

What Can I Do To Conserve Water?

Activity Information

Grade Appropriate Level: 2 & 3

Duration: two-40-minute periods and an overnight homework activity

Materials: online resources, worksheets

Brainstorming activities – chart paper & markers, beach volleyball with globe markings, chalk

Water demonstration – 5-gallon pail, eye dropper, worksheet, crayons (green, yellow, blue)

Objectives

To teach the students what our environment is, how important it is to us and how we can help to keep it clean and safe. Since water is one of the most important parts of our environment, we will be discussing what they can do to make sure we have safe water in the future.

Prescribed Learning Outcomes

Social Studies, Language Arts, Mathematics

Students will be able to:

- demonstrate an understanding of their responsibility to local and global environments
- understand that they can make a difference in their own environment
- be able to generate ideas that they can use to improve their environment
- display and analyze data through graphing



Skills

- Think critically, creatively and reflectively, communicate, hypothesize, analyze and interpret.

Background

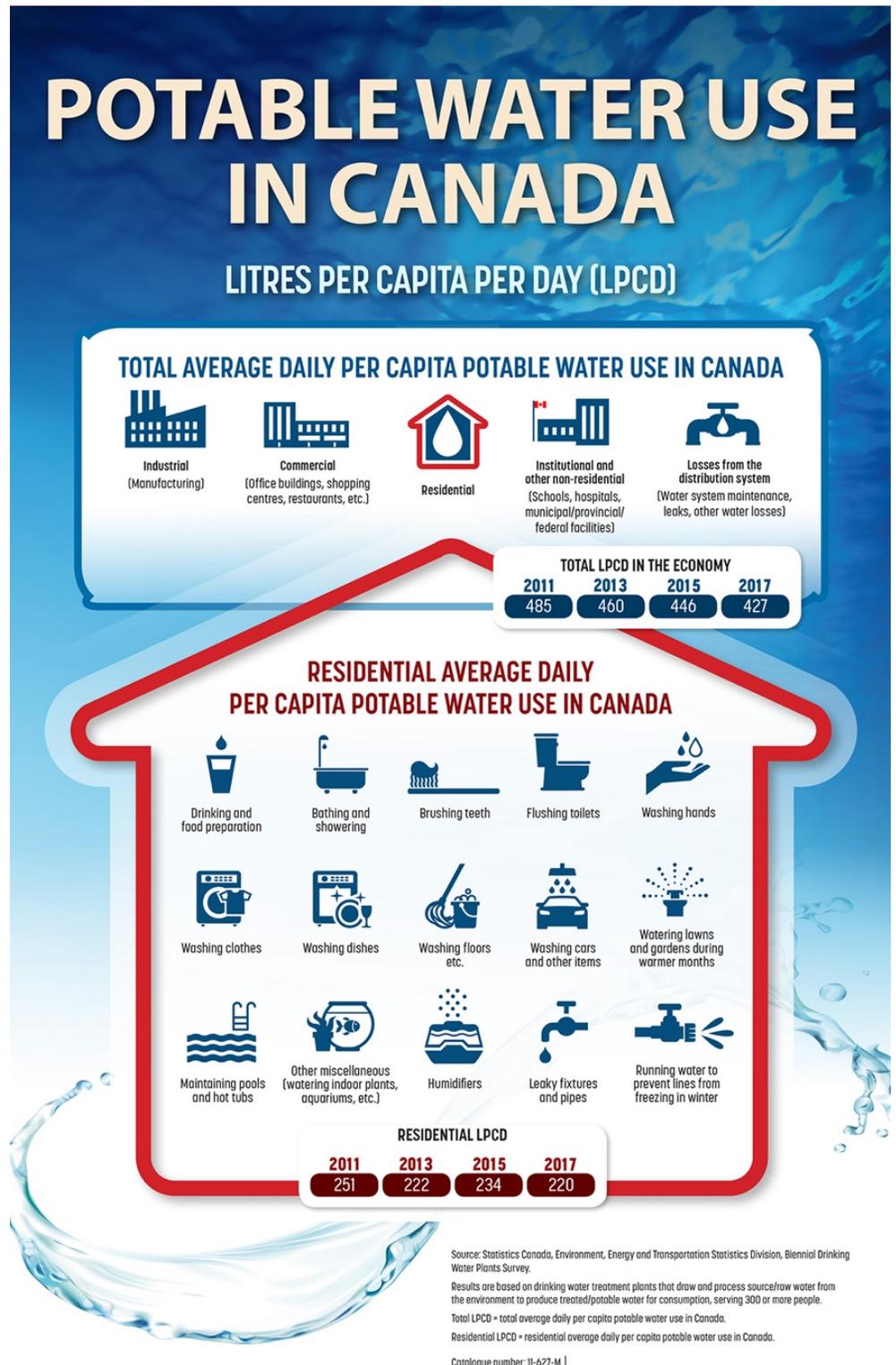
- Canada has 7% of the world's renewable fresh water. (Canada.ca website)
- Canadians might think we have an almost endless supply of clean, fresh water. Canada has some 20% of the world's total freshwater resources. However, less than half of this water -- about 7% of the global supply -- is "[renewable](#)". Most of it is fossil water retained in lakes, underground aquifers, and glaciers.
- "Approximately 66% of Canadian drinking water comes from groundwater sources, such as: rivers, lakes and reservoirs. The largest model by far are the Great Lakes. These five huge interconnected lakes span almost the entire width of the North American continent. In fact, these lakes are the largest surface areas of freshwater found in a single location anywhere on our planet. Only a few nations in the world have greater water resources in relation to their populations, they are: Iceland, Guyana, Bhutan, Suriname, Greenland and Papua New Guinea.

