

Ashwell Primary School
Design & Technology Curriculum
Skills & Knowledge Organiser - Structures



Structures - Key Stage 1

		Year 1 – Constructing a windmill	Year 2 – Baby Bear’s chair
Skills	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
	Make	<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
	Evaluate	N/A	<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 ▪ Evaluating the strength, stiffness and stability of own structure
Knowledge	Technical	<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 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 structures with wide, flat bases or legs are most stable ▪ To understand that the shape of a structure affects its strength ▪ To know that materials can be manipulated to improve strength & stiffness ▪ To know that a structure is something which has been formed 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
	Additional	<ul style="list-style-type: none"> ▪ To know that a client is the person I am designing for ▪ To know that design criteria is a list of points to ensure the product meets the client’s needs and wants ▪ 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 wind ▪ To know the 3 main parts of a windmill are the turbine, axle & structure 	<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

Structures – Key Stage 2

		Year 3 – Constructing a castle	Year 6 – Playgrounds
Skills	Design	<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 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"> ▪ 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"> ▪ 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"> ▪ 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 	<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
Knowledge	Technical	<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 know that structures can be strengthened by manipulating materials and shapes ▪ 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 their properties
	Additional	<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 ▪ 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 	<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 ▪ To know that a prototype is a cheap model to test a design idea