1 What is Water and Where Does it Come From?

sun

Aim: To explore the water cycle and investigate our relationship with water.

explore

Select from these ideas

- Brainstorm where water comes from and goes to.
- Create a magazine collage of all the different uses people have for water. Have students group the different uses.
- Ask students to draw/illustrate themselves in the water cycle, showing how they use water and where it goes.
- Investigate where water comes from and goes to in the school. Create a diagram and see if students can do the same for their water at home.

ACTIVITY 1 - The Water Cycle

learn

- Discuss the water cycles that the students have created, focusing on where they think water comes from.
- Use Photocopy Master 1 *The Water Cycle* to investigate the cycle and explore terms like transpiration and condensation.
- Using the list of equipment (see what you need), ask students to create a model of the water cycle. Discuss with the students how our earth looks naturally. Is it all flat? What happens in the low lying parts, where are the hills? How much of the earth is covered in water? Where will the pebbles and rocks be best to go? Carefully investigate the shapes and types of land shown on *The Water Cycle* and how they affect water flow.
- When they have completed their own water cycles, discuss the different designs and ways that students used to create their water cycles. Use Photocopy Master 1 to decide whether their designs include all the parts of the 'earth' in the water cycle.

What you need:

Large plastic container (this might be a large plastic bottle), half a bucket of soil or potting mix, two or three wire coat hangers, large clear plastic bag or plastic wrap, pebbles and small rocks, plenty of water, some small plants, moss, ferns, grass seed or bird seed.

reflect

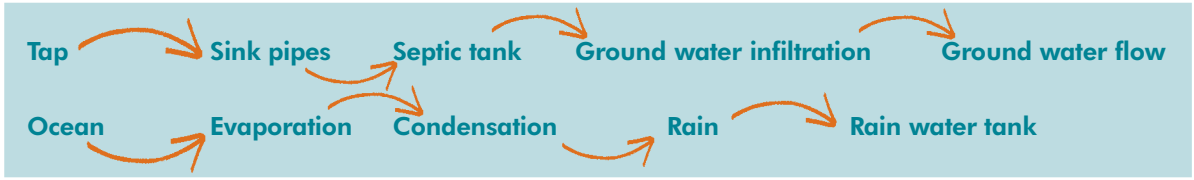
- How much 'ocean' should there be in your water cycle?
- Why do we need to cover the water cycle in plastic?
- Where do the water droplets on the plastic come from?
- Where does the water form 'oceans' and 'rivers'?
- What important functions does the water cycle have?
- Why are we so reliant on the water cycle? What does it do for us?

