



Year 4/5 DT Knowledge Organiser: Electrical Systems Monitoring and Control

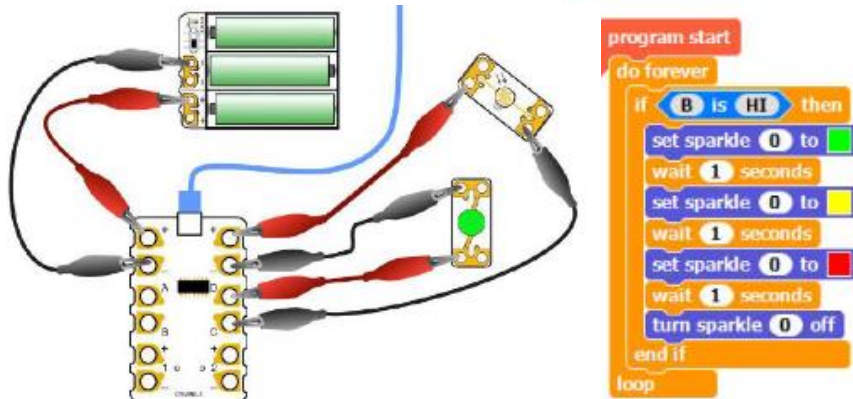


Subject Specific Skills

- Be aware of commercial aspects and incorporate these into their designs.
- Understand how an article might be mass produced.
- Research products using the internet.
- Test and evaluate commercial products, understanding how this information supports their own designs.
- Evaluate a range of different sources of information such as advertising and handbooks.

Prior Learning

- Experience of using computer control software and an interface box, a standalone box or microcontroller.
- Some experience of writing and modifying a program to make a light turn on or flash on and off.
- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.



Design:

- Develop a design specification for a functional product that responds automatically to changes in the environment.
- Generate, develop and communicate ideas through discussion, annotated sketches and 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 and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.
- Create and modify a computer control program to enable an electrical product to respond to changes in the environment.

Evaluate:

- Continually evaluate and modify the working features of the product to match the initial design specification.
- Test the system to demonstrate its effectiveness for the intended user and purpose.

Technical Knowledge:

- Understand and use electrical systems in their products.
- Understand the use of computer control systems in products.
- Apply their understanding of computing to program, monitor and control their products.
- Know and use technical vocabulary relevant to the project.

Vocabulary:

- **Program** – a sequence of instructions that can be used to control electrical components.
- **Microcontroller** – a device that can be programmed to control how an electrical product operates.
- **Light emitting diode (LED)** – an output device that glows when electricity is passed through it.
- **System** – a set of related parts or components that together achieve a desired outcome.
- **Output devices** – components that produce an outcome e.g. bulbs, motors and buzzers.
- **Input devices** – components that are used to control an electrical circuit e.g. switches.
- **Process** – how a computer program controls one or more output devices.

