

Activity Sheet 1

“The forms and amounts of water “

Introduction

With an estimated 1,260,000,000,000,000,000 litres of water in the world one can assume that there is water everywhere. But how much of this is really available for human consumption and how evenly is this resource distributed?

Activity Sheet 1 provides students with a visual example of the forms and quantities of water within the water cycle. It provides a way for students to realise the amount of freshwater in the globe available for human consumption and the need to conserve and protect this resource.

The content of this activity sheet relates to the following Geographical Concepts and Skills and Geographical Knowledge:

Geographical Concepts and Skills:

Place, space and interconnection

- Identify, analyse and explain spatial distributions and patterns and identify and explain their implications

Data and Information

- Select and represent data and information in different forms, including constructing appropriate maps at different scales that conform to cartographic conventions using digital and spatial technologies as appropriate.

Geographical Knowledge:

- Classification of environmental resources and the forms that water takes as a resource.

Assumed knowledge for this activity

The components and processes in the water cycle.

Equipment required for this activity

- 4 Beakers (1 x 1,000 ml and 3 x 100ml)
- A pipette
- Blue food dye
- Breakdown of the total amount of water, such as shown in the figure below.

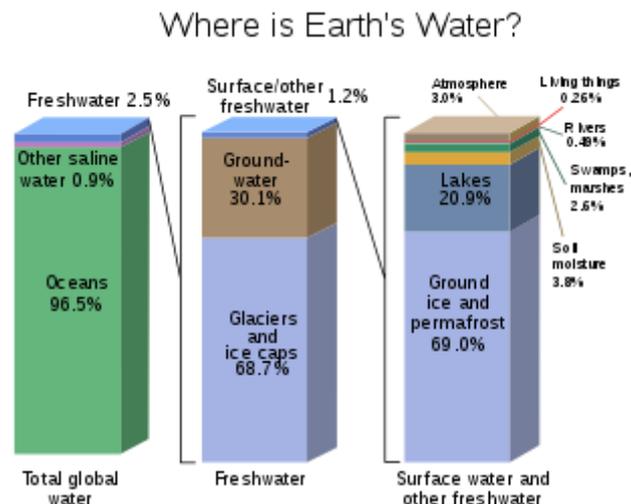


Image by USGS [Public domain], via Wikimedia Commons, taken from:

https://upload.wikimedia.org/wikipedia/commons/thumb/5/58/Earth%27s_water_distribution.svg/645px-Earth%27s_water_distribution.svg.png

Steps

1. Fill the 1,000 ml beaker and add blue food dye for clearer vision. Explain to the class that this beaker represents the total amount of water on the earth's surface.
2. On the board get students to write down their estimate of the percentage of the world's water, as represented in the beaker, that is fresh water. Fresh water consists of glaciers, ground water, lakes, rivers, soil moisture, wetlands, moisture in the atmosphere and plants and animals. Remember that it is not an estimation of the drinking water available.
3. Take 25 ml from the large beaker to represent the world's fresh water supplies and place it in one of the smaller beakers. This represents approximately 2.5 % of the water on the earth's surface that is freshwater.
4. Using the pipette take about 17ml from the beaker containing the 25 ml and place it in another beaker. This amount of the freshwater represents glaciers. The remaining 8mls represents groundwater and surface water.

Of the 8mls, about 7.7 ml is groundwater (approximately 45% of ground water is fresh and 55% is saline). The remaining 0.3mls is surface water. This 0.3 ml could be

put into the final beaker. Surface water consists of freshwater lakes, rivers, wetlands, soil moisture, and moisture in the atmosphere, plants and animals.

It is important to emphasise that only 0.3% of the earth's freshwater is in the rivers and lakes, yet rivers are where most people get their water from.

Follow Up Activities

1. Class Discussion. These questions could be used as prompts and could also be used as follow up questions.
 - Which of the statistics about the makeup of water in the world surprised you? Explain why
 - Explain how these statistics emphasise the need to protect and conserve our water resources.
 - Describe the impact that the rise in global temperatures could have on the categories of water in the world?
 - Think of some ways that alternative sources of water could be used to access fresh water.
2. Using statistics from websites such as those mentioned below draw a graph to show the makeup of water in the world. (To make this graph more compact it would be advisable to come up with a category of "other" and define what sources of water this includes through the use of a key).

Additional Sources

There are several websites that contain more specific statistics and graphics. See the list below and click on the links to access the page:

[Bureau of Meteorology](#)

[U.S Geological Survey](#)

[Circle of Blue](#)