

BUILD YOUR OWN HOVERCRAFT



HOW DO HOVERCRAFTS GLIDE?

Hovercrafts move by riding on cushions of air created by fans. Our experiment uses a balloon instead of a fan, causing it to glide across a surface.

YOU WILL NEED:

- The top from a sports capped drinking bottle
- A balloon
- A blank CD or one you don't mind getting scratched
- A hot gluegun or blu-tac
- Decorations like stickers and felt tip pens



- Use the hot glue gun to carefully stick the bottle cap to the centre of the CD making sure the edges are fully sealed
- If you are using blu-tac roll it into a sausage and press it down in a circle shape on the centre of the CD. Attach the bottle cap making sure there are no gaps for air to escape
- Close the bottle cap and blow up the balloon, don't tie it off but hold it tight so no air escapes
- Attach the balloon to the bottle cap, and adjust so it stands up, again making sure no air escapes
- Decorate your CD using stickers and felt tips if you have any, can you create a design personal to you?
- Place your completed hovercraft down on any hard surface, open the bottle cap and watch what happens!
- Tip: if air is escaping too fast, cover the hole under the CD with tape and poke small holes so the air releases more slowly









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AND NOW FOR THE SCIENCE ...

- Did you notice your hovercraft effortlessly gliding? It does this because of friction, or a lack of it!
- As the air escapes the balloon it spreads out under the CD and creates a cushion of air so the CD isn't touching the ground, allowing it to glide gracefully.
- Real-life hovercrafts also move on cushions of air created by fans: a "skirt" underneath the hovercraft traps the air, causing the it to rise. Fans (and an engine) push the vehicle forward.
- With our balloon-propelled hovercraft the CD is light enough to float on a small cushion of air so we don't need a skirt.

IN THE REAL WORLD

- As you nudged your balloon hovercraft you might have noticed it zipping across the surface like an air hockey puck
- That's because air hockey uses the same principle, with the puck floating on a layer of air. In the case of an air hockey table, the air is forced out from the table below rather than a source above like a hovercraft.





THINK ABOUT...

- Does changing the surface texture effect how your hovercraft moves?
- Try adding more weight or changing the size of your balloon
- What about opening the bottle cap only half way?
- Can you find a way to extend the base of your hovercraft? How does this change things?

COMPETITION TIME!

EXPLORE FURTHER

For more resources and videos search for the following:

- BBC Bitesize What is Friction?
- How Hovercrafts Work
- <u>12 Interesting Facts about</u>
 <u>Hovercraft</u>
- Complete 4 challenges and submit an entry to our poster competition to be in with a chance of winning an EDT Experience Day at your school.
- For funded schools, you have the opportunity to receive the Industrial Cadets Challenger Award click <u>here</u> for full details.
- Share a photo or video of your experiment with us on social media and use the hashtag #STEAMstars



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