



Lesson 5: Pollution Solutions

In this lesson, students will be introduced to the various methods of water conservation and pollution prevention.

Focus

Pollution Prevention and Water Conservation

Focus Questions

- How can I prevent water pollution?
- How can I conserve earth's natural resources, particularly water?

Materials Needed

Our Water PowerPoint
One Gallon Jug of Water

Engage

While using the *Our Water* PowerPoint as a guide, begin the lesson by asking the students the following questions:

- *What do you do every morning before school?*
- *What do you do every afternoon and evening?*
- *Think about those activities you do every day. How does water help you do those things?*
- *How else do people use water?*
- *Besides people, what else uses water?*

Allow students time to think about and answer the questions. A list describing typical water usage and users is provided on the *Our Water* PowerPoint.

Next, while holding up a gallon jug of water, ask students, "*If this jug holds one gallon of water, how many gallons do you think you use every day?*" Allow students to think about and answer to the question. You are likely to get a whole range of answers. Most students have little concept of the amount of water used daily per person. After hearing their guesses, review the following stats with them:



Grade Level: 1

Learning Objectives

- Students will be able to describe several different ways of conserving natural resources, such as water, and preventing pollution.

Key Words

Natural Resource, Water Pollution, Conservation, Reduce, Reuse, Recycle, Replant

Prior Knowledge Required

- Students should be able to explain the importance of water as a natural resource.
- Students should be able to explain the sources of water pollution as well as its effect on water quality and the environment.

South Carolina Science Standards and Performance Indicators Addressed

1.E.4B.2



“In South Carolina about 463 million gallons of water are withdrawn and delivered every day for domestic use, with the average South Carolina resident using 100 gallons per day in and around their home. If every South Carolina resident reduced their shower duration by one minute, about 2.6 billion gallons of water would be saved every year—that's enough water to fill more than 3,900 Olympic-sized pools!” (<https://www.neefusa.org/>).

Explore

After discussing the use of water in South Carolina, using the PowerPoint *Our Water* as a guide, play the *Conservation Fact or Fiction* game with the students. Be sure students understand the rules and objective of the game. Team numbers and arrangements will be based on class size and your professional judgement. Emphasis is placed on water waste in daily activities.

After the game, ask students, “Where does the water we use everyday come from?” Using questioning, guide students to the realization that the water we use comes from the surrounding environment, mainly surface and ground water sources.

In order to get students thinking about the importance of water conservation to people and to the environment, pose the following questions (or similar questions):

- *The more water we use, the more water gets taken out of the environment. How do you think this effects plants and animals in our area?*
- *If we run low on or run out of water, can we make more?*
- *If more people move to our area, what will happen to our water supply?*
- *What happens to our water when we throw trash or other things that don't belong there on the ground?*
- *What other natural resources are important to us besides water?*
- *Is it important to save our natural resources, like water? Why?*

Explain

Next, begin a discussion about the definition of conservation: *When people speak about saving resources, we often use*

Be Sure Students Understand:

- Clean, fresh water that can be used by humans is limited and, therefore, very valuable.
- Overuse or abuse of our water supply/resources can be harmful to the creatures that must have water to survive, including fish, animals, and plants.
- Our water supply is finite. We cannot make more.
- Water shortages may be caused by population increase, pollution, and climate change.
- Anything we put on the ground or in the sky will eventually end up in our water (because of the water cycle) including trash, chemicals, and other harmful substances.
- It is important to conserve all our natural resources (land, water, trees, air) as much as possible because they very valuable (to us and our surrounding environment), and some, such as water and land, are in short supply.
- According to Meriam-Webster, the definition of conservation is “a careful preservation and protection of something, especially planned management of a natural resource to prevent exploitation, destruction, or neglect.”



the word "conservation." What do you think I mean when I say, "It is important to conserve our natural resources?"

Allow students to think, respond, and attempt to figure out the definition themselves. Agree upon the correct definition as a class. Post the word "conservation" and their definition in a conspicuous place in the classroom. If you wish, you can use the attached definition sheet for this portion of the lesson.

