Design and Technology Progression Map through Key Stage 2 at

Key Stage 2 National Curriculum Expectations

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.**

	Year 3	Year 4	Year 5	Year 6
Design	With growing confidence generate ideas for an item, considering its purpose and the user/s. Start to order the main stages of making a product. Identify a purpose and establish criteria for a successful product. Understand how well products have been designed, made, what materials have been used and the construction technique. Learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. Start to understand whether products can be recycled or reused. Know to make drawings with labels when designing.	Start to generate ideas, considering the purposes for which they are designing- link with Mathematics and Science. Confidently make labelled drawings from different views showing specific features. Develop a clear idea 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. Identify the strengths and areas for development in their ideas and products. Learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. When planning explain their choice of materials and components according to	Start to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross sectional and exploded diagrams, prototypes, pattern pieces and CAD. 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 apply a range of finishing techniques, including those from art and design Use results of investigations, information sources, including ICT when developing design ideas. With growing confidence select appropriate materials, tools and techniques. Start to understand how much products cost to	Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross sectional and exploded diagrams, prototypes, pattern pieces and CAD. Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. Accurately apply a range of finishing techniques, including those from art and design. Plan the order of their work, choosing appropriate materials, tools and techniques. Suggest alternative methods of making if the first attempts fail. Identify the strengths and areas for development in their ideas and products. Know how much products

	Put together a step-by-step plan which shows the order and also what equipment and tools they need.	function and aesthetic. Take account of the ideas of others when designing Produce a plan and explain it to others Consider how to present their product in an interesting way	make, how sustainable and innovative they are and the impact products have beyond their intended purpose. Produce a range of ideas after collecting information Suggest some alternative plans and say what the good points and drawbacks are about each	cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose. Follow and refine their initial plan if necessary Convincingly justify their plan to someone else Suggest ideas about how their product could be sold
Make	Select a wider range of tools and techniques for making their product i.e. construction materials and kits, textiles, food ingredients, mechanical components and electrical components. Explain their choice of tools and equipment in relation to the skills and techniques they will be using. Measure, mark out, cut, score and assemble components with more accuracy. Start to work safely and	Select a wider range of tools and techniques for making their product safely. Know how to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. Know how mechanical systems such as cams or pulleys or gears create movement. Begin to use finishing techniques to strengthen and improve the appearance of their product	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. Demonstrate how to use skills in using different tools and equipment safely and accurately	Confidently select appropriate tools, materials, components and techniques and use them. Use tools safely and accurately. Assemble components to make working models. Aim to make and to achieve a quality product. Demonstrate when make modifications as they go along. Construct products using permanent joining techniques.

	accurately with a range of simple tools. Start to think about their ideas as they make progress and be willing to change things if this helps them to improve their work. Start to measure, tape or pin, cut and join fabric with some accuracy. Use equipment safely Attempt to make sure that their product looks attractive Make choices of material both for its appearance and Qualities Select the most appropriate tools and techniques to use for a given task Work accurately to make cuts and holes – e.g. to measure and then use equipment to cut. Understand how to reinforce and strengthen a 3D framework.	using a range of equipment including ICT. Measure carefully and show initiative to check so as not to make mistakes Persevere with their product even though their original idea might not have worked Use pulleys, levers and linkages in their product Create a more complex pop up (e.g. card) Create and use simple gears, pulleys, cams, levers and linkages Start to understand that mechanical systems such as levers and linkages or pneumatic systems create movement.	Weigh and measure accurately (time, dry ingredients, and liquids). Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT. Use a range of tools and equipment expertly Measurement accurately to ensure that everything is precise Demonstrate motivation/perseverance to refine and improve their products Create a 3D product using a range of materials and sewing techniques Now sew using a range of different stitches, to weave and knit. Demonstrate how to measure, tape or pin, cut and join fabric with some accuracy.	Know how to reinforce and strengthen a 3D framework. Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT Make decisions and select the most appropriate mechanical system for a particular purpose Build models incorporating circuits with buzzers and bulbs Know how simple electrical circuits and components can be used to create functional products. With growing confidence cut and join with accuracy to ensure a good-quality finish to the product

Evaluate	Start to evaluate their product against original design criteria e.g. how well it meets its intended purpose Suggest some improvements and say what was good and not so good about their original design Begin to disassemble and evaluate familiar products and consider the views of others to improve them. Begin to evaluate how the key designs of individuals in design and technology have helped shape the world	Evaluate their work both during and at the end of the assignment. Evaluate their products carrying out appropriate tests. Be able to disassemble and evaluate familiar products and consider the views of others to improve them. Evaluate how the key designs of individuals in design and technology have helped shape the world. Suggest some improvements and say what was good and not so good about their original design Begin to explain how they can improve their original designs Evaluate their product, thinking of both appearance and the way it works	**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 seek evaluation from others.** **Evaluate how the key designs of individuals in design and technology have helped shape the world.** **Evaluate appearance and function against original criteria**	**Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests.** **Evaluate their work both during and at the end of the assignment.** **Record their evaluations using drawings with labels.** **Evaluate against their original criteria and suggest ways that their product could be improved.** **Evaluate how the key designs of individuals in design and technology have helped shape the world.** **Test and evaluate their final Product** **Evaluate if their product meets all design criteria** **Justify why they selected specific materials**

Cooking and nutrition	• Start to know 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. • Understand how to prepare and cook a variety of dishes including experience of using a heat source. • Begin to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Know how a healthy diet is made up from a variety and balance of different food and drink • Begin to know that to be active and healthy, food and drink are needed to provide energy for the body (and begin to distinguish healthy high energy foods) • Be able to identify foods which come from the UK and other countries in the world • 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. • Understand how to prepare and cook a variety of predominantly savoury dishes including experience of using a heat source. • Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Measure and weigh ingredients appropriately • Explain why a healthy diet is important • Know that to be active and healthy, food and drink are needed to provide energy for the body and identify healthy high energy foods) • Understand what to do to be hygienic and safe • Become familiar with some of the processes that foods go through to preserve them/make them more appealing	• 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. • Know how to prepare and cook a variety of predominantly savoury dishes including the use of a heat source • Demonstrate increasing confidence in how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Evaluate a meal and consider if they contribute towards a balanced diet • Begin to understand that different food and drink contain different substances (nutrients, water and fibre) that are needed for health • Explain what times of year particular foods are eaten in • Describe what to do to be hygienic and safe • Use appropriate tools and equipment, weighing and measuring with scales. • Explain how ingredients were grown, reared and caught. • Understand that seasons may affect the food available. • Explain how food is processed into ingredients that can be eaten or used in cooking. • Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including the use of a heat source • Understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Know different food and drink contain different substances (nutrients, water and fibre) that are needed for health. • Use appropriate tools and equipment, weighing and measuring with scales. • Plan a healthy and affordable diet