

Year 6

Lesson 3

Where water comes from

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Learning objectives

Students will understand:

- The importance of water in providing products and services.
- The costs involved in supplying water.
- Opportunities for more efficient use of water in the household.

Learning outcomes

Subject	Strand & Content Descriptors
Science	Science as a Human Endeavour <ul style="list-style-type: none">• Scientific knowledge is used to inform personal and community decisions (ACSHE220) Science Inquiry Skills <ul style="list-style-type: none">• With guidance, select appropriate investigation methods to answer questions or solve problems (ACSIS103)
Mathematics	Measurement and Geometry <ul style="list-style-type: none">• Connect volume and capacity and their units of capacity (ACMMG138)
English	Literacy <ul style="list-style-type: none">• Participate in and contribute to discussions, clarifying and interrogating ideas, developing and supporting arguments, sharing and evaluating information, experiences and opinions (ACELY1709)• Plan, draft and publish imaginative, informative and persuasive texts, choosing and experimenting with text structures, language features, images and digital resources appropriate to purpose and audience (ACELY1714)• Use a range of software, including word processing programs, learning new functions as required to create texts (ACELY1717)

Important questions

- Is water free?
- What household activities contribute most to water consumption?
- How can households reduce water use without compromising their requirements for health and pleasure?

Background information – water for survival

For most of human history we only required water to drink. However, in the last few thousand years we have relied on water to help us dispose of waste, as a coolant or solvent in industries, to wash ourselves and possessions and to irrigate our crops.



Growing food and other products require water. The CSIRO estimates 170,000 litres of water is needed to produce one kilogram of clean wool and 100,000 litres is used to produce one kilogram of beef.

The need for reliable water supplies has resulted in enormous engineering structures including dams, weirs, channels and pipelines that deliver water, but contribute to environmental damage and social disruption.

Dams built on the Indus River in India, the Nile in Egypt and the Colorado in the United States have disrupted or stopped flooding patterns vital for fish and bird breeding; prevented silt from replenishing farm lands; and contributed to the rising salinity of groundwater. Dams have also forced thousands of people to move from their homes to make way for catchments.

While water appears to be free – simply falling from the sky – when we consider the environmental impacts associated with its delivery, the infrastructure required to collect and transport it and the potential environmental costs associated with disposal, the need to value water in an economic and environmental sense becomes clear.

Linking locally

Logan has unique characteristics that govern the way we manage water supplies. The population is expected to reach 434,000 people by 2031 with an additional 70,000 dwellings required and we will all require water for drinking, washing and recreation.

Rainfall, while greater than many other urban regions in Australia, is unreliable and spasmodic.

Increasing demand for water means we all must manage water supplies carefully. A combination of strategies has been implemented to reduce consumption.

Strategies include:

- Regulations to install dual-flush toilets and water saving shower roses in all new homes
- Residential and non-residential permanent water conservation measures
- Integration with the regional Water Grid in South East Queensland to allow for water sharing
- User-pays water pricing system
- Programs such as the Watersaver education program
- Mandatory installation of rainwater tanks in new developments
- Increasing use of recycled water across the city
- Pressure and leakage management initiatives
- Sourcing water from the ocean using desalination



Lesson plan – water for survival

Students undertake research to identify the use of water in non-familiar activities such as manufacturing; energy production and horticulture. Key details such as the source of water for specific purposes, the volume used and any strategies to reduce or recycle water should be recorded and presented to the class.

As a class discuss the 'costs' associated with water supply. Is water free? Consider the economic costs associated with developing and maintaining water infrastructure and the environmental and social costs.

Discuss what pressures water supplies are likely to face in the next 50 years. Consider population growth, tourism and changing weather patterns.

Using **Activity sheet 13 'Water usage chart at home'** (including figures for average water use – litres per shower) along with demographic and other information from their household, students are asked to estimate the volume of water used over a set period and identify where the water will be used (e.g. showers, toilets, washing machine and dishwasher).

Students then undertake data collection. For example, recording number and length of showers, recording and comparing meter readings and then present this data in a chart or similar format that illustrates consumption by activity.

Students to consider how their household could reduce water use without comprising their requirements for health and pleasure

Resource requirements

- Activity sheet 13 'Water usage chart at home'

Additional activities

Drawing on their findings of their home water use, students research and design a water efficient home

The design should consider factors such as:

- use of efficient appliances
- opportunities to reuse water
- water efficient gardening design and maintenance
- rainwater tanks and other collection devices
- substitution of dam or mains water

A floor plan and rationale, produced in an appropriate IT format should be developed and presented to the class.