



SCOUT ENVIRONMENT AWARENESS PROGRAM



The Water Cycle

Discover the ins and the outs of the water cycle.

Suitable for Cubs and Scouts.

Award Scheme Links

Cubs:

Waterwise Badge – Water and the Natural Environment

Scouts:

World Conservation Badge - Research

Outcomes

- Participants develop an understanding of the importance of water, water sources and the water cycle.
- Learn the definition of transpiration, evaporation, precipitation, infiltration, groundwater

Materials

- Cardboard cut outs of the components of the water cycle
- Bluetack or Velcro
- Water facts and figures (some below)

Activity

1. Discuss the importance and sources of water.

The importance of water –

- Water covers 75% of the planet
- Earth is the only planet in our solar system with water on the surface, underground and in the atmosphere
- Water is an essential component of all life
- On average, 50% of the human body is made of water

Water sources:

- Rivers
- Lakes, dams (taps!)
- Ocean/seas
- Ice caps/ glaciers
- Water vapour in the atmosphere
- Rain, snow, hail
- Groundwater/bore water/aquifers

A breakdown of water on the planet:

WATER SOURCE	PERCENTAGE
Oceans (saline)	97
Icecaps/Glaciers	2.1
Groundwater (fresh)	0.6
Freshwater Lakes	0.1
Saline Lakes	0.1

Soil Moisture	0.005
Atmosphere	0.001
Rivers (fresh)	0.0001
(Clement <i>et al</i> , 1997)	

97% of water on earth is oceanic, supporting marine life and only 0.7001% (round up to 1%) of the water on the planet is fresh and available to use by terrestrial organisms (including humans). This can be demonstrated using a graph diagram, pie chart or other methods to show that 1/100 is useable water! More detailed data at end of document.

Questions and discussion points:

- How many people live in Australia? 8,184,691 (July 2005 est.) (0.13% of the world population)
- How many people in the world?
<http://www.cia.gov/cia/publications/factbook/geos/xx.html> 6,446,131,400 (July 2005 est.)
(<http://www.cia.gov/cia/publications/factbook/fields/2119.html>)
- Does everyone across the world have the privilege of clean, fresh water?
- Human settlements are concentrated around water sources – impacts of humans on water resources (pollution and poisoning of water)
- Australia is a particularly dry landmass by world standards, 2/3 of mainland is desert. Water limits many ecosystem processes (excluding southern coast, which is particularly wet by world standards)

2. Discuss how the different water sources are linked in the water cycle.

Water circulates between oceans and atmosphere through the processes of

- Evaporation (driven by the sun from surface of ground, lakes, ocean) and
- Precipitation (rain/snow/hail/sleet etc) over land or ocean.
- Transpiration – from vegetation (largest contribution from trees)

Within the atmosphere water circulates via convection (wind transport), resulting in some precipitation.

Other processes:

- Deep drainage of soil moisture into ground water
- Run off of water into ocean (over land or through ground water)
- Stream flow of water into ocean

3. Build a water cycle diagram

Can use cardboard cutouts or just draw onto a black or white board. Components should include:

- cross section of a catchment (ground on a slope)
- ocean
- pond
- lake/rivers
- trees
- rain drops
- clouds
- wind/ water vapour
- grass
- groundwater/ cave formations
- the sun – which drives the water cycle
- arrows to link the above pictures

Discuss the inter-linkages of the components of the water cycle.

N.B. This activity is often run in conjunction with Raining Tennis Balls and Water Quiz Game.