



St Andrew's C of E Maghull Knowledge Organiser



Year 4 – Spring 2 – Design and Technology Electrical systems - Simple circuits and switches

Knowledge:

Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.

Know and use technical vocabulary relevant to the project.

Skills:

Designing

Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.

Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.

Making

Order the main stages of making.

Select from and use tools and equipment to cut, shape, join and finish with some accuracy.

Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.

Evaluating

Investigate and analyse a range of existing battery-powered products. Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.

Vocabulary:

Circuit – path through which electricity passes.

Conductor – a material which allows an electric current to pass through it.

Insulator – a material which does not easily allow electric current to pass through it.

Prototype – a model made to test whether a design will work.

Push-to-break switch – a switch turned off by pressing it.

Push-to-make switch – a switch turned on by pressing it.

Reed switch – a switch operated by a magnet.

Toggle switch – a switch operated when a lever is pressed.

System – a set of related parts or components that together achieve a desired outcome.

Output devices – components that produce an outcome e.g. bulbs and buzzers.

Input devices – components that are used to control an electrical circuit e.g. switches.

Lesson Sequence:

Lesson 1 – I can evaluate existing products.

Lesson 2 – I can establish the design criteria.

Lesson 3 – I can generate ideas.

Lesson 4 – I can plan the making stage.

Lesson 5 – I can make the end product.

Lesson 6 – I can evaluate my end product against the design criteria.