



Lesson 11

Water Conservation and Protection



Learning Standards & Assessment



Time



Resources



Curricular Integration



Handouts



Letters to Parents





Career Education

Big Ideas

- ▶ Strong communities are the result of being connected to family and community and working together toward common goals.
- ▶ Communities include many different roles requiring many different skills.

Content

- ▶ Personal development
 - goal-setting strategies
- ▶ Connections to community
 - cultural and social awareness
 - roles and responsibilities at home, at school, and in the community



35-45 minutes



Educator's Kits, including hardcopy lesson plans and support materials, are available for loan through the CRD. For pickup locations, print-friendly materials and multimedia tools see www.crd.bc.ca/teacher or contact the CRD at 250.360.3133.

Lesson 11:

Water Conservation and Protection

Purpose

This lesson focuses on the importance of water conservation and protection, with an emphasis on practical ways to save water at home and in the community.

Preparation

To prepare to guide students' brainstorming on what they can do to help conserve water (see Procedure step 3), read the parent handout "Water Conservation". Additional information on water consumption and conservation can be found in the resource, Household Guide to Water Efficiency (one copy included in this kit).

Photocopy (one/student):

- ▶ Assessment Tool—Water Wise Outside
- ▶ Student Handout—I Can Save Water!
- ▶ Parent Handout—Water Conservation

Procedure

Book – Raven Returns the Water

1. Read aloud "Raven Returns the Water" by Anne Cameron.
2. Review with students what they have learned about the importance of water for all living things. For example:
 - All plants and animals need water to survive.
 - People use water in many different ways: to drink, to clean ourselves, to clean our possessions (clothes, dishes, cars, etc.), to water our crops, to make everyday goods, for transportation, for recreation.
 - If people don't get enough water to drink, they can become sick or even die.



Teacher Resources

- ▶ Water Wise Community
- ▶ Parent Handout: “Drinking Water Conservation & Protection”

Student Resources

- ▶ Student Handout: “Water Wise”
- ▶ Handout “I Can Save and Protect Water!” (1/student)
- ▶ Word Maps

Lesson Resources

- ▶ KWL chart (begun in Lesson 1)
- ▶ Video, *Down the Drain and Back Again* (optional)
- ▶ Computer and projector or TV and DVD player
- ▶ Book “I Can Help Save Water.”
- ▶ Book “Raven Returns the Water” by Anne Cameron
- ▶ “E Is for Environment: I Promise” by Ian James Corlett
- ▶ Teaspoon of cooking oil
- ▶ Watertight container
- ▶ Water
- ▶ Dish soap

3. Ask leading questions that encourage discussion about motives, goals and steps to achieving them. e.g.
 - Motive- Raven was thirsty
 - Goal- to find water to drink
 - Steps – go in search of water, teach Frog a lesson

Transition- How can we share the water and help to conserve and protect it?



Image Search

1. Distribute the colouring poster “Can you find ___ ways to protect and use water wisely?”
2. If desired, replay the *Down the Drain and Back Again* video Chapter 3 to explore outdoor water use.

Review the water wise actions together. See Teacher Resource “Water Wise Community” for detailed information.



Experiment- Oily water

1. Read aloud to the class the text on pages 12-13 and 14-15 of the book “I Can Help Save Water.”
2. Use the “Have a Go” experiment on page 13 of the same book to demonstrate how easily water can become polluted.
3. Brainstorm common household chemicals that are often flushed “down the drain” (e.g., cooking oil, cleansers, fertilizers, pesticides). Discuss ways to reduce or eliminate these contaminants (e.g., not using the toilet as a garbage can, using environmentally sensitive cleansers, eliminating pesticide use, using compost instead of chemical fertilizers)
4. Ask students to brainstorm some other ways they can conserve and protect water at home, at school, and in the community. Use clues and prompts to help students generate as many ideas as they can (see the Parent Handout, “Water Conservation”). Record their responses on a class list or web.

Note: If, during class discussions, students suggest that drinking less water is a good way to conserve, advise them that this is not a good idea. Not only can they endanger their health, but drinking water actually represents a very small proportion of the water we use in Canada. They can save water, however, by not leaving the tap running to get cold water—instead, they should keep a pitcher of water in the refrigerator.

