



DESIGN TECHNOLOGY CURRICULUM COVERAGE

Level Expected at the End of EYFS

- Safely use and explore a variety of materials, tools and techniques, experimenting with design and function.
- Share their creations, explaining the process they have used.

Key Stage 1 National Curriculum Expectations

Pupils should be taught:

Design ✦ 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 ✦ 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 ✦ explore and evaluate a range of existing products ✦ evaluate their ideas and products against design criteria Technical knowledge ✦ 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.

Cooking and nutrition - use the basic principles of a healthy and varied diet to prepare dishes ✦ understand where food comes from.

Key Stage 2 National Curriculum Expectations

Pupils should be taught:

- Design ✦ use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups ✦ generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make ✦ select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately ✦ select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate ✦ investigate and analyse a range of existing products ✦ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work ✦ understand how key events and individuals in design and technology have helped shape the world Technical knowledge ✦ apply their understanding of how to strengthen, stiffen and reinforce more complex structures ✦ understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] ✦ understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] ✦ apply their understanding of computing to program, monitor and control their products

Cooking and Nutrition - understand and apply the principles of a healthy and varied diet ✦ prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques ✦ understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

DT Sky Curriculum Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	<p style="text-align: center;">Designing and making capes for our superhero awards</p> <p>Everyday products: Everyday products are objects that are used routinely at home and school, such as a toothbrush, cup or pencil. All products are designed for a specific purpose. Name and explore a range of everyday products and describe how they are used.</p> <p>Creativity: Design criteria are the explicit goals that a project must achieve. Create a design to meet simple criteria.</p> <p>Investigation: Specific tools are used for particular purposes. For example, scissors are used for cutting and glue is used for sticking. Select the appropriate tool for a simple practical task.</p> <p>Materials: Glue and simple stitches, such as running stitch, can be used to join fabrics. Running stitch is made by passing a needle in and out of fabric at an even distance.</p> <p>Cut and join textiles using glue and simple stitches.</p> <p>Textiles: Fabric can be decorated using materials and small objects, such as buttons and sequins. Decorations can be attached to the fabric by gluing, stapling or tying. Use gluing, stapling or tying to decorate fabric, including buttons and sequins.</p>		<p style="text-align: center;">Creating a moving picture of a mystery voyage with a slider and lever</p> <p>Mechanisms: Use sliders and levers in models or products.</p> <p>Staying Safe: Rules are made to keep people safe from danger. Safety rules include always listening carefully and following instructions, using equipment only as and when directed, wearing protective clothing if appropriate and washing hands before touching food. Follow the rules to keep safe during a practical task.</p> <p>ICT: Computer-aided design is when computers are used to help design products. It has advantages over paper design in that it will show how finished products will look.</p> <p>Materials: Different materials are suitable for different purposes, depending on their specific properties. For example, glass is transparent, so it is suitable to be used for windows. Select and use a range of materials, beginning to explain their choices</p> <p>Compare and contrast: Two products can be compared by looking at a set of criteria and comparing both products against each one. Describe the similarities and differences between two products</p>		<p style="text-align: center;">Designing a garden Space</p> <p>Structures: Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink. Construct simple structures, models or other products using a range of materials.</p> <p>Evaluation: A strength is a good quality of a piece of work. A weakness is an area that could be improved. Talk about their own and each other's work, identifying strengths or weaknesses and offering support.</p> <p style="text-align: center;">Creating a home-grown salad</p> <p>Food preparation and cooking: Using non-standard measures is a way of measuring that does not involve reading scales. For example, weight may be measured using a balance scale and lumps of plasticine. Length may be measured in the number of handspans or pencils laid end to end. Measure and weigh food items using non-standard measures, such as spoons and cups</p> <p>Nutrition: Fruit and vegetables are an important part of a healthy diet. It is recommended that people eat at least five portions of fruit and vegetables every day. Select healthy ingredients for a fruit or vegetable salad</p> <p>Origins of food: Some foods come from animals, such as meat, fish and dairy products. Other foods come from plants, such as fruit, vegetables, grains, beans and nuts. Sort foods into groups by whether they are from an animal or plant source.</p>	
Year 2	<p style="text-align: center;">Design and prepare a healthy curry</p> <p>Food preparation and cooking: some ingredients need to be prepared before they can be cooked or eaten. Prepare ingredients by peeling, grating, chopping and slicing.</p> <p>Nutrition: A healthy diet should include meat or fish, starchy foods (such as potatoes or rice), some dairy foods, a small amount of fat and plenty of fruit and vegetables. Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal.</p> <p>Origins of food: food comes from two main sources: animals and plants. Cows provide beef, sheep provide lamb and mutton and pigs provide pork, ham and bacon. Examples of poultry include chickens, geese and turkeys. Examples of fish include cod, salmon and</p>		<p style="text-align: center;">Design and make a suitable package for a chocolate bar</p> <p>Everyday products: products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive. Explain how an everyday product could be improved.</p> <p>Creativity: ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology. Generate and communicate their ideas through a range of different methods.</p> <p>ICT: Computer software can be used to help design or plan a product. Advantages include identifying and solving problems before the product is made and experimenting with different materials and colours. Labels can be added to designs for clarity. Use design software to create a simple labelled design</p>		<p style="text-align: center;">Design and make a beehive</p> <p>Investigation: Different tools have characteristics that make them suitable for specific purposes. For example, scissors are used for cutting paper because they have sharp, metal blades that can cut through thin materials. Select the appropriate tool for a task and explain their choice.</p> <p>Structure: structures can be made stronger, stiffer and more stable by using cardboard rather than paper and triangular shapes rather than squares. A broader base will also make a structure more stable</p> <p>Materials for Purpose: properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint. Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.</p>	

