

Design and Technology National Curriculum

Design	<ul style="list-style-type: none"> design purposeful, functional, appealing products for themselves and other users based on design criteria generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
Make	<ul style="list-style-type: none"> select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
Evaluate	<ul style="list-style-type: none"> explore and evaluate a range of existing products evaluate their ideas and products against design criteria
Technical knowledge	<ul style="list-style-type: none"> build structures, exploring how they can be made stronger, stiffer and more stable explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.
Food and Nutrition	<ul style="list-style-type: none"> use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from.

Design and Technology Long Term Plan and Skills Progression

	Year 1	Year 2
Autumn	Constructing a Windmill 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.	Baby Bear's Chair Generating and communicating ideas using sketching and modelling. Learning about different types of structures, found in the natural world and in everyday objects. 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.

	<p>Making functioning turbines and axles which are assembled into a main supporting structure.</p> <p>Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't.</p> <p>Suggest points for improvements.</p> <p>To understand that the shape of materials can be changed to improve the strength and stiffness of structures.</p> <p>To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses).</p> <p>To understand that axles are used in structures and mechanisms to make parts turn in a circle.</p> <p>To begin to understand that different structures are used for different purposes.</p> <p>To know that a structure is something that has been made and put together</p> <p>To know that a client is the person I am designing for.</p> <p>To know that design criteria is a list of points to ensure the product meets the clients needs and wants.</p> <p>To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity.</p> <p>To know that windmill turbines use wind to turn and make the machines inside work.</p> <p>To know that a windmill is a structure with sails that are moved by the wind.</p>	<p>Exploring the features of structures. Comparing the stability of different shapes.</p> <p>Testing the strength of own structures. Identifying the weakest part of a structure.</p> <p>Evaluating the strength, stiffness and stability of own structure.</p> <p>To know that shapes and structures with wide, flat bases or legs are the most stable.</p> <p>To understand that the shape of a structure affects its strength.</p> <p>To know that materials can be manipulated to improve strength and stiffness.</p> <p>To know that a structure is something which has been formed or made from parts.</p> <p>To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move.</p> <p>To know that a 'strong' structure is one which does not break easily.</p> <p>To know that a 'stiff' structure or material is one which does not bend easily.</p> <p>To know that natural structures are those found in nature.</p> <p>To know that man-made structures are those made by people.</p>
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	To know the three main parts of a windmill are the turbine, axle and structure.	
Spring	Year 1	Year 2
	Fruit and Vegetables	A balanced Diet

	<p>Designing smoothie carton packaging by-hand or on ICT software.</p> <p>Chopping fruit and vegetables safely to make a smoothie.</p> <p>Tasting and evaluating different food combinations.</p> <p>Describing appearance, smell and taste. Suggesting information to be included on packaging.</p> <p>Understanding the difference between fruits and vegetables.</p> <p>To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).</p> <p>To know that a blender is a machine which mixes ingredients together into a smooth liquid.</p> <p>To know that a fruit has seeds and a vegetable does not.</p> <p>To know that fruits grow on trees or vines.</p> <p>To know that vegetables can grow either above or below ground.</p> <p>To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).</p>	<p>Designing a healthy wrap based on a food combination which work well together.</p> <p>Slicing food safely using the bridge or claw grip.</p> <p>Constructing a wrap that meets a design brief.</p> <p>Describing the taste, texture and smell of fruit and vegetables.</p> <p>Taste testing food combinations and final products.</p> <p>Describing the information that should be included on a label.</p> <p>Evaluating which grip was most effective</p> <p>To know that 'diet' means the food and drink that a person or animal usually eats. To understand what makes a balanced diet.</p> <p>To know where to find the nutritional information on packaging.</p> <p>To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.</p> <p>To understand that I should eat a range of different foods from each food group, and roughly how much of each food group.</p> <p>To know that nutrients are substances in food that all living things need to make energy, grow and develop.</p> <p>To know that 'ingredients' means the items in a mixture or recipe.</p> <p>To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy.</p> <p>To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.</p>
Summer 1	Year 1	Year 2
	Puppets	Pouches

