

LENT TERM 2

DESIGN AND TECHNOLOGY – YEAR 3 - MEDIUM TERM PLANNING – MECHANISMS (Automatons)

<u>LESSON 1</u>	<u>LESSON 2</u>	<u>LESSON 3</u>
<p>TECHNICAL KNOWLEDGE MAKE</p> <p>LEARNING INTENTION: To know that different mechanisms work in different ways.</p> <p>Skills:</p> <ul style="list-style-type: none"> • Use simple lever and linkages to create movement. (Y2 Recap) • Select appropriate materials, fit for purpose. <p>Aim: Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users.</p>	<p>TECHNICAL KNOWLEDGE MAKE</p> <p>LEARNING INTENTION: To know that cams create and up and down motion.</p> <p>Skills:</p> <ul style="list-style-type: none"> • Begin to use cams, to create movement. • Begin to assemble, join and combine materials and components with some accuracy. <p>Aim: Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users.</p>	<p>TECHNICAL KNOWLEDGE MAKE</p> <p>LEARNING INTENTION: To know that different shaped cams create a different movement pattern.</p> <p>Skills:</p> <ul style="list-style-type: none"> • Begin to use cams, to create movement. • Begin to assemble, join and combine materials and components with some accuracy. <p>Aim: Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users.</p>
<p>Key Vocabulary: axles, sliders, levers, fulcrum, shafts, convert.</p>	<p>Key Vocabulary: cams, axles, sliders, rotate, follower.</p>	<p>Key Vocabulary: cams, off-centre, circular, heart, snail, pear, stationary, follower, turn, movement.</p>
<p>Recap and retrieval Levers, linkages, sliders and axles are all used in mechanisms. (KS1 recap)</p>	<p>Recap and retrieval</p> <ul style="list-style-type: none"> • Axles are shafts on which wheels can rotate to make a moving vehicle. 	<p>Recap and retrieval</p> <ul style="list-style-type: none"> • Axles are shafts on which wheels can rotate to make a moving vehicle. • Cams are devices that can convert circular motion into up-and-down motion.
<p>Key Knowledge:</p> <p>Child:</p>	<p>Key Knowledge:</p> <p>Child:</p>	<p>Key Knowledge:</p> <p>Child:</p>

- Levers consist of a rigid bar that rotates around a fixed point, called a fulcrum.
- Sliders move from side to side or up and down, and are often used to make moving parts in books.
- Axles are shafts on which wheels can rotate to make a moving vehicle.

Teacher:

- Mechanisms reduce the amount of work needed to lift a heavy object.

- Cams are devices that can convert circular motion into up-and-down motion.
- Cam mechanisms consist of an axle, a cam and a follower.

Teacher:

- The cam is fixed to the axle and the follower sits on the cam.
- When the axle is rotated, the follower moves up and down, following the shape of the cam.

- Different shaped cams produce different patterns of movement in the follower.

Teacher:

- A **pear cam** makes the follower stationary for half a turn, then it gently rises and falls.
- An **off-center circular cam** produces a smooth, continuous up and down movement.
- A **heart cam** makes a jerky, irregular up and down movement.
- A **snail cam** makes the follower stationary for half a turn, then gently rise and quickly fall.

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LESSON 4	LESSON 5	LESSON 6
<p>DESIGN</p> <p>LEARNING INTENTION: To know that design criteria are the exact goals a project must achieve to be successful.</p> <p>Skills:</p> <ul style="list-style-type: none"> • Create a plan which shows order, equipment and tools. • Describe design using an accurately labelled sketch and words. <p>Aim: Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world.</p>	<p>MAKE</p> <p>LEARNING INTENTION: To know that a material has different properties and suitability.</p> <p>Skills:</p> <ul style="list-style-type: none"> • Begin to measure, mark out, cut and shape materials/components with some accuracy. • Begin to assemble, join and combine materials and components with some accuracy. <p>Aim: Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users.</p>	<p>EVALUATE</p> <p>LEARNING INTENTION: To know that reflection is a key part of the design process.</p> <p>Skills:</p> <ul style="list-style-type: none"> • Use design criteria to evaluate finished product. • Say what they would change to make design better. <p>Aim: Critique, evaluate and test their ideas and products and the work of others.</p>
<p>Key Vocabulary: design, automaton, cam, mechanism, develop, automata, diagram, axle, follower, design criteria</p>	<p>Key Vocabulary: mechanisms, improvements, cams, followers, joining.</p>	<p>Key Vocabulary: cams, mechanisms, reflect, evaluate, design criteria, improve,</p>
<p>Recap and retrieval</p> <ul style="list-style-type: none"> • Axles are shafts on which wheels can rotate to make a moving vehicle. • Cams are devices that can convert circular motion into up-and-down motion. • Different shaped cams produce different patterns of movement in the follower. 	<p>Recap and retrieval</p> <ul style="list-style-type: none"> • Axles are shafts on which wheels can rotate to make a moving vehicle. • Cams are devices that can convert circular motion into up-and-down motion. • Different shaped cams produce different patterns of movement in the follower. 	<p>Recap and retrieval</p> <ul style="list-style-type: none"> • Axles are shafts on which wheels can rotate to make a moving vehicle. • Cams are devices that can convert circular motion into up-and-down motion. • Different shaped cams produce different patterns of movement in the follower.

	<ul style="list-style-type: none"> Design criteria are the exact goals a project must achieve to be successful. 	<ul style="list-style-type: none"> Design criteria are the exact goals a project must achieve to be successful. Materials for a specific task must be selected based on their properties.
<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> Design criteria are the exact goals a project must achieve to be successful. <p>Teacher:</p> <ul style="list-style-type: none"> Automata are machines that seem to move on their own and are intended to intrigue and delight an audience. 	<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> Materials for a specific task must be selected based on their properties. <p>Teacher:</p> <ul style="list-style-type: none"> Asking questions can help others to evaluate their products. Safety rules must be followed to prevent injury to sharp blades. 	<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> Discussions with peers can help discover improvements. <p>Teacher:</p> <ul style="list-style-type: none"> Asking questions can help others to evaluate their products.
<p>Assessment: Cumulative quiz. Retrieval practice.</p>		