	<p>shellfish. Milk comes mainly from cows but also from goats and sheep. Most eggs come from chickens. Honey is made by bees. Fruit and vegetables come from plants. Oils are made from parts of plants. Sugar is made from plants called sugar cane and sugar beet. Plants also give us nuts, such as almonds, walnuts and hazelnuts. Identify the origin of some common foods (milk, eggs, some meats, common fruit and vegetables).</p> <p>Staying Safe: hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriately and wiping up spills. Work safely and hygienically in construction and cooking activities.</p>		<p>or plan</p> <p>Compare and contrast: products can be compared by looking at particular characteristics of each and deciding which is better suited to the purpose. Compare different or the same products from the same or different brands</p> <p>Evaluation: finished products can be compared with design criteria to see how closely they match. Improvements can then be planned. Explain how closely their finished products meet their design criteria and say what they could do better in the future.</p>		<p>Mechanisms: Use a lever as a hinge to open the top of the beehive. Pupils may use wheels to move their structures.</p> <p>Evaluation: finished products can be compared with design criteria to see how closely they match. Improvements can then be planned. Explain how closely their finished products meet their design criteria and say what they could do better in the future.</p> <p>Levers and Linkages: Make a split Pin plant and bee to show how it gets pollen from a flower.</p>	
Year 3		<p>Making a Stone Age bag for gathering food.</p> <p>Creativity: design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user. Develop design criteria to inform a design</p> <p>Materials: A loom is a piece of equipment that is used for making fabric by weaving wool or thread. Weaving involves interlacing pieces of thread or yarn. Cut and join wools, threads and other materials to a loom.</p> <p>Materials for purpose: materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost. Plan which materials will be needed for a task and explain why.</p> <p>Decorating materials: embellishment is a decorative detail or feature added to something to make it more attractive. Add simple decorative embellishments, such as buttons, prints, sequins and appliqué.</p> <p>Compare and contrast: work from different designers can be compared by assessing specific criteria, such as their visual impact, fitness for purpose and target market. Explain the similarities and difference between the work of two designers.</p>		<p>Making an Egyptian Shaduf</p> <p>Everyday products: particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box. Explain</p> <p>Investigation: specific tools can be used for cutting, such as saws. Wood can be joined using glue, nails, staples, or a combination of these. Safety rules must be followed to prevent injury from sharp blades. These rules include using a bench hook to keep the wood still, using a junior hacksaw with a pistol grip and working under adult supervision. Use tools safely for cutting and joining materials and components.</p> <p>Mechanism and movement: levers consist of a rigid bar that rotates around a fixed point, called a fulcrum. They reduce the amount of work needed to lift a heavy object. Sliders move from side to side or up and down, and are often used to make moving parts in books.</p> <p>Structure: Explore different ways of joining wood to construct the shaduf according to a design, using appropriate equipment.</p> <p>Evaluation: asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.</p> <p>Staying safe: Understand how to safely handle equipment for joining wood – saws, hand drills, glue guns, etc. Work safely placing your hands in the correct place when using equipment</p>		<p>Designing and cooking a Cornish pasty:</p> <p>Food preparation and cooking: Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning. Prepare and cook a simple savoury dish.</p> <p>Nutrition: there are five main food groups that should be eaten regularly as part of a balanced diet: fruit and vegetables; carbohydrates (potatoes, bread, rice and pasta); proteins (beans, pulses, fish, eggs and meat); dairy and alternatives (milk, cheese and yoghurt) and fats (oils and spreads). Foods high in fat, salt and sugar should only be eaten occasionally as part of a healthy, balanced diet. Identify the main food groups (carbohydrates, protein, dairy, fruits and vegetables, fats and sugars).</p> <p>Origins of food: The types of food that will grow in a particular area depend on a range of factors, such as the rainfall, climate and soil type. For example, many crops, such as potatoes and sugar beet, are grown in the south-east of England. Wheat, barley and vegetables grow well in the east of England. Identify and name foods that are produced in different places.</p> <p>Evaluation: asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.</p>
Year 4		<p>Design and make a healthy Greek Dish</p> <p>Everyday products: culture is the language, inventions, ideas and art of a group of people. A society is all the people in a community or group. Culture affects the design of some products. For example, knives and forks are used in the western world, whereas</p>	<p>Making a Roman drawstring purse</p> <p>Everyday products: design features are the aspects of a product's design that the designer would like to emphasise, such as the use of a particular material or feature that makes the product easier to use or more durable. Investigate and identify Materials for purpose:</p>		<p>Use mechanisms to create a device to pick coal up out of a mine.</p> <p>Mechanism and movement: mechanisms can be used to add functionality to a model. For example, sliders or levers can be used in moving pictures, storybooks or simple puppets.</p>	

		<p>chopsticks are used mainly in China and Japan. The design of products needs to take into account the culture of the target audience. For example, colours might mean very different things in different cultures.</p> <p>Explain how the design of a product has been influenced by the culture or society in which it was designed or made.</p> <p>Food preparation and Cooking: cooking techniques include baking, boiling, frying, grilling and roasting. Identify and use a range of cooking techniques to prepare a Greek meal.</p> <p>Nutrition: healthy snacks include fresh or dried fruit and vegetables, nuts and seeds, rice cakes with low-fat cream cheese, homemade popcorn or chopped vegetables with hummus. A healthy packed lunch might include a brown or wholemeal bread sandwich containing eggs, meat, fish or cheese, a piece of fresh fruit, a low-sugar yoghurt, rice cake or popcorn and a drink, such as water or semi skimmed milk. Design a healthy Greek meal and explain why it is healthy.</p> <p>Materials for purpose: Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season. Choose from a range of materials, showing an understanding of their different characteristics.</p> <p>Origins of food: articular areas of the world have conditions suited to growing certain crops, such as coffee in Peru and citrus fruits in California in the United States of America. Identify and name foods that are produced in different places in the UK and beyond.</p>	<p>different materials and components have a range of properties, making them suitable for different tasks. It is important to select the correct material or component for the specific purpose, depending on the design criteria.</p> <p>Materials: hem runs along the edge of a piece of cloth or clothing. It is made by turning under a raw edge and sewing to give a neat and quality finish. Hand sew a hem or seam using a running stitch.</p> <p>Decorating textiles: lock printing techniques and fabric paint are used to create decorative, repeated patterns on fabrics. Create detailed decorative patterns on fabric using printing techniques.</p> <p>Compare and contrast: comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored. Create and complete a comparison table to compare two or more products.</p> <p>Evaluation: Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. Evaluation also includes suggesting improvements and explaining why they should be made. Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making improvements.</p> <p>Making A Roman Aqueduct: Exploring systems that move water to cities and plants sustainably. Design and create a Roman aqueduct. Compare with Egyptian Shaduf (Year 3).</p>		<p>linkages in moving vehicles or puppets; gears in motorised vehicles or spinning toys; pulleys in cable cars or transport systems and cams in 3-D moving toys or pictures. Explore and use a range of mechanisms (levers, axles, gears and pulleys) in models or products</p> <p>Creativity: annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way. Use annotated sketches and exploded diagrams to test and communicate their ideas</p> <p>Investigation: useful tools for cutting include scissors, craft knives, junior hacksaws with pistol grip and bench hooks. Useful tools for joining include glue guns. Tools should only be used with adult supervision and safety rules must be followed. Select, name and use tools with adult supervision.</p> <p>ICT: program is a set of instructions written to perform a specified task on a computer. Write a program to make something move on a tablet or computer screen remote.</p> <p>Structures: prototype is a mock-up of a design that will look like the finished product but may not be full size or made of the same materials. Shell and frame structures can be strengthened by gluing several layers of card together, using triangular shapes rather than squares, adding diagonal support struts and using 'jinks' corners (small, thin pieces of card cut into a right-angled triangle and glued over each joint to straighten and strengthen them). Prototype shell and frame structures, showing awareness of how to strengthen, stiffen and reinforce them. Staying safe: safety features are often incorporated into products that might cause harm. Some examples include the child-safety caps on medicine bottles, seatbelts in cars, covers for electrical sockets and finger guards on doors Understand how to safely handle equipment for joining wood – saws, hand drills, glue guns, etc. Work safely placing your hands in the correct place when using equipment.</p>	
Year 5		<p>Cams Moving Toys to show a form or transport within farming or trade.</p> <p>Mechanisms: Use Cams to convert circular motion into linear motion. Structures: various methods can be used to support a framework. These include cross braces, guy ropes and diagonal struts. Frameworks can be built using lolly sticks, skewers and bamboo canes. Build a framework using a range of materials to support mechanisms.</p> <p>Evaluation: testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture. Test and evaluate products against a detailed design specification and make adaptations as they develop the product</p> <p>Electrical: Make a light up Christmas decoration.</p>	<p>Woodwork and structure: Design and create a sundial.</p> <p>Everyday products: Explore how products that have been used to help people in their everyday lives began e.g. clock began as a sundial. Investigation: here are many rules for using tools safely and these may vary depending on the tools being used. For example, someone using a chisel should chip or cut with the cutting edge pointing away from their body. All tools should be cleaned and put away after use, and should not be used if they are loose or cracked. Name and select increasingly appropriate tools for a task and use them safely.</p> <p>Structure: various methods can be used to support a framework. These include cross braces, guy ropes and diagonal struts. Frameworks can be built using lolly sticks, skewers and bamboo canes. Build a framework using a range of materials to support mechanisms.</p> <p>Materials for Purpose: materials should be cut and combined with precision. For example, pieces of wood could be cut with a saw and glued or nailed together. Select and combine materials with precision.</p>			<p>Using CAD 3D modelling software to design and create a ship with sails.</p> <p>Tinkercad - Create 3D digital designs with online CAD</p> <p>Mechanisms: pneumatic systems use energy that is stored in compressed air to do work, such as inflating balloon to open a model monster's mouth. These effects can be achieved using syringes and plastic tubing. Use mechanical systems in their products, such as pneumatics</p> <p>Creativity: pattern piece is a drawing or shape used to guide how to make something. There are many different computer-aided design packages for designing products. Use pattern pieces and computer-aided design packages to design a product.</p> <p>ICT: Using CAD 3D modelling software to design a template of our ship and use the design to support our build.</p> <p>Materials: collage is artwork made by sticking materials, such as scraps of paper or fabric, onto a background. A mixed media collage is made using various materials and media, such as ink</p>

