

SCIENCE

Stage 3 Living World

Physical conditions on Earth affect water and the water cycle

Water is essential for the survival of living things.
Where does it come from and how can we measure it?



This resource supports the Georges Riverkeeper Stage 3 Education Module 4: Virtual Water

Outcome: Plans and conducts scientific investigations to answer questions, and collects and summarises data to communicate conclusions
ST3-1WS-S

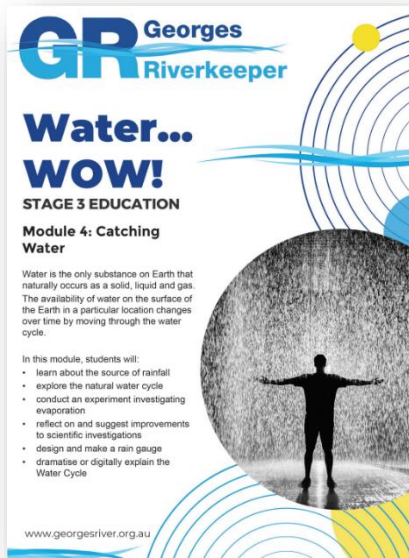
Key Inquiry Question: Where does fresh water come from and where does it go?

Learning Intentions: I understand where fresh water comes from. I can explain the water cycle using the correct terminology for each stage. I can conduct an experiment investigating evaporation. I can design and make a rainfall measurement device.

Success Criteria: I can create a paragraph that summarises where water comes from. I can successfully conduct an evaporation experiment. I can design and make device that can capture and measure rainfall.

Overview:

Water is the only substance on Earth that naturally occurs as a solid, liquid and gas. The availability of water on the surface of Earth in a particular location changes over time by moving through the water cycle.



Fresh water is a rare and wonderful thing

Earth's water journey is essential

Of the world's total water supply, 97% is salt water found in our oceans. That means that less than 3% of available water is freshwater and acceptable for our use. Think that's a small amount? Consider that of that three percent, over 68% is frozen in ice and glaciers and 30% is underground. This means that under 2% of freshwater is readily available to quench the needs of living things on Earth ([source](#)).



The water cycle above the ground

As the sun shines on liquid water it provides energy for evaporation, so that water becomes a gas that enters the atmosphere as water vapour. There is more evaporation as it gets hotter. We usually can't see water vapour, but it is measurable as humidity. As water vapour rises, it cools and changes back to tiny liquid water droplets that merge to form clouds. As droplets merge they collectively become increasingly heavy until they ultimately fall from clouds under the force of gravity. In Australia, most water falls as rain (liquid), but in colder regions it can fall as snow (solid), and we occasionally have solid hail falling from the sky. This water can flow across land and back into streams, rivers and oceans. As we experience it, this is the water cycle!

The water cycle underground

The other part of the water cycle, happens as water infiltrates through the ground. As water travels through soil it is well filtered. It can be taken up by plant roots and travel through the plant and into the atmosphere, as evapotranspiration. Alternatively, it can become groundwater (which is just water that is under the ground), which later can be discharged back into streams, rivers or oceans via springs.



Water Cycle and living things

Water is essential for the survival of living things. Where does water come from and how can we measure it?

Why is water important?

Water is a precious resource and is used in many different ways. All living things need water to survive. Water is important for the environment. Wherever it travels, water carries chemicals, minerals and nutrients with it. If people pollute water or take too much fresh water from rivers or lakes, it can affect the animals and plants that rely on the water for their survival. Polluted water is a health hazard. Access to clean water is important for health.

Many people around the world do not have access to clean water supplies. Although water is a renewable resource (which means we can keep reusing it), it becomes difficult and expensive to reuse if it gets polluted ([source](#)).



ACTIVITY 2: Evaporation experiment.

Place a cup with 100 mL of water outdoors in the sun for 4 hours, after marking the initial height of the water. Make a hypothesis. What might happen after 4 hours? Observe changes. What has happened to some of the water in the cup? Where has it gone? Discuss evaporation. View diagram to explore what happens to water vapour at [Easy Science for KIDS](#).



Make a poster displaying your experiment and what happened to the water. Draw a before and after image of your experiment. Make and record a prediction for this experiment, what you think will happen (a hypothesis). Were you right? Share the poster with your teacher and class.

ACTIVITY 1: Describe the source of water.

Think about and describe the source of water? Where does water from taps come from? Where does water in rivers and lakes come from? View video [The Anatomy of a Raindrop](#).

Summarise the video into one paragraph (3 or more sentences). Try to use some of the technical words. This paragraph can then be shared with your teacher and class.

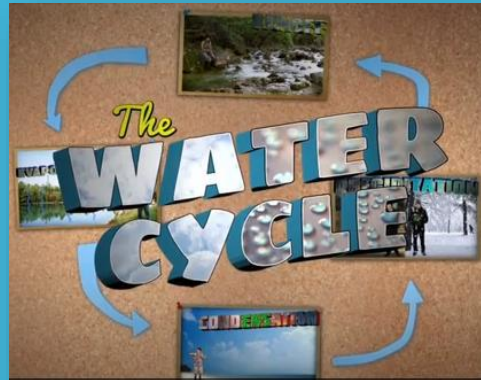
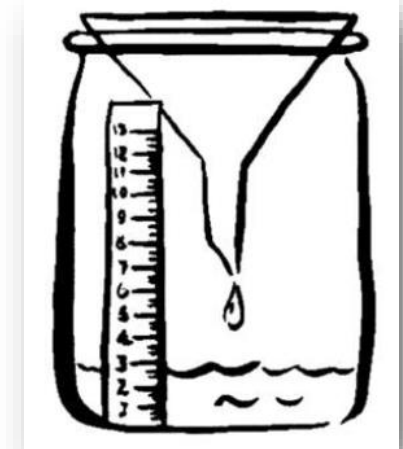


Photo [source](#).

ACTIVITY 3: Make a rainfall measuring device.

Introduce that rain is measured in millimetres. View video [How to Measure Rainfall](#) with Professor Pete's Classroom. Students then design and make a device that captures and measures rainfall. Evaluate the precision of the device as a measurement for collecting rainfall.

Prepare a 2 minute presentation for your class explaining how your design works.



These are free water education resources for teachers and students about water in the Georges River catchment in South Sydney, and more generally, in Australia. These education modules have been prepared for Stage 3 in primary schools.

They cover facts for kids about drinking water, water uses, the water cycle, water pollution, water conservation, rainfall, drought, floods, aquatic food webs, and how to measure water conditions using waterbugs, plus much more.

www.georgesriver.org.au/learn-about-the-river/schools

There are many different stakeholders and landowners in the Georges River Catchment who all have a responsibility to manage their land in a way that ensures there is a minimal impact on the river and its ecosystems.

Georges Riverkeeper's Members:



Georges Riverkeeper's Partners:

