

Design and Technology– Skills and progression

	Year 1		Year 2
Technical Knowledge	<p>Autumn term topic: Where are we? Spring term topic: Whatever the Weather Summer term topic: Coastal study. How is this different to our town?</p>	Technical Knowledge	<p>Autumn term topic: The Great Fire of London Spring term topic: Comparison of Rio and UK Summer term topic: Coastal Comparison</p>
Food and Nutrition	<p><u>Children can:</u></p> <ul style="list-style-type: none"> Describe textures Wash hands and clean surfaces. Think of interesting ways to decorate food. Say where some foods come from, (i.e. plant or animal). Describe differences between some food groups. Discuss how fruit and vegetables are healthy. Cut, peel and grate safely and hygienically with support. 	Materials/ Structures	<p><u>Children can:</u></p> <ul style="list-style-type: none"> Measure materials. Describe some different characteristics of materials. Join materials in different ways Use joining, rolling or folding to make it stronger. Use own ideas to make a design stronger.
Materials/Structures	<p>Children can:</p> <ul style="list-style-type: none"> Begin to measure and join materials, with some support. Describe differences in materials. Suggest ways to make their design stronger Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling) Cut materials safely using tools provided. 	Food and Nutrition	<p>Children can:</p> <ul style="list-style-type: none"> Explain Hygiene and keep a hygienic kitchen. Describe properties of ingredients and importance of a varied diet. Say where food comes from (plants, animals) or where food comes from geographically. Describe how food is farmed. Draw an 'eat well' plate showing the main food groups. Assemble ingredients for cooking.
Textiles	<p><u>Children can:</u></p> <ul style="list-style-type: none"> Measure, cut and join textiles to make a product, with some support. Choose suitable textiles. Colour and decorate textiles using a number of techniques (such as dying, adding sequins or printing). 	Mechanical Systems	<p><u>Children can:</u></p> <ul style="list-style-type: none"> Use levers or slides Begin to understand how to use wheels and axels. Create products using winding mechanisms.

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<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Product Design Process</p> <p>Design:</p> <ul style="list-style-type: none"> ● Have own ideas ● Explain what my product is for, and how it will work. ● Use pictures and words to plan, begin to use models. ● Design a product for myself following design criteria. ● Research similar existing products. <p>Make:</p> <ul style="list-style-type: none"> ● Explain what I am making and why. ● Consider what I need to do next. ● Select tools /equipment to cut, shape, join, finish and explain choices. ● Try to use finishing techniques to make product look good. ● Work in a safe and hygienic manner. <p>Evaluate:</p> <ul style="list-style-type: none"> ● Talk about existing products considering: use, materials, how they work, audience, where they might be used. ● Talk about existing products and analyse, ● Begin to talk about how they could improve their product. 	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Product Design Process</p> <p>Design:</p> <ul style="list-style-type: none"> ● Explain what I want to do and describe how I may do it. ● Explain purpose of product, how it will work and how it will be suitable for the user. ● Describe design using pictures, words, models, diagrams, begin to use ICT. ● Design products for myself and others following design criteria. ● Choose best tools and materials, and explain choices. ● Use knowledge of existing products to produce ideas. <p>Make:</p> <ul style="list-style-type: none"> ● Explain what I am making and why it fits the purpose. ● Make suggestions as to what I need to do next. ● Join materials/components together in different ways. ● Measure, mark out, cut and shape materials and components with support when needed. ● Describe which tools I am using and why. ● Choose suitable materials and explain choices depending on characteristics. ● Work safely and hygienically. ● Use appropriate finishing techniques. <p>Evaluate:</p> <ul style="list-style-type: none"> ● Describe what went well, thinking about design criteria. ● Talk about existing products, considering: use, materials, how they work, audience, where they might be used. ● Talk about what I would do differently if I were to do it again and why.
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Technical Knowledge	Year 3 Autumn term topic: Stone Age/Iron Age Spring term topic: Food and Farming Summer term topic: Elizabeth II	Technical Knowledge	Year 4 Autumn term topic: Vikings to Anglo Saxons Spring term topic: Victorian Cars and Bikes Summer term topic: Deforestation
Materials/Structures	<u>Children can:</u> <ul style="list-style-type: none"> ● Use appropriate materials to make their product. ● Cut materials accurately and safely. ● Apply appropriate cutting techniques to make cuts and holes. ● Select appropriate joining techniques. ● Begin to make strong structures. 	Textiles	<u>Children can:</u> <ul style="list-style-type: none"> ● Begin to devise a template. ● Think about the user when selecting from a range of textiles. ● Understand the need for a seam allowance. ● Join textiles with appropriate stitching. ● Select the most appropriate techniques to decorate textiles. ● Understand that a simple fabric shape can be used to make a 3D textiles project.
Food and nutrition	<u>Children can:</u> <ul style="list-style-type: none"> ● Carefully select ingredients. ● Use equipment safely. ● Think about how to grow plants to use in cooking. ● Begin to understand which food comes from the UK and wider world. ● Explain how food and drink are needed for active, healthy bodies. ● Prepare and cook some dishes safely and hygienically, controlling the temperature of the oven or hob with support. ● Grow in confidence using some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and mixing. ● Follow a recipe 	Electrical Systems	<u>Children can:</u> <ul style="list-style-type: none"> ● Use a number of components within a circuit. ● Program a computer to a control product. ● Create series and parallel circuits.

