

Egg in a Bottle



Have you ever seen your whānau use a vacuum cleaner around the house to suck things up? Vacuum cleaners are pretty awesome because they can pull things in without touching them, right? In this experiment, we're going to learn how air pressure can do something similar! We'll be testing how air can push an egg into a bottle without us touching it at all!

But first, let's make some predictions!

1. Do you think it's possible to get the egg into the bottle without cutting it or pushing it in?
2. Can you think of a time where you have seen air make something move or change?

TĪMATA! LET'S GET STARTED!

What you will need:

- **Hard Boiled Egg** – *hēki*
- **Lighter** – *whakakā*
- **Jar** (*opening just as wide as the egg*)
- **A Strip of Paper** (*1 x 10 cm approx*)

Instructions:

1. Peel the shell off your hard-boiled egg (*hēki*)
2. With help from an adult, light the end of your piece of paper and carefully place it inside the jar.
3. Quickly place the egg on top of the jar before the paper burns out.
4. Watch closely as the flame goes out, and you'll see the egg being sucked into the jar!

How does it work?

This experiment works because heating the air inside the bottle **changes the air pressure**.

When the air inside the bottle is heated by the flame, the air molecules move further apart and take up more space – we call this **expansion**.

Once the flame goes out, the air cools down rapidly and the molecules pack more tightly together – this creates lower pressure inside the jar compared to outside of the jar, so the egg gets pushed into the bottle.

Reflect:

- What did you hear?
- What did you smell?
- What role do you think the burning paper inside the bottle played?
- What did the egg do before it went inside the bottle?

Extra for experts!

- Try using a water balloon instead of an egg.
- Experiment to find out how long the paper needs to burn inside the jar (with the egg on top) for the air pressure to push the egg into the jar.