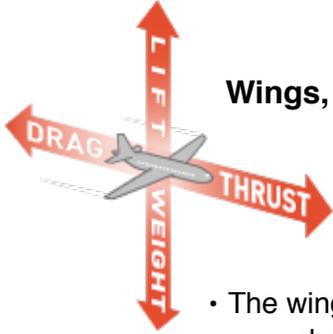


aerofoil task science



Wings, aerofoils and the forces of flying:

- Some of the common characteristics of things that fly are found in nature. Looking at bird wings (and then a plane shape) the main characteristic is the shape of the aerofoil.
- The wings of birds and planes have what is called an aerofoil shape. This aerofoil shape helps us overcome weight, which is the effect of **gravity** pulling down on the mass of the aircraft.
- The aerofoil shape gives us something called **lift**. This is the upward force required to overcome gravity, being produced by a wing as it moves through the air. This action allows the object to lift up and push forward.
- Something that slows us down is **drag**, which is the resistance to airflow and consequently slows the progress of an aircraft through the air, arising from disturbing the air as it moves through it, and from the skin friction due to the viscosity or 'stickiness' of the air. The drag force is opposite to the flight path.
- **Thrust** is the forward force required to move an aircraft through the air, overcoming drag (and providing sufficient speed for a wing to develop enough lift to fly). This must be provided by an engine, by gravity (glider, sailplane) or by muscles (birds). (from www.sciencekids.co.nz/lessonplans/flight/flightintroduction)

Helpful Websites

gradesix.mrpolsky.com/science
gradesix.mrpolsky.com/science-flightlinks
<http://howthingsfly.si.edu>
<http://academickids.com/encyclopedia/index.php/Airfoil>
<http://web.mit.edu/2.972/www/reports/airfoil/airfoil.html>

Using a rectangular block of Styrofoam (provided) you and your partner will need to apply your knowledge of streamlining, Bernoulli's principle, and the forces of flight to create an airfoil that demonstrates **the most effective airfoil** (by creating the greatest amount of lift).

All aerofoils will be tested using a standardized device.

We will be looking for:

1. A proposal created in the form of an Experiment with a strong question, variables, procedures, and areas to record observations.
2. Research log
3. Drawing of your design (including measurements for heights, widths, and distances)
4. Test results of your actual airfoil