

Virtual Festival
Follow Up Activity



All the Water in the World

Theme: Water Conservation

Curriculum:

- Understanding Life Systems, Grade 2 (Growth and Changes in Animals)
- People and Environments, Grade 3 (Living and Working in Ontario)
- Understanding Life Systems, Grade 4 (Habitats and Communities)
- Understanding Earth and Space Systems, Grade 5 (Conservation of Energy and Resources)

Activity Overview:

Through a demonstration, students will be shown that although Earth is covered mainly by water, only a small amount of water is actually available for human consumption. Learning that water is a limited resource will help students appreciate the need to use water resources more wisely.

Key Messages:

- The majority of the world is covered by water. However, only a very small amount of Earth's water is available for humans to drink;
- Since there is only so much freshwater available, it is very important not to waste water and to use this valuable resource wisely; and
- Living in southwestern Ontario gives access to the Great Lakes, which holds 20% of Earth's fresh water.

Materials:

- Map of the world (see below)
- 1 litre container of water
- Blue food colouring
- 4 beakers (or measuring cups) of decreasing size
- Eye dropper

Background:

Ironically, on a planet extensively covered with water (70-75%); this resource is one of the limiting factors for life on Earth as most of the water is unavailable for human consumption.

- About 97% of Earth's water is salt water. Humans cannot drink salt water because their kidneys can only make urine that is less salty than salt water. Therefore, to get rid of all the excess salt taken in by drinking salt water, you have to urinate more water than you drank, so you die of dehydration. Marine animals have kidneys or other organs that remove large amounts of salt from their bodies. The kidneys of humans and other land creatures cannot handle the massive amounts of salt that would accumulate if they drank salt water.
- About 2% of Earth's water is frozen in polar ice caps and glaciers.
- About 1% of Earth's water is fresh water and of that most is unavailable for human use (i.e. polluted, too deep, or trapped in soil).
- In the end, only 0.01% of the total water on Earth is actually accessible for humans to consume.

The Great Lakes (Lake Huron, Lake Ontario, Lake Michigan, Lake Erie, and Lake Superior) hold 20% of Earth's surface fresh water. About 40 million people, 30% of Canada's population and 10% of the U.S. population, live in the Great Lakes basin. The Great Lakes have a rich and diverse ecosystem and support a wide array of plants and animals. The long history of agricultural and industrial development has placed the Great Lakes basin's ecosystem under tremendous stress. The challenge is to minimize the pressures on the environment by changing the way we live and do business. The Great Lakes basin is unique its ability to produce good agricultural crops, many which rely on freshwater for irrigation.

What will I Be Doing? (Procedure):

1. Begin by asking the students what they use water for in their daily lives. Encourage them to think of indoor and outdoor uses, as well as rural and urban uses.
2. Show students the Map of the World and ask students where we find water on earth (oceans, lakes, rivers, streams, aquifers etc.).
3. Explain to students that even though Earth appears to have a lot of water, most of it is not available for humans to drink.
4. Show the students a 1 litre Container of Water. Tell them that this represents all of the water on Earth including glaciers and groundwater. Blue food colouring can be added for easier viewing.
5. Ask the students to guess how much of the 1 litre Container of Water would represent all the salt water found on Earth. Get them to guess in percentages.
6. Explain that 97% of the water on Earth's surface is salt water and is not drinkable. Pour 970 mL of water into a Beaker/measuring cup and explain that this represents the amount of salt water on Earth. Ask students if they have ever got salt water in their mouth and discuss why we cannot use it for drinking.
7. Next pour 20 mL into another Beaker/measuring cup and explain that this represents the amount of water that is frozen in polar ice caps and glaciers, making it unavailable for human consumption.
8. Pour 10 mL into another Beaker/measuring cup and explain that this represents the total freshwater on Earth. Tell the students that most of it cannot be drank and explain why.
9. Using the Eye Dropper, take out a drop of water from the freshwater beaker (10 mL). Explain to the students that this represents all of the available unpolluted fresh water in Earth.

Reflection and Extension:

1. Brainstorm with the students ways we can save water at home.
 - Turn the tap off when brushing teeth and take shorter showers.
 - Turn tap off when lathering up during showers and hand washing.
 - Only run dishwashers and washing machines with full loads.
 - Water lawn one inch once a week in the summer or let the grass go dormant.
2. Ask the students why we are so lucky to live where we do? What water source surrounds us? Explain the importance of the Great Lakes and what percentage of the world's freshwater they represent. Not all areas of the world have freshwater so plentiful. Just because we have so much, should we not conserve it?

Waters of the World

