

Where does our drinking water come from?

Adapted from *Watersense Teacher Resource File* (2007) reproduced courtesy of Brisbane City Council.

» Lesson overview

In the previous lesson, students explored the proportion of fresh water on earth and discussed that there is only a finite volume of water for us to use. In this lesson, students investigate the water infrastructure of the school. This activity lays the foundation for an in-depth school water audit later in the unit that will give students the opportunity to suggest strategies for saving water in the school.

Students also complete an activity to identify their prior knowledge and identify questions about sustainable water management for the class to delve into.

Queensland has 99 large dams with a combined storage capacity in excess of 10 million ML (ABS, 2004). Over 75% of the water used in South East Queensland comes from three dams operated by South East Queensland Water: Wivenhoe, Somerset and North Pine.

» Lesson objectives

In this lesson, students investigate the way water moves through their school.

» Equipment

For the class

- enlarged copy of a plan of the school
- butcher's or poster paper

For each student

- one copy of the plan of the school
- student journal

» Preparation

- Prepare a Think, Want, Learned, How (TWLH) chart for the classroom wall.
- Ask the administration for information about the location of stormwater drainage and other water infrastructure that may not be obvious to students. Add these structures to the school map.
- Plan a route for the 'water walk' around the school.

A TWLH chart is an adaptation of the KWL chart used in Unit 1. It has four columns: 'what we Think we know'; 'what we Want to learn', 'what we Learned' and 'How we know'. It is used to elicit students' prior understanding, to identify questions students would like answered, and to record learning as it occurs through the unit.

» Lesson steps

1. Review the previous lesson using Resource 1 and students' journal entries.
2. Discuss the idea that the earth's supply of fresh water is a finite resource that must be managed sustainably. Devise a class definition of the term 'sustainability'. Talk about how students' households manage water resources in their home. Review students' understanding of water-saving measures in the home that were addressed in the previous unit. For additional ideas, refer to *Background Information for Teachers*, available at <www.nrw.qld.gov.au/waterwise/education/units/teacher_background.html>.

3. As a whole class, brainstorm ideas about how communities can manage fresh water resources more effectively. Complete the first column 'what we think we Know'.
4. Ask students to individually think of questions they could add to the 'what we Want to learn' column of the TWLH chart. Ask them to record their questions in their journals. As a class, add these questions to the second column on the class chart. Display these clearly in the classroom, referring to them regularly during the course of this unit. As answers or new learnings are found, add these to the chart in the appropriate column.

Some starter questions could include:

- How do we save water in the home and at school?
- How can our local council save water?
- How can our community reuse some of the water we have already used: in the home; in the community? (Revisit the meaning of the term 'greywater'.)
- What are some of the issues with reusing water in the home?

- What are some of the issues associated with reusing water that has already been processed in a water treatment plant?
- What are some alternative sources of water?

One of the best ways that local councils can save water is to reduce loss and leakage from pipes.

5. Explain that students will investigate how to manage the water resources of the school more effectively. How can the school save additional water?
6. To learn more about the water infrastructure in the school, students will take a 'water tour' of the school ground, beginning at the school's water meter.
7. Form teams of three students and allocate the roles of Director, Manager and Speaker. Hand out copies of the school map.

The TWLH chart: Managing our water resources sustainably

what we think we Know	what we Want to learn	what we Learned	How we know

The **Director** understands the task and focuses the group on each step. The **Manager** is responsible for any equipment required and safety considerations. The **Speaker** can ask the teacher or another team's Speaker for help. (Refer to the **PrimaryConnections** materials for more information.)

8. Provide clear guidelines about the areas to be surveyed and the safety requirements.
9. Ask students to label their maps with important water-related items they can find, such as water outlets, taps, roof guttering, stormwater pipes, toilets and the piping leading away from them.
10. On completion of their investigative walk, students will glue their map into their journal. Ask the team Speaker to share any new learning identified by the students, and include this on the TWLH chart where appropriate.
11. At the conclusion of this lesson, have students create class 'flappers' (see notes in box) and use these images to form a border for the classroom collection and water board.

Flappers are strips of cardboard attached to a bulletin board, plaster or another piece of cardboard which can be lifted up to reveal drawn or written information. In this instance, students pick a water symbol that reflects an aspect of their life experience, passion or hope. Students put this symbol on top of the flapper and underneath, write a short explanation of why they chose this symbol (McGrath & Noble, 2002).

12. For homework, ask students to survey three people to find out what they know about the water supply and distribution in the local area, using the following questions. They can ask their parents, brothers and sisters, neighbours or friends. They should record responses in their journal. The questions are:
 1. Towns and cities, homes and buildings have water taps. Where does the water that flows out of those taps come from?
 2. When the kitchen sink is emptied, where does the water go?
 3. Where does the water from toilets go?
 4. When rain falls on the roofs of buildings, where does it end up?

» Optional activity

Students can use the 'Curiouser and curiouser' research strategy to find answers to their questions. Students individually list in their journals all the questions they have always wanted to ask about a topic. Each student researches the answers and makes a page to go into a class collection. They could also make a poster for display. If enough questions are generated, groups of three can each take one question to research and can then present their answer to the class orally, supported by visuals.