		<p>Electrical: electrical circuits can be controlled by a simple on/off switch, or by a variable resistor that can adjust the size of the current in the circuit. Real-life examples are a dimmer switch for lights or volume control on a stereo. Use electrical circuits of increasing complexity in their models or products, showing an understanding of control.</p> <p>Staying safe: Explain the functionality and purpose of safety features on a range of products electrical appliances must only be used under the supervision of an adult. Safety rules must also be followed when using electricity: fingers and other objects must not be put into electrical outlets, anything with a cord or plug should never be used around water and a plug should never be pulled out by its cord. Use appliances safely with adult supervision.</p>	<p>Compare and contrast: focus group is a small group of people whose reactions and opinions about a product are taken and studied. Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria. Survey users in a range of focus groups and compare results.</p>			<p>and paint. Combine stitches and fabrics with imagination to create a mixed media collage.</p> <p>Materials for purpose: materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together. Select and combine materials with precision.</p> <p>Decorating materials: applique is a technique where pieces of material are attached to another material by stitching or gluing. Use applique to add decoration to a product or artwork.</p> <p>Structure: various methods can be used to support a framework. These include cross braces, guy ropes and diagonal struts. Frameworks can be built using lolly sticks, skewers and bamboo canes. Build a framework using a range of materials to support mechanisms.</p>
Year 6		<p>Design, make and evaluate a motorised boat with a pulley mechanism to lift luggage up onto the boat.</p> <p>Mechanism and movement: mechanical systems can include sliders, levers, linkages, gears, pulleys and cams. Other mechanisms include pneumatics and hydraulics. Explain and use mechanical systems in their products to meet a design brief.</p> <p>Electricity: computer programs can control electrical circuits that include a variety of components, such as switches, lamps, buzzers and motors. Understand and use electrical circuits that incorporate a variety of components (switches, lamps, buzzers and motors) and use programming to control their products.</p> <p>Creativity: design criteria should cover the intended use of the product, age range targeted and final appearance. Ideas can be communicated in a range of ways, including through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways.</p> <p>ICT: computer monitoring uses sensors as a scientific tool to record information about environmental changes over time. Computer monitoring can also log data from sensors and record the resulting information in a table or graph. Use a sensor to monitor an environmental variable, such as temperature, sound or light</p> <p>Investigation: precision is important in producing a polished, finished product. Correct selection of tools and careful measurement can ensure the parts fit together correctly. Select appropriate tools for a task and use them safely and precisely.</p> <p>Materials for purpose: it is important to understand the characteristics of different</p>	<p>Design, make and evaluate a wind turbine</p> <p>Everyday products: peoples' lives have been improved in countless ways due to new inventions and designs. . Analyse how an invention or product has significantly changed or improved people's lives.</p> <p>Mechanism and movement: mechanical systems can include sliders, levers, linkages, gears, pulleys and cams. Other mechanisms include pneumatics and hydraulics. Explain and use mechanical systems in their products to meet a design brief.</p> <p>Electricity: computer programs can control electrical circuits that include a variety of components, such as switches, lamps, buzzers and motors. Understand and use electrical circuits that incorporate a variety of components (switches, lamps, buzzers and motors) and use programming to control their products.</p> <p>Creativity: design criteria should cover the intended use of the product, age range targeted and final appearance. Ideas can be communicated in a range of ways, including through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways</p> <p>Investigation: precision is important in producing a polished, finished product. Correct selection of tools and careful measurement can ensure the parts fit together correctly. Select appropriate tools for a task and use them safely and precisely.</p> <p>Materials for purpose: it is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability. Choose the best materials for a task, showing an understanding of their working characteristics</p>			<p>Select a UK region to design and create its local dish</p> <p>Food preparation and cooking: ingredients can usually be bought at supermarkets, but specialist shops may stock different items. Greengrocers sell fruit and vegetables, butchers sell meat, fishmongers sell fresh fish and delicatessens usually sell some unusual prepared foods, as well as cold meats and cheeses. Follow a recipe that requires a variety of techniques and source the necessary ingredients independently</p> <p>Nutrition: eating a balanced diet is a positive lifestyle choice that should be sustained over time. Food that is high in fat, salt or sugar can still be eaten occasionally as part of a balanced diet. Plan a healthy daily diet, justifying why each meal contributes towards a balanced diet.</p> <p>Origins of food: organic produce is food that has been grown without the use of man-made fertilisers, pesticides, growth regulators or animal feed additives. Organic farmers use crop rotation, animal and plant manures, hand-weeding and biological pest control. Explain how organic produce is grown</p>

