

Brontosaurus Learning

Making science fun!



An Experiment about

Air

Build a hovercraft

What you will need:

- A balloon
- An old cd or dvd
- Craft glue
- Pop top drink bottle lid

What you will do:

1. Put a circle of glue around the center of the cd about the size of the pop top drink lid.
2. Place the lid on the cd and push down gently. **You'll have to be patient and wait for the glue to dry!**
3. When the lid is properly glued to the cd, blow up your balloon until it is about 3/4 full and twist the bottom a couple of times. **This stops the air escaping while you attach it to the hovercraft.**
4. Carefully put the mouth of the balloon over the top of the pop top lid. **Make sure the lid is closed first!**
5. Untwist the balloon and place your hovercraft on a flat surface.
6. Being careful not to pull the balloon off the lid, open the pop top and let your hovercraft go! **What do you notice?**

What is going on?

The air in the balloon is pushed out through the lid and under the cd. Because the cd is smooth, light and evenly balanced, the air makes a cushion under the whole cd and reduces the friction between the cd and the surface so it is free to move.

Challenges:

- Try out your hovercraft on different surfaces, like tiles, concrete, carpet and grass. How does it perform? Can you explain the difference?
- Experiment with making the hovercraft move in different directions. How could you "push" it in one direction without touching it? Would gluing the pop top lid on slightly off centre make a difference? Try it and find out!

You can build your own hovercraft!



TEACHING NOTES:

Brontosaurus Learning Experiment: Air A07

Topic: Air

Key Concepts:

Air can be used to reduce friction.

Resources:

- Investigation Record IR01– one copy per student
- Experiment Description Air A07 – one copy per student
- Balloons, pop top drink lids, glue, old cds or dvds, flat surface

Lesson Notes:

Ask the class if they know what a hovercraft is and if they know how they work. Describe some of the features eg can travel on land and water.

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?

The air in the balloon should make an even cushion of air under the cd which dramatically reduces it's friction, so the cd should float across the flat surface, although you may not be able to predict in which direction!

Remember that the best way for students to learn is to try things for themselves, so pose the challenges and let them experiment. They may surprise you with their answers and observations!

Follow up discussion questions and activities:

- How could we make a larger hovercraft?
- Do you think it would be possible to make one big enough to carry a student? How? How would you power it? How would you steer it?
- What other things could benefit from the reduced friction the air cushion provides?

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!