



## Year 3 Design and Technology Knowledge Organiser: Electrical systems; Simple Circuits and Switches



**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, prototypes, pattern pieces and computer-aided design

**Make** select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately, select from and use a wider range of materials and components, including construction materials, textiles and ingredients, 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, understand how key events and individuals in design and technology have helped shape the world

**Technical knowledge** apply their understanding of how to strengthen, stiffen and reinforce more complex structures, understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

### Prior Learning

**Design** Design purposeful, functional, appealing products for themselves and other users based on design criteria  
generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

**Make** Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

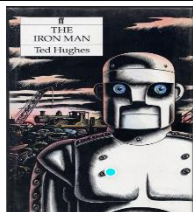
**Evaluate** Explore and evaluate a range of existing products evaluate their ideas and products against design criteria

**Technical knowledge** Build structures, exploring how they can be made stronger, stiffer and more stable explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

### Key Vocabulary

Mechanism  
Switch  
Circuit  
Bulb  
Battery  
Current

### Key Artist/ themes: Iron Man

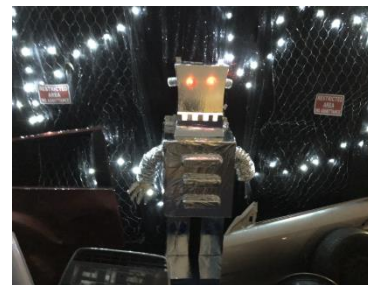


### Investigate (style / techniques / examples):

- I can investigate and analyse illuminated signs.
- I can understand how LEDs may be used instead of traditional incandescent bulbs in series circuits.
- I can develop ideas for a decorative illuminated sign.
- I can select and use tools, equipment, materials and components to make the enclosure of a decorative illuminated sign.
- I can construct a working circuit with one or more lights, and fit it in a decorative illuminated sign.
- I can investigate ways in which computers can be used to program and control lights in a product.

### Design and Create:

An electrical system that is made for a purpose, using a variety of flaps, wheels, levers or linkages which will be designed and created with the children's own research and ideas.



### Evaluate:

To use their sketch books to record their observations and use them to review and revisit ideas in the design, making and evaluating process.

Evaluate their chosen book and the mechanical systems used.