



SALTWATER AND FRESHWATER - SINK OR FLOAT INVESTIGATION

This is a simple and fun investigation. It encourages children to make predictions, make observations, record results and draw conclusions.

You will need

- 💧 2 glasses (large enough to hold eggs and other items in)
- 💧 2 eggs
- 💧 Salt
- 💧 Water
- 💧 A spoon or stirrer

Other small items from around the house/classroom to investigate with eg, small plastic toys, raisins, foil (rolled up and flat), pen lids, an out of date egg etc.

Method

- 1 Fill your glasses with water.
- 2 Explain that you are going to see if certain items from around the house/classroom will sink or float. Collect some items and encourage the children to make predictions. You can ask them to explain why they think some items will sink and others will not.
- 3 Once they have made their predictions, explain that you are going to add salt to one glass and not the other and that you will test the items in both glasses. Encourage the children to make predictions again. Do they think the salty water will change what happens to any of the items?
- 4 Add a decent amount of salt to one of the glasses (about 2 tablespoons should do but it depends on the size of your glass) and stir until dissolved.
- 5 Start with the eggs. Place one egg in the non-salty water and observe what happens (it should sink unless your egg is out of date).
- 6 Next, add the other egg to the salty water and observe what happens. This time it should float.
- 7 Repeat the investigation for the other items.



The science

Objects that are denser than water will sink. Those that are less dense than water will float. Items that are hollow will often float too as they are filled with air which is less dense than water.

By adding salt to water, it makes the water denser. Once the salt is dissolved in the water, it adds mass to the water (more weight). This makes the water denser and so more objects will float in it.

If you demonstrate the activity with an out of date egg, you will observe that the egg floats instead of sinks. This is because the bad egg has lost some of its yolk inside making it lighter. Micro-organisms have eaten the yolk to give energy. The micro-organisms combine the egg yolk with sulphur and produce carbon dioxide and hydrogen sulphide. The gas weighs less than the water and makes the egg float.

Extension

With some items, you could try and manipulate the shape to see if that will alter whether it sinks or floats. For example, using a flat piece of foil and also, rolling it into a ball.

You could also use this as an opportunity to discuss the salinity (saltiness) of the oceans. The ocean gets its saltiness when water from rivers picks up minerals and salts from rocks that it passes over before entering the sea.

The Dead Sea in Israel is a salt lake which is more than eight times saltier than the oceans. Many tourists flock here each year to come and float in the lake. It is fed by the river Jordan and as it has no outlets, it continues to build up minerals and salts making it as salty as it is. However, this salt lake is shrinking as a result of climate change.

Before you tidy away, you can also talk about what you can do with the water after the experiment. Rather than tipping it down the drain and wasting it, can your children think of other ways to use it? For example, using the non-salty water to water some plants or using the water in an Art lesson. With the salted water, you could model how the Dead Sea is shrinking by pouring the salty water onto a flat surface, eg, a shallow bowl and leaving it on a sunny windowsill to see what happens to the water and salt. The water will slowly evaporate (and the 'lake' will gradually shrink) while the salt will remain at the bottom of the bowl.

You can talk about why it isn't safe to drink either glasses of water and talk about why it is important to save water. You can find out more about water conservation and its importance on our website www.wessexwater.co.uk

You can also have a look at our education page to find out more about the effects of climate change on our water supply and also find some more fun resources and investigations
www.wessexwater.co.uk/community/education

