| Year Group: 3 | Unit: Mechanical Systems |
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| **National Curriculum Aims**<br>The national curriculum for design and technology aims to ensure that all pupils:<br>➢ develop the creative, technical, and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world<br>➢ build and apply a repertoire of knowledge, understanding and skills to design and make high-quality prototypes and products for a wide range of users<br>➢ critique, evaluate and test their ideas and products and the work of others | **Technical knowledge**<br>➢ understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]<br><br>**Product Outcome**<br>To make a greetings card with moving mechanisms. |

**Prior Learning:** Explored and used mechanisms such as flaps, sliders, and levers. Gained experience of basic cutting, joining, and finishing techniques with paper and card.

| Curriculum | Learning Intention/possible activities | Knowledge and Key Vocabulary |
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| **Evaluate**<br>➢ investigate and analyse a range of existing products | How do levers work?<br>Examine provided examples and label each element. | **Knowledge:**<br>– A mechanism is a device used to create movement in a product.<br>– A lever is a rigid bar which moves around a pivot.<br>– Name at least 3 everyday products that use levers. A linkage joins one or more levers to produce the type of movement required.<br>– Systems have an input, process, and an output.<br>– In a lever and linkage mechanism, the 'input movement' is where the user pushes or pulls a card strip. The 'output movement' is where one or more parts of the picture move. |
| **Design**<br>➢ use research and develop design criteria to inform the design of innovative, functional, | How might I create levers and linkages to inform my design? | **Vocabulary:**<br>mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, |

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| appealing products that are fit for purpose, aimed at individuals or groups<br>➢ generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design | Make a range of mechanical systems which use levers and linkages. Create a board with such examples as prototypes for design ideas.<br>How can my research help me?<br>Use research and develop design criteria to inform the design of innovative, functional, and appealing products that are fit for purpose, aimed at individuals or groups, in the context of developing design criteria and design ideas for a moving greetings card<br>Which prototype will result in the best movement for my design?<br>Use sketches to develop and communicate ideas. | reciprocating user, purpose, function prototype, design criteria, innovative, appealing, design brief |
| **Make**<br>➢ select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining, and finishing], accurately<br>➢ select from and use a wider range of materials and components, including construction materials according to their functional properties and aesthetic qualities | How can I ensure my finished product look appealing?<br>Select from and use a wider range of materials and components, including construction materials, their functional properties, and aesthetic qualities, in the context of selecting materials to produce a high-quality finish. | |
| **Evaluate**<br>➢ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work<br>➢ understand how key events and individuals in design and technology have helped shape the world | Does my product meet my design criteria?<br>Evaluate final product against design criteria. | |

**Thinking Deeper**: How might the prototype mechanism be developed and applied in another situation?

| **Links to other subjects:** |
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| • Subject Specific links- RE – the card will be an Easter card it may have a secular/non-secular design. |
| • Personal Development – resilience – to persevere with creation of different mechanisms |
| • SMSC – social – Valuing others' ideas and efforts in the process |
| • Cultural Capital – gaining an understanding into how everyday products are designed and produced. |
| • Careers –market research, designers |
| • British Values – Tolerance of our faiths. |
| • Equality – considering marketing to an inclusive audience. We are making Easter cards, but these can be secular in nature. |