Book- I Promise

1. Read aloud “E Is for Environment: I Promise” by Ian James Corlett. Review goal setting: motivation- why you want to set a goal, setting a goal and outlining steps to achieve it.
2. Have students use the student handout, “I Can Save and Protect Water!” to record their goal to help save and protect water at home, at school, and/or in the community. Provide opportunities for them to share their pledges with a partner.
3. Distribute the student handout, “I Can Save and Protect Water”, and go over the task as a class.

Assessment Opportunity

Collect students' completed worksheets, and look for evidence that they can identify ways in which water can be conserved and its quality protected. Add students' completed sheets to their Water Portfolios.

Revisit the KWL chart, and ask students to suggest additions and modifications based on what they learned from this lesson.

Distribute or email the parent handout, "Water Conservation". Suggest they take their pledges home to share with their parents.

Curricular Competencies

Look for evidence that students are able to:

Career Education

- ▶ Share ideas, information, personal feelings, and knowledge with others
- ▶ Work respectfully and constructively with others to achieve common goals

Extensions and Adaptations

- ▶ As an alternative beginning to this lesson, view the video, *Water Follies*, to get students thinking about water consumption and conservation.
- ▶ Read "E is for Environment: The Hunt for Red Dots All Over" by Ian James Corlett and challenge students to identify ways that the school, community or their households could save and protect water.
- ▶ Create an electronic version (e.g. PowerPoint or SmartNotebook) of all students' "I can Save and Protect Water" goals. Showcase to others.
- ▶ Set class, school or community goals. Work together to set the goal and establish steps to making it happen.
- ▶ Have students conduct experiments at home to see how much water they use for daily activities. For example:
 - Have them put the plug in the sink, then brush their teeth while leaving the water running. Have them mark the level of the water in the sink using masking tape. The next time they brush their teeth, they should turn the tap off when not in use, and mark the level of the water used. Compare the results. (Note that students should only do this experiment once to waste as little water as possible.)
 - When students have a bath, they should mark the water line in the tub (they should do this before they get in the water). When they take a shower, they should do so with the plug in, and note the level of the water. Compare the results. Which uses less water? Could they use less water by taking shallower baths? By taking shorter showers?
- ▶ Extend the concepts by reviewing what students already know about The 3 Rs—"Reduce, Reuse, Recycle," in terms of materials such as paper, glass, and plastic. Point out that these concepts can also be applied to water. In addition, by saving paper, for example, they are also saving water, since it takes a lot of water to make paper (approximately 295,000 litres of water is required to produce 910 kilograms of paper).
- ▶ Where possible, provide opportunities for students to practice water wise actions:
 - Setup rain water collection and use for indoor plants (not for consuming).
 - Compost and use in plants and gardens to return nutrients and water to the soil.
 - Build or join a community garden.
 - Encourage litterless lunches- it takes a lot of water to produce the packaging.
- ▶ Have students share their water conservation goals with other classes in the school, challenging them to create their own water conservation plans.

- ▶ Extend learning with other local sustainability programs (See Appendix D for other resources)
 - CRD - www.crd.bc.ca/education
 - The Greater Victoria Compost Education Centre - <http://compost.bc.ca/>
 - Growing Schools Program - http://lifecyclesproject.ca/initiatives/growing_schools/
 - Growing Young Farmers Society- www.growingyoungfarmers.ca
 - Mr. Organic - <http://www.friendlyorganicscanada.ca/>

Curricular Integration

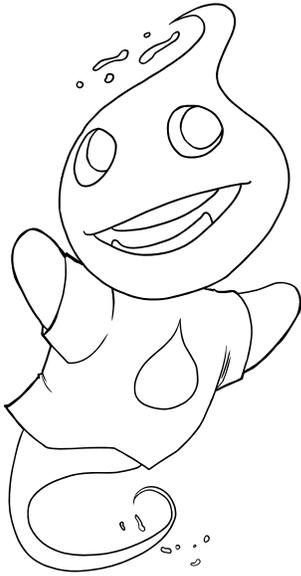
Science and Social Studies: this lesson addresses water conservation in relation to both the science and social studies curricula for this grade level.

Mathematics: use statistics related to water conservation as the basis for numeracy activities. For statistics see the Teacher Resource, "Did You Know?" (in Lesson 1).



Name: _____ Date: _____

I CAN SAVE AND PROTECT WATER!



