

# Ashtree Primary School and Nursery Medium Term Plan for Science

## Year 4 Summer Term - Electricity Unit

### Prior Knowledge – Y3 - Light

Step 1 - name a number of light sources, including the **sun**, describe and compare some light sources, recognise that light travels from a source -

Step 2 - state that light sources are seen when light from them enters the eyes, recognise that they cannot see in the dark, explain that places are dark because there is no light and a light source is needed to help us see in such places

Step 3 - state that **reflections** can be seen in **shiny** surfaces, demonstrate **light travelling** using a torch and record **light bouncing** off a mirror

Step 4 - explain that they cannot see shiny objects in the dark because there are no light sources

Step 5 - recognise that when light is **blocked**, a **shadow** is formed, recognise that shadows are similar in shape to the objects forming them, explain that shadows are formed when light from a source is blocked

Step 6 - make observations of changes in **shadows**, state that even **transparent** objects block some light and form shadows, describe the difference in shadows cast by **opaque, translucent and transparent** materials, explore how to make shadows of different shapes and sizes

**Prior Skills – Y3-** with support, records and presents findings using drawings, labelled diagrams, keys, tally charts, Carroll diagrams, Venn diagrams, bar charts and tables, sets up simple practical enquiries, comparative and fair tests with support, asks relevant questions and uses, with support, different types of scientific enquiries to answer them, beginning to make systematic and careful observation, reports on findings from enquiries, in simple scientific language, using oral and written explanations, Using model frames for support, gathers and records data in a variety of ways to help in answering questions

**Key Vocabulary** battery, cell, wires, switch, crocodile clips, buzzer, bulb, circuit, symbols, insulator, conductor, plastic, metal, appliance, component

### Key Knowledge

**Step 1** - identify **mains operated and battery operated** devices, describe some of the dangers associated with mains electricity

**Step 2** - name some **components** of a simple **electrical circuit**, know that batteries are sources of electricity - **battery, cell, wires, switch, crocodile clips, buzzer, bulb, circuit,**

**Step 3** - recognise that for a circuit to work it must be complete, construct a working circuit, make drawings of simple working circuits (pictorial only circuit symbols covered in year 6) - **symbols**

**Step 4** - make circuits from drawings provided, describe the effect of making and breaking one of the contacts on a circuit, explain why some circuits work and others do not

**Step 5** - identify materials as **conductors or insulators**, construct simple circuits and use them to test whether materials are electrical conductors or insulators

**Step 6** - describe how **switches** work, construct a home-made switch

### Key Skills

**Step 1** - uses observable and other criteria to group, sort and classify in different ways (including simple keys and branching databases)

**Step 2** - explains the purposes of a variety of scientific and technological development including those specific to their units of knowledge e.g. electricity, uses relevant scientific language to discuss their ideas and communicate their findings

**Step 3** - chooses the type of simple equipment that might be used from a reasonable range, uses appropriate equipment and measurements with increasing accuracy

**Step 4** - identifies differences, similarities or changes related to simple scientific ideas and processes, reports on findings from enquiries, in simple scientific language, using oral and written explanations, displays or presentations of results and conclusions

**Step 5** - sets up simple practical enquiries, comparative and fair tests, gathers and records data in a variety of ways to help in answering questions, with growing independence, uses results to draw simple conclusions and answers

**Step 6** - chooses the type of simple equipment that might be used from a reasonable range, uses appropriate equipment and measurements with increasing accuracy

### Curriculum Enhancements

Create own working lights.



### Possible Misconceptions

electricity flows to bulbs, not through them

electricity flows out of both ends of a battery

electricity works by simply coming out of one end of a battery into the component.

### Suggested Activities

Step 1 - relate knowledge about metals and non-metals to their use in electrical appliances

Step 5 - describe the use of conductors and insulators in components including connecting wires

Step 5 - identify playdough and graphite as non-metal conductors and explain why this is unusual

### Curriculum links

DT – Making a lamp

### This will lead to . . .

In Year 6 – Electricity, the children will learn to,

- **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.**