



Portfields Primary School Medium Term Plan



Year Group – 5

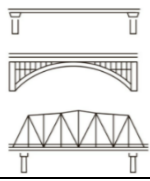
Subject - Design and Technology


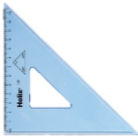

Strand – Mechanisms


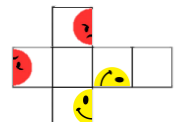
Topic – Pop-up Books

Term - Summer 1

National Curriculum	Key Questions		Substantive Knowledge	Key Vocabulary	Real-Life Links
<p>Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.</p> <p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p>Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.</p> <p>Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</p> <p>Investigate and analyse a range of existing products.</p> <p>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p> <p>Understand how key events and individuals in design and technology have helped shape the world.</p> <p>Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].</p>	<p>Have you read any pop-up books before? What do you like about these pop-up books? What mechanisms can you see in these pop-up books? How do they work? How do these mechanisms enhance the story being told? What do you like about Robert Sabuda's work? How will you make your storybook specific to the user? Has yours/others' designs met the individual design criteria? Do you need to make any changes to your design so it meets the individual design criteria? What do they/you need to do to make their/your mechanisms work effectively? What will your written story be about? What will your illustrations look like?</p>		<p>Know that Robert Sabuda creates pop-up books of well-known stories.</p> <p>Identify the different mechanisms in existing 'pop-up' books and how they contribute to the story.</p> <p>Understand that different mechanisms need different inputs and give different outputs.</p> <p>Know that target audience research is used to determine what a user wants from a product.</p>	<p>Design criteria Evaluate Feedback Fold Horizontal Illustration Input Mechanism Output Target audience Theme Vertical</p>	
	Technical Questions				
	<p>Do all mechanisms function in the same way? <i>No. Different mechanisms need different inputs and give different outputs.</i></p>	<p>What are the purpose of spacers and layers? <i>A spacer is used to restrict the movement of mechanisms (levers and sliders). A layer can be added on top of spacers to hide the mechanism underneath.</i></p>	<p>Know that spacers restrict the movement of lever and slider mechanisms.</p> <p>Know that layers can be added to spacers to hide the mechanism underneath.</p>	Technical Vocabulary	Inventors and Makers
	<p>How does a vertical/horizontal slider work? <i>A slider is pushed up and down/side to side. It is kept in line with spacers.</i></p>	<p>What should the written story be like? <i>It should be appropriate for the Year 1 target audience so not too difficult to read. It should fit the chosen theme.</i></p>		<p>Layer Lever Loose pivot Pivot Pop-up Slider Spacer Split pin</p>	<p><u>Robert Sabuda</u> Makes pop-up storybooks of well-known stories.</p>
	<p>How does a lever on a pivot work? <i>A lever is rotated around a pivot point. It is kept on the point by a pivot which allows some movement.</i></p>	<p>What should the illustrations be like? <i>They should be bright and colourful to engage the Year 1 target audience. They should fit the chosen theme based on the interests of the target audience.</i></p>	Disciplinary Knowledge		
	<p>How does a pop-up work? <i>A piece of the page is cut and folded in the opposite direction. When the page is opened, it extends outwards.</i></p>		<p>Create a set of design criteria based on the information provided by the target audience.</p> <p>Design a storybook by creating a storyboard containing: a clear theme that suits the target audience, labelled mechanisms, a short narrative.</p>		
	<p>Why do we conduct target audience research? <i>To determine what a user wants from a product so it can be specific to them.</i></p>		<p>Evaluate own and other's design against their individual design criteria.</p> <p>Make changes to the design based on peer feedback against the individual design criteria.</p>		
	<p>Why should design criteria be specific? <i>So the product is made to suit the user and their individual needs.</i></p>		<p>Create the frame of a book by folding and gluing card.</p> <p>Create a pop-up mechanism by cutting and folding card in the opposite direction to create movement.</p>		
			<p>Create functional slider and lever mechanisms using split pins, spacers and layers.</p>		
			<p>Provide feedback to peers about the functionality of their mechanisms.</p>		
			<p>Amend mechanisms for functionality based on peer feedback.</p>		
			<p>Add the story and illustrations to the pop-up book so they are appropriate for the target audience.</p>		

Lesson 1		
Flashback Four		Learning Objectives
<p>Last Topic Draw these bridges on your whiteboard in order from weakest to strongest: truss, arch, beam <i>beam, arch, truss</i></p> 	<p>Learning Objective LO to design a pop-up book.</p> <p>Success Criteria I know that mechanisms control movement. I can conduct target audience research to inform my product. I can design a storybook with a theme to suit the target audience and a range of mechanisms. I can adapt my design based on peer feedback.</p>	<p>Star Knowledge Different mechanisms (sliders, levers, pop-ups) need different inputs and give different outputs.</p>
<p>Last Year Name a toy that uses stored energy. <i>e.g. wind-up toy, pull-back toy (e.g. slingshot car), toy with a spring</i></p>	<p>Art Name a warm tertiary colour. <i>Red-orange, yellow-orange, yellow-green</i></p>	

Lesson 2		
Flashback Four		Learning Objectives
<p>Last Lesson What are these mechanisms called? <i>Vertical slider, lever on a pivot</i></p> 	<p>Last Topic What is this piece of equipment called and how it used? <i>A set square that is used for measuring and marking lengths and 45° and 90° angles.</i></p> 	<p>Learning Objective LO to make slider, lever and pop-up mechanisms.</p> <p>Success Criteria I can make mechanisms using sliders, pivots and folds to produce movement. I can use layers to cover the working of mechanisms. I can use spacers to restrict the movement of mechanisms.</p>
<p>Last Year How are exploded diagrams useful? <i>They show how a product can be assembled.</i></p> 	<p>Art What colours might an artist use to create a calm atmosphere or mood? <i>Blues, greens or purples.</i></p>	<p>Star Knowledge A spacer is used to restrict the movement of mechanisms (levers and sliders). A layer can be added on top of spacers to hide the mechanism underneath.</p>

Lesson 3		
Flashback Four		Learning Objectives
<p>Last Lesson What is the purpose of adding a layer over the top of spacers? <i>To hide the mechanism underneath.</i></p>	<p>Last Topic What is this piece of equipment called and which parts can you hold safely? <i>This is a glue gun. You can hold the handle and the trigger as they do not heat up.</i></p> 	<p>Learning Objective LO to add text and illustrations to meet the design criteria.</p> <p>Success Criteria I can add a short story that relates to the mechanisms on each page. I can add illustrations in line with the target audience's likes. I can share my final product with the target audience.</p>
<p>Last Year What mistake has been made? <i>The orientation of the net has not been considered so the design will not match up when the 3D shape is made.</i></p> 	<p>Art What painting technique might we use to paint clouds? <i>Smearing</i></p>	<p>Star Knowledge The story should be appropriate for the target audience and the illustrations should fit the chosen theme based on the interests of the target audience.</p>

