

# Reflecting on 'Can you store electricity in a bottle?'

The moment you flick a switch, electricity flows, lighting our rooms and powering our technology. But far from the nearest power point we can still charge up, thanks to batteries.

### Video summary

(Approximate running time: 3 minutes)

- An analogy of racing cars around a circuit explains both circuits and the mechanisms of an electrochemical battery.
- To keep a continuous supply of electrical current moving, conductors are arranged in the form of circuits.
- Cells we now describe as batteries rely on different metals for electrodes.
- Cells rely on a combination of materials to generate a chemical reaction that produces electricity.
- A wide variety of these 'electrochemical cells', or batteries, serve a number of uses in society, large and small.
- Connecting some batteries with a power source can store electricity.

### Resources

- Multiple choice Q&A worksheet
- Digital interactive activity: multiple choice Q&A
- Digital interactive activity: Light me up

### Literacy links

- **Circuit:** An arrangement of conducting materials and other components connected to allow a current of electricity to flow.
- **Electrochemical cell:** In electronics, a cell is a single component that uses chemical reactions to create an electrical current. We now call them batteries.
- **Battery:** Once used to describe a series of cells, today it is often used to describe even a single electrochemical cell

### Research tasks: Want to know more?

- Battery technology is getting so good, we're now able to use it to power not just small things, but entire homes, buildings, and even communities. Neoen's 'big battery' at the Hornsdale Power Reserve in South Australia can store 150 megawatts of power. It can provide a boost of electricity for tens of thousands of homes at times when power otherwise runs low. Constructed by the technology company Tesla, it uses the reactive metal lithium to create a charge. Ask students to list as many items they can think of that run on some kind of battery. Invite them to research the different kinds of batteries that are used in technology today.
- Many batteries contain chemicals such as lead, mercury, lithium, and cadmium. Not only are they non-renewable, meaning it will slowly get harder (and more expensive) to extract them from the ground, many are toxic. That all means we really shouldn't throw them out where they'll end up in landfill. Ask the students to plan a campaign for collecting old, dead batteries from their community, researching which companies will take them away for recycling.

# TEACHER NOTES

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## Reflecting on 'Can you store electricity in a bottle?'

### 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) As a circuit

#### Question 2

D) Positive (+) and negative (-)

#### Question 3

B) Steam helps turn a magnet, which pushes charges through a wire

#### Question 4

D) A power grid

#### Question 5

B) Chemical reactions release electrons

#### Question 6

C) We can store excess power in big batteries to use at other times