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Mechanical Systems	<p><u>Children can:</u></p> <ul style="list-style-type: none"> ● Select appropriate tools/techniques deciding on the most effective from trial and error. ● Make any alterations which may be needed to improve the product. ● Use scientific knowledge of transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanism, pulleys and gears) ● Use simple lever and linkages to create movement. 	Food and Nutrition	<p><u>Children can:</u></p> <ul style="list-style-type: none"> ● Think about presenting a product in interesting/attractive ways. ● Understand ingredients can be fresh, pre-cooked or processed. ● Begin to understand about food being grown, reared or caught in the UK and wider world. ● Independently and safely use some of the following techniques effectively: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. ● Prepare ingredients hygienically using appropriate utensils. ● Measure ingredients to the nearest gram accurately. ● Control the temperature of the oven or hob when cooking.
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Product Design Process	<p><u>Design</u></p> <ul style="list-style-type: none"> ● begin to research others' needs ● show design meets a range of requirements ● describe purpose of product ● follow a given design criteria ● have at least one idea about how to create product ● create a plan which shows order, equipment and tools ● describe design using an accurately labelled sketch and words ● make design decisions ● explain how product will work ● make a prototype ● begin to use computers to show design <p><u>Make</u></p> <ul style="list-style-type: none"> ● select suitable tools/equipment, explain choices; begin to use them accurately ● select appropriate materials, fit for purpose. ● work through plan in order ● consider how good product will be ● begin to measure, mark out, cut and shape materials/components with some accuracy ● begin to assemble, join and combine materials and components with some accuracy ● begin to apply a range of finishing techniques with some accuracy <p><u>Evaluate</u></p> <ul style="list-style-type: none"> ● look at design criteria while designing and making ● use design criteria to evaluate finished product ● say what I would change to make design better 	Product Design Process	<p><u>Design</u></p> <ul style="list-style-type: none"> ● use research for design ideas ● show design meets a range of requirements and is fit for purpose ● begin to create own design criteria ● have at least one idea about how to create product and suggest improvements for design. ● produce a plan and explain it to others ● say how realistic plan is. ● include an annotated sketch ● make and explain design decisions considering availability of resources ● explain how product will work ● make a prototype ● begin to use computers to show design. <p><u>Make</u></p> <ul style="list-style-type: none"> ● select suitable tools and equipment, explain choices in relation to required techniques and use accurately ● select appropriate materials, fit for purpose; explain choices ● work through plan in order. ● realise if product is going to be good quality ● measure, mark out, cut and shape materials/components with some accuracy ● assemble, join and combine materials and components with some accuracy ● apply a range of finishing techniques with some accuracy <p><u>Evaluate</u></p> <ul style="list-style-type: none"> ● refer to design criteria while designing and making ● use criteria to evaluate product ● begin to explain how I could improve original design ● evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose
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<ul style="list-style-type: none"> • begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose • begin to understand by whom, when and where products were designed • learn about some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products 	<ul style="list-style-type: none"> • discuss by whom, when and where products were designed • research whether products can be recycled or reused • know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products
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	Year 5 Autumn term topic: Egyptians Spring term topic: Trains, Brunel, Newcome Summer term topic: Winston Churchill		Year 6 Autumn term topic: Mayans Spring term topic: Land use North and South America Summer term topic: Martin Luther King
Food and Nutrition	<u>Children can:</u> <ul style="list-style-type: none"> Present their product well – interesting, attractive and fit for purpose. Begin to understand seasonality of foods. Describe how recipes can be adapted to change appearance, taste, texture, and aroma. Explain how there are different substances within food and drink needed for a healthy body. Prepare and cook some savoury dishes safely and hygienically including controlling the temperature of the heat source. Understand the importance of correct storage and handling of ingredients. Measure ingredients accurately. 	Textiles	<u>Children can:</u> <ul style="list-style-type: none"> Think about the user’s wants/needs and aesthetics when choosing textiles. Create objects, such as a cushion that employ a seam allowance. Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion) Think about how a product might be sold. Think carefully about what might improve the product.
Mechanical Systems	<u>Children can:</u> <ul style="list-style-type: none"> Refine their product after testing considering aesthetics, functionality, and purpose. Incorporate hydraulics and pneumatics. Be confident to try new/different ideas. Use cams, pulleys and gears to create movement. Use innovative combinations of electronics (or computing) and mechanics in productive designs. 	Food and Nutrition	<u>Children can:</u> <ul style="list-style-type: none"> Understand a recipe can be adapted by adding/substituting ingredients Explain seasonality of foods. Learn about food processing methods. Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. Understand the importance of correct handling and storage of ingredients (using knowledge of micro-organisms).

