

Is Life Better With Electricity?

Design Technology



Progression in Skill:

Describe the purpose of their products.
 Explain how particular parts of their products work.
 Develop own design criteria and use these to inform their ideas.
 Model their ideas through discussion, annotated sketches and prototypes.
 Generate realistic ideas with a clear purpose or person in mind.
 Select materials, components, tools and equipment suitable for the task.
 Order the main stages of making.
 Measure, mark out, cut and shape material and components with some accuracy.
 Assemble, join and combine materials and components with some accuracy.
 Consider the views of others, including intended users, to improve their work.
 Refer to their design criteria as they design and make.
 Use their design criteria to evaluate their completed products.
 Investigate & analyse:

- Why materials have been chosen
- What methods of construction have been used
- How well products work, achieve their purpose and meet user wants/needs

Use learning from Science and Mathematics to help design and make products that work.
 Know that materials have both functional properties and aesthetic qualities.
 Mechanical and electrical systems have an input, process and output.
 Know how simple electrical circuits and components can be used to create functional products.

Long-term Memory Knowledge:

Electrical circuits can be used to make games more exciting by having parts that light up or make a sound.
 Game designers write rules so that players either win or lose points when the light is lit up or a sound is made.
 The game won't work if the circuit is not constructed properly – if it is broken. This might be because there is a

break in a circuit where there shouldn't be or because it has been completed when it shouldn't.

Key Vocabulary (key vocabulary from this term's Science learning will also be used)

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| prototype | a model made to test whether a design will work |
| design criteria | a set of goals, decided upon at the start of a project, that help us decide how successful we were |
| exploded diagram | a drawing to show how the separate parts of a product fit together |
| system | a set of related parts that, together, achieve a desired outcome |
| input device | components used to control an electrical device e.g. switches |
| output device | components that produce an outcome e.g. bulbs and buzzers |

Progression in Resources:

Toys and games that rely on electrical circuits to work; switches, aluminium foil, paper fasteners, paper clips, card, corrugated plastic, reclaimed materials, finishing materials and media; buzzers, bulbs, bulb holders, batteries, battery holders; wire, wire strippers; right/left handed scissors, PVA glue, cutting mats

Relevance

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| Now | Children can combine their knowledge of electrical circuits and designing and making skills to make a product they are proud of and enjoy playing. |
| Future | Understand how electrical systems are used in products and be able to carry out some basic repairs. |
| Aspiration | Pursue careers in electrical engineering and game designing or develop these for pleasure. |

National Curriculum Links:

When designing and making, pupils should be taught to:
Design: use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups; generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams. **Make:** select from and use a wider range of tools and equipment to perform practical tasks accurately; select from and use a wider range of materials and components according to their functional properties and aesthetic qualities. **Evaluate:** investigate and analyse a range of existing products; evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. **Technical knowledge:** understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

Essential Prior Learning:

Construct a simple series electrical circuit in science, using bulbs, switches and buzzers; cut and join a variety of construction materials, such as wood, card and plastic; be able to explain why some tools and materials are better than others for the required purpose.