

Feeling Thirsty?

Age: All Ages

Objective

- To explain why water is a limited resource
- To learn how to calculate the percentage of fresh water available for human use

Background Lesson

As your students will know, the world is covered mainly by water. What they may not realize is that the majority of this water is not suitable for human consumption. Freshwater is a precious, limited resource. The objective of this lesson is to give the students a stronger appreciation for the conservation of freshwater and fresh water habitats, as well as the need to use freshwater wisely.

The Activity

Materials

- 1 liter pop bottle
- 100 milliliter graduated cylinder
- Eye dropper
- Ice cube tray
- Small container (small dish, margarine container, measuring cup etc.)
- Coloured markers
- Blank piece of paper to draw on
- Salt

Procedure

1. Start off with some basic discussion. Have the class think about all the water on our planet and have them consider what they think is the proportion of potable water (water of sufficiently high quality that can be consumed or used without risk) available compared to non-potable water. Saltwater, pollution and water trapped in glaciers are a few examples of water that is unavailable for human consumption.
2. Have the students arrange themselves in small groups and develop a pie chart estimating the percentage of potable and non-potable water, and have them share their estimates with the class.
3. Present to the class the 1 liter pop bottle filled with water. Explain to them that this represents all the water available on earth. Discuss with them where they think most of this water is located. The answer you are looking for is the oceans, so it might be useful to have a globe or world map as a visual aid.
4. From the 1 liter pop bottle, pour 30 milliliters of the water into the graduated cylinder. This represents 3 percent of the world's water and is the amount of freshwater that is available. With the salt, put a fair amount

- into the remaining water in the 1 liter pop bottle to represent the oceans and the water not available for human consumption.
5. With the graduated cylinder, ask the students where they think most of this fresh water is found on earth. Students may be surprised to learn the majority of fresh water available to humans is locked away in ice caps and glaciers.
 6. Pour 6 milliliters of fresh water into the small dish and the rest of the water into the ice cube tray. The water in the small dish will represent the non-frozen fresh water that is available for human consumption. This is 0.6 percent of earth's total.
 7. From the 6 milliliters, ask students where they think the majority of this water is located. They will probably be surprised to learn that a great deal of this water is found underground, and large amounts of the world's population including North America get their drinking water from these underground sources. It should be stressed as well, that not all of these underground wells are rechargeable and so we must be very cautious with our use of these underground water sources.
 8. Have a student volunteer to help you. Have the student hold their hand out. With the eye dropper place a single drop of water in their hand. This is the amount of water that is available for human consumption located in lakes and streams that are not polluted. This drop of water represents 0.00003 percent of the total available water on earth. Without proper management plans and proper conservation this single drop is unavailable for humans.
 9. With the pie charts, have the students compare what they drew with what they have just learned. Are they surprised?

Post Activity Discussion

- What was your reasoning behind your initial estimates?
- There is 8.4 million liters of water available for over 6 billion people on earth, is there enough water available for the current population?
- Why does one third of the world's population find themselves without clean freshwater?
- What are the factors affecting water distribution on earth?
- What other organisms depend on fresh water?
- What can you do to manage your water usage to make sure it is not wasted?

One Fish at a Time