



St Joseph's Catholic Primary School

Design & Technology Progression of Skills

Structure								
	F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	<ul style="list-style-type: none"> • Explore different materials freely, in order to develop their ideas about how to use them and what to make. 	<ul style="list-style-type: none"> • Explore, use and refine a variety of artistic effects to express their ideas and feelings. 	<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 need and colours 	<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 stable structure that is able to support weight • Creating frame structure with 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"> • Make simple models which express their ideas. • Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with 	<ul style="list-style-type: none"> • Create collaboratively sharing ideas, resources and skills. 	<ul style="list-style-type: none"> • Making stable structures from card, tape and glue • Following instructions to cut and assemble the supporting structure of a windmill 	<ul style="list-style-type: none"> • Making a structure according to design criteria • Creating joints and structures from paper/card and tape 	<ul style="list-style-type: none"> • Constructing a range of 3D geometric shapes using nets • Creating special features for individual designs • Making facades 	<ul style="list-style-type: none"> • Creating a range of different shaped frame structures • Making a variety of free standing frame structures 	<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 	<ul style="list-style-type: none"> • Building a range of play apparatus structures drawing upon new and prior knowledge of structures • Measuring, marking



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	different buildings and a park.		<ul style="list-style-type: none"> • Making functioning turbines and axles which are assembled into a main supporting structure 		from a range of recycled materials	<p>of different shapes and sizes</p> <ul style="list-style-type: none"> • Selecting appropriate materials to build a strong structure and for the cladding • Reinforcing corners to strengthen a structure • Creating a design in accordance with a plan • Learning to create different textural effects with materials 	<p>supports a load</p> <ul style="list-style-type: none"> • Building a wooden bridge structure • Independently measuring and marking wood accurately • Selecting appropriate tools and equipment for particular tasks • Using the correct techniques to saws safely • Identifying where a structure needs reinforcement and using card corners for support 	<p>and cutting wood to create a range of structures</p> <ul style="list-style-type: none"> • Using a range of materials to reinforce and add decoration to structures
Evaluate	<ul style="list-style-type: none"> • Develop their own ideas and then decide which materials to use to express them. 	<ul style="list-style-type: none"> • Return to and build on their previous learning, refining ideas and 	<ul style="list-style-type: none"> • Evaluating a windmill according to the design criteria, testing whether the structure is strong 	<ul style="list-style-type: none"> • Exploring the features of structures • Comparing the stability of different shapes • Testing the strength of own 	<ul style="list-style-type: none"> • Evaluating own work and the work of others based on the aesthetic of the 	<ul style="list-style-type: none"> • Evaluating structures made by the class • Describing what characteristics of a design and 	<ul style="list-style-type: none"> • Adapting and improving own bridge structure by identifying points of weakness and 	<ul style="list-style-type: none"> • Improving a design plan based on peer evaluation • Testing and adapting a design



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		developing their ability to represent them.	and stable and altering it if it isn't <ul style="list-style-type: none"> Suggest points for improvements 	structures <ul style="list-style-type: none"> Identifying the weakest part of a structure Evaluating the strength, stiffness and stability of own structure 	finished product and in comparison to the original design <ul style="list-style-type: none"> Suggesting points for modification of the individual designs 	construction made it the most effective <ul style="list-style-type: none"> Considering effective and ineffective designs 	reinforcing them as necessary <ul style="list-style-type: none"> Suggesting points for improvements for own bridges and those designed by others 	to improve it as it is developed <ul style="list-style-type: none"> Identifying what makes a successful structure
Technical Knowledge			<ul style="list-style-type: none"> Describing the purpose of structures, including windmills Learning how to turn 2D nets into 3D structures Learning that the shape of materials can be changed to improve the strength and stiffness of structures Understanding that cylinders are a strong type of structure that 	<ul style="list-style-type: none"> Identifying natural and man-made structures Identifying when a structure is more or less stable than another Knowing that shapes and structures with wide, flat bases or legs are the most stable Understanding that the shape of a structure affects 	<ul style="list-style-type: none"> Identifying features of a castle Identifying suitable materials to be selected and used for a castle, considering weight, compression, tension Extending the knowledge of wide and flat based objects are more stable Understanding the terminology of strut, tie, span, 	<ul style="list-style-type: none"> Learning what pavilions are and their purpose Building on prior knowledge of net structures and broadening knowledge of frame structures Learning that architects consider light, shadow and patterns when designing Implementing frame and shell structure knowledge Considering effective and 	<ul style="list-style-type: none"> Exploring how to create a strong beam Identifying arch and beam bridges and understanding the terms: compression and tension Identifying stronger and weaker structures Finding different ways to reinforce structures Understanding 	<ul style="list-style-type: none"> Knowing that structures can be strengthened by manipulating materials and shapes Identifying the shell structure in everyday life (cars, aeroplanes, tins, cans) Understanding man made and natural structures



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			<p>are often used for windmills and lighthouses</p> <ul style="list-style-type: none"> Understanding that windmill turbines use wind to turn and make the machines inside work Understanding that axles are used in structures and mechanisms to make parts turn in a circle Developing awareness of different structures for different purposes 	<p>its strength</p> <ul style="list-style-type: none"> Using the vocabulary: strength, stiffness and stability Knowing that materials can be manipulated to improve strength and stiffness Building a strong and stiff structure by folding paper 	<p>beam</p> <ul style="list-style-type: none"> Understanding the difference between frame and shell structure 	<p>ineffective designs</p>	<p>how triangles can be used to reinforce bridges</p> <ul style="list-style-type: none"> Articulating the difference between beam, arch, truss and suspension bridges 	
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