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<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Materials/Structures</p>	<p>Children can:</p> <ul style="list-style-type: none"> • Select materials carefully, considering intended use of product and appearance. • Explain how the product meets the design criteria. • Measure accurately enough to ensure precision. • Ensure product is strong and fit for purpose. • Begin to reinforce and strengthen a 3D frame. • Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). 	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Electronics</p>	<p>Children can:</p> <ul style="list-style-type: none"> • Create circuits using electronics kits that employ a number of components (such as LED's, resistors, transistors and chips). • Use different types of circuits in products. • Think of ways in which adding a circuit will improve a product. • Program a computer to monitor changes in environment and control product.
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Product Design Process	<p>Design</p> <ul style="list-style-type: none"> ● use internet and questionnaires for research and design ideas ● take a user's view into account when designing ● begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose ● create own design criteria ● have a range of ideas ● produce a logical, realistic plan and explain it to others. ● use cross-sectional planning and annotated sketches ● make design decisions considering time and resources. ● clearly explain how parts of product will work. ● model and refine design ideas by making prototypes and using pattern pieces. ● use computer-aided designs <p>Make</p> <ul style="list-style-type: none"> ● use selected tools/equipment with good level of precision ● produce suitable lists of tools, equipment/materials needed ● select appropriate materials, fit for purpose; explain choices, considering functionality ● create and follow detailed step-by-step plan ● explain how product will appeal to an audience ● mainly accurately measure, mark out, cut and shape materials/components ● mainly accurately assemble, join and combine materials/components ● mainly accurately apply a range of finishing techniques ● use techniques that involve a small number of steps ● begin to be resourceful with practical problems <p>Evaluate</p> <ul style="list-style-type: none"> ● evaluate quality of design while designing and making 	Product Design Process	<p>Design</p> <ul style="list-style-type: none"> ● draw on market research to inform design ● use research of user's individual needs, wants, requirements for design ● identify features of design that will appeal to the intended user ● create own design criteria and specification ● come up with innovative design ideas ● follow and refine a logical plan. ● use annotated sketches, cross-sectional planning and exploded diagrams ● make design decisions, considering, resources and cost ● clearly explain how parts of design will work, and how they are fit for purpose ● independently model and refine design ideas by making prototypes and using pattern pieces ● use computer-aided designs <p>Make</p> <ul style="list-style-type: none"> ● use selected tools and equipment precisely ● produce suitable lists of tools, equipment, materials needed, considering constraints ● select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics ● create, follow, and adapt detailed step-by-step plans ● explain how product will appeal to audience; make changes to improve quality ● accurately measure, mark out, cut and shape materials/components ● accurately assemble, join and combine materials/components ● accurately apply a range of finishing techniques ● use techniques that involve a number of steps ● be resourceful with practical problems <p>Evaluate</p> <ul style="list-style-type: none"> ● evaluate quality of design while designing and making; is it fit for purpose?
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<ul style="list-style-type: none"> • evaluate ideas and finished product against specification, considering purpose and appearance. • test and evaluate final product • evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose • begin to evaluate how much products cost to make and how innovative they are • research how sustainable materials are • talk about some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products 	<ul style="list-style-type: none"> • keep checking design is best it can be. • evaluate ideas and finished product against specification, stating if it's fit for purpose • test and evaluate final product; explain what would improve it and the effect different resources may have had • do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose • evaluate how much products cost to make and how innovative they are • research and discuss how sustainable materials are • consider the impact of products beyond their intended purpose • discuss some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products
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