		<p>materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability. Choose the best materials for a task, showing an understanding of their working Characteristics</p> <p>Staying safe: the safety of the user has to be taken into account when designing a new product. Methods to help keep users safe include providing clear instructions for use; clear indication of the age range for which it is designed; safety features (such as child resistant packaging); warning symbols and electrical safety checks. Demonstrate how their products take into account the safety of the user.</p>	<p>Structure: strength can be added to a framework by using multiple layers. For example, corrugated cardboard can be placed with corrugations running alternately vertically and horizontally. Triangular shapes can be used instead of square shapes because they are more rigid. Frameworks can be further strengthened by adding an outer cover.</p> <p>Select the most appropriate materials and frameworks for different structures, explaining what makes them strong.</p>			
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Knowledge and Skills Progression							
	Area						
	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Humankind: Everyday products	Everyday products are objects that we use every day. These objects have a specific use. Name and explore a range of everyday products and begin to talk about how they are used.	Everyday products are objects that are used routinely at home and school, such as a toothbrush, cup or pencil. All products are designed for a specific purpose. Name and explore a range of everyday products and describe how they are used.	products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive. Explain how an everyday product could be improved.	particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box. Explain	design features are the aspects of a product's design that the designer would like to emphasise, such as the use of a particular material or feature that makes the product easier to use or more durable. Investigate and identify culture is the language, inventions, ideas and art of a group of people. A society is all the people in a community or group. Culture affects the design of some products. For example, knives and forks are used in the western world, whereas chopsticks are used mainly in China and Japan. The design of products needs to take into account the culture of the target audience. For example, colours might mean very different things in different cultures. Explain how the design of a product has been influenced by the culture or society in which it was designed or made.	Explore how products that have been used to help people in their everyday lives began e.g. clock began as a sundial.	peoples' lives have been improved in countless ways due to new inventions and designs. For example, the Morrison shelter, designed by John Baker in 1941, was an indoor air-raid shelter used in over half a million homes during the Second World War. It saved the lives of many people caught in bombing raids. Analyse how an invention or product has significantly changed or improved people's lives.
Staying safe	Rules keep us safe when using equipment. Safety rules include always listening carefully and following simple instructions, using equipment only for the tasks they are designed for and washing hands before touching food. Follow rules and instructions to keep safe.	Rules are made to keep people safe from danger. Safety rules include always listening carefully and following instructions, using equipment only as and when directed, wearing protective clothing if appropriate and washing hands before touching food. Follow the rules to keep safe during a practical task	hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriately and wiping up spills. Work safely and hygienically in construction and cooking activities.	Understand how to safely handle equipment for joining wood – saws, hand drills, glue guns, etc. Work safely placing your hands in the correct place when using equipment.	safety features are often incorporated into products that might cause harm. Some examples include the child-safety caps on medicine bottles, seatbelts in cars, covers for electrical sockets and finger guards on doors Understand how to safely handle equipment for joining wood – saws, hand drills, glue guns, etc. Work safely placing your hands in the correct place when using equipment.	Explain the functionality and purpose of safety features on a range of products electrical appliances must only be used under the supervision of an adult. Safety rules must also be followed when using electricity: fingers and other objects must not be put into electrical outlets, anything with a cord or plug should never be used around water and a plug should never be pulled out by its cord. Use appliances safely with adult supervision.	the safety of the user has to be taken into account when designing a new product. Methods to help keep users safe include providing clear instructions for use; clear indication of the age range for which it is designed; safety features (such as child resistant packaging); warning symbols and electrical safety checks. Demonstrate how their products take into account the safety of the user
Processes: Mechanism and movement	Vehicles and machines have wheels to help them move. Explore, build and play with a range of resources and construction kits with wheels.	Use sliders and levers in models or products.	Mechanisms include sliders, levers, linkages, gears, pulleys and cams. Use a range of mechanisms in models or products - Use a lever as a hinge to open the top of the beehive. Pupils	levers consist of a rigid bar that rotates around a fixed point, called a fulcrum. They reduce the amount of work needed to lift a heavy object. Sliders move from side to side or up and down, and	mechanisms can be used to add functionality to a model. For example, sliders or levers can be used in moving pictures, storybooks or simple puppets; linkages in moving vehicles or puppets; gears in	Use Cams to convert circular motion into linear motion. shell structures are hollow, 3-D structures with a thin outer covering, such as a box. Frame structures are made from thin, rigid components,	mechanical systems can include sliders, levers, linkages, gears, pulleys and cams. Other mechanisms include pneumatics and hydraulics. Explain and use mechanical systems in their

