



DT progression map – knowledge and skills

National Curriculum statement: Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

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.

	Year 3	Year 4	Year 5	Year 6
Cooking	<ul style="list-style-type: none"> • Understanding a healthy diet • Organise, gather and cut ingredients to follow a recipe 	<ul style="list-style-type: none"> • Impact of healthy diet on lifestyles • Know when and how food is prepared • Make a savoury dish using simple cooking techniques. • Changing state of materials 	<ul style="list-style-type: none"> • <i>Plan</i> and create a healthy and balanced savoury dish • Process of seeds to shelf (Super market) • Understand seasonality • Understand nutritional information on packaging 	<ul style="list-style-type: none"> • <i>Plan</i> and make a healthy balanced meal on a budget • Building on understanding of seasonality etc • Fair trade • Changing materials • Affordability of food – price comparisons and budgeting
DT project – Moving toys	<ul style="list-style-type: none"> • Using levers, linkages and pulleys to create a moving toy. • Explore key events or individuals who have influenced technological advances 	<ul style="list-style-type: none"> • Using pneumatics to create a moving toy. • Explore key events or individuals who have influenced technological advances 	<ul style="list-style-type: none"> • Using cams to create moving toys • Also, focus on improvement of models to strengthen and adapt. • Explore key events or individuals who have influenced technological advances 	<ul style="list-style-type: none"> • Electronic fairgrounds • Also, focus on improvement of models to strengthen and adapt • Focus on business model – understand the market, costing, advertising, budgeting etc • Explore key events or individuals who have influenced technological advances.
Ongoing process	Design, Make, Evaluate, Improve	Design, Make, Evaluate, Improve	Design, Make, Evaluate, Improve	Design, Make, Evaluate, Improve

	Year 3
Skills: Design	<p>Create a design that meets a range of requirements including its purpose and the user/s</p> <p>Consider the equipment and tools needed when planning.</p> <p>Describe a design using an accurately labelled diagrams with words and an order for working.</p>
Skills: Make	<p>Select a wider range of tools and techniques for making their product i.e. construction materials and kits, food ingredients, mechanical components and electrical components.</p> <p>Explain their choice of tools and equipment in relation to the skills and techniques they will be using.</p> <p>Start to understand that mechanical systems such as levers create movement.</p> <p>Measure, mark out, cut, score and assemble components with more accuracy.</p> <p>Start to work safely and accurately with a range of simple tools.</p> <p>Start to think about their ideas as they make progress and be willing to change things if this helps them to improve their work.</p> <p>Start to measure, tape or pin, cut and join with some accuracy.</p>
Skills: Evaluate	<p>Start to evaluate their product against original design criteria e.g. how well it meets its intended purpose</p> <p>Begin to disassemble and evaluate familiar products and consider the views of others to improve them.</p> <p>Evaluate the key designs of individuals in design and technology has helped shape the world.</p>
Technical Knowledge	<p>Create a design that meets a range of requirements</p> <p>Select a wider range of tools and techniques for making their product</p> <p>Start to evaluate their product against original design criteria</p>
Cooking & Nutrition	<p>Demonstrate hygienic food preparation and storage</p> <p>Know how to peel, cut, grate, mix, mould and begin to cook foods (using toasters and microwaves with supervision).</p> <p>Start to understand that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat well plate.</p> <p>Begin to know that to be active and healthy, food and drink are needed to provide energy for the body.</p>
Key concepts revisited –	

	Year 4
Skills: Design	<p>Generate more than one idea for how to create a product considering the purposes for which the product is being designed- link with maths and science.</p> <p>Gather information to help design a successful product (i.e. by asking others' views).</p> <p>Produce a detailed plan with labelled diagrams; including from different views showing specific features, a written explanation and step-by-step guide of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail</p> <p>Suggest improvements to develop and refine a planned idea.</p>
Skills: Make	<p>Select a wider range of tools and techniques for making their product safely.</p> <p>Know how to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques.</p> <p>Start to join and combine materials and components accurately in temporary and permanent ways.</p> <p>Know how mechanical systems such as pneumatics create movement.</p> <p>Understand how to reinforce and strengthen a 3D framework. Demonstrate how to measure, tape or pin, cut and join fabric with some accuracy.</p> <p>Begin to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.</p>
Skills: Evaluate	<p>Evaluate products and identify criteria that can be used for their own designs</p> <p>Evaluate their products carrying out appropriate tests also considering the appearance and usability of own and pre-existing products.</p> <p>Explain how the original design could be improved</p> <p>Start to evaluate their work both during and at the end of the assignment</p> <p>Be able to disassemble and evaluate familiar products and consider the views of others to improve them.</p> <p>Evaluate the key designs of individuals in design and technology that has helped shape the world.</p>
Technical Knowledge	<p>Produce a detailed plan with labelled diagrams; including from different views showing specific features, a written explanation and step-by-step guide of what has to be done</p> <p>Know how to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques.</p> <p>Start to join and combine materials and components accurately in temporary and permanent ways.</p> <p>Evaluate products and identify criteria that can be used for their own designs</p>
Cooking & Nutrition	<p>Know how to peel, cut, grate, mix, mould and begin to cook foods (using toasters and microwaves with supervision).</p> <p>Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat well plate'</p> <p>Know that to be active and healthy, food and drink are needed to provide energy for the body.</p>
Key concepts revisited –	<p>Cooking- understanding a healthy diet in order to understand its impact on lifestyles.</p>

