Champion
the Researchers

TRAFFIC LIGHTS

Ben is a transport engineer. He researches how to improve safety and efficiency on the road, using traffic lights.

PUPILS MAKE AN ELECTRONIC THREE-WAY 'TRAFFIC LIGHT' SWITCH

Equipment

3 V battery (or two 1.5 V cells joined in series); connecting wire and crocodile clips; three 3 V bulbs; wooden board (or thick cardboard), about 6 cm x 6 cm; paper clip; four metal drawing pins.

Method

Wrap the end of a piece of wire around a drawing pin. Push the pin through the rounded end of a paper clip and into the wooden board. Connect the other end of the wire to a 3 V battery and wrap the ends of the other pieces of wire around each of the remaining three drawing pins. Make sure the wires are long enough to complete the electrical circuit. Push the pins into the board. Make sure that the paper clip can reach all three pins. Connect the components to complete the electrical circuit.

Try moving the paper clip to light up all three bulbs in turn.

Extensions

The black markings on the road, near a set of traffic lights, are induction loops. They are sensors that tell the traffic lights when a vehicle is present. With a group of pupils, find an inductive loop near school. Take a photo and research how they work. Ask pupils to present their findings to the class.

The research link

Some people might think that research does not affect them. Yet research into safer and more efficient traffic lights affects billions of people who use cars and pedestrian crossings every day. Some research projects don't have as much direct impact, but they still play an invaluable part in helping us to understand our world better.

Additional guidance notes

You could use a circuit board for this activity, with switch components and red, orange and green LEDs.

Remember to respect drivers and other pedestrians when you are out looking for induction loops. Be mindful of traffic and stay on the pavements. If possible, wear safety jackets or reflective clothing.