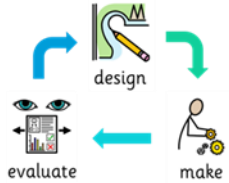
Year 4 – Summer – DT – Pupil Knowledge Organiser

What do I already know?

- A good design includes ideas based on user needs and existing products.
- Designers sketch and label their ideas, showing where different parts will go.
- A prototype is a first model of something we design to see if it works.
- Following a design means using the plans we made to build the prototype.
- We need to use the right tools and materials to make our prototype.
- It's essential to troubleshoot and adjust when necessary.

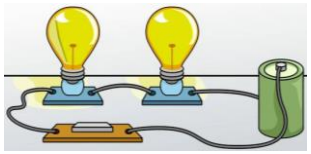
What am I learning now?

1. What is an electrical system used for?
2. How do we control lights using switches?
3. What can I learn from real products and those who use them?
4. Can I design a nightlight to meet the needs of a young child?
5. Can I make a working nightlight from my design?
6. How well does my nightlight work and how could I improve it?

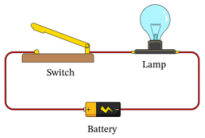


Key Knowledge: Electrical Systems

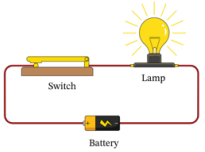
A circuit needs a power source (battery), wires and an output device (bulb).



A switch is used to open or close a circuit and control the flow of electricity.



An open circuit is one that is broken, so electricity can't flow.



A closed circuit is one where electricity can flow all the way around.

There are different types of switches, for example:

Push-to-make (closes the circuit when pressed),
OR
Push-to-break (opens the circuit when pressed).

Nightlights are designed to be reassuring, softly lit, and child-friendly.

Features include colour, shape, size, and ease of use (e.g. big switches).

There are various ways to ensure a secure connection:

twisting strands of wire,

wrapping the ends together,

using a connector block.

It may be necessary to strip the wires.

Crocodile clips, made of conducting material, ensure a secure connection.

Design, Make, Evaluate

In Design and Technology, we follow a process:

design

Develop a range of ideas based on who will use our product and what for.

make

Safely assemble, join and combine materials.

evaluate

Learn from existing products.

Discuss what is good and what can be improved about our products, based on our design criteria.

Key Vocabulary

electricity	A type of energy that can power things like lights, computers, and toys.
circuit	A path that electricity flows around to make something work.
component	A part of a circuit, like a bulb, battery, wire, or switch.
battery	A power source that gives electricity to the circuit.
wire	A thin piece of metal that connects parts of a circuit and lets electricity flow.
switch	A part of a circuit that turns the electricity on or off.
conductor	A material that lets electricity pass through it easily, like metal.
design brief	A short description of what a product must do and who it is for.
market research	Finding out what people want or need before making a product.
target user	The person who the product is being made for.