- Canada has an impressive 80,423 cubic meters per capita and approximately 891,163 sq km or 9% of the nation is covered with freshwater. But, this isn't the whole picture. If the freshwater currently trapped in underground lakes and glaciers was released, we would have around 20% of the Earth's freshwater in Canada." (NelsonWater.com)

Watch [this National Geographic video](#) about Canada's water usage with some helpful tips. The good news is we've already reduced water consumption by 100 litres less per person than 20 years ago!

Introductory Activity

- In order to gain their attention and introduce the topic of the lesson, the teacher should engage the students in a simple game of beach volleyball.
 - The ball should have the markings of a basic globe on it. The purpose is to get a quick prediction of how much of the world is water.
- The students toss the ball from one person to the next. Each person catches the ball and reports to the teacher whether their right pinky finger is on water or land.
- The teacher keeps a running tally on the chalkboard for everyone to see. This is a fun activity, but the **results will show that the majority of the earth's surface is actually water.**



Suggested Instructional Strategies

- Assess previous knowledge. Have the students brainstorm what they feel is included in their environment. Discuss the differences and similarities of their personal environments. The similarities should be guided toward their physical environments that would include all three aspects of water, land and air, but we will be focusing on water.
- A visual learning activity for the students. Prepare a quick demonstration of the quantity of drinkable water in the world. Fill a 5-gallon pail with water and have the students predict the percentage of each type of water found on the Earth. They will use the worksheet, “*Were you Aware?*” (adapted from Isherwood, 1996) and provided in this lesson plan, to record their predictions. They will record the amount of salt water on the graph in green, yellow for the fresh water in glaciers and polar icecaps and blue for the fresh surface and groundwater.
- Discuss the results. Have the students fill in the graph on the right-hand side of *Were you Aware* worksheet. Salt water makes up [97% of the Earth’s water](#) (green), 2.5% is fresh-frozen in glaciers and the polar icecaps (yellow) and only 0.5% is drinkable fresh, surface and ground water (blue). In order to emphasize how small 0.5% really is, fill six tablespoons from the five-gallon pail and empty them in a glass as the students count.
- About 6.25 tablespoons from a five-gallon pail is proportionate to the 0.5 percent of the world’s water that we can access to drink.
- **Homework.** In order to have students make the connection between what they are learning at school and how this is important to them at home, the students will be required to complete a homework activity involving water usage for a week. When they brush their teeth before bed, they are to collect and measure the amount of water used if the tap is left running. (A large pot may be necessary.) The next morning, they are to again collect and measure the water, but they are to turn the tap off between rinses. Try using the same pot to see the actual difference. The water from both experiments can then be poured into a measuring container with litres marked on it to show the numerical amounts and charted with the worksheet provided (Water Log). After a week or as long as the teacher specifies, they will compare the data individually and collectively.

