**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. |  |  |
| Oscillatingmotion | 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
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| 1. To investigate how cams can be made using a cam and a follower.
 | * Different shaped cams produce different kinds of movement.
 | * Investigation skills.
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| 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
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| 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
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| 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…
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| **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?
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