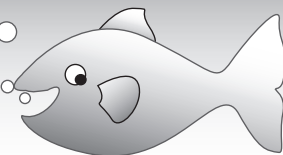


Every Drop Counts



Making a splash

The aim:

To investigate the chemical and physical properties of water.

The story:

Looking at water you might think that it's the simplest thing around. Pure water is colourless, odourless, and tasteless. But water is not that simple. First of all it exists in three states, liquid, solid and gas, and it is a necessity for all life on Earth.

When water's temperature is cooled and falls below 0°C , it becomes solid ice with a fixed shape. If it is heated above 100°C , water boils and turns into a gas called steam. A gas has no fixed shape or volume and will expand to fill its container. Between these temperatures water is in a liquid state. A liquid has a definite volume, but no fixed shape and will flow and take the shape of its container.

Water's many properties makes life possible. It's easy to mix and dissolve many chemicals in water e.g. sugar is a chemical that can dissolve in water. It's possible to boil the water away and have solid sugar remaining. Water is part of many chemical reactions e.g. cement mixed with water forms concrete.

Splash fact: Ice is less dense than water, so it floats. If it sank, the bottom of the oceans would be solid ice.

The learning outcome:

Science level 3 - Chemistry 3.1 Classify a range of materials as solids, liquids or gases according to observable properties.

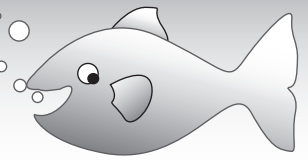
Science level 4 - Chemistry 4.1 Relate properties of common substances to their suitability for particular use.

The gear:

kettle
cold water
ice-blocks
PET soft drink bottles with lids
jelly crystals
hot water
jelly moulds



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Making a splash

The plot:

Introduction - Investigating the states of water

Write on a board the words solid, liquid and gas. Ask students to provide words that we use to describe the three states of water. These words will include, water, ice, snow, steam, vapour, cloud, rain, hail etc.

Experiment 1 - Exploring the three states of water

Ask students to hold an ice block in their hand and observe what happens. Heat from the students' hands will warm the ice block causing it to melt and change from a solid to a liquid. To demonstrate the next change into the gas state, get the students to observe a boiling kettle at a safe distance.

Experiment 2 - The shapes of water

Show students three different shaped containers with water. Ask students what shape the water has in each container. Does the shape change if the container is tipped on a different angle? Does the shape change if the water is poured out?

Experiment 3 - What do you think?

Ask students what happens when jelly crystals are placed into the water and then heated. Will the water change? Will the jelly crystals change? Can you see the jelly crystals once they have dissolved? Show the students three different shaped containers and fill them with jelly water mix. Ask students what shape the hot mix has in each container.

Once the jelly is set, is it a solid or liquid? What properties make it like a solid? What properties make it like a liquid? Is it easy to decide if it is a solid or liquid? Ask students to put their case.

