Year 4/5 DT Knowledge Organiser: Mechanical Systems

Subject Specific Skills
• Use knowledge of –e.g.- science and art when designing
• Be aware of commercial aspects and incorporate these into designs
• Measure and cut out in precise detail, and make sure that finished products are carefully finished
• Make separate elements of a model before combining into the finished article
• Understand how an article might be mass produced
• Produce a simple instruction manual or handbook for their product
• Research products using web based resources

Prior Learning
• Experience of axles, axle holders and wheels that are fixed or free moving.
• Basic understanding of electrical circuits, simple switches and components
• 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.
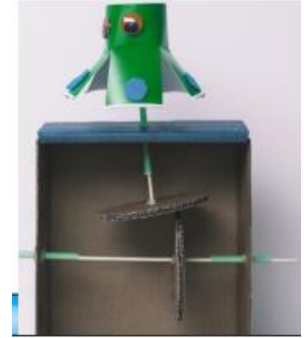
Key Vocabulary
pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, annotated drawings, exploded diagrams mechanical system. input, process, output design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief

Technical Knowledge:
• Understand that mechanical and electrical systems have an input, process and an output.

• Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.
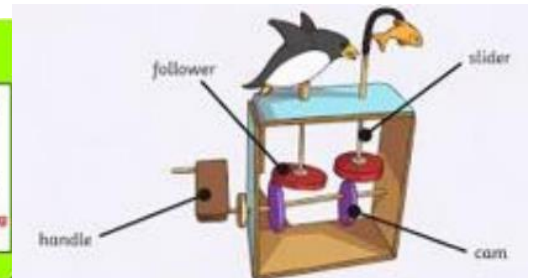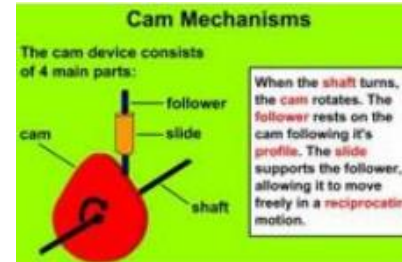
Design: Design and make a moving toy

• Generate innovative ideas by carrying out research.
• Develop a simple design specification.
• Develop and communicate ideas.
• Decide on your intended user.

Make:
• Produce detailed lists of tools, equipment and materials.
• Create step-by-step plans.
• Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished.

Cam Mechanisms

The cam device consists of 4 main parts: cam, follower, slide, shaft

When the shaft turns, the cam rotates. The follower rests on the cam following it's profile. The slide supports the follower, allowing it to move freely in a reciprocating motion.

Evaluate:

• Compare the final product to the original design specification.
• Test products with intended user and evaluate the quality of the design, manufacture, functionality and fitness for purpose.
• Consider the views of others to improve your work.