

EXPERIMENT 04: RISING WATER

Duration: 30 minutes

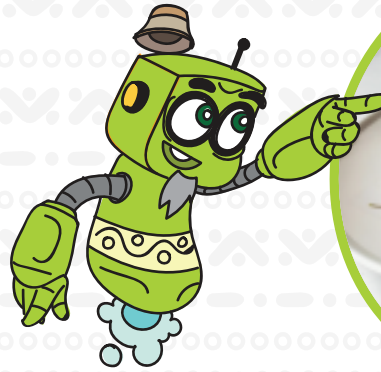
Outcomes:

- Understanding the fact that oxygen supports burning.
- Learning that air contains more than one gas.

PART 1: The Experiment

What you need:

- Plate
- Glass cup or Jar
- Lighter or Matchbox



Learning environment

The experiment should preferably be carried out outside in a place with no flammable materials like gas or petrol.

- Note:** 1. Select a candle that fits in the glass comfortably.
2. Supervise kids closely and blow out the candle when done.



Question to consider:

If we are to cover a candle with a glass, do you think it can continue burning?

Instructions

- Light the candle and fix it onto the middle of the plate with a little melted wax.
- Add water to the plate till it's about 2/3 full.
- Leave the candle to burn for about 2 minutes.
- Turn the glass cup or jar upside down and place it over the candle. Mark the level of water on the glass immediately. Take note of any observations.

Deductions/ thoughts

Encourage the child to make deductions based on the experiment

Questions

What has happened to the water level? Is the candle still burning? Why or why not? Do you see any bubbles in the water?

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PART 2: The Science (Combustion)

Observation: After covering the candle with the cup, the candle goes out after a few seconds.

Explanation:

Oxygen is a requirement for burning to occur. When you place a glass over the burning candle, oxygen supply is limited. This explains why, after sometime, when the oxygen is depleted, the candle goes out. The next big question is, why did the level of water inside the glass rise? It rises because of two main reasons:

1. Due to the fact that the oxygen inside the glass has been depleted by the burning candle, the air pressure inside the glass lowers below the atmospheric pressure. This forces water from the exterior of the glass to enter inside.
2. As the candle flame burns, it causes the air inside the glass to expand. This explains why you see some bubbles in the water when you cover the candle with the glass. Some bubbles escape out of the glass. When the candle goes out, the warm air contracts as it cools down. This leaves a vacuum that is quickly filled by the water on the plate.

Applications

Burning requires oxygen gas. Fire extinguishers deprive the flames and burning agents of oxygen. That's how they put out fire.

Key words: combustion, candle, water, glass.

Key concepts: combustion, gases in the air around us.



Resources for further reading/ exploration:

- <https://www.stevespanglerscience.com/lab/experiments/why-does-the-water-rise/>
- <https://www.youtube.com/watch?v=olAOwWklif0>