As an extension, they could multiply the students’ results by the population of the school or even the population of the whole town; a great math assignment.
- **Reinforce understanding.** Now that the students know the actual quantity of usable water in the world and they have experimented to see how much water they waste, focus them back to the brainstorming that was conducted at the beginning of yesterday’s lesson. Ask the students to develop any questions they have about the environment under the heading of water.

- (For example, Are we wasting too much water? How can we reduce the water we are using?) Divide the students into small groups and have them develop more questions and then problem-solve possible solutions to their questions. After 10-12 minutes, have the students get back together to share and discuss their solutions. Record all of the group's suggestions together on chart paper and put on display.
- **Modeling the assignment.** Display pictures depicting proper and improper uses of water. Sources could include online videos, newspaper articles, personal drawings, infographics as well as age and reading level appropriate books and brochures or corporate material from industry, government and conservation groups. Have students explain what they see in the pictures and discuss the different ways water is being properly or improperly used. Using available resources, they can find pictures that could be added to the sample set and condensed into a collage.
- **Application of learning.** Once it is clear that the students understand the assignment, divide the class into small groups and give them 20 minutes to complete their collages. After the allotted time, display the collages and allow students a few minutes for viewing and discussion amongst themselves.
- **Closure.** Bring the students back together for a group discussion of the proper and improper uses they discovered when completing their collages. Determine if there are ways in which we could improve our use of water at school or in our homes. Discuss what differences there would be in our environment, if everyone in his or her town tried saving water in only one way. How does a lack of water affect towns or villages in places like Africa or India? What happens to the population and the animals if there is no available water for drinking or to grow crops? Why do North Americans waste so much water? Here's a list of 25 ways people waste water from [California](#) and a dishwashing detergent [website](#) with Canadian statistics and tips. "Most of our water usage at home occurs in the bathroom (35%), toilet (30%), laundry (20%), kitchen (10%) and while cleaning (5%)."
- **Application.** In order to apply what they have learned, students will write in their Journal five things that they could do in their personal environment to help conserve water. They should not only list what they could do, but explain how they will perform the tasks and how they will motivate their families, friends, and neighbours into joining their plan. Encourage students to contact by phone or e-mail world groups such as [UNICEF Canada](#) or [Doctors without Borders](#) to find out how important fresh drinking water is to a village in Africa.
- Invite someone from this group to speak to the students about how people cope without regular access to water and how far they must walk to the nearest water supply.

Suggested Assessment Strategies

- During the small group brainstorming session look for evidence that they are able to identify environmental issues and suggest appropriate and feasible solutions to the problems. They should also display the proper behaviour when involved in group activities (for example - listening and accepting others' opinions and presenting/sharing their opinions).

- Criteria for assessment of water collage: All pictures should be presented under the appropriate heading (for example, Proper/Improper uses of water). There are to be very few repetitive pictures. The collage is to be completed neatly and in an organized fashion. During the discussion of the collages, listen for recognition of different ideas and discussion of validity of others' work.
- In their Journal writing activity, (which can be completed on the computer as well) the teacher should look for five feasible activities a student could do to improve water usage in their own homes. They should also have a logical strategy in place for fulfilling each activity. A couple of weeks later, the students can again write a journal entry outlining their progress, or lack thereof, in conserving water. If they do not show significant progress, ask them to explain what kinds of barriers and challenges they faced. Ask students to help by suggesting solutions.
- Using the comparison chart below ***How Much of Our World is Water***, ask students to look at other countries and write, draw or paste pictures of those that have lots of water versus those who don't. Investigate ways those countries with very little water might improve their water shortage. Hint: Desalination, rainwater storage etc. Various resources are below.