			<p>may use wheels to move their structures.</p> <p>Levers and Linkages: Make a split Pin plant and bee to show how it gets pollen from a flower.</p>	are often used to make moving parts in books.	<p>motorised vehicles or spinning toys; pulleys in cable cars or transport systems and cams in 3-D moving toys or pictures. Explore and use a range of mechanisms (levers, axles, gears and pulleys) in models or products</p>	<p>such as a tent frame. The rigid frame gives the structure shape and support. Diagonal struts can strengthen the structure. Create shell or frame structures using diagonal struts to strengthen them</p> <p>pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. These effects can be achieved using syringes and plastic tubing. Use mechanical systems in their products, such as pneumatics</p>	products to meet a design brief.
Electricity						<p>electrical circuits can be controlled by a simple on/off switch, or by a variable resistor that can adjust the size of the current in the circuit. Real-life examples are a dimmer switch for lights or volume control on a stereo. Use electrical circuits of increasing complexity in their models or products, showing an understanding of control.</p>	computer programs can control electrical circuits that include a variety of components, such as switches, lamps, buzzers and motors. Understand and use electrical circuits that incorporate a variety of components (switches, lamps, buzzers and motors) and use programming to control their products.
Creativity: Generation of ideas	Create collaboratively, share ideas and use a variety of resources to make products inspired by existing products, stories or their own ideas, interests or experiences.	Design criteria are the explicit goals that a project must achieve. Create a design to meet simple criteria.	<p>ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology. Generate and communicate their ideas through a range of different methods.</p>	design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user. Develop design criteria to inform a design	<p>annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way. Use annotated sketches and exploded diagrams to test and communicate their ideas</p>	<p>pattern piece is a drawing or shape used to guide how to make something. There are many different computer-aided design packages for designing products. Use pattern pieces and computer-aided design packages to design a product.</p>	design criteria should cover the intended use of the product, age range targeted and final appearance. Ideas can be communicated in a range of ways, including through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways.
Structures	Different materials have different properties and can be used for different purposes. Construct simple structures and models using a range of materials.	Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink. Construct simple structures, models or other products using a range of materials.	structures can be made stronger, stiffer and more stable by using cardboard rather than paper and triangular shapes rather than squares. A broader base will also make a structure more stable.	Explore different ways of joining wood to construct the shaduf according to a design, using appropriate equipment.	<p>prototype is a mock-up of a design that will look like the finished product but may not be full size or made of the same materials. Shell and frame structures can be strengthened by gluing several layers of card together, using triangular shapes rather than squares, adding diagonal support struts and using 'Jinks' corners (small, thin pieces of card</p>	<p>various methods can be used to support a framework. These include cross braces, guy ropes and diagonal struts. Frameworks can be built using lolly sticks, skewers and bamboo canes. Build a framework using a range of materials to support mechanisms.</p>	strength can be added to a framework by using multiple layers. For example, corrugated cardboard can be placed with corrugations running alternately vertically and horizontally. Triangular shapes can be used instead of square shapes because they are more rigid. Frameworks can be further strengthened by adding an outer cover.