sun

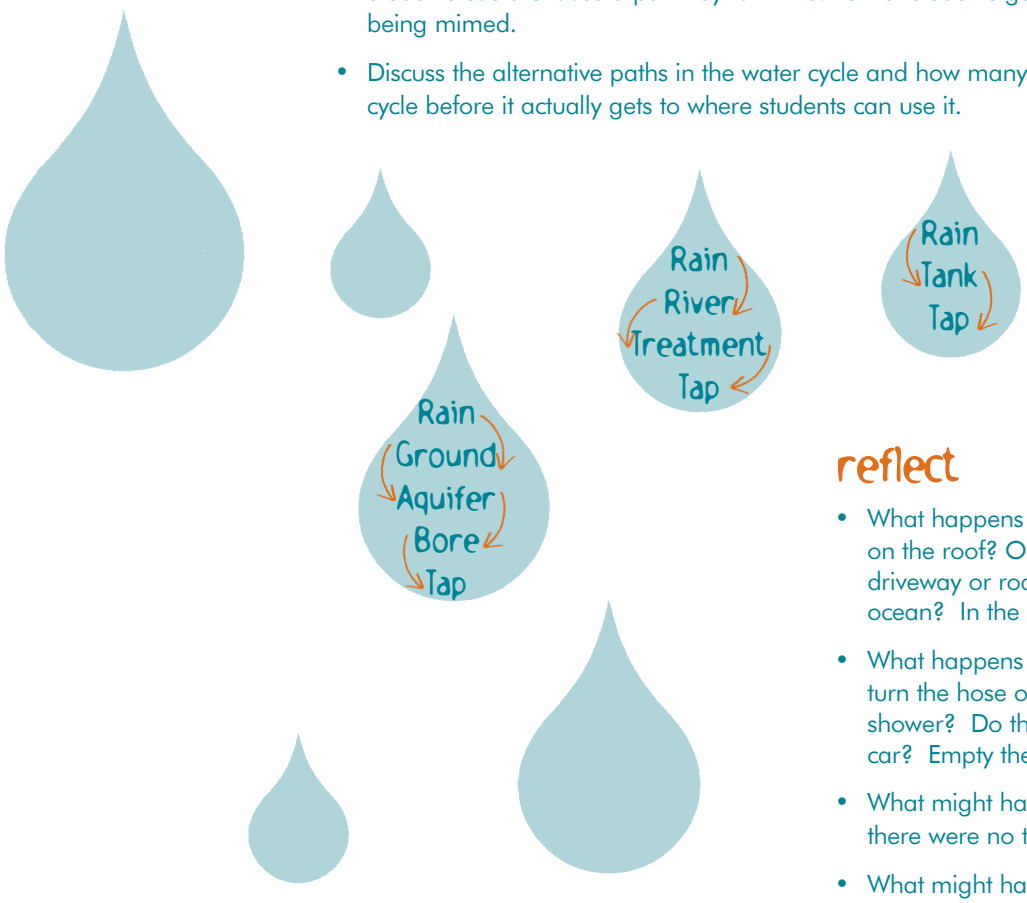
ACTIVITY 2 - Follow the Water Droplet

learn

- Using Photocopy Master 1a *The Water Cycle in use* as an overlay to Photocopy Master 1, or select and cut as appropriate to your needs from Photocopy Master 1a, explore where in the cycle the school water comes from and goes to.
- Follow-up with students their home water cycle.
- Imagine where the water goes:



- Spray some water on the roof and 'listen' and 'watch' where the water goes.
- Students could imagine that they are a drop of water and choose a starting point in the water cycle, for example the classroom tap. See Photocopy Master 2 for text of a story.
- Students could choose a pathway to mime. Other students guess which pathway is being mimed.
- Discuss the alternative paths in the water cycle and how many times it might have to cycle before it actually gets to where students can use it.



reflect

- What happens to the water when it falls on the roof? On the paddock? On the driveway or road? On the trees? In the ocean? In the stream?
- What happens to the water when you turn the hose on the garden? Have a shower? Do the washing? Wash your car? Empty the swimming pool?
- What might happen to the water cycle if there were no trees?
- What might happen if there were only roads or paved surfaces?
- What things might make a drop of water flow faster through the cycle? Slower?

ACTIVITY 3 - Maori Classification of Water

learn

- People have different uses for different kinds of water. For example, the water that we use for washing the clothes is okay to water the garden but is not okay for drinking. In Maori culture, water comes in many different types and therefore has different purposes and is viewed in different ways.
- Use the types of water *Nga momo wai* Photocopy Master 3 and carry out activity 2 again, seeing if you can identify the different types of water in your water cycle and where you might find other types of water.

reflect

- How might Maori people in your community view water in your area?
- What different kinds of water are present in your school?
- How do you feel about this?

ACTIVITY 4 - Exploring Condensation and Evaporation

learn

- Explore different activities such as breathing on a spoon, holding a metal pan above a jug or pot of boiling water, and ask students to think about what happens.

  - Ask students why they think the spoon goes cloudy or the pan gets wet.

  - Ask them what things they observe and notice.

  - Discuss situations that students may have already experienced such as seeing their breath on a cold day, condensation on the windows at home, steam rising from pots, condensation on the bathroom mirror.

  - Carry out the experiment/investigation suggested below. Ask students to set it up, focus on problem solving skills, questioning and planning an investigation.

What you need:

Cup

Pot

Heat source (element, gas ring)

Cold plate

Create evaporation and condensation

- Using two cups of water, a pot, a heat source and a cold plate or pan, create some steam.
- 'Catch' the steam on the plate and compare this to creating 'rain', which is called **condensation**.
- Leaving the plate above the boiling water will allow it to heat up.
- Does the hot plate collect steam? Why is this?
- What has happened to the level of the water? Why is this?
- Where has the water gone? This process is called **evaporation**.
- What makes water evaporate from lakes, puddles, oceans and rivers?
- Check your ideas by chalking around the edges of a puddle and checking on it regularly. Where does the water go? What has caused the water in the puddle to heat up?
- Ask students to look for other examples of evaporation and condensation around them.

What you need

Flower or small branch with leaves on it

Plastic bag (sealable)

Transpiration

- Ask students where else they think water 'evaporates' from e.g. puddles, lakes, oceans etc.
- Place a flower, grass or small branch in a plastic bag and close the bag so that it is airtight.
- Ask students to think about what might happen and why.
- Observe the bag over several hours and over a day or so.
- Discuss what the students have observed and have them explore reasons why this might have happened. *As the plant 'breathes' it releases oxygen, this combines with hydrogen to create water. This water condensates on the sides of the bag creating 'rain'.*
- What is the liquid on the side of the bag?
- Where did it come from?

reflect

- Why do you think plants are important in the water cycle?
- What might happen if we didn't have any trees?

action

- Think of three other reasons why plants are important to us.
- Check your school. How many trees are there?
- Could there be more? Could you help more trees to grow in your school? Local area?
- Contact your local Forest and Bird branch or QEII Trust representative. They may have activities planned for your area that students could link with.