***I, _____
promise to save and protect water because:***

My Goal is to:

Steps to reach my goal are:

1. _____

2. _____

3. _____

Signature: _____ ***Date:*** _____



Drinking Water Conservation and Protection

Dear Parent/Guardian,

Today your child learned about a number of different ways we can all help to conserve and protect our drinking water and set a personal goal to achieve this.

Some websites you might find useful are:

- ▶ Capital Regional District supplies drinking water to the 350,000 customers on the Greater Victoria Drinking Water System. The organization also provides water conservation, water quality and cross connection control services. To learn more about how to conserve water, save money and protect our local drinking water quality, visit www.crd.bc.ca/water.
- ▶ Meet Ollie the Otter, our local Watershed Warden who will take you on a learning adventure right in the middle of a watershed! Explore online for a watershed adventure. www.crd.bc.ca/education/school-programs/for-k12-teachers/educator-guides-resources/watersheds
- ▶ Myrecyclopedia.ca is a resource for residents of the Capital Region to identify how to reduce, reuse and recycle in the Capital Region. Residents and businesses can find convenient facility locations and get the environmental story behind the items we use in our homes and businesses. www.myrecyclopedia.ca
- ▶ Preventing Pollution- Knowing what not to put down your drain can also save you money. www.crd.bc.ca/education/stormwater-wastewater-septic
- ▶ Going Pesticide Free. www.crd.bc.ca/education/natural-gardening

Water Conservation and Protection at Home

In the Bathroom

- ▶ Install a water-efficient toilet, which uses 4.8 L (litres) or a dual flush model. (conservation)
- ▶ Don't use the toilet as a garbage can. (conservation/pollution prevention)
- ▶ Install a low-flow showerhead, which uses 6 to 9.5 L per minute. A regular, high-flow showerhead uses 9.5 to 18 L per minute. (conservation)
- ▶ Take less than 5 minute showers. (conservation/energy saving)
- ▶ Turn the shower off while you are lathering. (conservation/energy saving)
- ▶ Install aerators on faucets. (conservation)
- ▶ Don't keep the water running while washing your face or brushing your teeth. Turn it off when you're not using it. (conservation)
- ▶ Fix leaks in toilets and pipes. Fix drippy taps. (conservation/energy saving)
- ▶ Use household cleaners and personal care products that are easier on the environment. (pollution prevention) www.crd.bc.ca/docs/default-source/source-control-pdf/2017recipe-card_forweb.pdf?sfvrsn=669d0aca_2
- ▶ If it lathers, use 1/2 the amount recommended. Our water is so soft that we can use much less soap than is recommended and it saves using extra water to rinse out all the suds. (conservation/water conservation/energy saving) <https://www.crd.bc.ca/education/stormwater-wastewater-septic/at-home/protecting-plumbing-treatment>

In the Kitchen

- ▶ Install aerators on faucets. (conservation)
- ▶ Don't keep the tap running to get cold water. Keep a jug of water in the refrigerator instead. (conservation)
- ▶ Scrape dishes into composter or garbage instead of rinsing the food off. (conservation/pollution prevention) www.crd.bc.ca/education/stormwater-wastewater-septic/at-home/protecting-plumbing-treatment/fats-oils-and-grease
- ▶ Use the dishwasher only when it's full. (conservation/energy saving)
- ▶ Save water from cooking vegetables to use in soups. (conservation)



- ▶ Steam vegetables to use less water. (conservation)
- ▶ Fix leaks in pipes. Fix drippy taps. (conservation/energy saving)

Throughout the Home

- ▶ Fix leaks in toilets and pipes. Many homes lose more water from leaky taps than they use for cooking and drinking. (conservation/energy saving)
- ▶ Fix drippy taps. (conservation/energy saving)
- ▶ Run the washing machine on cold wash and only when it's full, or install a machine that has adjustable load sizes. (conservation/energy saving)
- ▶ Use 1/2 the amount of detergent recommended. Our water is so soft that we can use much less soap than is recommended and it saves using extra water to rinse out all the suds. (conservation/energy saving)
- ▶ Reduce and recycle materials such as paper, plastics, glass, and metals. All of these materials require a great deal of water to manufacture. **www.myrecyclopedia.ca**

