Design and Technology Progression of Knowledge and Skills KS2

	Year 3	Year 4	Year 5	Year 6
Unit of Work	**Structures:** Construction skills to create a labyrinth game. **Food Nutrition:** Make Griddle Cakes. Food comparison. **Textiles:** Investigate a range of textile products that have a selection of stitches, joins, fabrics, finishing techniques, fastenings and purposes. Making a battery pack for Ironman.	**Simple Circuit (2020):** Make a working lighthouse. **Levers + Linkages:** Making an information board for the Science Museum **Food and Nutrition (2019):** Cornbread Muffins.	**Electronics (2020):** Motorised space vehicle **Mechanical systems/CAMS:** Make a toy. **Textiles (2020):** Bayeux type tapestry depicting the changing of the monarchy over time.	**Food and Nutrition:** Wartime Vegetable Turnovers. **Structures:** To make a habitable shelter. **Mechanical Systems (cams, pulleys and gears):** Making a Ferris wheel.
	Lower KS2		**Upper KS2**	
Designing - Understanding contexts, users and purposes	* Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. * Describe the purpose of their products. * Indicate the design features of their products that will appeal to intended users. * Explain how particular parts of their products work. * Gather information about the needs and wants of particular individuals and groups. * Develop their own design criteria and use these to inform their ideas.		* Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment. * Describe the purpose of their products. * Indicate the design features of their products that will appeal to intended users. * Explain how particular parts of their products work. * Carry out research, using surveys, interviews, questionnaires and web-based resources. * Identify the needs, wants, preferences and values of particular individuals and groups. * Develop a simple design specification to guide their thinking.	
Designing -	* Share and clarify ideas through discussion.		* Share and clarify ideas through discussion.	

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Generating, developing, modelling and communicating ideas	* Model their ideas using prototypes and pattern pieces. * Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas. * Use computer-aided design to develop and communicate their ideas. * Generate realistic ideas, focusing on the needs of the user. * Make design decisions that take into account the availability of resources.	* Make design decisions that take into account the availability of resources. * Model their ideas using prototypes and pattern pieces. * Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas. * Use computer-aided design to develop and communicate their ideas. * Generate realistic ideas, focusing on the needs of the user. * Make design decisions that take into account the availability of resources.
Making Planning	* Select tools and equipment suitable for the task. * Explain their choice of tools and equipment in relation to the skills and techniques they will be using. * Select materials and components suitable for the task. * Explain their choice of materials and components according to functional properties and aesthetic qualities. * Order the main stages of making.	* Follow procedures for safety and hygiene. * Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. * Measure, mark out, cut and shape materials and components with some accuracy. * Assemble, join and combine materials and components with some accuracy. * Apply a range of finishing techniques, including those from art and design, with some accuracy.
Making Practical skills and techniques	* Follow procedures for safety and hygiene. * Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. * Measure, mark out, cut and shape materials and components with some accuracy. * Assemble, join and combine materials and components with some accuracy. * Apply a range of finishing techniques, including those from art and design, with some accuracy.	* Follow procedures for safety and hygiene. * Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components. *Accurately measure, mark out, cut and shape materials and components. *Accurately assemble, join and combine materials and components. *Accurately apply a range of finishing techniques, including those from art and design. * Use techniques that involve a number of steps. * Demonstrate resourcefulness when tackling practical problems.
Technical Knowledge	* How to use learning from science and maths to help design and make products that work.	* How to use learning from science and maths to help design and make products that work.

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	* That materials have both functional properties and aesthetic qualities. * That materials can be combined and mixed to create more useful characteristics * That mechanical and electrical systems have an input, process and output. * Use the correct technical vocabulary for the projects they are undertaking. * How mechanical systems such as levers and linkages or pneumatic systems create movement. * How simple electrical circuits and components can be used to create functional products. * How to program a computer to control their products. * How to make strong, stiff shell structures · T10 that a single fabric shape can be used to make a 3D textiles product.	* That materials have both functional properties and aesthetic qualities. * That materials can be combined and mixed to create more useful characteristics. * That mechanical and electrical systems have an input, process and output. * The correct technical vocabulary for the projects they are undertaking. * How mechanical systems such as cams or pulleys or gears create movement. * How more complex electrical circuits and components can be used to create functional products. * How to program a computer to monitor changes in the environment and control their products * How to reinforce and strengthen a 3D framework * That a 3D textiles product can be made from a combination of fabric shapes * That a recipe can be adapted by adding or substituting one or more ingredients.
Evaluation Own ideas and products	* Identify the strengths and areas for development in their ideas and products * Consider the views of others, including intended users, to improve their work *Refer to their design criteria as they design and make *Use their design criteria to evaluate their completed product	* Identify the strengths and areas for development in their ideas and products * Consider the views of others, including intended users, to improve their work * Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make *Evaluate their ideas and products against their original design specification
Evaluation Existing products	Pupils will be taught to investigate and analyse: * How well products have been designed and made * Why materials have been chosen * What methods of construction have been used * Developed ground-breaking products * How well products work to achieve their purposes * How well products meet user needs and wants * Who designed and made the products * Where and when products were designed and made * Whether products can be recycled or reused	Pupils will be taught to investigate and analyse: * How well products have been designed and made * Why materials have been chosen * What methods of construction have been used * How well products work to achieve their purposes * How well products meet user needs and wants * How much products cost to make * How innovative products are * How sustainable the materials in products are * What impact products have beyond their intended

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		purpose
Evaluation Key events and individuals	* About inventors, designers, engineers, chefs and manufacturers who have.	* About inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products
Cooking and Nutrition Where food comes from	* That all food comes from plants or animals. * That food has to be farmed, grown elsewhere (e.g. home) or caught.	* 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. * That seasons may affect the food available. * How food is processed into ingredients that can be eaten or used in cooking.
Cooking and Nutrition Food preparation, cooking and nutrition	* How to name and sort foods into the five groups in The Eatwell Plate. * That everyone should eat at least five portions of fruit and vegetables every day. * How to prepare simple dishes safely and hygienically, without using a heat source. * How to use techniques such as cutting, peeling and grating.	* How to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. * How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. * That recipes can be adapted to change the appearance, taste, texture and aroma. * That different foods and drinks contain different substances – nutrients, water and fibre – that are needed for health.