Y4 – Electricity

Inspiration
Creativity (problem solving)

Partnership with parents
Community – links to DT

Key Questions
- Which household appliances use electricity?
- How can we use electricity safely?
- What is a simple circuit and what are its parts?
- What do we need in a series circuit to make a lamp light?
- How do switches work?
- What are insulators and conductors?
- Which materials are good conductors?

Working Scientifically
- asking relevant questions
- setting up simple practical enquiries, comparative tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including data loggers
- gathering and recording data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes

Also covered in:
Y6 - Electricity

At the end of this unit, children will be able to:
- Construct a simple series circuit naming its parts
- Understand basic precautions when working with electricity
- Understand how a switch works
- Identify common conductors and insulators
- Know that metals are good conductors
- Ask relevant questions and set up simple enquiries to answer them

Knowledge

- We can group materials according to whether they are electrical conductors or electrical insulators.
- Electrical conductors are materials that allow electricity to flow through them easily. These materials are useful for making electrical circuits because they conduct electricity.
- Electrical insulators are materials that do not allow electricity to flow through them. They are poor conductors of electricity. They are still useful however because they stop electricity flow and help us to control where it flows.
- Electricity is energy. This energy can be used to power electrical items such as: toasters, kettles, cookers, televisions and laptops.
- Common household appliances run on electricity. This is transported through wires and cables. It can also be stored in batteries (sometimes called cells)
- A circuit always needs a power source, such as a battery, with wires connected to both the positive and negative ends.
- A battery is made from a collection of cells connected together.
- A circuit can also contain other electrical components such as bulbs, buzzers or motors which will allow electricity to pass through.
- Electricity will only travel around a circuit that is complete. This means it has no gaps. You can use a switch in a circuit to create a gap in the circuit. This can be used to switch it on and off.
- When a switch is open (off) there is a gap in the circuit. Electricity cannot travel around the circuit.
- When a switch is closed (on) it makes the circuit complete. Electricity can flow around the circuit.

Topic Specific Vocabulary
conductor, insulator, materials, electricity, flow, energy, power, household appliances, wires, cables, battery, cell, circuit, wires, lamps, bulbs, buzzers, motors, switch, complete circuit, closed circuit, plug

NC Subject content
- identify common appliances that run on electricity
- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- 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
- recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- recognise some common conductors and insulators, and associate metals with being good conductors.

Subject Specific/Academic Vocabulary
This vocabulary should be explicitly taught in context. Other tier 2 words should also be explored as they are encountered.

Year 3	Year 4	Year 5	Year 6
Benefit, impact, issues, occur, process, sequence, source, variables	Appropriate, consequences, identified, procedure, range, relevant, significant, specific, theory, transfer	Factors, affect, analyse, contribute, demonstrate, outcome, react, volume,	Component, exclude, function, imply, initial, justify, sufficient.

We are scientists
Application of skills in a real life context in DT.