

Year 4

Lesson 1

Where water comes from

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Learning objectives

Students will be able to determine:

- how water moves through the water cycle
- the terminology associated with the water cycle
- undertake experiments that model aspects of the water cycle.

Learning outcomes

Subject	Strand & content descriptors
Science	<p>Science understanding:</p> <ul style="list-style-type: none"> • Earth's surface changes over time as a result of natural processes and human activity. (ACSSU075) <p>Science as a human endeavour</p> <ul style="list-style-type: none"> • Science knowledge helps people to understand the effect of their actions. (ACSHE062) <p>Science inquiry skills</p> <ul style="list-style-type: none"> • Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate. (AC SIS066) • Suggest ways to plan and conduct investigations to find answers to questions. (AC SIS065) • Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends. (AC SIS068) • Compare results with predictions, suggesting possible readings for findings. (AC SIS216)
Geography	<p>Geographical knowledge & understanding</p> <ul style="list-style-type: none"> • Environment: Pressure systems and frontal processes help to explain the daily weather. <p>Geographical skills & understanding</p> <ul style="list-style-type: none"> • Observing and questioning: Pose questions about place, space or environment and make some predictions about their answer.
English	<p>Literacy</p> <ul style="list-style-type: none"> • Plan, rehearse and deliver presentations incorporating learned content and taking into account the particular purpose and audiences. (ACELY 1689)

Important questions

- Why is water important?
- How does water move through the environment?
- What are **evaporation**, **transpiration**, **condensation**, **precipitation** and **infiltration**?



Background information – the water cycle

The water on earth remains constant. However, it is continually recycled through the hydrological or water cycle process. As water travels through the cycle it changes taste, shape and form. Three processes drive the water cycle: evaporation, condensation and precipitation. Transpiration is also important.

- **Evaporation:** when water is heated it changes from liquid to gas (water vapour) – the sun heating the ocean produces most of the water vapour in the atmosphere.
- **Condensation:** as water vapour rises, it cools and changes into tiny droplets of water seen as clouds, fog or mist.
- **Precipitation:** rain, hail or snow – as water vapour continues to rise, the water drops join and become heavier and eventually fall out of the air.
- **Transpiration:** water emitted by plants through pores in the leaves is evaporated and released into the atmosphere as water vapour.
- **Runoff:** water that flows directly into rivers, streams and dams.
- **Infiltration:** water that soaks into the soil to be used by plants or stored as groundwater.
- **Groundwater:** rain that has drained underground and collected in impermeable layers.

Linking locally

Elements of the water cycle can be easily observed in your local district:

- Rainfall evaporating from a footpath.
- Clouds of water vapour moving from the ocean toward the hinterland.

The city of Logan is dominated by the catchment and tributaries of the Logan and Albert rivers. Covering over 4,000 square kilometres, the catchments drain to Southern Moreton Bay.

Lesson plan – the water cycle

Initiate a discussion to establish student knowledge of water and how it is used.

Reinforce or introduce key elements of the water cycle. (**Activity sheet 1 ‘The water cycle’**) Discuss how water moves through the environment and how it changes form, in turn explaining the processes of evaporation, condensation, precipitation, infiltration and transpiration.

In pairs or small groups ask students to consider simple experiments that could model a process from the water cycle. Assistance by providing everyday examples of process, such as condensation on a bathroom



mirror or puddles evaporating, should be provided.

Students should identify tools required and suitable techniques for collecting and recording data.

Students should be encouraged to make predictions regarding the experiment; compare results with other groups of students and determine if the test was fair. The results of the experiments can be presented utilising appropriate scientific terminology.

Note: common experiments may include evaporation tests, undertaken using a variety of materials and vessels situated in different locations eg transpiration – bagging leaves on a variety of plants and recording water loss.

Additional activities

Geography: Recording of local weather conditions over a set period and linking data with meteorological information on pressure systems and other weather phenomena will strengthen understanding of the water cycle process locally.

English: Reports - verbal or otherwise can be presented demonstrating an understanding of water cycle phenomena and the influence on local weather patterns.

Resource requirements

- Activity sheet 1 'The water cycle'