

Brighter Bulbs

twinkl

Aim

- I can investigate which electrical conductors make a bulb shine brightest.

Success Criteria

- I can identify electrical conductors and insulators.
- I can explain that some materials are better conductors than others.
- I can plan and carry out an investigation to find the best electrical conductor.

Electrical Conductors and Insulators



Electricity can travel easily through **electrical conductors**, but some materials do not let electricity pass through them. These are known as **electrical insulators**.

Watch this clip to see some materials that are electrical conductors or insulators.



Conductors and Resistance

These items are all electrical conductors.



Some conductors make it easier for electricity to pass through them than others. All materials have some electrical resistance.

Resistance is the opposition to the flow of electricity through a material. Electrical insulators have a very high resistance and it is very hard for electricity to travel through these objects.

Electrical conductors have very low resistance and it is very easy for electricity to pass through them.

Different conductors have different levels of resistance, so even though they can all conduct electricity, some allow electricity to flow through easier than others.

Football Floodlights

A football team need new floodlights to illuminate their football pitch for evening games.

They need to find the best conductors for the circuits in their lights, so that the bulbs in the lights shine as brightly as possible.

They want you to investigate the best electrical conductors, and present your recommendation for which material they should use.





Brighter Bulbs

You will test different materials in a circuit to see which ones conduct electricity best.

You will be able to tell which conductors are the best as they will make the bulb light up the brightest.

You could observe the bulb each time to see how bright it is, or you could measure the light levels using a light sensor.



Brighter Bulbs



Use your Brighter Bulbs Activity Sheet to order the materials you test from the worst conductor to the best conductor.

Plan your presentation to the football team on your Activity Sheet.

You may film your presentation to the footballers, or you may present it to your class.



Brighter Bulbs

You need to test the conductivity of different materials to find the best conductor. This conductor will be used in the circuit to power the brightest possible bulbs for the new floodlights at a football stadium.

Test the materials in a circuit, and put them in order below.

Most conductive / brightest bulb: _____

Least conductive / dimmest bulb: _____

You will present your recommendations to the football team. Plan your presentation below.

1. Introduce your group and what you will be presenting. Hello, we are _____ and we would like to present _____	2. Explain how you tested the materials. To find the best conductor, we tested different materials by _____
3. Give your recommendation for which material they should use to make the circuits for the floodlights. Our tests show that the material you should use in the floodlights is _____ because _____	4. Thank the footballers for watching and give them any more information they may need. Thank you for watching our presentation.

Use these words in your presentation:

metal	circuit	bulb	observe	bright
conductor	sensor	shine	material	

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Football Feedback



Thankyou for testing the different materials.

Did all your group recommend the same materials for our floodlights?

We will try out your suggestions.



Were there any differences in your results? Can you give a reason why or why not?