After students have a good working definition of conservation, prepare them for the next activity. Using the Our Water PowerPoint as a guide and the DON'T/DO Diagram attached, instruct students to list ways they think people waste water (this can be placed on the "Don't" side of the diagram). Then, for each item on the "Don't" side, tell the students to list one way to solve that problem (this can be placed on the "Do" side of the diagram). Students could also have the option of drawing a picture to represent answers if possible. The following is an example:

DON'T: Brush teeth with the faucet running.

DO: Turn off water while brushing your teeth.

Give students time to think of several examples and to share them as a class. Moreover, have students color the diagram and post it in the classroom or hallway. As an alternative to students writing or drawing individually, write the ideas as the class comes up with them. Then, have each individual student color one of the answers and display them in the classroom.

Elaborate

After finishing the DO/DON'T Diagram, show students the reduce, reuse, and recycle video. When the video is done, review the meaning of reduce, reuse, and recycle. Use the Our Water PowerPoint as a guide. Then, tell the students that they will be playing the Reduce, Reuse, Recycle game. The rules and materials are also provided in the PowerPoint.

Evaluate

After the game is finished, use the quiz questions provided in the Our Water PowerPoint as a knowledge check.

Resources

- Blount, S. (n.d.). Home Water Use in the United States. Retrieved March 26, 2020, from <https://www.neefusa.org/weather-and-climate/weather/home-water-use-united-states#SouthCarolina>
- "Support Guide 3.0 for First Grade." South Carolina Department of Education Office of Standards and Learning, June 2018.

For More Information and Feedback:

We value your feedback on this lesson, including how you use it in your formal/ informal education settings. Please send your comments to:
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Acknowledgements:

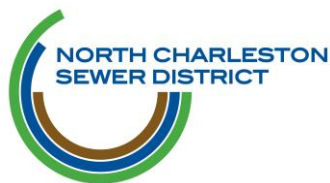
Created by Caitlin Graham, FOG Program Manager, North Charleston Sewer District.

Adapted from the work of Sarah Mason and Darnell Collins, North Charleston Sewer District using resources listed above.

If reproducing this lesson, please cite NCSD as the source and provide the following URL:
<https://ncsd.sc.gov/learning-about-fog/>

Conservation Fact or Fiction Game:

Statement	Fact/ Fiction	Explanation
*Just by turning off the tap while you brush your teeth in the morning and before bedtime, you can save up to 8 gallons of water! That adds up to more than 200 gallons a month, enough to fill a huge fish tank that holds 6 small sharks!	Fact	
*Taking a shower uses much less water than filling up a bathtub.	Fact	A shower only uses 10 to 25 gallons (per 5 minutes), while a bath takes up to 70 gallons. To save even more water, keep your shower under five minutes long!
** A leaky faucet can waste 100 gallons a day.	Fact	* The average family can waste 180 gallons per week, or 9,400 gallons of water annually, from household leaks. Fixing leaks is a great way to reduce water use.
An easy way to save water is to use a hose when washing cars and bikes.	Fiction	* A hose can waste 6 gallons per minute if you leave it running, but using a bucket and sponge only uses a few gallons!
One 8 oz glass of tap water costs more than a six pack of soda.	Fiction	** You can refill an 8-oz glass of water approximately 15,000 times for the same cost as a six-pack of soda.
Handwashing dishes (with the faucet running) saves more water than running the dishwasher with a full load of dishes.	Fiction	* If you leave the faucet running while you are washing the dishes, you could waste around 30 gallons of water (10 gallons for five minutes). **An automatic dishwasher uses 9 to 12 gallons of water.
Earth's natural resources include air, minerals, plants, soil, water, and wildlife (national geographic).	Fact	
*** The average South Carolina resident uses about 100 gallons per day in and around their home.	Fact	
** Over half of the human body is made up of water.	Fact	The human body is about 75% water.
Watering your yard in the middle of the day wastes less water than watering in the morning or evening.	Fiction	* Avoid watering your yard in the middle of the day. Watering when it's hot and sunny is wasteful because most of the water evaporates before the plants have time to drink it.



