"Shining light on a world of possibilities"

BRITISH SCIENCE WEEK

7 – 16 March 2025

British Science Week

Fun experiments you can do at home!

Magic Milk Experiment

What you will need:

- A shallow dish or plate
- Full-fat milk
- Food colouring
- Cotton buds
- Dish soap

What to do:

1. Pour milk into the dish until it covers the bottom.
2. Add a few drops of different food colouring in various spots.
3. Dip a cotton bud into dish soap and then touch it to the milk.
4. Watch as the colours swirl and mix on their own!

Why it works:

The soap breaks down the fat in the milk, creating movement that pushes the colours around.

Baking Soda Volcano

What you will need:

- A small plastic cup
- Bicarbonate of soda
- Vinegar
- Food colouring (optional)
- Washing-up liquid (optional)

What to do:

1. Place the cup on a tray or in a bowl (to catch the 'lava').
2. Fill the cup halfway with bicarbonate of soda.
3. Add a few drops of food colouring and a squirt of washing-up liquid.
4. Pour in vinegar and watch the eruption!

Why it works:

The bicarbonate of soda and vinegar react to create carbon dioxide gas, which bubbles up and creates the foamy eruption.

Invisible Ink

What you will need:

- Lemon juice
- Cotton buds
- White paper
- A lamp or iron

What to do:

1. Dip a cotton bud into lemon juice and use it to write a secret message on the paper.
2. Let the paper dry completely.
3. Hold it close to a warm lamp or carefully iron it (with adult help).
4. The message will appear!

Why it works:

The lemon juice weakens the paper, and when heated, it oxidises and turns brown.

Dancing Raisins

What you will need:

- A clear glass
- Fizzy water or lemonade
- Raisins

What to do:

1. Fill a glass with fizzy water.
2. Drop in a few raisins.
3. Watch them rise and fall like they are dancing!

Why it works:

The bubbles of carbon dioxide attach to the raisins, lifting them to the surface. When the bubbles pop, the raisins sink again.

Walking Water Rainbow

What you will need:
- 6 clear cups
- Water
- Food colouring (red, yellow, blue)
- Paper towels

What to do:
1. Fill 3 cups with water and leave 3 empty.
2. Add red food colouring to one cup, yellow to another, and blue to the last.
3. Arrange the cups in a circle, alternating between filled and empty.
4. Place a folded paper towel between each cup, dipping into both the coloured water and the empty cup.
5. Watch over the next few hours as the water "walks" and mixes colours to create a rainbow!

Why it works:
The paper towel absorbs water through capillary action, allowing it to move and mix.

Balloon Rocket

What you will need:

- A long piece of string
- A balloon
- A drinking straw
- Tape

What to do:

1. Thread the string through the straw and tie both ends to sturdy objects (like chairs) to create a tight, straight line.
2. Blow up the balloon (but don't tie it), then tape it to the straw.
3. Let go and watch the balloon zoom along the string like a rocket!

Why it works:

The air escaping the balloon pushes it forward, demonstrating Newton's Third Law of Motion (for every action, there is an equal and opposite reaction).

Rainbow in a Glass

What you will need:

- A tall glass
- Water
- Sugar
- Food colouring (red, yellow, green, blue)
- 4 small cups
- A spoon

What to do:

1. Fill each cup with the same amount of water.
2. Add a different colour of food dye to each cup.
3. Add increasing amounts of sugar to each one: 1 spoon in the first, 2 in the second, 3 in the third, and 4 in the fourth. Stir well.
4. Slowly layer the different colours in a tall glass, starting with the most sugary solution and carefully adding the others on top.

Why it works:

The denser (sugar-heavy) liquids stay at the bottom, and the less dense ones sit on top, forming a rainbow effect.

Oobleck (Non-Newtonian Fluid)

What you will need:

- Cornflour
- Water
- A bowl

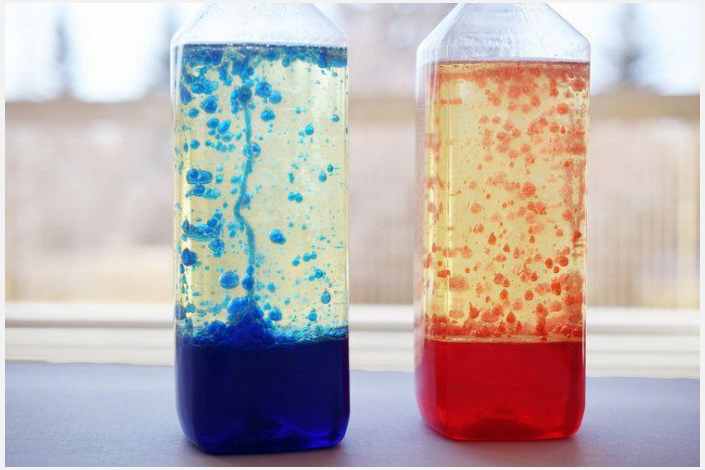
What to do:

1. Mix 2 parts cornflour with 1 part water in a bowl.
2. Stir until it has a gooey, thick consistency.
3. Try hitting it fast—it feels solid! Now let it slowly slip through your fingers—it acts like a liquid!

Why it works:

Oobleck is a non-Newtonian fluid, meaning it behaves like both a liquid and a solid depending on the pressure applied.

Homemade Lava Lamp



What you will need:

- A clear bottle or jar
- Vegetable oil
- Water
- Food colouring
- Alka-Seltzer tablets (or bicarbonate of soda and vinegar as an alternative)

What to do:

1. Fill the bottle $\frac{3}{4}$ full with vegetable oil.
2. Pour water into the rest of the bottle, leaving a little space at the top.
3. Add a few drops of food colouring.
4. Drop in half an Alka-Seltzer tablet and watch the bubbles rise and fall like a lava lamp!

Why it works:

The tablet reacts with the water to create carbon dioxide bubbles, which carry the coloured water to the top before popping and sinking again.

Colour-Changing Cabbage Experiment

What you will need:

- Red cabbage
- Water
- Lemon juice
- Bicarbonate of soda
- Clear cups

What to do:

1. Chop up red cabbage and soak it in hot water for 10 minutes.
2. Pour the purple cabbage water into clear cups.
3. Add lemon juice to one cup—it turns pink!
4. Add bicarbonate of soda to another—it turns blue or green!

Why it works:

Red cabbage contains natural pH indicators that change colour when mixed with acids (like lemon juice) or bases (like bicarbonate of soda).

Experiments at home

Which experiment will you choose?
There are so many exciting ones to try!
Remember, always stay safe and have an adult supervise you, especially when using heat, liquids, or small objects.
Science is all about exploring and discovering—so have fun!

Don't forget to take photos of your experiment in action and send them into school at office@saja.theplt.org.uk stating your class name.

We can't wait to see your amazing scientific investigations! 🚀🔬✨