

St. Joseph's R.C. Primary School
Design and Technology Progression of Skills and Knowledge



Structures								
		Reception Junk Modelling & Boats	Year 1 Windmills	Year 2 Baby Bear's Chair	Year 3 Castles	Year 4 Pavilions	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"> • Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design. 	<ul style="list-style-type: none"> • Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects. 	<ul style="list-style-type: none"> • Designing a castle with key features to appeal to a specific person/purpose. • Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. • Designing and/or decorating a castle tower on CAD software. 	<ul style="list-style-type: none"> • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight. 	<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"> • 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. 	<ul style="list-style-type: none"> • Making a structure according to design criteria. • Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper. 	<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. 	<ul style="list-style-type: none"> • Creating a range of different shaped frame structures. • Making a variety of free-standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials. 	<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.
	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. 	<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 	<ul style="list-style-type: none"> • Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't • Suggest points for improvements 	<ul style="list-style-type: none"> • Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. 	<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. 	<ul style="list-style-type: none"> • Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs. 	<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.



St. Joseph's R.C. Primary School Design and Technology Progression of Skills and Knowledge

		<ul style="list-style-type: none"> • Considering what they would do differently if they were to do it again. • Describing their favourite and least favourite part of their model. 	boats to see which floats best. <ul style="list-style-type: none"> • Testing their design and reflecting on what could have been done differently. • Investigating the how the shapes and structure of a boat affect the way it moves. 		<ul style="list-style-type: none"> • Evaluating the strength, stiffness and stability of own structure. 	<ul style="list-style-type: none"> • Suggesting points for modification of the individual designs. 		<ul style="list-style-type: none"> • Identifying what makes a successful structure.
Knowledge	<i>Technical</i>	<ul style="list-style-type: none"> • To know there are a range to 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 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 (e.g., 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 	<ul style="list-style-type: none"> • To know that shapes and structures with wide, flat bases or legs are the most stable. • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily 	<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 what a frame structure is. • To know that a 'free-standing' structure is one which can stand on its own 	<ul style="list-style-type: none"> • To know that structures can be strengthened by manipulating materials and shapes.
	<i>Additional</i>		<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 client is the person I am designing for. • To know that the design criteria is a list of points to ensure the product meets the client's needs and wants. 	<ul style="list-style-type: none"> • To know that natural structures are those found in nature. • To know that man-made structures are those made by people. 	<ul style="list-style-type: none"> • To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose. 	<ul style="list-style-type: none"> • To know that a pavilion is a decorative building or structure for leisure activities. • To know that cladding can be applied to structures for different effects. 	<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

St. Joseph's R.C. Primary School
Design and Technology Progression of Skills and Knowledge



- To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity.
- To know that windmill turbines use wind to turn and make the machines inside work.
- To know that a windmill is a structure with sails that are moved by the wind.
- To know the three main parts of a windmill are the turbine, axle and structure

- To know that a façade is the front of a structure.
- To understand that a castle needed to be strong and stable to withstand enemy attack.
- To know that a paper net is a flat 2D shape that can become a 3D shape once assembled.
- To know that a design specification is a list of success criteria for a product.

- To know that aesthetics are how a product looks.
- To know that a product's function means its purpose.
- To understand that the target audience means the person or group of people a product is designed for.
- To know that architects consider light, shadow and patterns when designing.

negative ways.

- To know that a prototype is a cheap model to test a design idea.

Please note: not all year groups are included for each separate element due to our **combined and condensed curriculum.**