

Hapton CE Methodist Primary School – Year 5 Spring 2 Knowledge Organiser

Design & Technology – Mechanical Systems

I will lift up my eyes to the hills, where does my help come from? My help comes from the Lord, the maker of heaven and earth.”

Psalm 121 v 1-2

<p align="center">What should I know ...</p> <ul style="list-style-type: none"> • Know that mechanisms control movement. • Understand that mechanisms can be used to change one kind of motion into another. • Understand how to use sliders, pivots and folds to create paper-based mechanisms. • Know that a design brief is a description of what I am going to design and make. • Know that designers often want to hide mechanisms to make a product more aesthetically pleasing. 	<p align="center">I will be taught facts on...</p> <ul style="list-style-type: none"> • How to mark, saw and cut out the components and supports of their toy with a varying degree of accuracy to the intended measurements. • How linkages change the direction of a force. • That the mechanism in an automata uses a system of cams, axles and followers. • To understand that different shaped cams produce different outputs. • To know that an automata is a hand-powered mechanical toy. • To know that a cross-sectional diagram shows the inner workings of a product. 	<p align="center">Key Questions ...</p> <ul style="list-style-type: none"> • What is an automata? • Do we still see toys that operate without electricity today? • Why is a mechanical (moving without the need for electricity) display a good idea over a static display? <div style="border: 1px solid black; padding: 5px;"> <p align="center">Cam shapes</p> <table border="1"> <thead> <tr> <th>Round</th> <th>Snail</th> <th>Ellipse</th> </tr> </thead> <tbody> <tr> <td>No movement</td> <td>Drop and climb</td> <td>Steady up and down</td> </tr> </tbody> </table> <p align="center"><i>Changing the shape of the cam in your Automata, will create different movements.</i></p> </div>	Round	Snail	Ellipse	No movement	Drop and climb	Steady up and down						
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<p align="center">Key Vocabulary and Definition...</p> <table border="1"> <tr> <td>Automata</td> <td>Mechanical toy or hand powered mechanism</td> </tr> <tr> <td>Cam</td> <td>A rotating or sliding piece in a mechanism</td> </tr> <tr> <td>Exploded diagram</td> <td>A diagram which shows all the internal and external parts of a product</td> </tr> <tr> <td>Jelutong</td> <td>Softwood which is easy to cut and shape</td> </tr> <tr> <td>Set Square</td> <td>A right angle triangular tool used for drawing lines at 90 degrees.</td> </tr> <tr> <td>Follower</td> <td>The post which traces the shape of the cam rising and falling in a linear motion</td> </tr> </table>	Automata	Mechanical toy or hand powered mechanism	Cam	A rotating or sliding piece in a mechanism	Exploded diagram	A diagram which shows all the internal and external parts of a product	Jelutong	Softwood which is easy to cut and shape	Set Square	A right angle triangular tool used for drawing lines at 90 degrees.	Follower	The post which traces the shape of the cam rising and falling in a linear motion	<p align="center">Key skills...</p> <ul style="list-style-type: none"> • Follow health and safety rules, taking care with the equipment. • Partial assembly of their toys using an exploded-diagram, following a teacher’s demonstration. • Develop a design idea with some descriptive notes. • Explore different cam profiles and choose three for their follower toppers with an explanation of their choices. • Create neat, decorated follower toppers with some accuracy. • Measure and cut panels that fit with some inaccuracies to conceal the inner workings of the automata. • Decorate and finish the automata to meet the design criteria and brief 	<p>Automata toy components:</p> <ol style="list-style-type: none"> 1. Character 2. Follower 3. Cam 4. Frame 5. Axle attached to handle <div style="text-align: center;"> </div>
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