** Only 1% of the earth's water is available for drinking water.	Fact	** Less than 2% of the Earth's water supply is fresh water. Of all the earth's water, 97% is salt water found in oceans and seas. Two percent is frozen.
Using water wisely is not important.	Fiction	Clean, fresh water that can be used by people is limited; so, we must use it wisely and not waste it.
Washing clothes uses more water than any other indoor water use (i.e. more than showers, toilets, faucets, leaks, etc).	Fiction	* Toilets use more water than any other indoor water uses (24%). Next is showers at 20%. One flush of the toilet uses 3 ½ gallons of water (on average).
Putting food scraps down the sink is better for you and the environment than putting it in the trash.	Fiction	Placing food scraps in the trash can and wiping your plate before you wash the dishes helps prevent FOG (fats, oils, and grease) from going down your drain. When FOG goes down the drain, it can cause damage to homes, neighborhoods, and the environment.
** A person can survive about a month without food, but only 5 to 7 days without water.	Fact	
Using chemicals like fertilizers and pesticides outside can lead to water pollution.	Fact	Anything on the ground can be picked up by water (runoff) and carried to nearby lakes, rivers, streams, etc.
By replanting trees in bare areas, we can preserve soil and conserve trees.	Fact	
** A dairy cow must drink four gallons of water to produce one gallon of milk.	Fact	
** A gallon of gasoline takes nearly 13 gallons of water to produce.	Fact	Carpool to school or ride your bike to reduce both your energy and water use.

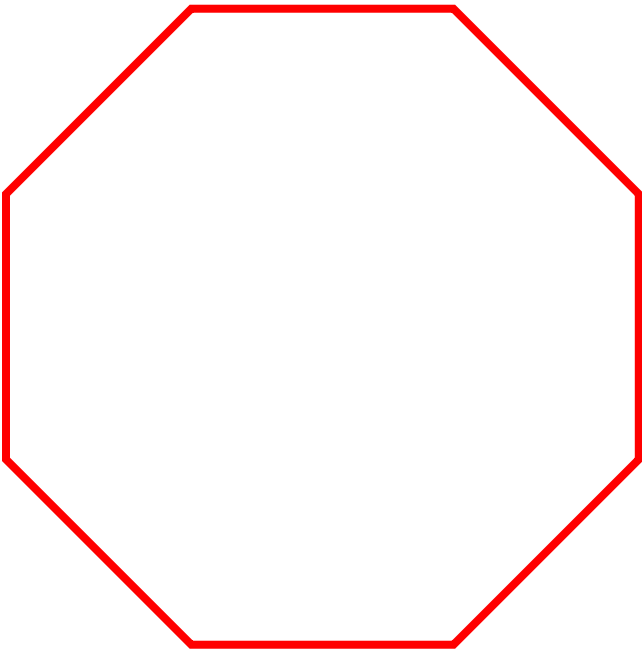
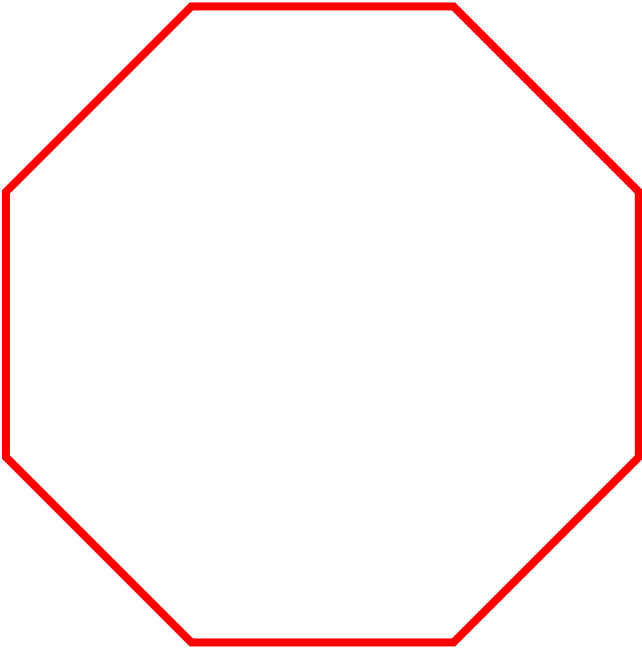
Sources:

* <https://www.epa.gov/watersense/statistics-and-facts>

** https://www.thinkh2onow.com/water_conservation_facts.php

*** <https://www.neefusa.org/>

DON'T



DO

