**Year 6 Design and Technology Curriculum – Spring Term**

|  |
| --- |
| **Theme: More complex switches and circuits**  |
| **Curriculum objectives** | **Vocabulary** | **Links across the curriculum** |
| Investigate famous inventors who developed ground-breaking electrical systems and components.**Designing** • Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost. • Generate and develop innovative ideas and share and clarify these through discussion. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. **Making •** Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. •  **Evaluating** • Continually evaluate and modify the working features of the product to match the initial design specification. • Test the system to demonstrate its effectiveness for the intended user and purpose. • (Projects on a page) | **Keyword** | Definition  | **Keyword** | Definition  | **Science –**Knowledge of circuits and have an understanding of conductors, insulators, and open and closed switches..Art – drawing skills.**Spoken language** – ask relevant questions to build understanding and their vocabulary.Give well-structured answers and explanations.**Mathematics-** accurate measuring cm/mm |
| ParallelCircuit | An electrical path that branches so the current divides and only part of it flows through any branch. | Switch | A device for making and breaking a connection in an electrical circuit. |
| Conductor | A material which allows an electrical current to pass through it. | Series circuit | All the circuit elements are arranged in a single path. |
| Insulator | A material which does not easily allow an electrical current to pass through it. | Open switch |  When a switch is positioned so that electricity cannot flow through it. |
| Prototype | A model made to test whether a design will work. | Closed switch | When a switch is positioned so that electricity can flow through it. |
| Output devices | Components that are used to produce an outcome e.g., bulbs or buzzers. | Input devices | Components that are used to control an electrical circuit. |
| **Prior knowledge:** *What specifically have pupils learned that is relevant to this unit that they are building upon?* | **Future knowledge:** *What specifically will pupils learn in the future that is relevant to this unit?* |
| Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered functional, electrical product (Year 4). |  |
| **Lesson Sequence** | **Key Knowledge** | **Key Skills** |
| 1. To investigate and research a range of products that respond to the environment
 | * Some electrical products respond to changes in the environment e.g alarm systems, security lights etc.
* Thomas Edison invented the light bulb
 | * Explore, research skills
 |
| 1. To investigate ways of making circuits.
 | * Electrical circuits must be complete to work.
* The difference between a series circuit and a parallel circuit.
 | * Explore, investigative skills
 |
| 1. To design an electrical product which responds to the environment.
 | * How the product (e.g., pressure pad alarm) will respond to the environment.
* Which equipment and tools are required.
 | * Creative thinking
* Drawing and labelling skills.
 |
| 1. To make an electrical product which responds to the environment.
 | * The electrical product will function when then circuit is complete.
 | * Construction skills, questioning skills, modification skills
 |
| 1. To evaluate the electrical product.
 | * How the product could be improved.
 | * Evaluation skills.
* What went well…
* Even better if…
 |
| **Themes and links** |
| **Themes** | **Where these are covered:** |
| **Investigate** | * Lesson 1 and 2
 |
| **Design** | * Lesson 3
 |
| **Make**  | * Lesson 4
 |
| **Evaluate** | * Lesson 5
 |