Insulator or conductor

Energise Anything!

Did you know?

Electricity doesn't just flow along cables and wires, like the ones in the animation. People conduct electricity too. That's why it's really dangerous to put fingers in power sockets.

Science scene-setter

For electricity to flow, a complete circuit is needed with no gaps. In the home, electricity travels through metal wires that are good conductors of electricity. To protect people and animals from electric shocks, we need to cover these wires with insulators – materials that don't carry electricity.

The challenge

What is the most unusual material your pupils can find that is a good conductor of electricity?

7-11

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Key activity steps

1 Research

Share the animation Electricity is electrifying with your class: eonenergy.com/primary

- Remind pupils that some materials like wires are good conductors of electricity. Some are good insulators, like the plastics that cover them
- Hold up various regular classroom items. Do pupils think they are conductors or insulators?
- Review some electricity safety tips: be safe; don't put anything in your mouth; don't connect anything directly to a battery; if something is not working, disconnect the battery while you work out what is happening.

2 Design

Ask pupils to design a table to record which materials are good conductors and which are good insulators. Consider:

- How many columns they will need?
- What are the headings for their table?
- Have they included what material the object is made from – as well as the name of the item?

3 Test

Test which materials are good conductors. Who thinks they can find the most unusual conductors?

- When you have a collection of the most unusual conductors ask four or five pupils to stand in a circle holding hands. They are a circuit – with no breaks
- Add in the circuit toy between two of them. What happens?
- See how many pupils can be added to the circuit before the circuit toy stops working
- Make a break in the circle and get the pupils at the break to hold the unusual conductors to see which is the most conductive.

4 Reflect

- How does the circuit toy work? What must be inside it?
- Are people conductors or insulators?
- How can a bird sit on a single wire without getting an electric shock? What would happen if its foot or a tail touched another wire?

Equipment and resources

- ✔ Circuit toy, energy ball or energy stick toys, if available
- ✔ Circuit equipment
- ✔ Batteries in battery holders
- ✔ Lamps, LEDs or buzzers
- ✔ Wires with crocodile clips or aluminium foil wrapped around the ends
- ✔ Objects to test for conductivity e.g. metal spoon, plastic spoon, wood, keys, ruler, paper, potatoes, bananas, citrus fruit

E.ON's Energise Anything has already engaged over 25,000 young people. We asked some of their teachers to describe it in three words. Here's what they said most often!