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

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| **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 |
| Parallel  Circuit | 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 | | | | | | |