# Brough Primary School – Curriculum Intention Plan 2023 - 2024

| **Subject:** Design and Technology<br>**Year Group:** Year 3/4 | **Area of learning:** Electrical Systems - Simple Circuits and Switches |
|---|---|
| Links to previous work/Remember when | • The children have no prior learning for this topic as they have not yet met electrical systems within Design and Technology or Science.<br>• Some of the children will have life experience of night lights, switches turning the night light on and off, light switches in their home, some knowledge of electricity and power.<br><br>Children will have experience of:<br>: Following a given design criteria.<br>: Evaluating existing products.<br>: Selecting tools and materials with support.<br>: Applying a range of finishing techniques with some accuracy. |
| **Term** | **Key Skills to be taught** |
| **Spring 2024**<br><br>What the children should know at the end of this series of lessons | - Use research and, with support, develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose and are aimed at particular individuals or groups.<br><br>- Generate and communicate their ideas through discussion and annotated sketches.<br><br>- Select from and use a wider range of tools and equipment to cut, shape, join and finish their model accurately.<br><br>- Select from and use a wider range of construction materials according to their functional properties and aesthetic qualities.<br><br>- Investigate and analyse a range of existing products.<br><br>- Evaluate their ideas and products against their own design criteria.<br><br>- Understand and use simple circuits in their products that incorporate switches and bulbs. |

| **Vocabulary** |
|---|
| *intended user, annotated sketch, component, design criteria, product, battery, circuit, switch, bulb, electrical engineer,* user, purpose, function |

# Brough Primary School – Curriculum Intention Plan 2023 - 2024

| Sequence of learning | Learning Objectives/Outcomes | suggested Lesson Outline |
|---|---|---|
| 1 | **Learning Objective:**<br>To investigate existing night lights to find out about finishing, switches, design requirements and function.<br><br>**Key Knowledge:**<br>**Night lights are made to help children who are afraid of the dark and help them to get to sleep.**<br>**Lots of night lights use battery power.**<br>**A simple series circuit provides the light source - usually containing a battery, wires, light bulb and switch.**<br>**A series circuit is a circuit in which the current follows one path. It is a loop with components arranged one after another. The electrons in the loop travel in one direction so the current is the same all around the loop.** | **Recap** – Not applicable<br><br>***Children record***<br>*Show the children different examples of lights and ask them what they are used for. Why would we need a night light? What would be important in a nightlight? (*not a bright light, a switch, attractive to user, safe - no sharp edges, electrical parts away from the user).<br><br>*Disassemble a torch in front of the children. If there are enough torches, ask the children to do this in pairs. Ask the children to identify which part: Switches it on? Supplies power? Produces light? Reflects light forwards? Allows light to pass through? Allows you to change batteries?*<br><br>*Children to draw their favourite night light and label the important parts - switch, light source, transparent/translucent material, attractive features, battery.* |
| 2 | **Learning Objective:**<br>I can make and use a series circuit and a range of switches.<br><br>I can create design criteria.<br><br>**Key Knowledge:**<br>**A circuit is a closed path through which an electrical current flows. A switch is used to prevent the circuit and the bulb** | **Recap** – Why are night lights used? (A night light is a small light fixture, that is often portable, placed for comfort or convenience, in dark areas or areas that may get dark at times. They can help children who are afraid of the dark).<br><br>What is important in a night light? *(*not a bright light, a switch, attractive to user, safe - no sharp edges, electrical parts away from the user).<br><br>***Children record***<br>Following the recap questions, talk to the children about our project for this half term - to make a portable night light. Together, think about who would use it and why. |

# Brough Primary School – Curriculum Intention Plan 2023 - 2024

| | | |
|---|---|---|
| | **being constantly on or off. Switches can be made in a range of ways by using materials that conduct electricity and others that are electrical insulators.** | - Child of their age or younger to help them to get to sleep at night.<br><br>Together, decide on the design criteria for the nightlight considering the user and function:<br><br>1. Portable - battery powered<br>2. Contains a simple series circuit to light the bulb.<br>3. Attractive to a child of your age or younger.<br>4. Safe - no sharp edges or exposed wires.<br>5. Uses a switch so can be turned on and off.<br><br>Today, investigate making a series circuit and a range of home-made switches with the children. Children to work in pairs with a tray of resources - bulb, bulb-holder, 3 wires, switch, battery and battery holder. Children to make a series circuit with 1 bulb and 1 battery.<br>Children to then be shown how to make a variety of switches, children to make these and then add them to their circuit.<br>Show the children how to draw their circuits using symbols - children to draw their circuit diagram and write down their design criteria. |
| 3 | **Learning Objective:**<br><br>**Key Knowledge:** | **Recap** –<br><br>***Children record***<br>Show the children the example night lights.<br>Children to design their own night light that fits the design criteria.<br>Children to annotate their design to show what materials they will use and where the circuit will be placed. |
| 4 | **Learning Objective:**<br><br>**Key Knowledge:** | **Recap** –<br><br>***Children record***<br>Children to make their night lights using the range of resources available to them. Children to ensure that the night light contains a switch, a simple series circuit, is portable and is safe for children. |
| 5 | **Learning Objective:** | ASSESSMENT LESSON<br>Children to evaluate the night lights against the design criteria. |

# Brough Primary School – Curriculum Intention Plan 2023 - 2024

| Learning Outcome/product |
| --- |
| To design, make and evaluate a night light that uses a simple circuit and a switch. |

| Assessment records | List only those children who have not achieved the expected outcomes. |
| --- | --- |
| | |