Water cycle – Introduction

Topic: Water Supply – Where does your water come from?

Aim:
To develop students' understanding on how water travels through the natural water cycle.

Victorian Curriculum

Science: VCSSU041, VCSSU046, VCSSU047, VCSSU059, VCSSU062
Geography: VCGGC082

Students will use the interactive map to:

- Investigate and explore the stages of the water cycle and where they occur across Melbourne.
- Follow the movement of water through different states
- Explore how we use water and how it's managed and the difference between the natural and urban water cycle

Guiding questions:

- What are the water cycle stages?
- Where does our (drinking) water come from?
- Where does our wastewater go?

Background

Water is essential to our way of life. It is a vital resource that makes all life on Earth possible, but what do we/you actually know about it? How does water fall from the sky? How does it get to your tap when you need it?

The water cycle, also known as the hydrological cycle, is the continuous movement of water across the Earth. This natural process recycles water and distributes it throughout the environment, which is later managed for our cities and industry. No new water is created or lost!

As the water cycle is exactly that, a cycle, we could begin at any point. The most logical is to start in a large water body where water is a liquid. Energy from the sun heats up the surface layer of this water and turns the liquid molecules into a gas, which rises into the atmosphere as water vapour. This is the process of **Evaporation.** Water is also converted from a liquid to a gas in plants through **Transpiration.** This is where water is absorbed through the plants roots and released as a gas via photosynthesis. These water molecules cool high up in the atmosphere and turn back into liquid droplets through the process of **Condensation.** Eventually, this water falls back to Earth as **Precipitation** (rain, sleet, hail, snow). This water is then percolates through the soil through **Infiltration** or runs over the surface as **Run-off.**

Water is then managed and distributed in urban areas through the Urban Water Cycle.

Educational videos:

ABC x Melbourne Water: Water Cycle Videos

- The Natural Water Cycle: An educational video made in collaboration with the ABC.
- Wastewater Treatment: The second episode in the series which explains part of the Urban Water Cycle and where, why and how our wastewater is treated.
- Stormwater: This video educates student on stormwater, surface run off, litter and where water ends up after going down the drain.
- Climate change: Gives students an overview of climate change, what it is and how it affects Australia.

Melbourne's drinking water

This video gives a quick explanation on where your drinking water comes from, how it gets to your house and what is being done to ensure there is enough water for the future for everyone and the environment.

Teacher- led exploration (20 min)
(This activity can also be carried out independently by the students on laptops)
Using a shared screen or whiteboard, open up Melbourne's World of Water – an Interactive Map. You will find a basic help guide here.

Guide the students through the water cycle (Natural and Urban) stages paying special attention to the location that these stages may occur in Melbourne.

Map tip: At the bottom of each content page there will be a link labelled "Next" that will take you directly to the next cycle stage.

Natural Water Cycle

1. Evaporation

1a. Transpiration

2. Condensation
3. Precipitation
4. Infiltration
5. Run off

Urban Water Cycle

1. Catchment/ Collection
2. Water Treatment
3. Distribution
4. Water Supply/Use
5. Sewage Treatment
6. Recycled Water
7. Stormwater
8. Climate Change (optional)

The Water Cycle

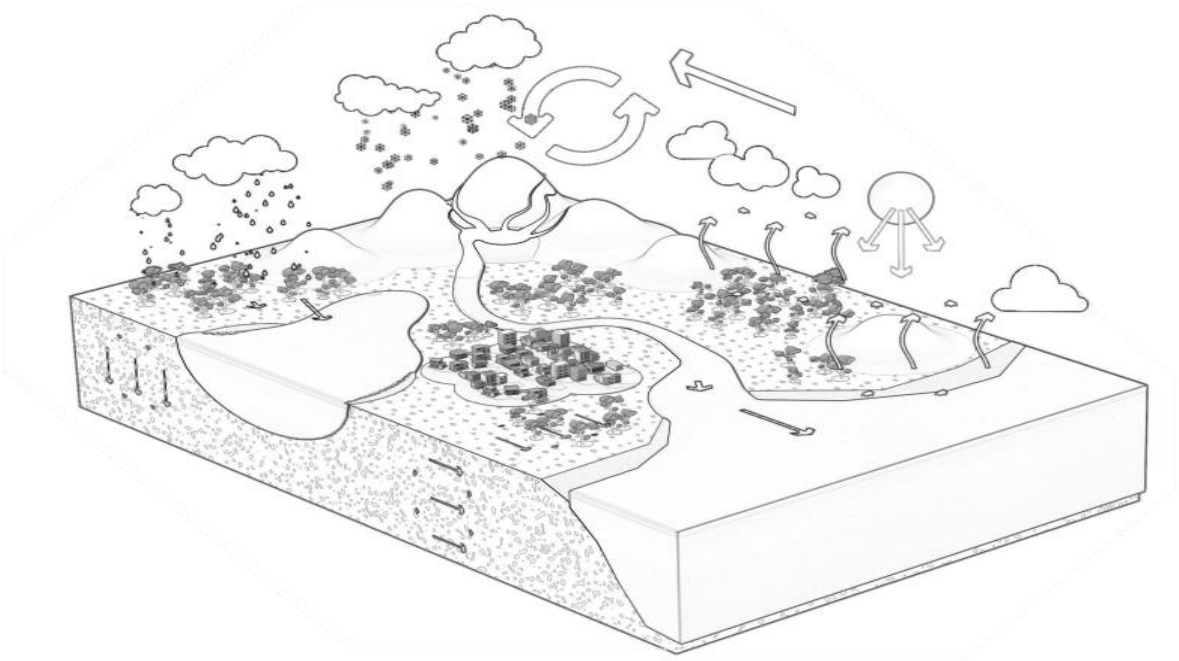
1. **Fill in the blanks**

Using the words below, complete the water cycle paragraph below:
Infiltration
Condensation
Transpiration
Run-off
Evaporation
Precipitation

Energy from the sun heats up the surface layer of this water and turns the liquid molecules into a gas, which rises into the atmosphere as water vapour. This is the process of _____**.** Liquid water is absorbed through plants roots and released as a gas via photosynthesis, this is called _____.

Once these water molecules rise high up into the atmosphere they begin to cool and turn back into liquid droplets through the process of _____**.** Eventually, this water falls back to Earth as _____. This water then percolates through the soil through _____ or travels over the surface as _____.

2. **Colour and label diagram below, using the list of words above.**



Melbourne Water