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| **DT Year 3 Mechanisms Block C** | | | |
| **National Curriculum - Key Stage 2**  Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:   * **Design** use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design * **Make** select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities * **Evaluate** investigate and analyse a range of existing products evaluate their ideas and products against their own design criteria and consider the views of others to improve their work understand how key events and individuals in design and technology have helped shape the world * **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. | | | |
|  | Lesson 1 | Lesson 2 | Lesson 3 |
| **Learning intention** | How can you do a lot of work with little effort? | How can you do a lot of work with little effort? | How can you do a lot of work with little effort? |
| **Skills taught** | Can construct a see-saw and explain the effects of making adaptations such as lengthening the lever | Can construct a catapult and explain the effects of making adaptations such as using a smaller elastic band | Can design a simple toy that uses a linkage mechanism, explaining how it will work and reasons for selecting a specific linkage |
| **Recall and retrieval** | Identify simple mechanisms and their uses | Levers create a force that can move a load with minimal effort  A lever consists of: fulcrum, load and effort  There are three classes of lever  Simple mechanisms are those powered by hand | Linkages are a series of levers and pivots  Explore the difference between the input and output force in a range of linkage systems  Describe the different types of motion created by linkages |
| **Sequence of knowledge throughout the lesson** | **Key knowledge**  Can identify the parts of a lever and explain how a lever works and how it provides a mechanical advantage  Can identify different classes of lever and apply this knowledge to construct a see-saw.  Can describe the difference between the input force and movement and output force and movement | **Key knowledge**  Can identify the parts of a lever and explain how a lever works and how it provides a mechanical advantage  Can identify different classes of lever and apply this knowledge to construct a catapult.  Can describe the difference between the input force and movement and output force and movement | **Key knowledge**  Can explain the connection between levers and linkages  Can describe the difference between the input force and movement and output force and movement  Can begin to identify different types of movement created by linkages |
| **Scaffolding** | Working Examples  Visual steps to success  Teacher support | Working Examples  Visual steps to success  Teacher support | Working Examples  Visual steps to success  Teacher support |
| **Challenge** |  |  |  |
| **Key Vocabulary** | Lever  Load  Effort  Fulcrum  Linkage  Mechanism  Force | Lever  Load  Effort  Fulcrum  Linkage  Mechanism  Force | Lever  Load  Effort  Fulcrum  Linkage  Mechanism  Force |