

DT – Year 1 – Autumn 2

Structures: constructing windmills (4 lessons)

Mechanisms: making a moving story book (lesson 1, 2 and 3)

	<p>Previous Learning / sticky knowledge</p> <p>EYFS: junk modelling Physical development Develop small motor skills so that they can use a range of tools competently, safely and confidently. <u>ELG: Fine Motor Skills:</u> Use a range of small tools, including scissors, paint brushes and cutlery.</p> <p>Expressive arts and design Explore, use and refine a variety of artistic effects to express ideas and feelings. <u>ELG: Creating with Materials:</u> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p> <p>This unit: Identify some features that would appeal to the client (a mouse) and create a suitable design. Explain how their design appeals to the mouse. Make stable structures, which will eventually support the turbine, out of card, tape and glue. Make functioning turbines and axles that are assembled into the main supporting structure. Say what is good about their windmill and what they could do better.</p>			
	Curiosity questions	Substantive knowledge	Disciplinary Knowledge	Key Vocabulary
Wk 1	<p>What is a windmill?</p> <p>To include individual preferences and requirements in my design.</p>	<ul style="list-style-type: none"> To understand that the shape of materials can be changed to improve the strength and stiffness of structures. To understand that cylinders are a strong type of structure (and, therefore, they are the main shape used for windmills and lighthouses). To begin to understand that different structures are used for different purposes. 	<ul style="list-style-type: none"> Learning the importance of a clear design criteria. Including individual preferences and requirements in a design. 	<p>Axle Bridge Design Design Criteria Model Net Packaging Structure Template</p>
<p><u>Retrieval Practice Questions</u> Last week: which is a windmill? Pictures of different structures to choose from. Last term: which material would be the best for a boat? Last year: How do I safely use scissors?</p>				
Wk 2	<p>What is a strong shape?</p> <p>To make a stable structure.</p>	<ul style="list-style-type: none"> To understand that the shape of materials can be changed to improve the strength and stiffness of structures. To understand that cylinders are a strong type of structure (and, therefore, they are the main shape used for windmills and lighthouses). 	<ul style="list-style-type: none"> Making stable structures from card, tape and glue. Learning how to turn 2D nets into 3D structures. Following instructions to cut and assemble the supporting structure of a windmill. 	<p>Axle Bridge Design Design Criteria Unstable Stable</p>

		<ul style="list-style-type: none"> To know that a structure is something that has been made and put together. 		Structure Template Net Strong Weak
	<u>Retrieval Practice Questions</u> Last week: What different types of windmills can you think of? Last term: What can I use to join 2 materials? Last year: what does bend mean?			
Wk 3	What are turbines for? To assemble the components of my structure.	To understand that the shape of materials can be changed to improve the strength and stiffness of structures. To understand that axles are used in structures and mechanisms to make parts turn in a circle. To begin to understand that different structures are used for different purposes. To know that a structure is something that has been made and put together.	Learning the importance of a clear design criteria. Including individual preferences and requirements in a design. Making functioning turbines and axles which are assembled into a main supporting structure.	Axle Bridge Design Design criteria Model Packaging Structure Template Net
	<u>Retrieval Practice Questions</u> Last week: picture of a stable and an unstable structure. Explain which one is stable and why. Last term: What is a design? Last year: Name a tool we can use to join materials.			
Wk 4	How well does my windmill work? To evaluate my project and adapt my design.	To understand that the shape of materials can be changed to improve the strength and stiffness of structures. To understand that cylinders are a strong type of structure (and, therefore, they are the main shape used for windmills and lighthouses). To understand that axles are used in structures and mechanisms to make parts turn in a circle. To begin to understand that different structures are used for different purposes. To know that a structure is something that has been made and put together.	Learning the importance of a clear design criteria. Including individual preferences and requirements in a design. Making stable structures from card, tape and glue. Learning how to turn 2D nets into 3D structures. Following instructions to cut and assemble the supporting structure of a windmill. Making functioning turbines and axles which are assembled into a main supporting structure.	Axle Bridge Design Design Criteria Model Packaging Structure Template Net
	<u>Retrieval Practice Questions</u> Last week: What does an axel do? Last term: How can we test that a boat works? Last year: what is an evaluation?			

Wk 5	What is a moving picture?	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.	Explaining how to adapt mechanisms, using bridges or guides to control the movement. Designing a moving story book for a given audience. Following a design to create moving models that use levers and sliders. Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. Reviewing the success of a product by testing it with its intended audience.	sliders mechanisms
<u>Retrieval Practice Questions</u> Last week: what other products have an axle? Last term: what is a prediction? Last year: accurately measure a length				
Wk 6	How will you tell the part of the story through a picture?	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.	Explaining how to adapt mechanisms, using bridges or guides to control the movement. Designing a moving story book for a given audience. Following a design to create moving models that use levers and sliders. Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. Reviewing the success of a product by testing it with its intended audience.	adapt design design criteria input mechanism model sliders template
<u>Retrieval Practice Questions</u> Last week: talk to your partner about all the things you learnt about how things move from last session. Last term: what do you include in a design? Last year: picture of a junk model what has been used?				
Wk 7	How will my picture move?	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.	Explaining how to adapt mechanisms, using bridges or guides to control the movement. Designing a moving story book for a given audience. Following a design to create moving models that use levers and sliders. Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. Reviewing the success of a product by testing it with its intended audience.	assemble design design criteria input mechanism model sliders template
<u>Retrieval Practice Questions</u> Last week: agree or disagree "all things move up and down like a ball." Do you agree or disagree? Last term: picture of a boat. Name the parts of a boat. Last year: which of these is not a material.				
WOW Experience Days				