

Preston Primary School Knowledge Organiser

Topic: Design and Technology

Term: Spring 1

Year: Unit 3

Duration: 5 Weeks

Electrical circuits

In this Long Enquiry, the children will be making fully functional electrical circuits.

The Powerful Knowledge we will take away from this Learning Enquiry (what we will be learning):



- Each electrical circuit contains a lightbulb, a switch, wires and a power source. There can be different numbers of these in different circuits.



- Understand about safe use of electricity. Water and electricity is a very dangerous combination and household plugs need to be treated carefully.

- Switches control the flow of electricity and are used in many common products such as laptops, light fittings, and games consoles. Switches can be pressed, pulled, or used via remote control. Switches turn the current of electricity on or off.



- A battery will be the power source for this design.
- Components in a circuit can be represented with drawings and scientific diagrams.
- Each product that is designed has a specific purpose and has been evaluated against it's design criteria to ensure it is fit for purpose.

Our Key Vocabulary:

Word	Meaning
Design	Design is developing, planning and communicating your ideas about what you intend to make.
Make	To work with tools, equipment, materials, ingredients, and components to make quality products and dishes.
Evaluate	To reflect on ideas and products against the design criteria.
Design Criteria	The specific and concise requirements that a product must achieve to be successful. This is used to evaluate a product.
Battery	A cell which stores electrical energy.
Bulb	A glass container that converts electricity into light
Circuit	.A collection of components which make an electrical system.
Conductor	Materials that allow electricity to flow through them.
Current	An electrical current is the flow of electricity
Electricity	A type of energy, that is usually invisible, that can be made or stored and used to make objects work.
Insulator	A material that does not allow electricity to pass through it.
Switch	A circuit part that you can open or close to allow electricity to flow through it or to stop it flowing through.
Voltage	Force of an electrical current. It is measured in volts.
Wire	A thin flexible string like thread. Wire is made from metal as it is a good conductor of electricity.

What I already know:

Previously, the children should have learnt about the following bullet points. Have a discussion with your child about the following bullet points and what they could mean. You may like to go and visit one of our local lighthouses and think about where their power is generated, where is it situated and why and the purpose of it.

- Children can talk about electrical equipment at school and at home.
- They can use electrical items safely.
- They can identify which common products use electricity and whether this comes from a battery or the mains.

Useful links and websites:

<http://www.bbc.co.uk/schools/gcsebitesize/design/electronics/componentsrev9.shtml>

This shows the scientific diagrams for electrical circuits.

The Design, Make and Evaluate Model of Design and Technology:

In every Design and Technology lesson children will refer to the Design Make and Evaluate Model. Children will start by evaluating existing products/dishes and then design their own based on a design criteria. During the making process, children will constantly evaluate their product/dish, the tools they are using and the materials they have selected and possibly return to adapt their original design. This evaluation is continuous, and children will move back and forth between the stages Design, Make and Evaluate. Children will understand that this model is not a cycle. The children are constantly thinking critically, reflecting, and evaluating and are confident to move back and forth through the stages Design, Make, Evaluate. When children finish their final product/dish they will complete a final evaluation form, assessing against their design criteria.

