

Ashwell Primary School

Science Curriculum

Electricity Knowledge Organiser



EYFS

Core Knowledge / skills to be acquired:

- know electricity can be dangerous
- explore a range of battery powered devices

Key Vocabulary:

Battery, electricity, switch

Curriculum Enrichment / Cultural Capital Opportunities

-

Prior knowledge / skills this builds on:

What comes next: (Year 4 – Circuits and components)

- **identify common appliances that run on electricity**
- identify mains operated and battery operated devices
- describe some of the dangers associated with mains electricity
- name some components of a simple electrical circuit
- know that batteries are sources of electricity
- recognise that for a circuit to work it must be complete
- construct a working circuit
- **construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers**
- make drawings of simple working circuits (pictorial only circuit symbols covered in year 6)
- make circuits from drawings provided
- **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**
- *are methodical in tracing faults in simple circuits*
- describe the effect of making and breaking one of the contacts on a circuit
- explain why some circuits work and others do not
- **recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit**
- describe how switches work
- construct a home-made switch
- identify materials as conductors or insulators
- construct simple circuits and use them to test whether materials are electrical conductors or insulators
- **recognise some common conductors and insulators, and associate metals with being good conductors**
- *relate knowledge about metals and non-metals to their use in electrical appliances*
- *describe the use of conductors and insulators in components including connecting wires*
- *identify playdough and graphite as non-metal conductors and explain why this is unusual*

Year 4 – Circuits and components

Core Knowledge / skills to be acquired:

- **identify common appliances that run on electricity**
- identify mains operated and battery operated devices
- describe some of the dangers associated with mains electricity
- name some components of a simple electrical circuit
- know that batteries are sources of electricity
- recognise that for a circuit to work it must be complete
- construct a working circuit
- **construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers**
- make drawings of simple working circuits (pictorial only circuit symbols covered in year 6)
- make circuits from drawings provided
- **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**
- *are methodical in tracing faults in simple circuits*
- describe the effect of making and breaking one of the contacts on a circuit
- explain why some circuits work and others do not
- **recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit**
- describe how switches work
- construct a home-made switch
- identify materials as conductors or insulators
- construct simple circuits and use them to test whether materials are electrical conductors or insulators
- **recognise some common conductors and insulators, and associate metals with being good conductors**
- *relate knowledge about metals and non-metals to their use in electrical appliances*
- *describe the use of conductors and insulators in components including connecting wires*
- *identify playdough and graphite as non-metal conductors and explain why this is unusual*

Key Vocabulary:

Battery, cell, wires, switch, crocodile clips, buzzer, bulb, circuit, symbols, insulator, conductor, plastic, metal, appliance, component

Curriculum Enrichment / Cultural Capital Opportunities

Prior knowledge / skills this builds on: (EYFS)

- know electricity can be dangerous
- explore a range of battery powered devices

What comes next: (Year 6 - Electricity)

- know that the 'amount' of electricity (voltage) depends on the number of batteries
- construct some working series circuits with specified components
- recognise conventional circuit symbols
- **use recognised symbols when representing a simple circuit in a diagram**
- draw circuit diagrams and construct circuits from diagrams using conventional symbols
- explore how to change the brightness of bulbs and the volume of a buzzer
- describe ways of changing the brightness of a bulb in a circuit or the volume of a buzzer
- compare different circuits (e.g. for brightness of bulb)
- recall that the amount of electricity is measured in voltage

- **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**
- *explore the thickness of a wire in a circuit*
- *describe the differences between wires usually used for circuits and fuse wires*
- *describe what would happen if all the lights in a home were connected in the same circuit and one broke*
- *explain the current in circuits using simple models and analogies (e.g. piped water, bicycle chain, children and sweets)*

Year 6 - Electricity

Core Knowledge / skills to be acquired:

- know that the 'amount' of electricity (voltage) depends on the number of batteries
- construct some working series circuits with specified components
- recognise conventional circuit symbols
- **use recognised symbols when representing a simple circuit in a diagram**
- draw circuit diagrams and construct circuits from diagrams using conventional symbols
- explore how to change the brightness of bulbs and the volume of a buzzer
- describe ways of changing the brightness of a bulb in a circuit or the volume of a buzzer
- compare different circuits (e.g. for brightness of bulb)
- recall that the amount of electricity is measured in voltage
- **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**
- *explore the thickness of a wire in a circuit*
- *describe the differences between wires usually used for circuits and fuse wires*
- *describe what would happen if all the lights in a home were connected in the same circuit and one broke*
- *explain the current in circuits using simple models and analogies (e.g. piped water, bicycle chain, children and sweets)*

Key Vocabulary:

Voltage, current, series, component, circuit, conductor, positive/negative terminal, complete circuit, battery, cell

Curriculum Enrichment / Cultural Capital Opportunities

▪

Prior knowledge / skills this builds on: (Year 4 – Circuits and Components)

- **identify common appliances that run on electricity**
- identify mains operated and battery operated devices
- describe some of the dangers associated with mains electricity
- name some components of a simple electrical circuit
- know that batteries are sources of electricity
- recognise that for a circuit to work it must be complete
- construct a working circuit
- **construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers**

What comes next:

- | | |
|--|--|
| <ul style="list-style-type: none"> ▪ make drawings of simple working circuits (pictorial only circuit symbols covered in year 6) ▪ make circuits from drawings provided ▪ 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 ▪ <i>are methodical in tracing faults in simple circuits</i> ▪ describe the effect of making and breaking one of the contacts on a circuit ▪ explain why some circuits work and others do not ▪ recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit ▪ describe how switches work ▪ construct a home-made switch ▪ identify materials as conductors or insulators ▪ construct simple circuits and use them to test whether materials are electrical conductors or insulators ▪ recognise some common conductors and insulators, and associate metals with being good conductors ▪ <i>relate knowledge about metals and non-metals to their use in electrical appliances</i> ▪ <i>describe the use of conductors and insulators in components including connecting wires</i> ▪ <i>identify playdough and graphite as non-metal conductors and explain why this is unusual.</i> | |
|--|--|