Lesson ideas

Introduction

These lessons focus on recognising the different sources of water in and around communities, identifying which sources are safe to drink and which are suitable to use for other purposes, how our water is treated and the steps we can take to use it sustainably.

They are suitable for primary and middle years students.

Learning outcomes

Using this curriculum material will assist students in achieving the following learning outcomes:

- Students will learn what is in the water in their community.
- Students will be able to explain why some water is safe for drinking and some is not.
- Students will understand the importance of only drinking water that is safe for human consumption.
- Students will learn why it is important to use water wisely.

English

- Students to write a persuasive piece titled, 'Why water quality is important to me'.
- Students to write an explanation of one water treatment method. Include annotated diagrams.
- Students to create a class 'word wall' of new and interesting water-related words in English and local language.
- Students to find the meaning of each word on the **'Find the meaning'** activity sheet.
- Students to complete the **'Water acrostic poem'** activity sheet using words that relate to what can be found in water and/or how to use it sensibly.
- Students to read one of the **'What's in the water?'** books in the 'Interactives' section of the website, then record what they have learned on the **'Water mind map'** activity sheet.
- Students to design and create a printed advertisement to inform people about the importance of drinking clean water.
- Water is often referred to as a 'precious' resource. What does the word precious mean? Students can use the **'Working with words'** activity sheet to explore the word, then consider how this term applies to water.

- Students to create a water wise brochure or presentation for people visiting their community.
- Students to create an advertising campaign to educate members of the community about how the source-to-tap process works, and about safe and unsafe drinking water.
- Students to read a water-themed Dreamtime story of their choice (e.g. The Ngurunderi Dreaming, Tiddalik the Frog or The Rainbow Serpent), then complete the **'Dreamtime Story book report'** activity sheet.
- Students to have some educational fun with their word knowledge and complete one or all of the following 'For fast finisher' activity sheets:
  - **'Water words word search'**
  - **'Letter maze'**
  - **'Be water wise crossword'**

Mathematics

- Students to survey their classmates about how they use water and use the data to create a graph.
- Students to use measuring devices to measure the amount of water that leaks from a dripping tap. Take measurements for one day then calculate approximately how much water is wasted for a week, a month, and a year.
- Students to read a water meter (if present) and collect usage data over a couple of weeks. Are there times when water is used more? When?

  Put in place some water wise techniques then collect more usage data. Did the water wise techniques help reduce usage?
- Students to calculate how much water is used for everyday activities on the **'Water, water everywhere'** activity sheet.
- Students to create a map of their school or community and mark where there is water supply. Indicate any water issues such as dripping taps or toilets that don't flush.
- Students to collect the water they use when they wash their hands. Measure how much they use then see if they can reduce it. Have a competition between students to see who can use the least amount of water while still washing their hands properly.
- Students to learn how to convert millilitres to litres (1 millilitre = 0.001 litres) and litres to kilolitres (1000 litre = 1 kilolitre).
- Students use their data analysis skills to answer the questions on the **'Water usage calculations'** activity sheet. You may need to discuss the definition of 'average' before undertaking this activity.

- Students to practise their coordinate plotting skills with the **'Water wise coordinate drawing'** activity sheet.
- Students to practise number equations to solve the **'What is it? number puzzle'** activity sheet.
- Students to use the **'What our water use'** activity sheet to record readings from your school water meter. Discuss reasons for the differences in the readings and other student observations.

Science

- Students to think about what they know, would like to know and are learning about water and record it on the **'Water KWL chart'** activity sheet.
- Students to investigate how SA Water test water quality. Invite a representative of SA Water to speak to your class about water. This could be in person or via a web link. Before they visit, students should compile a list of questions for the visitor.
- In small groups, with the help of an adult, students to experiment testing water quality from different sources with a water testing kit (these are readily available online or from hardware stores. Call KESAB for advice if you have trouble finding one). What contaminants did students find?
- Students to undertake their own water quality observations using their sight and smell by completing the **'Water for the senses'** activity sheet.
- After reading the information about where our water comes from and how it is made safe to drink, on the Water Let's be Sustainable website, students to brainstorm the different impurities that can be found in various water sources by completing the **'What lies beneath?'** activity sheet.
- Students to observe water and bugs through microscopes (if available). What can they see? Investigate what types of germs can be found in water.
- Students to learn about why we need water to survive. What else needs water to survive?
- Students to think about the various things that end up in their water (e.g. bugs, dirt, detergent, rocks etc.) then select a few suitable items and place them in a cup of clean water. Watch and record what happens to the water. Consider the following:
    - How does the water change?
    - What happens to the texture of the water?
    - What happens to the colour of the water?
    - Does the smell of the water change? How?
    - Does the water look different at the end of the day?

