



SAVING WATER

BACKGROUND

Water is found in three states of matter on Earth – solid (ice), liquid (lakes, rivers, oceans) and gas (humidity in the atmosphere, clouds). The same water has been cycling through these three states for millions of years. We are drinking the same water dinosaurs also drank. However, only 0.3% of the Earth's water is usable by humans. We need to keep our water clean and available for our communities to use for as long as possible. Conservation and proper water management are very important for the survival of all living things.



CURRICULUM CONNECTIONS

Key concepts include:

- All living things, including humans, depend on air and water for survival.
- Human activities can have both positive and negative impacts on air and water in the environment.
- Review the stages of the water cycle.
- Assess personal and family uses of water.
- Plan a course of action to help conserve water

Discussion Starter

Watch ClearWaterKids Challenge – [Save the Water](#) (2:55)

Ava, Ari and Potato the Chicken try to solve this riddle: What does brushing your teeth have to do with a swimming pool? They explore some of the ways water is wasted in our daily lives and offer tips on how to conserve this precious resource.



Pre-viewing Probes

- *Everyone needs air, food and shelter in order to survive. What else do you think we cannot live without?*
- *What are some of the ways you use water?*
- *I wonder how much water we use in just one day.*



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- What do you think brushing your teeth might have to do with a swimming pool?
Let's watch the video to find out.



Post-viewing Prompts

- Did anything in the video surprise you? What and why?
- What does brushing your teeth have to do with a swimming pool?
- What does the water we use come from?
- Where does it go after we've used it?

Try This

Water Cycle Review

Review the stages of the water cycle with these activities.

OPTION 1: Water Cycle Demo

To be conducted by the Teacher.

- Pour a cup of boiling/hot water into an empty bowl.
- Place a plate on top of the bowl.
- Place several ice cubes on top of the plate.
- Where does it go after we've used it?

Ask students to observe and describe what is happening in the water cycle.

Hot water is evaporating. The humidity in the gas part of the jar is increasing, and the warm air is rising. When the hot, moist air touches the cold plate, the water condenses from gas to liquid, and drips down back into the warmer water below, like precipitation falling from clouds.

OPTION 2: Water Cycle in a Bag

For students working in pairs or small groups.

- Use a permanent marker to draw a sun and clouds in the upper half of a plastic zip-lock bag.
- Add a few drops of blue food colouring to a cup of tap water and stir to blend.
- Carefully pour the water into the open bag to fill the bottom quarter or so of the bag.
- Seal the bag securely and tape it to a sunny window.
- Check on your bag after a few hours/days and record your observations.

The heat from the sun will cause the liquid water to turn into a gas and evaporate. When it cools, it condenses and falls back into the water below.

Explore Outdoors

Where Does Water Go?

Set up this exploration with a trip to the school yard. On a good cloud-watching day, review the stages of the water cycle and head outside. During or after cloud watching, ask the students:



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- *What are clouds made of?*
- *Where might the water that is in the clouds have come from originally?*
- *What might eventually happen to the water in those clouds?*
- *Does the water in clouds fall to earth in the same location it evaporated from?*

Follow-up

Back in the classroom, use a KWL chart to brainstorm thoughts and questions about where your local water comes from and where it goes:

- *When you flush the toilet*
- *After it goes down the drain in your sink*
- *After it runs into storm sewers*

You can find answers to these questions on your municipal or regional government's website. You can also visit your local municipal sewage and water treatment facilities to ask the experts in person.

Try This

Why Do We Have to Conserve Water?

If water is a renewable resource and keeps cycling back to earth, why do we have to conserve it? One reason is that local water sources can sometimes be difficult to access. More water may be available in one area and less in another.

Make a Model

This activity helps demonstrate how water supply and usage in one area can affect the amount of water that is available in another area.

What You Need:

- Large sandpit or boxes of sand, one per group of students
- Digging tools
- A lightweight reusable plastic sheet
- A stack of cups
- Blue food colouring to make water more visible (optional)
- Rulers
- Some spray bottles full of water to represent rainfall
- Enough water in buckets to fill your model's lakes
- Materials for damming (e.g., stones, bricks, socks filled with sand)
- Writing materials for recording observations and questions

What to Do

- 1 Explain to students that they are creating a watershed. In a watershed, water flows from high areas to lower areas.
- 2 Mound the sand or snow higher at one end of the digging area, and slope it down gradually to the other end.



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- 3 At the highest point, scoop out some small springs and rivers. These will be the headwaters of your watershed. The rivers will flow down to a lake about halfway down the sandpit.
- 4 Scoop out a river from this lake to another lake at the low end of the sandpit.
- 5 Make the river wide enough, so that when you cover the model with the plastic sheet, the sheet won't choke off the water flow. Make sure that the land around the lakes slopes lake-ward, so that rainwater will run into the lakes from the surrounding land.
- 6 Cover the model with a plastic sheet and press it into the lakes and rivers.
- 7 Pour water very slowly into the headwaters. Keep adding water until both lakes contain water. Have students explain where this water would be coming from in real life (e.g., melted glaciers, rain, run-off from precipitation and ice/snow melt, groundwater).
- 8 Place a ruler in each lake and note the water levels.
- 9 Holding a stack of cups, explain that it has been a very dry summer, and a lot of people live in the area around the lowest lake. Ask students to list all the things people have needed lake water for that summer (e.g., drinking, watering crops, watering lawns and gardens, washing cars, filling swimming pools). Each time a student lists a water use, they removes a cup (or more) of water from the lowest lake. Have them pour that water into a bucket.
 - What happens to the water level in the upper lake as a result?
 - How does the water the people used return to the water cycle? (Use spray bottles to "rain" on the watershed.)
 - Will the people who used the water get to reuse all of that water eventually?
 - What kinds of infrastructure are used to help ensure a constant water supply? (E.g., water towers, reservoirs, underground pipes)
 - How can citizens help?
- 10 Experiment with various scenarios (e.g., a drought in the upper lake area; just enough rainfall in the upper- or lower-lake area; too much rainfall in the upper- or lower-lake area; a damming project, etc.).
- 11 Record observations and questions to investigate further

Take Action

Be a Water Protector!

Students brainstorm all the ways water is used at school and at home. Then, working in expert groups, they research and present ways to use less water:

- On lawns and gardens
- In the bathroom
- In the kitchen
- In the classroom
- To keep cool in summer



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Design a Water-Friendly School Garden

- Research drought-resistant plants that will grow well in your area
- Choose a location that is close to a water source
- Can you set up a rain barrel or two next to your garden?

More to Explore

- Look for these theme-related books:
 - **City of Water** written by Andrea Curtis and illustrated by Katy Dockrill, Groundwood Books, 2021
 - **Every Last Drop** by Michelle Mulder, Orca Book Publishers, 2015
 - **The Water Walker** written and illustrated by Joanne Robertson, Second Story Press, 2017. Free online teaching guide at : <https://secondstorypress.ca/teachers-guides>
 - [ClearWater Kids Booklist](#) for more great Canadian books on nature and science.
- Visit [Science North](#) for more hands-on, curriculum-linked learning resources and lesson plans.