**Year 5 Design and Technology Curriculum – Summer Term**

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| **Theme: Mechanical systems - Cams** | | | | | | | |
| **Curriculum objectives** | | | **Vocabulary** | | | | **Links across the curriculum** |
| Projects on a page.  **Designing**  • Generate innovative ideas by carrying out  research using surveys, interviews, questionnaires  and web-based resources.  • Develop a simple design specification to guide  their thinking.  • Develop and communicate ideas through  discussion, annotated drawings, exploded  drawings and drawings from different views.  **Making**  • Produce detailed lists of tools, equipment and  materials. Formulate step-by-step plans and, if  appropriate, allocate tasks within a team.  • Select from and use a range of tools and  equipment to make products that that are  accurately assembled and well finished. Work  within the constraints of time, resources and cost.  **Evaluating**  • Compare the final product to the original design  specification.  • Test products with the intended user, where safe  and practical, and critically evaluate the quality of  the design, manufacture, functionality and fitness  for purpose.  • Consider the views of others to improve their work.  • Investigate famous manufacturing and engineering  companies relevant to the project.  **Technical knowledge and understanding**  • Understand that mechanical systems have an  input, process and an output.  • Understand how cams can be used to produce  different types of movement and change the  direction of movement.  • Know and use technical vocabulary relevant to the project. | | | **Keyword** | Definition | **Keyword** | Definition | **Science** – explore the effects of simple machines on movement.  **Art and design** – use and develop drawing skills. Use colour, pattern, texture and shape.  **Spoken language** – ask relevant questions to build understanding and their vocabulary.  **Mathematics-** measuring cm, mm |
| Cam | A mechanism changes one sort of movement to another. |  |  |
| Follower | The device that follows the movement of the cam. |  |  |
| Rotary motion | Movement that goes round. |  |  |
| Reciprocating motion | Backwards and forwards movement in a straight line. |  |  |
| Oscillating  motion | Movement to and fro around a pivot point. |  |  |
| **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?* | | |
| Experience of axles, axle holders and wheels that are fixed or free moving (Year 2)  • Basic understanding of different types of movement. • Experience of cutting and joining techniques with a range of materials including card, plastic and wood. • An understanding of how to strengthen and stiffen structures (Year 4). | | | | | Use previous knowledge of mechanisms to understand gears and pulleys. | | |
| **Lesson Sequence** | | **Key Knowledge** | | | | **Key Skills** | |
| 1. To investigate through videos, pictures and toys how cams work. | | * Cams can produce different kinds of movement. | | | | * Investigation skills | |
| 1. To investigate how cams can be made using a cam and a follower. | | * Different shaped cams produce different kinds of movement. | | | | * Investigation skills. | |
| 1. To design a product which uses a cam mechanism | | * Know how the cam system will work in the product. Know what the product will look like and which materials and tools will be required. | | | | * Creative thinking. * Drawing and labelling skills | |
| 1. To make a product which uses a cam system. | | * Know how to construct the cam product with the chosen materials, refining their design decisions as they work (iterative process). | | | | * Construction skills | |
| 1. To evaluate their cam product. | | * Know how effect their product was and how it could be improved. | | | | * Evaluation skills. * What went well … Even better if… | |
| **Themes and links** | | | | | | | |
| **Themes** | **Where these are covered:** | | | | | | |
| **Investigate** | * Lesson 1, 2 | | | | | | |
| **Design** | * Lesson 3 | | | | | | |
| **Make** | * Lesson 4 | | | | | | |
| **Evaluate** | * Lesson 5. How effective is the product? | | | | | | |