

Reflecting on 'Why do we use electricity?'

Electricity powers our world. From heating to transport, from computing to cooking, we couldn't imagine our modern world without it. Take a close-up look at what electricity really is and why it's so important.

Video summary

(Approximate running time: 3 ½ minutes)

- Electricity powers many things in our home and society.
- Electricity is negatively charged particles called electrons moving through a conductor.
- Materials that don't allow electrons to move easily are called insulators.
- Wires through our electronics, houses, and making up powerlines conduct electricity.
- Electrons interacting with atoms produce physical effects that include light, movement, and heat.
- Some of these effects can be dangerous on the human body, which is why need to be careful with high voltage.
- Electricity is a useful resource because of its ability to cause so many energy changes.

Resources

- Multiple choice Q&A worksheet
- Classroom activity: Static Electricity with Balloons
- Digital interactive activity: multiple choice Q&A
- Digital interactive activity: The Electron Racetrack

Literacy links

- Electron: Small, negatively charged particles surrounding an atom's nucleus.
- Insulator: Materials made of atoms that hold electrons tight, so they don't transmit electrical currents easily.
- Conductors: Materials made of atoms that share electrons relatively easily, transmitting electrical currents easily.
- Magnetism: A field of force created by moving electrons.
- Energy: A description of the amount of change we see in a thing, such as change in motion, shape, temperature, colour or brightness.

Research tasks: Want to know more?

- In 1802, an English chemist named Humphrey Davy made charcoal glow with light as he connected it to an early form of battery called a voltaic pile. It wasn't quite a light bulb moment, but it was the beginning of a revolution. More than 200 years later, our households are full of lights, heaters, and other appliances. Ask students to pick a household electrical item and research its invention.
- Lightning strikes Earth's surface roughly 40 to 50 times every single second, adding up to nearly one and a half billion flashes a year. A single bolt can have a current of tens of thousands of amps, and a charge of hundreds of millions of volts. Ask students discuss how electricity is described around their home, using items such as batteries and home appliances for reference. How do these compare with lightning bolts?

TEACHER NOTES

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Curriculum links

Australian Curriculum Science, year 6

- Electrical energy can be transferred and transformed in electrical circuits and can be generated from a range of sources (ACSSU097)
- Scientific knowledge is used to solve problems and inform personal and community decisions (ACSHE100)
- Cross curricular priorities: Sustainability
- General capabilities: Numeracy, Literacy, Ethical understanding

NSW Curriculum Science, stage 3
(years 5 and 6)

- Explains how energy is transformed from one form to another (ST3-8PW-ST)
- Investigates the effects of increasing or decreasing the strength of a specific contact or non-contact force (ST3-9PW-ST)
- General capabilities: Numeracy, Literacy

Victorian Curriculum Science, Levels 5 and 6

- Energy from a variety of sources can be used to generate electricity; electric circuits enable this energy to be transferred to another place and then to be transformed into another form of energy (VCSSU081)
- Scientific understandings, discoveries and inventions are used to inform personal and community decisions and to solve problems that directly affect people's lives (VCSSU073)

Worksheet Answers:

Question 1

B) Lightning

Question 2

C) Atoms

Question 3

A) Electricity is a flow of electrons

Question 4

A) Conductors

Question 5

B) A metal, such as copper

Question 6

C) Insulators

Question 7

C) Plastic

Question 8

C) Because it can easily be transformed into a range of different types of energy