<https://kids.kiddle.co/Desalination>

- <https://www.youtube.com/watch?v=3h49i1iDNP4> Cool outdoor experiment for kids converting fresh water from saltwater!
- <https://www.youtube.com/watch?v=XPCaM9Rzzbs> (Desalination)
- [Water Scarcity](#) globally mapped
- [Rainwater collection system](#) explained by a 5-year-old in Singapore!
- [Watercan](#) powerpoint slides

Cross-Curricular Interests

Science-Technology-Society
 Environment & Sustainability
 Information Technology
 Multiculturalism

Suggested Links

<http://www.metrovancouver.org/services/water/water-conservation/Pages/default.aspx>

<http://www.watercan.com/kids/index.shtml>

<https://www.canada.ca/en/services/environment/natural-resources/water.html>

<https://www.usbr.gov/mp/arwec/water-facts-ww-water-sup.html> (Worldwide Water Supply)

Images courtesy of Pexels

Lesson plan submitted by: Paula Barchard Prepared/adapted by:
 Eve Simon for FORED BC

WORKSHEETS FOLLOW

Water Log

You would probably be amazed at the amount of water you actually use. If you're interested in finding out, try keeping track of your water use over the course of a week. It could help you pinpoint areas where water savings could be easily achieved. Water use away from home can account for twenty percent of your weekly use – so keep track of those uses as well.

Did you know? A person living in Sub-Saharan Africa uses 10 to 20 litres of water a day, while on average, a Canadian uses 326 litres a day.

What You Do	How Many Times – By Day							Average	Actual	Total
	M	T	W	T	F	S	S			
Bathroom										
toilet flushes								x 20 litres		
showers								x 100 litres		
baths								x 150 litres		
teeth brushing								x 10 litres		
shaving								x 20 litres		
Kitchen										
cooking								x 20 litres		
dishes by hand								x 35 litres		
dishwasher								x 40 litres		
garbage disposal								x 20 litres		
Utility Room										
washing								x 225 litres		
Outdoors										
car washes								x 400 litres		
watering								x 35 L/min		
other								estimate		
Total - Daily								Total - Weekly		

The chart allows you to keep track of your water use on a daily basis. The figures under 'Average' give typical water consumption figures for various appliances and devices. The appliance and devices in your home may use great or lesser amounts of water. Use the column marked 'Actual' where the difference is known.



How Much of our World is Water?

Find examples of countries that have lots of water and those that don't. Can paste pictures and/or print names of countries in both columns. If time permits, ask students to suggest ways to help countries with very little water.

LOTS of WATER

VERY LITTLE WATER



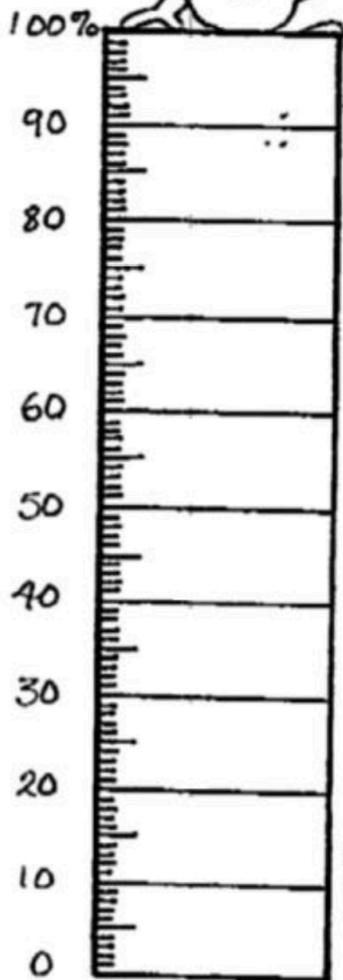
Were You Aware?

There are 3 different types of water available on Earth:

salt water, fresh water in glaciers and polar ice caps, and surface & ground water.

Predict the % of each type of H₂O found on Earth.

Actual Data: Color in the actual % of each type of water found on Earth.



Color Code

GREEN

salt water

YELLOW

fresh water
in
glaciers
& polar
ice caps

BLUE

fresh surface
& ground
water

Get your
Crayons
ready!