	Year 5
Skills: Design	<p>Generate a range of ideas after collating relevant information (i.e.users' views, research) and identify a purpose for the product. Produce a detailed plan, with step-by-step instructions, cross-sectional diagrams and prototypes- link with Mathematics and Science. Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, considering the positive aspects and drawbacks of each. Begin to use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. With growing confidence select appropriate materials, tools and techniques. Start to understand how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose.</p>
Skills: Make	<p>Select appropriate materials, tools and techniques e.g. 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. Understand how mechanical systems such as cams or pulleys or gears create movement. Begin to measure and mark out more accurately. Demonstrate how to use skills in using different tools and equipment safely and accurately with growing confidence cut and join with accuracy to ensure a good-quality finish to the product. Use finishing techniques (from Art) to strengthen and improve the appearance of their product using a range of equipment including ICT.</p>
Skills: Evaluate	<p>Start to evaluate a product against the original design specification and by carrying out tests. Evaluate their work both during and at the end of the assignment. Begin to evaluate it personally and seek evaluation from others. Evaluate the key designs of individuals in design and technology has helped shape the world.</p>
Technical Knowledge	<p>Generate a range of ideas and identify a purpose for the product. Produce a detailed plan, with step-by-step instructions Measure and mark out more accurately Evaluate a product against the original design specification and by carrying out tests.</p>
Cooking & Nutrition	<p>Weigh and measure accurately (time, dry ingredients, liquids) Apply the rules for basic food hygiene and other safe practices <i>e.g. hazards relating to the use of ovens</i> Cut, mix, mould and use hobs to heat food, with appropriate supervision. Understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. Begin to understand that seasons may affect the food available. Understand how food is processed into ingredients that can be eaten or used in cooking.</p>
Key concepts revisited –	<p>Cooking- revisit the Eatwell plate in order to understand nutritional information on packages</p>

	Year 6
Skills: Design	<p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-generated designs.</p> <p>Use research (i.e. market research using surveys, interviews, questionnaires or web-based resources) to develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose.</p> <p>Draw up a specification for their design- link with Mathematics and Science.</p> <p>Plan the order of their work, choosing appropriate materials, tools and techniques.</p> <p>Work within constraints, refining and justifying plans as necessary</p> <p>Demonstrate when make modifications as they go along.</p> <p>Identify the strengths and areas for development in their ideas and products.</p> <p>Know how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose</p>
Skills: Make	<p>Confidently select appropriate tools, materials, components and techniques and use them.</p> <p>Assemble components to make working models.</p> <p>Aim to make and to achieve a quality product.</p> <p>Accurately apply a range of finishing techniques, including those from art and design.</p> <p>Demonstrate when make modifications as they go along by using alternative methods of making if the first attempts fail.</p> <p>Know how more complex electrical circuits and components can be used to create functional products</p> <p>Know how to reinforce and strengthen a 3D framework.</p> <p>Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.</p>
Skills: Evaluate	<p>Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests.</p> <p>Evaluate their work both during and at the end of the assignment. Record their evaluations using drawings with labels.</p> <p>Evaluate against their original criteria and suggest ways that their product could be improved.</p> <p>Evaluate the key designs of individuals in design and technology has helped shape the world.</p>
Technical Knowledge	<p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional to draw up a specification for their design.</p> <p>Confidently select appropriate tools, materials, components and techniques and use them.</p> <p>Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests.</p>
Cooking & Nutrition	<p>Cut, mix, mould and use hobs to heat food, developing independence with this as appropriate.</p> <p>Understand that seasons may affect the food available. Understand how food is processed into ingredients that can be eaten or used in cooking.</p> <p>Know different food and drink contain different substances – nutrients, water and fibre – that are needed for health.</p>
Key concepts revisited –	<p>Cooking – the nutritional value of ingredients to ensure that the meal planned on a budget is healthy and balanced.</p>