Brontosaurus Learning

Making science fun!

An Experiment about

Liquids

Density

What you will need:

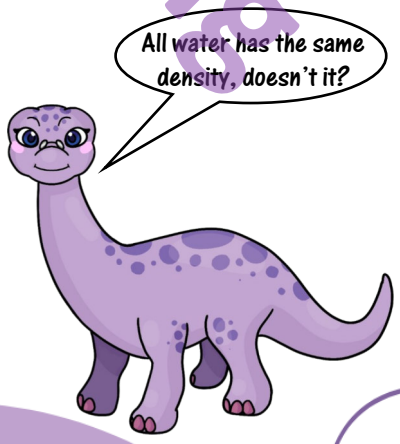
- 5 plastic recyclable cups
- Some clear drinking straws
- Food coloring
- Salt
- A teaspoon
- A marker
- Warm water
- Pop sticks

What you will do:

1. Use the marker to label your containers 1 to 5.
2. Put one teaspoon of salt in cup 1, two in cup 2, three in cup 3, four in cup 4 and 5 teaspoons of salt in cup 5.
3. Ask a grown up to 3/4 fill each cup with warm water. You must now stir each cup with a pop stick until all the salt is dissolved. ***Be patient!***
4. Use the food colouring to die each cup a different color. ***Hint: Red and yellow makes orange, blue and yellow makes green.***
5. Hold your straw so that you can put your thumb over the top. Lift off your thumb, then lower the other end of the straw into the liquid in cup 1 about 1 cm (1/2 inch), then put your thumb back on top. When you lift the straw you should have about 1 cm (1/2 inch) of liquid in the bottom of the straw. ***Keep your thumb on top or it will fall out!***
6. Now lower your straw 2 cm (1 inch) into cup 2. Take your thumb off and then put it back on. When you lift the straw you should have some of liquid one and some of liquid 2.
7. Keep going until you have all 5 liquids in the straw. ***Remember you have to put the straw in deeper into the cup each time.***

What is going on?

The more salt there is dissolved in the water, the higher the density of the liquid. High density liquids sink and low density liquids float. This is because density is a measure of how much is packed into the same space—the liquid with more salt dissolved into it has more packed into the same space that the liquid with less salt.



When you push on the sand balloon, the bits of sand just move around and lie next to each other, then stay there. They don't move apart, so they have no bounce.

Challenges:

- Research the Dead Sea. Where is it and what makes it unique?

Teaching Notes:

Brontosaurus Learning Experiment:
Liquids LQ16

Topic: Liquids—Density

Key Concepts:

- Density is the measure of how much matter is in a certain volume

Resources:

- Investigation Record IR01– one copy per student
- Experiment Description Liquids LQ16 – one copy per student
- Warm water—as warm as you can make it without it being dangerous, recyclable cups, clear drinking straws, salt, teaspoons, food coloring, pop sticks

Lesson Notes:

You will need to carefully demonstrate how to hold your thumb over the straw so that you can draw up liquid—I always get them to practice with plain water before we even start the experiment.

Remind students to listen carefully to instructions, and to OBSERVE their experiment.

Explain that the water will be warm to help the salt dissolve so they will need to be careful with it.

As a class discuss the experiment prior to undertaking it, and students should complete the sections of their Investigation Report IR01 from "Title to "Hypothesis".

The liquid in the straw should sort itself according to density no matter which order that put it into the straw, however I recommend that they start by doing it in order—liquid 1 first etc. After they have done it once they can experiment with mixing and matching by letting the water out of their straw into the sink—it is important they don't put it back into the cups!

What should happen in this experiment, and why?

The lower density liquids should float on top of the higher density liquids. In other words, they should sort themselves out in order: 1, 2, 3, 4, 5.

Follow up discussion question:

- Can you design an experiment to test the density of other liquids? What do we have at school or at home we could compare? (same experiment with dishwashing liquid, oil, etc)

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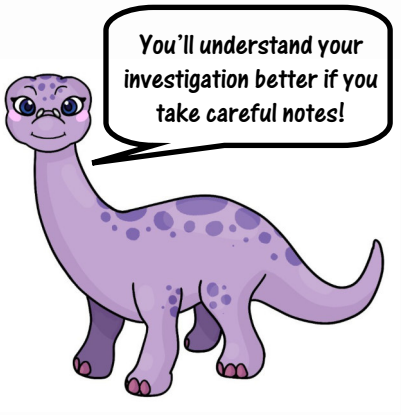

Investigation Record

Experiment Title:

Scientist (that's you!):

Materials: What will I need?

Investigation—what am I going to do in this experiment?

Diagrams are a great idea!

Hypothesis: What I think will happen:

Observation: What I SAW happen:

Diagrams are a great idea!

From my investigation I learnt:

Great work scientist!