Year 3/4 DT: Electrical Circuits

Subject Specific Skills

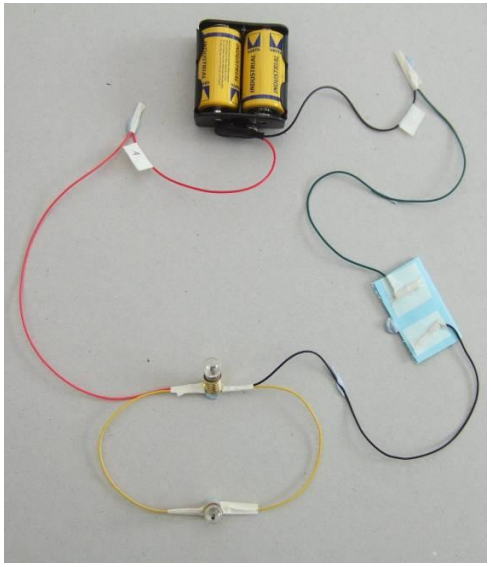
- Understand and use computing to program and control products containing electrical systems, such as series circuits incorporating switches, bulbs and buzzers.
- Know and use technical vocabulary relevant to the project.

Prior Learning

- Constructed a simple series electrical circuit, using bulbs, batteries, switches and buzzers.
- Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Technical Knowledge:

- Understand and use lever and linkage mechanisms.
- Distinguish between fixed and loose pivots.
- Know and use technical vocabulary relevant to the project.



Design:

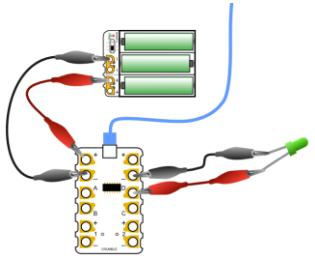
· Gather information about users' needs and wants, and develop design criteria to inform the design of products that are fit for purpose.
· Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.

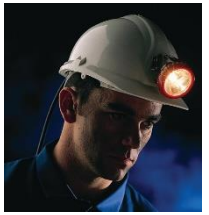
Make:

- Order the main stages of making.
- Select from and use tools and equipment to cut, shape, join and finish with some accuracy.
- Connect simple electrical components and a battery in a series circuit to achieve a functional outcome.
- Program a standalone control box, microcontroller or interface box to enhance the way the product works.

Evaluate:

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





Key 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.