

Progression of skills and knowledge 'Structures'		EYFS- Junk modelling	EYFS- Boats	Year 3- Stonehenge	Year 5- Bridges	Year 6- Playgrounds
Skills	Design	<ul style="list-style-type: none"> - Making verbal plans and material choices. - Developing a junk model. 	<ul style="list-style-type: none"> - Designing a junk model boat. - Using knowledge from exploration to inform design. 	<ul style="list-style-type: none"> - Develop ideas for own products using knowledge gained from practical tasks and existing product evaluation. - Think about the purpose and audience. - Identify and list materials needed. - Draw/plan labelled diagrams of product design. - Consider the order of tasks (instructions). 	<ul style="list-style-type: none"> - Designing a stable structure that is able to support weight. - Creating a frame structure with a focus on triangulation. 	<ul style="list-style-type: none"> - Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.
	Make	<ul style="list-style-type: none"> - Improving fine motor/scissor skills with a variety of materials. - Joining materials in a variety of ways (temporary and permanent). - Joining different materials together. - Describing their junk model and how they intend to put it together. 	<ul style="list-style-type: none"> - Making a boat that floats and is waterproof, considering material choices. 	<ul style="list-style-type: none"> - Constructing a range of 3D geometric shapes using nets. - Creating special features for individual designs. - Making facades from a range of recycled materials. - Use own plans to create final product. - Refine product designs as the final product is created. 	<ul style="list-style-type: none"> - Making a range of different shaped beam bridges. - Using triangles to create truss bridges that span a given distance and support a load. - Building a wooden bridge structure. - Independently measuring and marking wood accurately. - Selecting appropriate tools. 	<ul style="list-style-type: none"> - Building a range of play apparatus structures drawing upon new and prior knowledge of structures. - Measuring, marking and cutting wood to create a range of structures. - Using a range of materials to reinforce and add decoration to structures.

				<ul style="list-style-type: none"> - Choose and use appropriate materials and tools 	<ul style="list-style-type: none"> and equipment for particular tasks. - Using the correct techniques to saw safely. - Identifying where a structure needs reinforcement and using card corners for support. - Explaining why selecting appropriating materials is an important part of the design process. - Understanding basic wood functional properties. 	
	Evaluate	<ul style="list-style-type: none"> - Giving a verbal evaluation of their own and others' junk models with adult support. - Checking to see if their model matches their plan. - Considering what they would do differently if they were to do it again. - Describing their favourite and least favourite part of their model. 	<ul style="list-style-type: none"> - Making predictions about, and evaluating different materials to see if they are waterproof. - Making predictions about, and evaluating existing boats to see which floats best. - Testing their design and reflecting on what could have been done differently. 	<ul style="list-style-type: none"> - Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. - Suggesting points for modification of the individual designs. - Consider whether the product meets the design brief/purpose and audience 	<ul style="list-style-type: none"> - Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. - Suggesting points for improvements for own bridges and those designed by others. 	<ul style="list-style-type: none"> - Improving a design plan based on peer evaluation. - Testing and adapting a design to improve it as it is developed. - Identifying what makes a successful structure

			- Investigating the how the shapes and structure of a boat affect the way it moves.			
Knowledge	Technical	<ul style="list-style-type: none"> - To know there are a range of different materials that can be used to make a model and that they are all slightly different. - Making simple suggestions to fix their junk model. 	<ul style="list-style-type: none"> - To know that waterproof materials are those which do not absorb water. 	<ul style="list-style-type: none"> - To understand that wide and flat based objects are more stable. - To understand the importance of strength and stiffness in structures. 	<ul style="list-style-type: none"> - To understand some different ways to reinforce structures. - To understand how triangles can be used to reinforce bridges. - To know that properties are words that describe the form and function of materials. - To understand why material selection is important based on properties. - To understand the material (functional and aesthetic) properties of wood. 	<ul style="list-style-type: none"> - To know that structures can be strengthened by manipulating materials and shapes.
	Additional		<ul style="list-style-type: none"> - To know that some objects float and others sink. - To know the different parts of a boat. 	<ul style="list-style-type: none"> - To know that a façade is the front of a structure. - To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. 	<ul style="list-style-type: none"> - To understand the difference between arch, beam, truss and suspension bridges. - To understand how to carry and use a saw safely. 	<ul style="list-style-type: none"> - To understand what a 'footprint plan' is. - To understand that in the real world, design, can impact users in positive and negative ways.

				<ul style="list-style-type: none">- To know that a design specification is a list of success criteria for a product.- To know some similarities and differences between stone age structures.		<ul style="list-style-type: none">- To know that a prototype is a cheap model to test a design idea.
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