Science – Year 6

Electricity

How has our understanding of electricity changed over time?

NC objectives - **areas of study**	End point of area of study	Vocabulary		
		Basic	Adventurous	Technical
associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches use recognised symbols when representing a simple circuit in a diagram.	Children create circuits using components and in drawings using the correct symbols. Through investigation, children can explain how buzzer volume and the brightness of lamps in circuits can be altered. They are able to ask and answer questions about circuits suggesting ways to test their ideas based on prior knowledge.	Electricity, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch,		electrical insulator, conductor, circuit diagram, circuit symbol, voltage

Knowledge

Substantive Knowledge

- Retrieval of knowledge about electricity and simple circuits from Year 4 learning.
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- Lesson 1
- LO To know how to create a simple circuit.
- LO To know how electricity can be dangerous.
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- **Electricity, electric, current, circuit diagram, voltage**
- Know that a simple circuit can be constructed using components
- Know that exposure to high levels of electrical current can be dangerous

Reflect on how the world would be different without electricity.

Disciplinary Knowledge

Working as physicists, children build on knowledge from year 4 to build circuits that work, developing the work of electrical engineers.

Similarities and differences

Children build circuits using components and compare what happens as different components are added- for example buzzers, bulbs, switches and motors. They explore and investigate asking and answering their own questions using the correct scientific vocabulary. They are able to create short films of explanation, annotate diagrams and photographs. They plan

- Lesson 2
- LO To know how to use recognised symbols when drawing a diagram of a simple circuit.
- **circuit diagram, circuit symbol,**
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- Know how to draw simple circuit diagrams
- Know the recognized symbols for a battery, bulb, motor, buzzer and wire
- Lesson 3
- LO To know how components function in a circuit.
- **bulb, battery cell, battery holder, motor, buzzer, switch,**
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- Know how to predict whether components will function in a given circuit, depending on whether or not the circuit is complete; whether or not a switch is in an on or off position; and whether or not there is a cell to provide electrical current to the circuit
- Lesson 4
- LO To know voltage measures the power of a cell.
- **Electricity, current, battery cell, voltage**
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- Know that voltage is a measure of the power of a cell to produce electricity; it is a measure of the 'push' of electric current, **not** the size of the electric current
- Lesson 5
- LO To know how the voltage effects the brightness of the bulb.
- **Electricity, electric, current, bulb, voltage**
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- Know that as the number and voltage of cells in a circuit increases, the brightness of a bulb or the volume of a buzzer will increase (though too high a voltage may 'blow' the bulb or buzzer)
- Lesson 6
- LO To know how to create a series and parallel circuit.
- **circuit diagram, circuit symbol, voltage**
-

how to answer questions using fair testing, changing only one variable at a time. They are able to record findings in tables, bar and line graphs.

Evidence

Using test results to make predictions to set up further comparative and fair tests reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations. They work systematically to use learning of changing one variable at a time to apply this knowledge to designing and making in DT for example a set of traffic lights or a burglar alarm.

• Know that two bulbs in a circuit can be wired up to create a series circuit or a parallel circuit; if one bulb blows in a series circuit the other will not shine as the circuit has been broken; in contrast, if one bulb blows in a parallel circuit, there will still be a complete circuit for the other bulb so it will continue to shine; use this knowledge to explain the advantages of using parallel circuits (e.g. in the lighting in homes) To reflect on the benefits of electricity in our lives, and around the world.	

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.