| **DT Year 6 Electrical systems Block E** |
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| **National Curriculum****Key Stage 2*** **Design** Design purposeful, functional, appealing products for themselves and other users based on design criteria generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.
* **Make**  Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
* **Evaluate** Explore and evaluate a range of existing products evaluate their ideas and products against design criteria Technical knowledge build structures, exploring how they can be made stronger, stiffer and more stable explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.
* **Technical knowledge** Apply their understanding of how to strengthen, stiffen and reinforce more complex structures understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products.
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|  | Lesson 1 | Lesson 2 |  |
| **Learning intention** | Can switches perform more than one function? | Can switches perform more than one function? | Can switches perform more than one function? |
| **Skills taught** | Can name components and build a simple series circuit Can draw a circuit diagram using recognised symbols | Can build circuits where components work independently of each other and simultaneously Can draw series and parallel circuit diagramsCan draw a diagram to represent the electrical circuit for a specified appliance  | Can apply knowledge of circuits and switches to build a simple multifunction product  |
| **Recall and retrieval** | Batteries, bulbs, motors, switches and buzzers are components of electrical circuits A continuous flow of electrical energy is needed to enable an appliance to work A switch is a control mechanism used to interrupt the flow of electricity in a circuit Some switches have more than one function | There are different types of switches Some switches perform one function only, whilst others are multi-functional A circuit diagram is a graphical representation of an electrical circuit | Series circuits are where components are connected together in one loopIf one component fails or is turned off in a series circuit then none of the components will work In series circuits, components work simultaneously Parallel circuits are where components are connected in separate loopsIf one component is switched off in a parallel circuit, the rest of the components will still workIn parallel circuits, components work independently of each other |
| **Sequence of knowledge throughout the lesson** | **Key knowledge**Can explain the type and function of a range of switches Can identify switches that are multifunctional and those that are not, from a given selection Can make accurate recordings of their findings | **Key knowledge**Can describe different types of switches and identify their functionsCan predict the type of circuit required for a specified appliance  | **Key knowledge**Can explain the difference between series and parallel circuits and how these can be applied to perform specific functions Can explain how they have made the torch and fan work simultaneously, independently or bothCan identify the advantages and disadvantages of different models |
| **Scaffolding** | Working ExamplesVisual steps to successTeacher guidance | Working ExamplesVisual steps to successTeacher guidance | Working ExamplesVisual steps to successTeacher guidance |
| **Challenge** |  |  |  |
| **Key Vocabulary** | SwitchComponentParallel circuitSeries circuitFunctionalityMulti-functionBriefSimultaneous  | SwitchComponentParallel circuitSeries circuitFunctionalityMulti-functionBriefSimultaneous | SwitchComponentParallel circuitSeries circuitFunctionalityMulti-functionBriefSimultaneous |