					cut into a right-angled triangle and glued over each joint to straighten and strengthen them). Prototype shell and frame structures, showing awareness of how to strengthen, stiffen and reinforce them.		Select the most appropriate materials and frameworks for different structures, explaining what makes them strong.
Use of ICT	Digital devices can be used to share information about creations with others. Use digital devices to take digital images or recordings of their creations to share with others.	Computer-aided design is when computers are used to help design products. It has advantages over paper design in that it will show how finished products will look.	Computer software can be used to help design or plan a product. Advantages include identifying and solving problems before the product is made and experimenting with different materials and colours. Labels can be added to designs for clarity. Use design software to create a simple labelled design or plan.		program is a set of instructions written to perform a specified task on a computer. Write a program to make something move on a tablet or computer screen remote.	Using CAD 3D modelling software to design a template of our ship and use the design to support our build.	computer monitoring uses sensors as a scientific tool to record information about environmental changes over time. Computer monitoring can also log data from sensors and record the resulting information in a table or graph. Use a sensor to monitor an environmental variable, such as temperature, sound or light
Investigation: Investigation	Different tools are needed for different tasks. For example, pencils and paper are needed for drawing pictures. Choose and explore appropriate tools for simple practical tasks.	Specific tools are used for particular purposes. For example, scissors are used for cutting and glue is used for sticking. Select the appropriate tool for a simple practical task.	Different tools have characteristics that make them suitable for specific purposes. For example, scissors are used for cutting paper because they have sharp, metal blades that can cut through thin materials. Select the appropriate tool for a task and explain their choice.	specific tools can be used for cutting, such as saws. Wood can be joined using glue, nails, staples, or a combination of these. Safety rules must be followed to prevent injury from sharp blades. These rules include using a bench hook to keep the wood still, using a junior hacksaw with a pistol grip and working under adult supervision. Use tools safely for cutting and joining materials and components.	useful tools for cutting include scissors, craft knives, junior hacksaws with pistol grip and bench hooks. Useful tools for joining include glue guns. Tools should only be used with adult supervision and safety rules must be followed. Select, name and use tools with adult supervision.	here are many rules for using tools safely and these may vary depending on the tools being used. For example, someone using a chisel should chip or cut with the cutting edge pointing away from their body. All tools should be cleaned and put away after use, and should not be used if they are loose or cracked. Name and select increasingly appropriate tools for a task and use them safely.	precision is important in producing a polished, finished product. Correct selection of tools and careful measurement can ensure the parts fit together correctly. Select appropriate tools for a task and use them safely and precisely.
Evaluation	Recognise that it is possible to change and alter their designs and ideas as they are making them. Adapt and refine their work as they are constructing and making.	A strength is a good quality of a piece of work. A weakness is an area that could be improved. Talk about their own and each other's work, identifying strengths or weaknesses and offering support.	finished products can be compared with design criteria to see how closely they match. Improvements can then be planned. Explain how closely their finished products meet their design criteria and say what they could do better in the future.	asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.	Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. Evaluation also includes suggesting improvements and explaining why they should be made. Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making improvements.	testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture. Test and evaluate products against a detailed design specification and make adaptations as they develop the product	design is an iterative process, meaning alterations and improvements are made continually throughout the manufacturing process. Evaluating a product while it's being manufactured, and explaining these evaluations to others, can help to refine it. Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others.
Materials:	Scissors are used to cut materials.	Glue and simple stitches, such as running stitch, can be used to join fabrics. Running stitch is made by passing a needle in and out of fabric at an even distance.	Explore different materials used for similar products and select the most appropriate.	A loom is a piece of equipment that is used for making fabric by weaving wool or thread. Weaving involves interlacing pieces of thread or yarn. Cut	hem runs along the edge of a piece of cloth or clothing. It is made by turning under a raw edge and sewing to give a neat and quality finish. Hand	collage is artwork made by sticking materials, such as scraps of paper or fabric, onto a background. A mixed media collage is made using	Select appropriate materials to meet the design brief in various products across Year 6.

