

Brontosaurus Learning

Making science fun!



An Experiment about

Air

Dry Under Water

What you will need:

- Bowl
- 2 pieces of paper towel
- Clear cup or glass
- Water

What you will do:

1. Crumple one piece of paper towel into a tight ball and push it right into the bottom of the cup. Turn the cup upside down and make sure that the paper towel doesn't fall out. If it does, push it further into the cup.
2. Now pour some water into the bowl. It should be about half full, perhaps a little higher, but not all the way to the top.
3. Turn the cup upside down and lower it straight into the bowl of water until it hits the bottom of the bowl, then lift it straight out again.
4. Use the second paper towel to dry the edge of the cup, then check the paper towel that was in the bottom of the cup. Is it wet or dry?

What is going on?

Air molecules can't be seen with our eyes, but they still take up space. When you put the cup into the bowl the air bunches up around the paper and stops the water reaching it. Water will go into the cup, but not as high as the paper.

Challenge:

- Would this work with more paper towels? Is there a limit to how much you can keep dry?



TEACHING NOTES:

Brontosaurus Learning Experiment:
Air A14

Key Concepts:

- Air takes up space

Resources:

- Experiment description Air A14 - one copy per student.
- bowls, cups (preferably clear), paper towels, water

Lesson Notes:

Discuss air and ask students to describe what it is. Explain that air is a gas and that it is made up of molecules, which are the smallest part of a substance that can be on its own. Molecules are so small that we can't see them without special microscopes.

Remind students to listen carefully to instructions, and to OBSERVE their experiment.

As a class discuss the experiment prior to undertaking it, and students should complete the sections of their Investigation Report IR01 from "Title" to "Hypothesis".

What should happen in this experiment, and why?

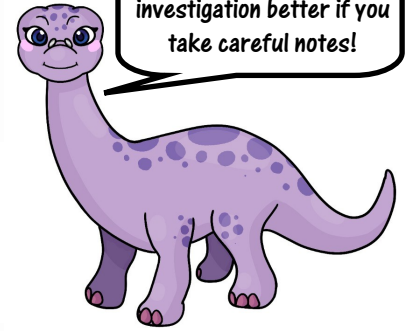
Molecules in gas, including air, stay away from each other so that there is usually space between them. Molecules in liquids are closer together, and molecules in solids are right up against each other. When you push on a gas, like when you push the cup into the water, the molecules get closer together. This is possible because of the space that is normally between them. When you push the cup into the water the pressure of the water pushes against the air and compresses it into a bubble around the paper towel, keeping it dry.

At the end of the lesson gather the students together again and hold a whole class discussion to discuss their observations.

Follow up questions:

- Why do you think the paper stayed dry?
- What would happen if you used a deeper bucket and pushed the cup way to the bottom underwater?
- What would happen if you sloped the cup when you put it into the water, rather than pushing it straight down?

Investigation Record



Experiment Title:

Scientist (that's you!):

Materials: What will I need?

Investigation—what am I going to do in this experiment?

Diagrams are a great idea!

Hypothesis: What I think will happen:

Observation: What I SAW happen:

Diagrams are a great idea!

From my investigation I learnt:

Great work scientist!