

Advent 2
Design & Technology – Mechanisms and Mechanical Structures – Making a pop-up book: Y5

Scripture Link:

National Curriculum Objective:

Design, make and evaluate a _____ (product) for _____ (user) for _____ (purpose)

	Lesson 1	Lesson 2	Lesson 3
Learning intention for each lesson	I know what a pop-up book is and its purpose.	I can design a pop-up book.	I can follow my design brief to make my pop-up book.
Recall and Retrieval	<ul style="list-style-type: none"> • some real-life items that use mechanisms such as wheelbarrows, hamster wheels and vehicles. • that mechanisms are a collection of moving parts that work together as a machine to produce movement. • there is always an input and an output in a mechanism. 	<ul style="list-style-type: none"> • that different materials have different properties and are therefore suitable for different uses. • I know the shape of an object will affect how it moves. • I know that drawing a net can be used to create a structure. • I know that a template is a stencil you can use to help you draw the same shape accurately. 	<ul style="list-style-type: none"> • that it is important to test my design as I go along so that I can solve any problems that may occur. • That creating a prototype of my design is useful for checking ideas and proportions. • I know how to use sliders, pivots and folds to create paper-based mechanisms. • I know that: <ul style="list-style-type: none"> • an input is the motion used to start a mechanism; • an output is the motion that happens as a result of starting the input.
Sequence of substantive knowledge throughout the lesson	<p>Evaluate:</p> <ul style="list-style-type: none"> • I know that mechanisms control movement. • I know that mechanisms can be used to change one kind of motion into another. • I know that drawing a net can be used to create a structure. • I know that all moving things have kinetic energy. • I know the shape of an object will affect how it moves. • I know that aesthetics means how an object or product looks in design and technology. • I know that a template is a stencil you can use to help you draw the same shape accurately. 	<p>Design:</p> <ul style="list-style-type: none"> • I know how to use sliders, pivots and folds to create paper-based mechanisms. • I know that: <ul style="list-style-type: none"> • an input is the motion used to start a mechanism; • an output is the motion that happens as a result of starting the input. • I know that structures use the movement of the pages to work. • I know that mechanisms control movement 	<p>Make:</p> <ul style="list-style-type: none"> • I know that a design brief is a description of what I am going to design and make.

	<ul style="list-style-type: none"> I know that it is important to assess and evaluate design ideas and models against a list of design criteria. 		
Key Skills/disciplinary knowledge		Design: <ul style="list-style-type: none"> I can design a pop-up book which uses a mixture of structures and mechanisms. I can design a book made up of a front cover and four pages and include a mixture of structures and mechanisms within it. I can name each mechanism, input and output accurately. I can storyboard ideas for a book. 	Make: <ul style="list-style-type: none"> I can follow a design brief to make a pop-up book, neatly and with focus on accuracy. I can use paper, card and glue to make my book structure. I can make mechanisms and/or structures using sliders, pivots and folds to produce movement
Key Vocabulary	Design, input, motion, mechanism, Criteria, research, reinforce, model	Design, design brief, design criteria, input, layers, lever, mechanism, model, motion, output, pivot, slider, spacers, structure, reinforce, research	Layers, lever, mechanism, model, motion, pivot, Slider, spacers, structure
Main teaching activity <i>If the school has another short term planning format, this does not need to be included.</i>			
Scaffolding		Pupils needing extra support <ul style="list-style-type: none"> could base their books upon the Jack and Jill nursery rhyme; could work with the suggested mechanisms and structures for each page. 	Pupils needing extra support <ul style="list-style-type: none"> could use the Activity: Jack and Jill book template (support) and/or the Activity: Jack and Jill moving and pop-up parts (support) that have been used as demonstration pieces in each of the teacher videos accompanying this topic.
Challenge		Pupils working at greater depth: <ul style="list-style-type: none"> could include a range of different mechanisms and structures on each page; should articulate how each mechanism could be made. 	Pupils working at greater depth: <ul style="list-style-type: none"> should work independently and make use of more complex mechanisms/sophisticated structures.
Diversity Links			
Catholic Social Teaching Principles			

British Values			
Wider links			

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	Lesson 4	Lesson 5	Lesson 6
Learning intention for each lesson	I can use layers and spacers to cover the working of mechanisms.	I can create a high-quality product suitable for a target user.	I can evaluate my pop-up book against the design criteria.
Recall and Retrieval	<ul style="list-style-type: none"> I know that a design brief is a description of what I am going to design and make. I know how to use sliders, pivots and folds to create paper-based mechanisms. 	<ul style="list-style-type: none"> I know that mechanisms can be used to change one kind of motion into another. I know that all moving things have kinetic energy. I know that designers often want to hide mechanisms to make a product more aesthetically pleasing. 	<ul style="list-style-type: none"> How closely my finished product meets my design criteria. I know that I need to consider the preferences and needs of the user. I know that good quality making should be neat, accurate and securely assembled.
Sequence of substantive knowledge throughout the lesson	<p>Make:</p> <ul style="list-style-type: none"> I know that designers often want to hide mechanisms to make a product more aesthetically pleasing. 	<p>Make:</p> <ul style="list-style-type: none"> I know that I need to consider the preferences and needs of the user. I know that good quality making should be neat, accurate and securely assembled. 	
Key Skills/disciplinary knowledge	<p>Make:</p> <ul style="list-style-type: none"> I can use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. I can complete the mechanisms and structures as detailed in my design template. I can make my book look neater and more attractive by using layers and spacers to hide relevant parts of my mechanisms. 	<p>Make:</p> <ul style="list-style-type: none"> I can complete the surface decoration of my pop-up book by adding the story through: <ul style="list-style-type: none"> pictures; captions 	<p>Evaluate:</p> <ul style="list-style-type: none"> I can evaluate the work of others and receive feedback on my own work. I can suggest points for improvement.
Key Vocabulary	Aesthetic, layers, spacers	Aesthetic, caption, function	Design, input, motion, mechanism, criteria, Research, reinforce, model
Main teaching activity <i>If the school has another short term planning</i>			

<i>format, this does not need to be included.</i>			
Scaffolding	<p>Pupils needing extra support:</p> <ul style="list-style-type: none"> • should simplify designs and/or use the Activity: Jack and Jill moving pop-up parts (support) and the Activity: Jack and Jill book template (support) for the page backgrounds. 	<p>Pupils needing extra support:</p> <ul style="list-style-type: none"> • could use printed characters; should work with just one or two materials. 	
Challenge	<p>Pupils working at greater depth:</p> <ul style="list-style-type: none"> • should introduce a diverse range of mechanisms, structures or a combination of both 	<p>Pupils working at greater depth:</p> <ul style="list-style-type: none"> • should work with a wider range of materials and use them more creatively; could create a back cover if time allows. 	
Diversity Links			
Catholic Social Teaching Principles			
British Values			
Wider curriculum links			