Autumn 2 Year 4 Design and Technology Knowledge Organiser
Electrical Systems: Torches

Subject specific Vocabulary

Battery	A device that stores and provides electricity for a circuit.
Bulb	A component that lights up when electricity flows through it.
Circuit diagram	A drawing that shows how electrical components are connected in a circuit.
Component	A part of an electrical circuit, like a bulb, battery, switch or wire.
Conductor	A material that lets electricity pass through it, like metal.
Electricity	The energy that flows through wires and powers electrical items.
Insulator	A material that does not let electricity pass through, like plastic or rubber.
Series circuit	A circuit where all components are connected in one loop.
Switch	A device that turns a circuit on or off by opening or closing the connection.
Torch	A portable light that works using a bulb, battery, and switch in a circuit.

Images/Diagrams/Maps

Writing/Provision/ Enrichment opportunities

Instructional Writing – How to Build a Torch
Pupils write step-by-step instructions for making a torch.

Invite a **local electrician or engineer,** to speak about how electrical circuits are used in real jobs (e.g. wiring homes, creating electronic devices, or designing safety equipment).

Important Knowledge

Electricity flows through a complete circuit – if the circuit is broken, the torch won't work.

Conductors let electricity pass through (like metal), and insulators don't (like plastic or rubber).

A switch controls the flow of electricity – it can turn the torch on and off by opening or closing the circuit.

We can design and make a working torch by building a simple circuit and choosing materials for our target audience.

We test and evaluate our torches to see what works well and what we could improve.

Presentation	Assessment		
	To learn about electrical items and how they work.	Identifying electrical products; explaining why electrical products are useful; making a working switch.	Identifying the features of electrical products; suggesting other ways to make a switch using different conductors.
	To analyse and evaluate electrical products.	Identifying the features of a torch and how it works; describing what makes a torch successful.	Explaining which features are important to all torches and which are tailored to the target audience; generating creative suggestions for how the components could be made.
	To design a product to fit a set of specific user needs.	Writing design criteria for a specific user; creating suitable designs that fit the success criteria and their own design criteria.	Using the outcome of the previous lesson's evaluation task to improve their design; adding special features specifically designed for their user.
	To make and evaluate a torch.	Assembling a functioning torch with a working circuit and switch according to their design criteria.	Adding special features to suit their client; discussing how these components could be used in other products.