| | |
|---|---|
| Topic Name | Electricity |
| Big Question | How would we cope without electricity for a day? |
| Scientists to use as examples | Michael Faraday, Thomas Edison, Joseph Swan |
| Key Knowledge | • identify common appliances that run on electricity<br>• construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers<br>• 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<br>• recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit<br>• recognise some common conductors and insulators, and associate metals with being good conductors<br>Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in year 6.<br><br>Note: pupils might use the terms current and voltage, but these should not be introduced or defined formally at this stage. Pupils should be taught about precautions for working safely with electricity. |
| Key investigational skills | Pupils might work scientifically by: observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.<br><br>Q & A sessions at the beginning and end of each topic and relevant to each session of teaching. Big Questions displayed.<br>Building circuits and testing them. Testing Conductors and insulators within a circuit.<br>Testing brightness of a bulb<br>Completing a table relevant to conductivity.<br>Drawing and designing complete working circuits.<br>Group discussion on results. Drawing working circuits. |

| | |
|---|---|
| | Display work.<br>Using results to design a working switch based circuit.<br>Sorting conductive and nonconductive materials<br>Responses to Q & A Sessions.<br>Writing up the results of experiments.<br>Completing end of topic quiz. |
| Vocabulary | Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol N.B. Children in Year 4 do not need to use standard symbols for electrical components, as this is taught in Year 6 |
| Prior learning – what children should know | Explore how things work. (Nursery - Electricity) |
| Future learning – next time they will be learning | Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. (Y6 - Electricity) • 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. (Y6 - Electricity) • Use recognised symbols when representing a simple circuit in a diagram. |
| Visits | |
| Book links | Magic School Bus –<br>Electric field trip – Joanna Cole |