

Science – Year 4

Electricity

Why are insulators as important as conductors?

NC objectives - areas of study	End point of area of study	Key Vocabulary		
		Basic	Adventurous	Technical
<p>identify common appliances that run on electricity</p> <p>construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</p> <p>recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<p>Children identify appliances that run on mains and stored electricity in the form of batteries.</p> <p>They are able to construct a simple circuit using cells, wires, bulbs, switches and buzzers.</p> <p>Using their knowledge of working circuits, they are able to predict if circuits will work or not and give scientific explanations.</p> <p>They know how switches work and begin to make some of their own using what they know about conductors and insulators.</p> <p>Using first hand experiences they can sort objects as conductors or insulators and know that most metals are good conductors.</p>	<p>electricity, appliances, mains, plug, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, device electrical circuit, complete circuit, component, metal, non-metal</p>	<p>positive negative</p>	<p>conductor, insulator, short circuit, connect/connections, loose connection,</p>

Knowledge

Substantive Knowledge

- Retrieval- children have worked as physicists before when studying light and magnets in Y3 and sound in Y4.

Disciplinary Knowledge

Working as physicists, children investigate electricity as a source of energy and of working as an electrician.

- Lesson 1
- LO To know common appliances that run on electricity.

- **Electricity, mains, battery, appliance**

- Know that electrical energy is one of many forms of energy
- Know that current electricity is the form of electricity that we use in our lives in lights, computers, televisions, etc
- Cells, batteries and the mains are all sources of electrical energy

What would life be like without electricity?

- Lesson 2
- LO To know how to construct a simple circuit.

- **electrical circuit, complete circuit, component, cell, battery, crocodile clip, bulb,**

- Know how to construct a simple circuit using components
- Know that exposure to high levels of electrical current can be dangerous
- Know that electrical current can flow if there is a complete circuit
- Know that wires – which contain a conductor inside them, usually made of metal – can allow electrical current to flow around a circuit
- Know that when electrical current flows through a circuit's components within that circuit – such as buzzers which make a noise and bulbs which emit light – begin to work

- Lesson 3
- LO To know a switch opens and closes a circuit.

- **electricity, electrical circuit, complete circuit, switch,**

- Know that a switch functions by completing or breaking a complete circuit

- Lesson 4
- LO To know some common conductors and insulators.

- **conductor, insulator, metal, non-metal,**

- Know that electrical current flows well through some materials, called electrical conductors, and poorly through other materials, called electrical insulators
- Know that an object is made from/of a material
- Know that metal is a material from which objects can be made.
- Know that metals are good electrical conductors

Patterns

Children create circuits using components and explore what happens as different components are added to the circuit. They can create circuits independently and ask questions, suggesting changes and implement them, setting up simple practical enquiries, comparative and fair tests. They make recordings of what they discover and understand when a circuit will and will not work.

Similarities and differences

Children investigate how different electrical appliances work, identifying them as mains or battery operated, they suggest reasons for this because of their use in the world around them. Exploring different objects, they are classify them according to their properties of conductivity and look at the similarities and differences between objects and the materials they are made from.

- Lesson 5
- LO To know Thomas Edison was an American inventor.
- electricity, electrical appliance/device, bulb
- Know that Thomas Edison was an American inventor who made the first practical light bulb, he is probably one of the greatest inventors of all time

Is Thomas Edison one of the greatest inventors?

Concepts

Biology

Chemistry

Physics

SKILLS

1. Compare

2. Explore

3. Identify

4. describe

5. classify

6. Question

7. observe

8. test

9. record

10. research

ASSESSMENT

KNOW MORE, REMEMBER MORE, DO MORE...

In this unit of learning, progress has been made when a learner knows more. This 'distance travelled' from the starting point is evidenced through them remembering more and doing more: in books, low stakes quizzes, retrieval, use of mind maps, answering the big question and being able to feel more confident about this unit.