Outside

- ▶ Plant water-efficient plants. "Native" species that are adapted to our climate are the best choice. Ask a garden centre for further suggestions, or visit one of the demonstration gardens in the area: (conservation)
 - Springridge Commons Demonstration Garden **<https://fernwoodnrg.ca/fernwood-nrg-programs/food-security/gardens/spring-ridge-common/>**
 - Swan Lake Christmas Hill Nature Sanctuary **www.swanlake.bc.ca/**
 - Horticulture Centre of the Pacific **https://hcp.ca/gardens_hcp/**
- ▶ Think about replacing some areas of your lawn with ground covers or herbs. These plants need less water than lawn grasses. (conservation)
- ▶ Go pesticide free. **www.crd.bc.ca/education/natural-gardening/pure** (pollution prevention)
- ▶ Don't cut the lawn too short. Between 5 and 7.5 cm (2-3 inches) is a good height. Longer grass needs less water. (conservation)
- ▶ Water less often. Most lawns receive more water than they need. The average lawn needs only a maximum of 2.5 cm (1 inch) per week during the hottest, driest weeks. Don't worry if the grass gets a little yellow—it will recover quickly. A good way to see if your lawn needs water is to step on the grass. If the lawn springs back up when you move, it doesn't need water. (conservation)
- ▶ Use recycled water from rinsing dishes, cooking vegetables, etc. to water plants (not food plants). (conservation)
- ▶ Install a rain barrel to collect rain for use in watering your garden. (conservation)
- ▶ Water early in the morning or late in the evening to avoid excess evaporation. (conservation)
- ▶ Make sure sprinklers are watering the plants, not watering the street or the driveway. (conservation)
- ▶ Use mulch around bedding plants to keep the moisture in. (conservation)
- ▶ Wash your car on gravel or grass using a bucket of soapy water instead of running the hose continuously. (Conservation/pollution prevention)
- ▶ Wash your car less often. Use the bumper sticker ("Don't wash me! I'm saving water.") to remind people that cars don't need to be kept spotless or washed everyday. (conservation)
- ▶ Use a broom instead of a hose to clean driveways and sidewalks. (conservation/pollution prevention)
- ▶ Cover swimming pools when not in use to reduce evaporation. (conservation)
- ▶ Be sure to follow all water conservation bylaws in effect. (conservation)

Saving water also saves money!

Water Wise Community

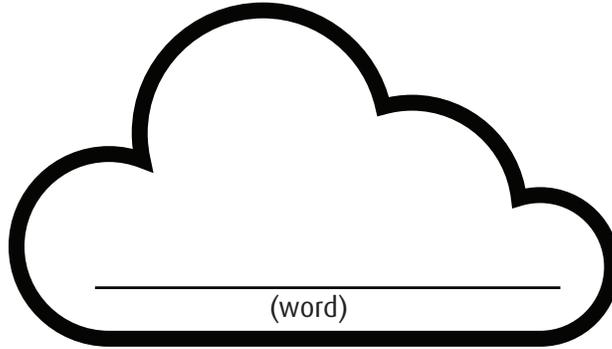


Saving drinking water	Protecting water
<p>Taps off- no leaks.</p> <p>Hose - no holes.</p> <p>Car washing with a bucket and/or a hose with a shutoff nozzle.</p> <p>Golden lawn- no water needed, grass hibernates during the hot weather and will grow green again when rainfalls again.</p> <p>Compost- water in compost adds moisture to the soil.</p> <p>Rainbarrel – instead of tap water use rain water for flowers. Watch “Go Green with a Rainbarrel” video. Elementary students in the USA are explaining how to use a rainbarrel. http://www.youtube.com/watch?v=uPfYYJF0ttw</p> <p>Native plants – drought tolerant, don’t need more than rainwater if located in the right place.</p> <p>Vegetable garden- growing your owns saves water, energy and prevents pollution just like drinking tap water instead of bottled water, because it doesn’t have to travel as far or be trucked or flown in an airplane. See what your neighbours are growing.</p>	<p>Outdoor tap has a backflow preventer attached to stop dirty water getting sucked back into the hose and mixing with clean drinking water.</p> <p>Car washing on the grass - soap and water filter slowing through the ground- just like runoff water seeps into the forest of the Sooke Lake Watershed.</p> <p>Pesticide Free garden or lawn- keeps the runoff water clean.</p> <p>Compost- adds nutrients to the soil, rather than using chemicals</p>



Water Word Map

Name: _____ Date: _____



Draw it:

Define it:

Use it in
a sentence:

