

Unit 2: Drinkable water

Introduction

Weather, specifically rain patterns, varies greatly across Queensland. For example, South East Queensland is almost entirely dependent on dams as a water source for its rapidly growing population. It is also subject to highly variable weather patterns. Although northern Queensland generally receives more rainfall than other parts of the state, droughts can still affect water supplies there.

This unit looks at water management from both local and global perspectives, and explores alternative water sources such as desalination and purified recycled water.

Some of the focus questions for this unit include:

- ◆ What do we understand about water? Where does it come from? Where does it go? What does it consist of?
- ◆ Is clean water available worldwide?
- ◆ How can we ensure that enough clean water will be available for growing populations?
- ◆ In investigating water (natural, reused, reclaimed), what information can be gathered from our studies to determine the sustainability of current water practices?

While the focus of this unit is on surface water sources, the lessons could be adapted for communities in which groundwater is the primary water source.

Queensland has about half of Australia's fresh water reserves, but most of the rain falls north of Townsville. The more populated areas of the state—mostly along the east coast strip—receive only 12% of the state's total rainfall; only 6% of river water reaches inland communities.

Queenslanders are among the highest water users in the world—we use about 1.1 million litres per person every year.

Key concepts

- ◆ The future wellbeing of our society and environment depends on the sustainable use of water resources.
- ◆ We have a responsibility to manage our water resources efficiently.
- ◆ Clean water is important for maintaining our health.
- ◆ Modern technology can provide clean water by replicating the natural water cycle. It can also assist us to be more efficient in our use of water.
- ◆ There is only a very small amount of fresh water available for every living thing to share. Some places have more water than others.
- ◆ Personal, family and school decisions about water usage and management balance local and global considerations.
- ◆ We can look after our water resources by using less and keeping them clean.

❖ Essential Learnings for this unit—By the end of Year 7

Ways of working	Knowledge and understanding
Science	
<p>Students are able to:</p> <ul style="list-style-type: none"> › collect and analyse first- and second-hand data, information and evidence › draw conclusions that summarise and explain patterns in data and are supported by experimental evidence and scientific concepts › communicate scientific ideas, data and evidence, using scientific terminology suited to the context and purpose. 	<p>Science as a human endeavour</p> <p>Science is a part of everyday activities and experiences.</p> <ul style="list-style-type: none"> › Scientific knowledge can help to make natural, social and built environments sustainable, at a scale ranging from local to global.
Studies of Society and Environment	
<p>Students are able to:</p> <ul style="list-style-type: none"> › collect and analyse information and evidence from primary and secondary sources › draw conclusions and make decisions based on information and evidence by identifying patterns and connections › communicate descriptions, decisions and conclusions, using different text types for specific purposes and the convention of research-based texts › respond to investigation findings and conclusions by planning and implementing actions. 	<p>Place and space</p> <p>Environments are defined and changed by interactions between people and places.</p> <ul style="list-style-type: none"> › Sustainability requires a balance between using, conserving and protecting environments, and involves decisions about how resources are used and managed.

Assessment

» Opportunities for assessment

These involve monitoring students' developing understanding of water and wastewater systems and their understanding of water as a finite resource. Students' work is to be kept in a journal or theme book, which will be a record of observations, experiences and reflections. Frequent monitoring of these journals will allow identification of students' alternative conceptions and will provide evidence of student learning.

» Assessment task

The assessment task for this unit focuses on changes that the school community makes to use its water more efficiently. The students conduct an audit of the water use in the school and write a persuasive report to the school environment committee recommending three actions that the committee can take to encourage more efficient use of water in the school.

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Assessable elements

» Science

- Knowledge and understanding
- Communicating

» Studies of Society and Environment (SOSE)

- Knowledge and understanding
- Investigating
- Communicating

Unit overview

Phase	Lesson
Engage	
To capture interest and discover what we think we know	<ul style="list-style-type: none"> › Lesson 1—Water around the world › Lesson 2—Where does our drinking water come from?
Explore	
To have shared, hands-on experiences	<ul style="list-style-type: none"> › Lesson 3—How do people in developing countries access drinking water? › Lesson 4—Water in my catchment › Lesson 5—What kinds of things do we find in our water? › Lesson 6—Filtering groundwater?
Explain	
To demonstrate what we have learned by exploring	<ul style="list-style-type: none"> › Lesson 7—Making water drinkable—Water treatment › Lesson 8—Making a solar still
Elaborate	
To build understanding through an investigation	<ul style="list-style-type: none"> › Lesson 9—Water supplies—Now and for the future › Lesson 10—Purified recycled water—Case study
Evaluate	
To review and reflect on learning	<ul style="list-style-type: none"> › Lesson 11—School water audit › Lesson 12—Writing a school water action plan



... Linking locally

- ◆ Visit your local council websites and municipal libraries for local information about water management.
- ◆ Contact local community elders for an Indigenous perspective. For protocols go to page 22 of *Embedding Aboriginal and Torres Strait Islander Perspectives in Schools* at <http://education.qld.gov.au/schools/indigenous/docs/indig-persp.pdf>.
- ◆ Visit local tourism information centres for information on the local water catchment, impoundments, Landcare, catchment networks and contacts.
- ◆ Organise a visit to a local water treatment or advanced water treatment plant.
- ◆ For information about the local catchment, contact the local council, the natural resource management regional body, the local Landcare group or catchment group (Lesson 4).

... Taking action

Students will conduct a school water audit and make recommendations to the school administration, environment committee and the parents' and citizens' association about strategies that could reduce water use in the school.

Students may also choose to organise an event or activity to support the aid work of an international water charity.

... Bibliography

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De Bono, E. (1994) *CoRT thinking program guide*. Hawker Brownlow: Victoria.

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Resource 1

❖ Student assessment task: School water action plan report

Unit 2: Drinkable water

» Setting the scene: Saving water at our school

Your school community has decided to look at a number of ways of using its resources more efficiently to reduce its ecological footprint. You have been asked to write a report to the school environment committee recommending three actions the committee should take to use water more efficiently in the school.

You need to convince the school environment committee to carry out your priority actions, so you will need to be very persuasive in your report. In a persuasive report, you must justify every point you make with supporting evidence or facts.

» Purpose of the task

For you to show how well you can:

- › interpret and draw conclusions from data about water use in the school
- › identify priority actions that the school community can take to use their water more efficiently
- › write a persuasive report using a given format outlining your findings.

» Products to be completed

Working independently, you will:

- › complete the ‘Saving water at our school’ report plan
- › write a persuasive report to the school environment committee recommending actions that the school community could take to use water more efficiently.