

imagination hub: tinkering with everyday objects

Playing with Aerodynamics

We have put some items into sensory boxes that you will need and then it is up to you to find the rest around your home.

Please do make sure to share your ideas and experiments from the boxes with us! Send them to imaginationhub@ioi.london. We would love to see what you come up with!



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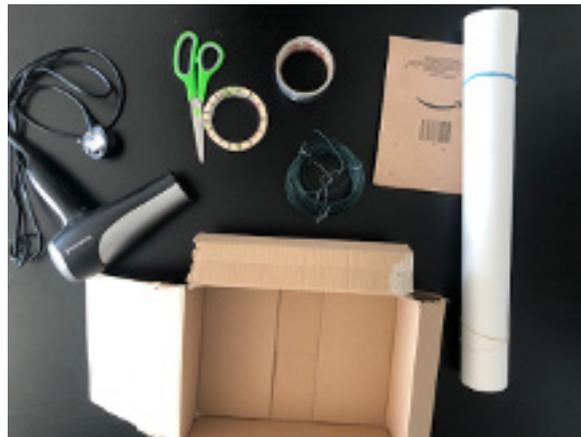
experimenting with aerodynamics



Aerodynamics is all about playing with an object so that it will do what you want when it is in the air. For example, making it the right weight so it hovers or making it the right shape so it spins! If you have ever made a paper aeroplane, then you were playing with aerodynamics!

You will need:

- Cardboard box
- Cardboard envelope
- Masking Tape
- Plug point
- Hairdryer
- Wire/ String
- Four A3 cards
- Duct Tape



How to make a wind tunnel:

Step 1:

Cut a hole in one corner of the bottom of your cardboard box. Push the hairdryer through so that it sticks out of the box. Use some masking tape to keep it in place and to make sure the hairdryer sticks out as far as it can.



Step 2:

We have to make sure the hairdryer is off the table as the heat that comes out the back end could spoil your table. To do this, turn the box over and poke holes into the box with some scissors. Use tied wire to secure the hairdryer tight against the ceiling of the box. Now when you turn the box over the hairdryer is off the table!



Step 3:

Use some strong tape or duct tape to secure the hairdryer in place further. Try place it so the hairdryer blows air straight upwards.



Step 4:

Now take your cardboard envelope and cut a diamond shape into the edge. Slip the envelope over the end of the hairdryer.



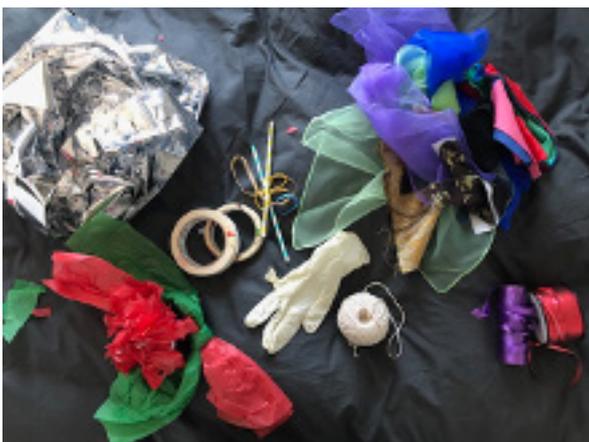
Step 5:

Take your two sheets of A3 card and curve them into the envelope to make an open cone shape. Try to curve the small end of the cone so it is tight around the circle end of the hairdryer.



Step 6:

You now have your own wind tunnel! Use can now use your art materials to test and experiment with aerodynamics!



Test it out with some of these materials:

- Kebab sticks
- Sellotape
- Paper
- Pieces of light fabric
- Tissue paper
- Plastic bags
- Balloons
- Rubber gloves
- Ear buds
- Rubber bands
- Paper clips



Experiment Challenges!



- ★ Now that you have your wind tunnel, start experimenting with your other materials to make different flying objects.
- ★ Try to make something that shoots up high into the ceiling when you put it in the wind tunnel!
- ★ See what you can make that will hover just above the tunnel. Can you make something that spins?
- ★ If what you make doesn't fly, what can you do to the tunnel to make them fly better? What can you do to the flying object?
- ★ How long you can keep them in the air? What stays in the air the longest?

Hack it!

Now let's hack this idea! That means let's try something new with it and experiment further. Here's how you make a moveable wind tunnel!

Step 1:

Take two more sheets of A3 card and make a new cone with them. Make it so the end of the cone fits tightly over the end of your hairdryer.

Step 2:

Use some duct tape to secure the cone to the hairdryer and also to make the cone stable with no flaps.

You have your move-able wind tunnel!

Test out what kind of objects you can make with this new movable wind tunnel!

How is it different now you can control the hot air? Is it easier or harder?

