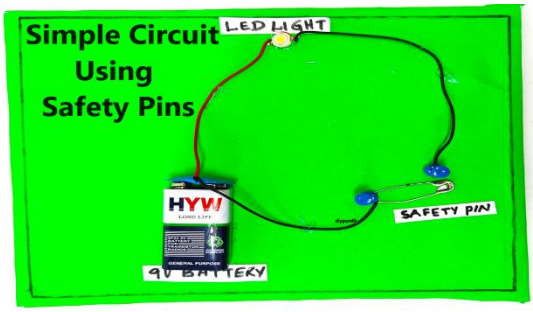
# Lowerhouse Junior School
# Design & Technology Overview Sheet

## Year 4 – Structure/Electrical circuit – create a nightlight with a switch incorporating electrical circuit




Base of nightlight ^

**Key Learning**: Pupils who are **secure** will be able to:

- **Year 4 Electrical system/structure**
- Incorporate a circuit into a model
- Use electrical systems such as switches, bulbs and buzzers
- Build frameworks to support mechanisms

**Design**

Develop more than one design or adaptation of an initial design.

Plan a sequence of actions to make a product.

Record the plan by drawing using annotated sketches and exploded diagrams

Think ahead about the order of their work and decide upon tools and materials.

Propose realistic suggestions as to how they can achieve their design ideas.

Consider aesthetic qualities of materials chosen.

**Make**

- Prepare pattern pieces as templates for their design.
- Select from a range of tools for cutting shaping joining and finishing.
- Use tools with accuracy.
- Select from techniques for different parts of the process.
- Plan the stages of the making process.
- Use appropriate finishing techniques.

**Evaluate**

- Identify the strengths and weaknesses of their design ideas in relation to purpose/user.
- Decide which design idea to develop.
- Consider and explain how the finished product could be improved.
- Discuss how well the finished product meets the design criteria of the user.

Investigate key events and individuals in Design and Technology

**Learning Intentions**

Lesson 1: LI: To understand how nightlights work and the purpose of the user.
Lesson 2: LI: To explore different nightlight designs and design their own.
Lesson 3: LI: To plan how to make my final product using explodes diagrams.
Lesson 4: LI To make an electrical circuit with a switch.
Lesson 5: LI: To make frame for the nightlight to fit the electrical circuit inside.
Lesson 6: LI: To evaluate my final product.

| Overview: | Cross Curricular Links |
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| Lesson 1: | **Links to science – Electrical circuits** |

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| Understand how nightlights work and why they are used.<br>Lesson 2:<br>Explore a range of nightlight designs.<br>Lesson 3:<br>Plan how to make nightlight incorporating a simple electrical circuit with a switch.<br>Lesson 4: Children make an electrical circuit with a switch.<br>Lesson 5:<br>Make the frame for your nightlight to incorporate you electrical circuit inside.<br>Lesson 6:<br>Evaluate your nightlight. | **Key Vocabulary**<br>Structures:<br>shell structure, three-dimensional (3-D) shape, net, vertex, edge, face, length, width, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing,<br><br>Electrical systems:<br>series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input, output device |
| | **Resources**<br>**AA batteries – (one per child)**<br>**Wires with crocodile clips (2 per child)**<br>**Paper clips (one per child)**<br>**Bulb and bulb holder (one per child)**<br>**Cardboard carton or box** |
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