	<p>Using a template to create a design for a puppet</p> <p>Cutting fabric neatly with scissors.</p> <p>Using joining methods to decorate a puppet.</p> <p>Sequencing steps for construction.</p> <p>Reflecting on a finished product, explaining likes and dislikes.</p> <p>To know that 'joining technique' means connecting two pieces of material together.</p> <p>To know that there are various temporary methods of joining fabric by using staples, glue or pins.</p> <p>To understand that different techniques for joining materials can be used for different purposes.</p> <p>To understand that a template (or fabric pattern) is used to cut out the same shape multiple times.</p> <p>To know that drawing a design idea is useful to see how an idea will look.</p>	<p>Designing a pouch.</p> <p>Selecting and cutting fabrics for sewing. Decorating a pouch using fabric glue or running stitch.</p> <p>Threading a needle. Sewing running stitch, with evenly spaced, neat, even stitches to join fabric.</p> <p>Neatly pinning and cutting fabric using a template.</p> <p>Troubleshooting scenarios posed by teacher.</p> <p>Evaluating the quality of the stitching on others' work.</p> <p>Discussing as a class, the success of their stitching against the success criteria. Identifying aspects of their peers' work that they particularly like and why.</p> <p>To know that sewing is a method of joining fabric.</p> <p>To know that different stitches can be used when sewing.</p> <p>To understand the importance of tying a knot after sewing the final stitch.</p> <p>To know that a thimble can be used to protect my fingers when sewing.</p>
Summer 2	Year 1	Year 2
	Making a moving storybook	Making a moving model

	<p>Explaining how to adapt mechanisms, using bridges or guides to control the movement.</p> <p>Designing a moving story book for a given audience.</p> <p>Following a design to create moving models that use levers and sliders.</p> <p>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.</p> <p>To know that a mechanism is the parts of an object that move together.</p> <p>To know that a slider mechanism moves an object from side to side.</p> <p>To know that a slider mechanism has a slider, slots, guides and an object.</p> <p>To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.</p> <p>To know that in Design and technology we call a plan a 'design'.</p>	<p>Creating a class design criteria for a moving monster.</p> <p>Designing a moving monster for a specific audience in accordance with a design criteria.</p> <p>Making linkages using card for levers and split pins for pivots.</p> <p>Experimenting with linkages adjusting the widths, lengths and thicknesses of card used.</p> <p>Cutting and assembling components neatly.</p> <p>Evaluating own designs against design criteria.</p> <p>Using peer feedback to modify a final design.</p> <p>To know that mechanisms are a collection of moving parts that work together as a machine to produce movement.</p> <p>To know that there is always an input and output in a mechanism.</p> <p>To know that an input is the energy that is used to start something working.</p> <p>To know that an output is the movement that happens as a result of the input.</p> <p>To know that a lever is something that turns on a pivot.</p> <p>To know that a linkage mechanism is made up of a series of levers.</p> <p>To know some real-life objects that contain mechanisms.</p>
	Year 1	Year 2
	Wheels and Axles	Fairground Wheel
	<p>Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. Creating clearly labelled drawings that illustrate movement.</p>	<p>Selecting a suitable linkage system to produce the desired motion.</p> <p>Designing a wheel.</p> <p>Selecting materials according to their characteristics.</p>

	<p>Adapting mechanisms, when:</p> <ul style="list-style-type: none"> • they do not work as they should. • to fit their vehicle design. • to improve how they work after testing their vehicle. <p>Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move.</p> <p>To know that wheels need to be round to rotate and move.</p> <p>To understand that for a wheel to move it must be attached to a rotating axle.</p> <p>To know that an axle moves within an axle holder which is fixed to the vehicle or toy.</p> <p>To know that the frame of a vehicle (chassis) needs to be balanced.</p> <p>To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles.</p>	<p>Following a design brief.</p> <p>Evaluating different designs.</p> <p>Testing and adapting a design.</p> <p>To know that different materials have different properties and are therefore suitable for different uses.</p> <p>To know the features of a ferris wheel include the wheel, frame, pods, a base an axle and an axle holder.</p> <p>To know that it is important to test my design as I go along so that I can solve any problems that may occur.</p>
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