

## Year 6



### Knowledge Organiser: D&T – Electrical Systems

**Project ideas;** Fairground rides, simple alarms

#### Key Vocabulary

|                                |                             |                   |
|--------------------------------|-----------------------------|-------------------|
| Series Circuit                 | Parallel Circuit            | Control Boxes     |
| Timed Systems                  | Monitoring System           | Micro-Switch      |
| Light Dependent Resistor (LDR) | Push-to-break/make switches | Reed/ Tilt Switch |

#### Key Learning

Understand and use electrical systems in their products linked to science coverage.

Apply their understanding of more complex circuits and switches/ computing to program, monitor and control their products.

Know and use technical vocabulary relevant to the project.

#### Skills

##### Design

Use research using surveys, interviews, questionnaires and web-based resources to develop a design specification for a range of functional products.

Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.

Generate and develop innovative ideas and share and clarify these through discussion.

Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.

##### Make

Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components.

Competently select from and use appropriate tools to accurately measure, mark, cut and assemble materials, and securely connect electrical components to produce reliable, functional products.

Use finishing and decorative techniques suitable for the product they are designing and making.

##### Evaluate

Continually evaluate and modify the working features of the product to match the initial design specification.

Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. Test the system to demonstrate its effectiveness for the intended user and purpose.

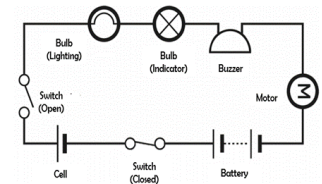
#### In Year 4 you learnt...

- Understand and use electrical systems in products linked to science coverage.
- Apply their understanding of simple circuits and switches/ computing to program and control a products.
- Know and use technical vocabulary relevant to a project.

#### Overview – More Complex Circuits

Electricity is a type of energy. It is used to power lots of things. Electricity can flow through circuits. A circuit is the path the electric current follows. It must have no breaks in it (a closed circuit) for electricity to flow.

The electricity flowing through a circuit is known as the current. It can be used to power an output device.



Switches can be positioned so that electrical currents can flow through them (closed switch) or cannot flow through them (open switch). This alters the way that output devices function.

In a series circuit, two output devices are controlled by one switch. In a parallel circuit, two output devices can be controlled separately by switches. Switches can be used alongside control boxes, to set up timed systems (e.g. traffic lights) and monitoring systems (e.g. alarms).

A series circuit is... A parallel circuit is..

A circuit includes... and...

My circuit worked/ didn't work because I...

Next time I need to...



