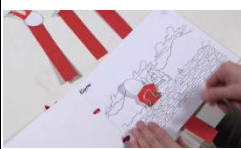


 BOWLEE PARK COMMUNITY SCHOOL Design and Technology Progression Document		Mechanisms							
		EYFS		Key Stage 1		Key Stage 2			
		Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Previous Skills Taught	End Product			 	 				
	Design brief	To design and make an emergency vehicle that moves on wheels	To design and make a mechanism that moves using a handle and gears	To design and make a moving picture for a reception aged child. The slider/movement must move from side to side and up and down.	To design and make a moving monster from card and split pin linkage that are joined together by pivots so that the levers can move as a mechanism. It will include a monster's head which will open and close as the linkage is controlled by handles.	To design and make a toy for Year 1 children to help them understand that pneumatic systems can be used to create movement.	To make a self powered 'slingshot' car including the design and construction of the car body, to race against those of my classmates.	To design and make an interactive storybook for Year 1 children using a mixture of pop-up structures and interactive mechanisms.	To design and create a mechanical toy to mimic movement in a character or object with a system of cams axles and followers.
				To design and create a moving vehicle. The vehicle must include wheels, axle and axle holder.	To design and make a ferris wheel. The wheel must rotate and will have a stable frame, pods and an axle				

	Design	-Design a vehicle that includes wheels.		• Design for a given Audience. • Design a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move. • Create clearly labelled drawings which illustrate movement.	• Design a moving monster for a specific audience in accordance with a design criteria. • Selecting a suitable linkage system to produce the desired motions. • Design a wheel Selecting appropriate materials based on their properties.	• Design a toy which uses a pneumatic system and fits a design brief. • Generate ideas using thumbnail sketches and exploded diagrams.	• Design a shape that reduces air resistance. • Draw a net to create a structure from. • Personalise a Design.	• Design a pop-up book which uses a mixture of structures and mechanisms. • Name each mechanism, input and output accurately. • Storyboard ideas for a book.	• Experiment with a range of cams, create a design for an automata toy based on a choice of cam to create a desired movement. • Understand how linkages change the direction of a force. • Understand and Draw cross-sectional diagrams to show the inner-workings of the automata.
	Make	-Use junk modelling resources to create a cab for the vehicle. -Push in the wheels kits to join them to the cab to create a vehicle that moves.		• Follow a design to create moving models that use levers and sliders.	• Make linkages using card for levers and split pins for pivots. • Experiment with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly. • Follow a design brief and select materials according to their characteristics.	• Create a pneumatic system to create a desired motion. • Build secure housing for a pneumatic system using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Select materials due to their functional and aesthetic characteristics and manipulate them to create different effects by cutting, creasing, folding, weaving.	• Measure, mark, cut and assemble with increasing accuracy. • Make a model based on a chosen design.	• Follow a design brief to make a pop up book, neatly and with focus on accuracy. Links to yr 1 pop up book, • Make mechanisms and/or structures using sliders, pivots and folds to produce movement. • Use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.	• Measure, mark and check the accuracy of components accurately using a ruler and scissors. • Assemble components accurately to make a stable frame understanding the joints of the frame need to be secured at right angles.
	Evaluation <i>Evaluate against the design brief</i>	-Test the finished product to see if it moves.	-Test the finished product to see whether it moves when the handle is turned.	• Test a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed • Reviewing the	• Evaluate own designs against design criteria. • Use peer feedback to modify a final design and evaluate others designs.	• Use the views of others to improve designs. • Test and modify the outcome, suggesting improvements.	• Evaluate the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on	• Evaluate the work of others and receive feedback on own work. • Suggest points for improvement.	• Evaluate the work of others and receive feedback on own work. • Apply points of Improvements and describe changes

				success of a product by testing it with its intended audience	• Test and adapt a design.	• Understand the purpose of exploded-diagrams through the eyes of a designer and their client.	performance.		they would make/do if they were to do the project again.
	Technical Knowledge	-Learn that for wheels to rotate they must be round.	-Understand Technical vocabulary: gears handle	• To know that a mechanism is the parts of an object that move together • To know that a slider mechanism moves an object from side to side • To know that a slider mechanism has a slider, slots, guides and an object • To know that bridges and guides are bits of card that purposefully restrict the movement of the slider • To know that wheels need to be round to rotate and move • To understand that for a wheel to move it must be attached to a rotating axle • To know that an axle moves within an axle holder which is fixed to the vehicle or toy • To know that the frame of a vehicle (chassis) needs to be balanced	• To know that different materials have different properties and are therefore suitable for different uses • To know that mechanisms are a collection of moving parts that work together as a machine to produce movement • To know that there is always an input and output in a mechanism • To know that an input is the energy that is used to start something working • To know that an output is the movement that happens as a result of the input • To know that a lever is something that turns on a pivot • To know that a linkage mechanism is made up of a series of levers	• To understand how pneumatic systems work • To understand that pneumatic systems can be used as part of a mechanism • To know that pneumatic systems operate by drawing in, releasing and compressing air	• To understand that all moving things have kinetic energy • To understand that kinetic energy is the energy that something (object/person) has by being in motion • To know that air resistance is the level of drag on an object as it is forced through the air • To understand that the shape of a moving object will affect how it moves due to air resistance.	• To know that mechanisms control movement • To understand that mechanisms that can be used to change one kind of motion into another • To understand how to use sliders, pivots and folds to create paper-based mechanisms	• To understand that the mechanism in an automata uses a system of cams, axles and followers • To understand that different shaped cams produce different outputs
	Additional knowledge			• To know that in Design and technology we call a plan a 'design' • To know some real-life items that use wheels such as wheelbarrows,	• To know the features of a Ferris wheel include the wheel, frame, pods, a base an axle and an axle holder • To know that it is important to test my design as I go	• To understand how sketches, drawings and diagrams can be used to communicate design ideas • To know that	• To understand that products change and evolve over time • To know that aesthetics means how an object or product looks in	• To know that a design brief is a description of what I am going to design and make • To know that designers often want to hide mechanisms to	• 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 • To

				hamster wheels and vehicles	along so that I can solve any problems that may occur • To know some real-life objects that contain mechanisms	exploded-diagrams are used to show how different parts of a product fit together • To know that thumbnail sketches are small drawings to get ideas down on paper quickly	design and technology • To know that a template is a stencil you can use to help you draw the same shape accurately • To know that a birds-eye view means a view from a high angle (as if a bird in flight) • To know that graphics are images which are designed to explain or advertise something • To know that it is important to assess and evaluate design ideas and models against a list of design criteria.	make a product more aesthetically pleasing	understand how to use a bench hook and saw safely • To know that a set square can be used to help mark 90° angles
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