Topic

Electrical Systems:

Battery Operated Lights

Holy Family Halewood

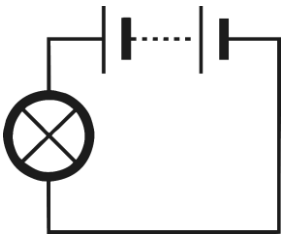
Year 3 and 4 Design Technology

Learning Objectives

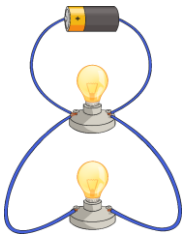
- To explain how key events and individuals in design and technology have helped shape the world
- To make and represent different types of circuits.
- To make and use switches.
- To develop design criteria and a design.
- To develop and communicate a design for a light.
- To select materials and components to make a light.
- To create a well finished product.
- To complete a detailed evaluation of a finished product

Key Vocabulary

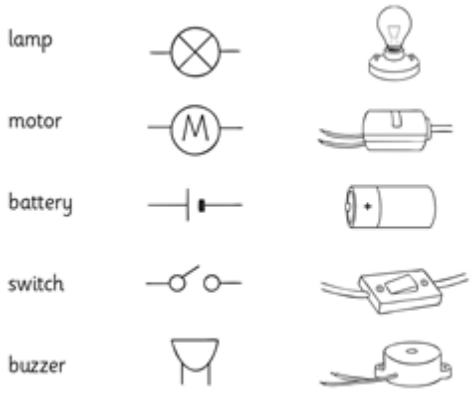
STEM- **S**cience, design & **T**echnology, **E**ngineering and **M**athematics
Electricity- a type of **energy** that can build up in one place or flow from one place to another
Electrical system- groups of electrical **components** (parts) connected to carry out some operation
Mains Electricity- appliances that plug into a socket use mains electricity, such as televisions
Battery Electricity- appliances that work without having to be plugged into a socket use batteries to power them, such as mobile phones
Circuit- a closed path through which an electric current flows
Series Circuit- a circuit where the components are joined together in one bigger circuit (one continuous loop)
Parallel Circuit- two smaller circuits with each bulb having it's own circuit parallel to one another
Insulator- a material that does not easily allow electric to pass through it
Conductor- a material which allows electric to pass through it
Operated- to perform an operation (action)



Series Circuit



Parallel Circuit



Circuit Symbols

Changes In Lighting Key Facts

3,000,000 BC: During the Palaeolithic period when the ice came some humans sheltered from the cold in caves. They would have built fires to give them warmth and light.
AD 1714-1830: In the Georgian period candles would have been used to light up homes. Three types of candle were commonly used; tallow (made from animal fat), spermaceti (made from whale oil) and beeswax.
AD 1837-1901: In the Victorian period, in 1879, Thomas Edison invented the 'modern light bulb' that worked for a long time. His invention meant that people could use electricity to light their homes. He also invented eclectic lamps.
AD 2015: LED lights are the biggest thing to hit lighting since electricity was invented! LED lights use up to 85% less energy than conventional bulbs. LED lighting is available in a huge range of unique designs.

Knowledge We Will Acquire

- Understanding how key events and individuals in design and technology have helped shape the world in the context of looking at technological developments in the way we light our homes.
- Understanding how electrical systems have an input and output process
- Understanding the difference between a series and parallel circuit
- Technical vocabulary relating to electrical systems

Skills We Will Acquire

- Using electrical materials and components
- Making and representing a series and parallel circuit
- Making and using switches