- Students to research how water is transferred from its source to its point of use in their community. Create a flow chart to show the process.
- Students to find the meaning of precipitation, condensation, and evaporation and discover how these terms relate to the water cycle. Conduct some experiments that demonstrate this cycle.
- Students to explore how human actions can impact the water cycle.
- Students to discuss why treatment of water is necessary. Select one or more water treatment methods to research further. There is some information in the 'Safe drinking water' section of the website or at www.sawater.com.au
- Students to brainstorm ways they use water (e.g. drinking, bathing, watering, etc.) then sort these according to where the water should be sourced (e.g. rainwater tank, special tap, normal tap, creek, etc.).
- Students to explore the sources of untreated water in their community. Investigate why it is safe for animals to drink this water, but not humans.

Humanities and Social Sciences (History, Geography, Civics and Citizenship, Economics and Business)

- Students to speak to some community elders and find out how water has been used throughout the years. How was it collected? How was it stored? How did the community ensure that it was safe to drink or use?
- Students to consider how water is wasted in their school. Make a list and then brainstorm ways this wastage could be reduced or stopped. The list and solutions could be given to the school principal or the local council. Students could create a 'water wise' committee for the school. This committee should be responsible for identifying water wastage issues and working together to address them.
- Students to mark areas that experience high, medium and low rainfall on a map of Australia. Use different colours for each area, then mark your community with a flag. Compare the rainfall in different areas.
- Students to investigate the main causes of rainfall and consider the seasonal rainfall patterns in their community. How does this affect the landscape and the availability of water throughout the year?
- Students to consider how the movement of water through the environment connects and impacts upon places. Create a map of the water movement in or around your community.
- Students to consider how their community uses natural resources (with an emphasis on water) to satisfy the needs of the community while still preserving them for future generations. How does this reflect spiritual connections to water?

- Students to discuss why it is important to have rules and regulations about water use. Students to discuss their rights and responsibilities in respect to water supply and use in the community.
- Students to list the ways in which poor water quality can affect people, fauna and flora.
- Students to complete the **'Water use – do's and don'ts'** activity sheet to draw and match pictures of correct versus incorrect water usage. Students to display these around the school with clear 'do' and 'don't' messages attached.

The Arts (Drama, Dance, Media Arts, Music, Visual Arts)

- Students to create water wise signs to display around the school. They could use the **'Be water wise'** template if they wish.
- Students to investigate how water is symbolised in Indigenous art in their own community and how this may be different in others.
- Students to use paint and crayons to create new illustrations to go with one of the 'Bore-to-tap' online books in the 'Interactives' section of the website. These should reflect your community.
- Students to use art and craft materials to illustrate the water cycle.
- Students to paint a mural of a water source. On one half of the mural, students to create a clean, healthy water source and on the other half, a dirty unhealthy water source.

Technologies (Design and Technologies, Digital Technologies)

- Students to learn about water treatment plants, what they do and why we need them.
- Students to look at different types of filters (e.g. cheesecloth, kitchen strainer, rocks, etc.), decide which type would work best to filter water then make and test their own filters. Students could then design a water filtration system for the future. Be creative.
- Students to design and then construct a 'water run' model (like the 'marble run' game), where water can travel through pipes from various heights.
- Students to design the ultimate water wise house, school or community. They should consider how water will be collected, stored, shared and used.
- Students can use some, or all of the pictures on the **'Water wise community'** sheet to create their own 'Ultimate water wise community'. They should label the features that make their community water wise. As an extension option, students could build a 3D model based on their design.
- Students to complete the **'Desalination KWL chart'** to display what they know, want to know and have learnt about desalination.

Health and Physical Education

- Students to discover the effect that water has on our bodies. Why is clean, healthy water important for us?
- Invite a doctor, nurse or other health professional to speak to the class about the importance of hydration and consuming clean water.
- Students to learn about water-borne diseases. How can they spread? How can they be prevented? What effects do they have on our bodies? How do we recognise problems caused by unsafe water?
- Students to discuss the issues that might affect a community's water supply or make it unsafe for human consumption. Consider camels tipping over tanks, people turning tanks into swimming pools, animals bathing in creeks, throwing rubbish into waterholes or creeks, etc.
- Students to make a list of all the things they use water for during a day. Sort these into categories such as hydration, health and recreation.
- Students to explore the use of water in maintaining personal hygiene. This includes hand washing, showering, washing clothes, etc. How can students be water wise while maintaining health and hygiene? Create a skit or jingle to promote hygiene practices and perform it for the community.