

Suction and Air Pressure

Teacher Notes for Years 7-10



The Suction video tells us that there is no such thing as suction. The effects that we see are actually objects and fluids being pushed.

Video Summary

There is no such thing as suction. In the video Ollie explains that by sucking on a straw, you are in fact reducing air pressure at the top of the straw. The higher air pressure around the liquid in the glass forces it up the straw and into the area of low pressure in your mouth.

A similar action is happening with a vacuum cleaner. A motor moves air out of the dust chamber, creating a region of low pressure. The air at the cleaner's nozzle is at a higher pressure, and rushes up the tube carrying dust with it.

In the demo where the ruler is broken, it is the pressure of air above the newspaper that holds the ruler down. There is about one kilogram of pressure above each square centimetre of newspaper. On a typical broadsheet this equates to around 5,000 kg pressing on the ruler.

When Ollie removes the air out of the bag around Vanessa, it is the force of the air pressure around her that makes the bag seal against Vanessa's body.



Figure 1: Vacuum sealing by removing air. The pressure from the surrounding air squeezes the bag and its contents.



Figure 2: Levitating plate? The plate is held against the glass by the surrounding air pressure.

Science Understanding (Year 7 & 10)

Physical sciences

Change to an object's motion is caused by unbalanced forces acting on the object. (Year 7)

Changing the pressure of air will cause air to flow from the high pressure area into the low pressure area. Students could identify other devices or situations that use this effect. For instance: plungers, fish tank filters, or air conditioners.

The motion of objects can be described and predicted using the laws of physics. (Year 10)

Though the flow of fluid is difficult to model, laws describing how changes in pressure are carried through a system have been around for hundreds of years. Students could research Bernoulli's laws through phenomenon such as 'syphoning'.

Science as Human Endeavour (Year 9)

Nature and development of science

Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community. (Year 9)

The idea that there is no such thing as suction may come as a surprise to students. Teachers could encourage discussion for and against the idea to help illustrate how scientific understanding is refined by the scientific community.

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