		Cut and join textiles using glue and simple stitches.		and join wools, threads and other materials to a loom.	sew a hem or seam using a running stitch.	various materials and media, such as ink and paint. Combine stitches and fabrics with imagination to create a mixed media collage.	
Materials for purpose	Different materials are suitable for different purposes, such as construction kits for modelling and ingredients for baking. Select appropriate materials when constructing and making.	Different materials are suitable for different purposes, depending on their specific properties. For example, glass is transparent, so it is suitable to be used for windows. Select and use a range of materials, beginning to explain their choices	properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint. Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.	materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost. Plan which materials will be needed for a task and explain why.	different materials and components have a range of properties, making them suitable for different tasks. It is important to select the correct material or component for the specific purpose, depending on the design criteria. Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season. Choose from a range of materials, showing an understanding of their different characteristics.	materials should be cut and combined with precision. For example, pieces of wood could be cut with a saw and glued or nailed together. Select and combine materials with precision. materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together. Select and combine materials with precision.	it is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability. Choose the best materials for a task, showing an understanding of their working characteristics
Decorating and embellishing textiles		Fabric can be decorated using materials and small objects, such as buttons and sequins. Decorations can be attached to the fabric by gluing, stapling or tying. Use gluing, stapling or tying to decorate fabric, including buttons and sequins.		embellishment is a decorative detail or feature added to something to make it more attractive. Add simple decorative embellishments, such as buttons, prints, sequins and appliqué.	lock printing techniques and fabric paint are used to create decorative, repeated patterns on fabrics. Create detailed decorative patterns on fabric using printing techniques.	applique is a technique where pieces of material are attached to another material by stitching or gluing. Use applique to add decoration to a product or artwork.	
Nature: Food preparation and cooking	A recipe is set of instructions for preparing a dish and includes a list of the ingredients required. Follow instructions, including simple recipes, that include measures and ingredients	Using non-standard measures is a way of measuring that does not involve reading scales. For example, weight may be measured using a balance scale and lumps of plasticine. Length may be measured in the number of handspans or pencils laid end to end. Measure and weigh food items using non-standard measures, such as spoons and cups	some ingredients need to be prepared before they can be cooked or eaten. Prepare ingredients by peeling, grating, chopping and slicing.	Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning. Prepare and cook a simple savoury dish.	cooking techniques include baking, boiling, frying, grilling and roasting. Identify and use a range of cooking techniques to prepare a Greek meal.		ingredients can usually be bought at supermarkets, but specialist shops may stock different items. Greengrocers sell fruit and vegetables, butchers sell meat, fishmongers sell fresh fish and delicatessens usually sell some unusual prepared foods, as well as cold meats and cheeses. Follow a recipe that requires a variety of techniques and source the necessary ingredients independently
Nutrition	There are healthy and unhealthy foods. Fruit and vegetables are an important part of a healthy diet.	Fruit and vegetables are an important part of a healthy diet. It is recommended that people eat at least five portions of fruit and vegetables every day. Select healthy ingredients for a fruit or vegetable salad.	A healthy diet should include meat or fish, starchy foods (such as potatoes or rice), some dairy foods, a small amount of fat and plenty of fruit and vegetables. Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal.	there are five main food groups that should be eaten regularly as part of a balanced diet: fruit and vegetables; carbohydrates (potatoes, bread, rice and pasta); proteins (beans, pulses, fish, eggs and meat); dairy and alternatives (milk, cheese and yoghurt) and fats (oils and spreads). Foods high in fat, salt and sugar should only be eaten occasionally as part of a healthy, balanced diet. Identify the main food groups (carbohydrates,	healthy snacks include fresh or dried fruit and vegetables, nuts and seeds, rice cakes with low-fat cream cheese, homemade popcorn or chopped vegetables with hummus. A healthy packed lunch might include a brown or wholemeal bread sandwich containing eggs, meat, fish or cheese, a piece of fresh fruit, a low-sugar yoghurt, rice cake or popcorn and a drink, such as water or semi skimmed milk. Design a healthy Greek meal and explain why it is healthy.		eating a balanced diet is a positive lifestyle choice that should be sustained over time. Food that is high in fat, salt or sugar can still be eaten occasionally as part of a balanced diet. Plan a healthy daily diet, justifying why each meal contributes towards a balanced diet.

				protein, dairy, fruits and vegetables, fats and sugars).			
Origins of food	Food comes from different sources, including from animals, such as meat, fish, eggs and dairy, or from plants, such as fruit and vegetables. Begin to identify the origins of some foods.	Some foods come from animals, such as meat, fish and dairy products. Other foods come from plants, such as fruit, vegetables, grains, beans and nuts. Sort foods into groups by whether they are from an animal or plant source.	food comes from two main sources: animals and plants. Cows provide beef, sheep provide lamb and mutton and pigs provide pork, ham and bacon. Examples of poultry include chickens, geese and turkeys. Examples of fish include cod, salmon and shellfish. Milk comes mainly from cows but also from goats and sheep. Most eggs come from chickens. Honey is made by bees. Fruit and vegetables come from plants. Oils are made from parts of plants. Sugar is made from plants called sugar cane and sugar beet. Plants also give us nuts, such as almonds, walnuts and hazelnuts. Identify the origin of some common foods (milk, eggs, some meats, common fruit and vegetables).	The types of food that will grow in a particular area depend on a range of factors, such as the rainfall, climate and soil type. For example, many crops, such as potatoes and sugar beet, are grown in the south-east of England. Wheat, barley and vegetables grow well in the east of England. Identify and name foods that are produced in different places.	Particular areas of the world have conditions suited to growing certain crops, such as coffee in Peru and citrus fruits in California in the United States of America. Identify and name foods that are produced in different places in the UK and beyond.		organic produce is food that has been grown without the use of man-made fertilisers, pesticides, growth regulators or animal feed additives. Organic farmers use crop rotation, animal and plant manures, hand-weeding and biological pest control. Explain how organic produce is grown
Comparison: Compare and contrast	Aspects of designing and making can be compared with others, including inspiration for making a product and the tools and techniques used. Describe what, why and how something was made and compare with others.	Two products can be compared by looking at a set of criteria and comparing both products against each one. Describe the similarities and differences between two products	products can be compared by looking at particular characteristics of each and deciding which is better suited to the purpose. Compare different or the same products from the same or different brands	work from different designers can be compared by assessing specific criteria, such as their visual impact, fitness for purpose and target market. Explain the similarities and difference between the work of two designers.	comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored. Create and complete a comparison table to compare two or more products.	focus group is a small group of people whose reactions and opinions about a product are taken and studied. Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria. Survey users in a range of focus groups and compare results.	products and inventions can be compared using a range of criteria, such as the impact on society, ease of use, appearance and value for money. Create a detailed comparative report about two or more products or inventions.