

Teacher-led activity

UPSIDE-DOWN GLASS EXPERIMENT



You will need:

- A glass
- Water
- A thick sheet of paper or card that is bigger than the glass

What you do:

1. Fill the glass with water right to the top.
2. Place the paper on top of the glass.
3. Place your hand on the paper, then quickly flip the glass over (it's best to do this over a sink in case it spills).
4. Remove your hand from the bottom of the glass.



You should find: The paper stays in place and the water doesn't spill out! This is because of air pressure and surface tension. Although you aren't aware of it, the air around us pushes in all directions. Look closely and you'll see a pocket of air trapped in the glass above the water. When you turned the glass upside down a few drops of water escaped, increasing the space taken up by the trapped air and lowering its pressure. This means that the air pressure inside the glass is lower than the air pushing up from outside, which stops the water's weight from pushing the paper down. At the same time, the 'sticky' water molecules are attracted to the paper, keeping the paper in place. This is called adhesion.

Pupil activity

MODEL WIND TURBINE

What you do:

1. Cut out the turbine shape. Cut out the circles (you could use a hole punch if you have one).
2. Ask an adult to help you make a hole through the paper straw, at least 1 cm from the end, and cut off a piece of the wooden skewer about 6-7 cm long.
3. Fold each of the points with a hole in it into the centre so that all the holes line up, and staple together in one or two places near the hole. Push the piece of skewer through the holes.
4. Now push the skewer through one or two beads, depending on their size, and then through the hole in the straw.
5. Thread another bead onto the skewer at the front and secure the end with some sticky tack. Do the same at the back. You may need more beads or sticky tack at the back to balance the turbine. Tip: don't secure it too tightly or the turbine won't spin.
6. You're all done. Give it a blow!

You will need:

- The template
- Scissors
- A paper straw
- A wooden skewer
- A stapler and staples
- A few beads which are large enough to be threaded onto the skewer
- Sticky tack



You should find: The harder you blow, the faster the turbine will spin. Try blowing the wind turbine from different angles; from the front, the side, near the top and near the bottom. How fast does it spin? Does it spin clockwise or anti-clockwise?