi.gov.uk/consumer/images/waterc.gif to aid in describing the following process:

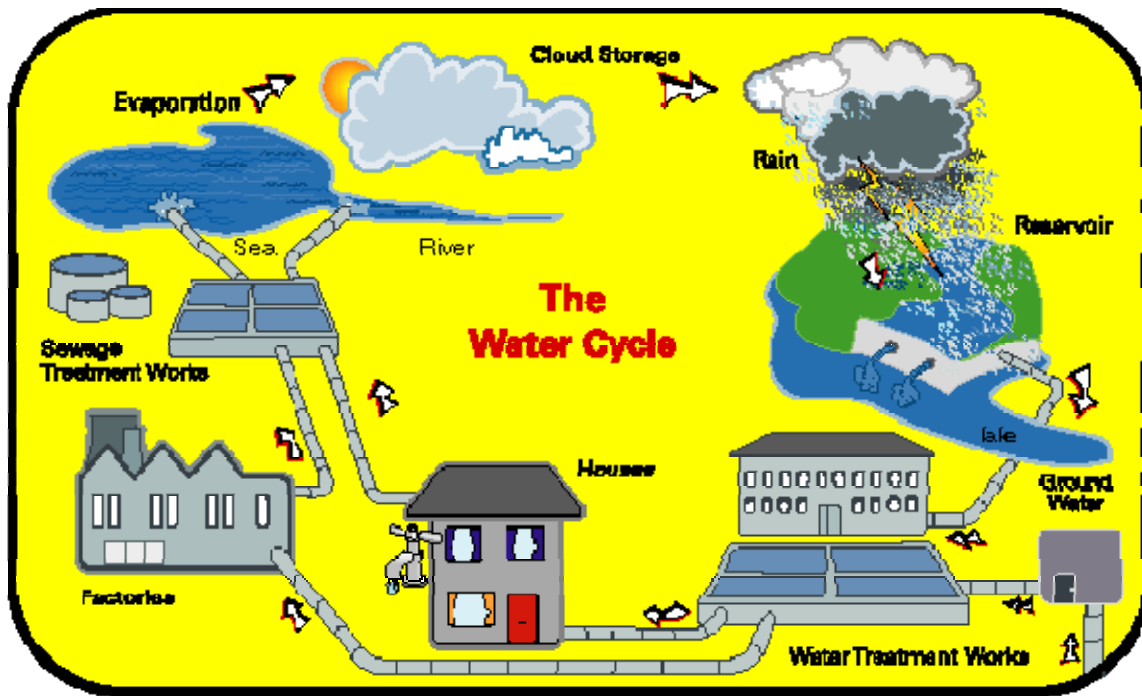
- Large underground pipes carry water from rivers and streams to a reservoir. (A reservoir is a place that stores water.)
- The water is then cleaned. Large objects, like feathers and garbage, are filtered out. A second filter removes smaller objects, like gravel and sand.
- Then the water goes to a water treatment plant where things like bacteria (which can make you sick), and minerals (which can make water taste or smell funny) are removed. Scientists remove the minerals and add bacteria-killing chemicals and flouride which some dentists say promotes healthier teeth.
- Once the water is clean and safe, it leaves the treatment plant, and makes its way through underground pipes, called mains, to the city. Mains branch out into smaller pipes, which go into homes, schools, and businesses.
- Water pressure pushes the water up through the pipes in the wall, and out of your faucet.

Using the Printable:

3. Tell the class they will now conduct research using online references, interviews, and in-person observations to find out how tap water reaches their town or city. Divide students into teams of three, and distribute [Go to the Source: Your Town's Tap Water Lesson Printable 3 \(PDF\)](#) to each student.
4. Read the introduction together and provide students with class time to conduct research. Review the definitions of primary and secondary sources and encourage the use of primary sources (interviews, quarterly water-testing results, official city or town Web sites, etc.) during this project.
5. Review the results of students' research. Discuss the similarities and differences between what each group discovered.
6. Distribute the materials for the Taste-Testing Our Water experiment described on [Lesson Printable 3 \(PDF\)](#) and allow time for students to complete it in teams. Discuss the results as a class. (Take the pledge at filterforgood.com and get a coupon for a Brita® product to use in this experiment.)
7. Ask students to consider the environmental impact of bottled water compared to tap water, and emphasize the importance of thinking about how our actions affect the environment. Encourage students to share their own feelings about how making small changes in our habits can reduce waste. Have students respond to the writing assignment on the [Go to the Source: Your Town's Tap Water Lesson Printable 3 \(PDF\)](#) . Publish some of your students' "testimonials" in the "Talk to Us" section of this website.

Extending the Lesson to Home:

Ask students to look at the results on their [Tracking Your Trash Activity Printable 1 \(PDF\)](#) from their second day of tracking. Discuss the results and encourage students to keep up the great work!



Family Activity: Tracking Your Trash

Extend what your students have learned at home by having them keep track of how much waste their families produce during a day. Students will discuss the results in class and come up with a family action plan to reduce home plastic waste.

OBJECTIVE

Students will discover how much plastic waste families produce during an easy multiday observation.

MATERIALS

[Tracking Your Trash Activity Printable 1 \(PDF\)](#) and [The Plastic Plan Activity Printable 2 \(PDF\)](#)

DIRECTIONS

Tell students they are going to be tracking all the plastic waste that is produced in their homes for one day. Then they will come up with a plan to reduce their family's plastic waste!

DAY ONE:

Students will keep track all of the plastic waste generated on a "normal" day, such as plastic juice jugs, bottled water, and milk cartons using [Tracking Your Trash Activity Printable 1 \(PDF\)](#).

DAY TWO:

Have students bring the results from Day 1 back to class to share. Were students surprised by how much waste their families produced?

What plastic materials were thrown away the most? Have students make suggestions as to how they can minimize plastic waste and write them on the board. Divide ideas into three categories: REDUCE, REUSE, RECYCLE.

Use [The Plastic Plan Activity Printable 2 \(PDF\)](#) to share these ideas with families and develop an action plan to reduce home plastic waste.

DAY THREE:

Have students track trash for another day and try to reduce waste by implementing the family action plan on [The Plastic Plan Activity Printable 2 \(PDF\)](#).

Ask students to encourage their families to [take the FilterForGoodSM pledge](#) !

BONUS!

You can extend your students' trash audit for as long as you like. You may even want to track your class' waste reduction successes! As a class, add up the total number of items thrown away each week, and create a line graph for your classroom bulletin board. Hopefully you will see your line go down and down as your class reduces plastic waste!