

Lesson Plan 1: Prep to Grade 2

Getting to know Dams, Weirs and Water Channels

Context

Dams: A dam is a big wall constructed across a valley to control the flow or raise the level of water held within a catchment area.

Currently, SunWater owns and manages nineteen dams in Queensland and each dam has been strategically built in existing river, stream or creek locations to serve the needs of the region. A dam is a critical component of a water supply scheme which can be made up of weirs and barrages, pumping stations, pipelines and channels, and drains. The overall scheme is designed to supply water for various purposes including town water supply, irrigation, electricity production, industrial i.e. power stations, mines, stock and groundwater supply.



Dams are also a great place to visit to enjoy recreational activities, however there are risks associated with dams which are important to understand, particularly if you are a resident living downstream of a dam.

In the event of heavy rainfall in a dam catchment area, a dam will provide some attenuation (reduction) to flooding downstream of the dam. However, as the dam's storage level increases and reaches its full supply level, excess water is diverted through a spillway to flow downstream.

SunWater dams are designed to store water to their intended capacity and then safely pass any excess water inflows through purpose built spillways, release gates or outlet works.

For more information about dams, please refer to the [SunWater Dams brochure](#).

Weirs: Over the last 80 years, SunWater has designed and managed the construction of 66 weirs and barrages. A weir is a steel or concrete barrier constructed across a river or creek that regulates water flow and allows water to be slowly released to users downstream. Due to the unpredictable nature of water release, weirs can be very dangerous with strong undercurrents and hidden debris that cannot be seen.

Water channel: A water channel is like a passage dug into the ground to send water from one location to another for farmers to use to water their crops. Water levels in channels can change very quickly. Heavy gate structures let water in and out of the channels causing the water levels to rise and fall. The sides of water channels are often very steep and algae present in the water can make the sides of the water channels slippery. Just like dams and weirs, submerged hazards, such as logs, pipes and rocks often lurk under the surface.

Teacher's note: Please colour print and laminate the three flash cards showing a dam, weir and water channel for use in this lesson plan. Print double sided to reference the fast facts.

Learning Outcomes

- Understand the difference between dams, weirs and water channels through classroom discussion
- Appreciate that dams are a great place to enjoy recreational activities while, at the same time, having an awareness of the potential dangers
- Understand the purposes of dams, weirs and water channels and how the water supply is used
- Be able to represent and communicate observations and ideas in a variety of ways

Class discussion & activity

- Engage the students in a class discussion about where water comes from when we turn a tap on at home. Introduce the term dam and ask the students what they think it is and why we need them. Write down key words on the board
- Discuss how the water got into the dam (introduce the concept of the water cycle) and what would happen to the level of water in the dam after long periods of rain and long periods of dry weather
- Ask students to think about the various uses for the water, and who might use it (e.g. towns, farmers, industry).
- Ask the students if they have ever visited a dam. What did they do while they were there? Write down some of the recreational activities that could take place at dams
- Introduce the term weir and water channel to the students. Using the flash cards, show the pictures to the students and ask them to identify the main similarities and differences between dams, weirs and water channels
- Explain to the students that dams, weirs and water channels can be dangerous places too. Ask the students to think of some of the dangers that could be present

Teacher's note: This topic is covered in further detail in Lesson Plan 2: *Understanding the hidden dangers- what lies beneath?*

- Introduce the activity sheet: **Discovering dams, weirs and water channels** and ask the students to complete the questions. This could be completed as a class/ small group activity with Prep students.

Links

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| Sun Water website | http://www.sunwater.com.au/ |
| Play Safe...Stay away! video | http://www.sunwater.com.au/sustainability/water-safety/blue-safety-video |
| Splash Facts | http://www.sunwater.com.au/sustainability/water-safety/blue-safety-video/teach-me! |
| Safety Tips when visiting a dam-brochure | http://www.sunwater.com.au/_data/assets/pdf_file/0007/16864/Safety_tips_when_visiting_a_dam.pdf |
| A3 full colour classroom posters | http://www.sunwater.com.au/_data/assets/pdf_file/0012/2622/Water_Safety_A3_Poster.pdf |
| SunWater dams brochure | http://www.sunwater.com.au/_data/assets/pdf_file/0005/17465/Sun_Water_Dams.pdf |
| SunWater infrastructure map | http://www.sunwater.com.au/_data/assets/pdf_file/0018/1728/Sun_Water_Infrastructure_Map_2016.pdf |
| Free 'Blue Pack' | http://www.sunwater.com.au/sustainability/water-safety/blue-safety-video/for-teachers |

All URLs and hyperlinks correct at May 2017

Reflection & extension

Introduce children to the concept of the water cycle and explain how water is recycled over, and over again. Describe the journey of a water drop as it is heated by the sun (evaporates) and travels from the ocean up into the sky as water vapour. As the water vapour rises, it cools (condenses) and the water drops form clouds. As the water drops become heavier, they will fall back onto the land and rivers as rain, snow or hail (precipitation).

Some of this rainwater is captured and stored in dams so that it can supply water to towns, farms and industry; some of the water enters creeks and rivers; and some soaks into the ground and travels through the soil as groundwater. Eventually the water returns to the ocean where the water cycle starts again.

Ask the students to draw and label a simple picture of the water cycle.



Activity sheet: Getting to know dams, weirs and water channels

1. Can you find the words **Dam**, **Weir** and **Channel** on the picture below? Circle each of them with a different colour pen.



2. Write the word **Dam**, **Weir** or **Water Channel** to match each picture below.



3. Using the pictures above, draw an arrow to match the word with the correct description.

Dam

A passage dug into the ground to send water from one place to another.

Weir

A big wall built across a river to store water for later use. Water is released via a **spillway**.

Water channel

A **barrier** built across a river. Water can be released and flow over this barrier to be used further downstream.

4. Water from the dams, weirs and water channels is used for many different purposes. On the picture above circle the following pictures/ words:

a. town/ houses

b. fields

c. factories (industrial and mining)

d. cows

5. Write a sentence to describe how we use water in our homes.


