Design and Technology – Progression of Skills 2021 22

Products	**Windmills** **Weather precaution instruments** **Story board (sliders, levers, wheels)** **Ice lollies** **Seaside Salads**	**Textile hanging Christmas decorations** **Scones** **Light up signs** **Animation theatre boxes** **Fish cakes** **Light up Christmas ornaments**	**Christmas Pop-up toys** **Veggie pasta** **Micro bit Guitars** **Bird Feeders** **Chickpea and spinach curry with naan**	
Early learning goals Explain how things work Show an interest in different occupations Talk about the differences between materials; explore them freely and develop own ideas of how to use them and what to make Join different materials and explore different textures				
Phase/Year Group	**KS1**		**LKS2**	**UKS2**
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Designing and planning						
Background research, understanding contexts, users and purposes. Generating, developing, modelling and communicating ideas.	Exploring existing products. Who is it for? What is the product used for? Explain what product they will be designing and making. Describe what their product is for	Use own experiences and existing products to develop ideas. Explain how their product will work. Say who their product is for – themselves of others. Communicate ideas by talking and	Generate ideas for an item based on the needs of a user, clarifying these through discussion. Understand and gather information about what a particular group of people want from a product.	Make labelled drawings from different views showing specific features. Develop a clear idea of what is to be done, how to use materials, equipment and processes and	Use the results of investigations and a range of information sources, when developing design criteria to generate innovative and functional products. Model their ideas using prototypes.	Select a method for demonstrating ideas which is fit for purpose e.g. annotated sketches, cross-sectional drawings and exploded diagrams.

	by talking and drawing. Use a simple design criterion to help develop ideas. Model ideas by exploring materials and making mock-ups. Selecting from a range of tools and materials.	through annotated drawing. Choose materials/ingredients based on their properties. Choose suitable tools for making – whilst explaining why they should be used.	Begin to evaluate similar products and identify a criterion for a successful product. Plan the order of their work before starting. Begin to develop realistic ideas that meet needs of users Explain reasons for materials and tool choice.	suggesting alternative methods of making if the first attempts fail. Explain their choice of tools and equipment in relation to the skills and techniques they will be using.	Draw out the features of their designs which will appeal to the intended audience. Make design decisions taking account of constraints such as time, resources and cost. Use annotated sketches and exploded diagrams to develop and communicate ideas. Plan the order of work to allow for efficiency in time and resources.	Use their knowledge of a broad range of existing products to help generate ideas. Consider the availability and costings of resources when planning out designs. Generate a series of design ideas, clearly communicating final designs, explaining how particular parts of their products work and how they will appeal to the intended users.
Making						
Practical skills and techniques	Use tools safely and hygienically. With help, measure, mark out, cut and shape materials and components. Know about the	Begin to select a range of materials and components according to their characteristics. Measure, mark out and cut with improving accuracy.	Use a wider range of materials and components than in KS1, including electrical components. Know how simple electrical circuits	Select materials and components suitable for the task. Order the main stages of making. Join and combine materials and	Select from a range of materials and components according to their functional properties and aesthetic qualities. Know how	With growing confidence, select from a wide range of tools and equipment, explaining their choices.

	simple working characteristics of materials and components.	Assemble, join and combine materials in order to make a product. Choose and use appropriate finishing techniques (including skills used in Art and Design). Follow procedures for safety and hygiene.	and components can be used to create functional products. Explain their choice of materials and components according to functional properties or aesthetic qualities. Measure, mark, cut and shape materials with some accuracy. Join, assemble and combine materials and components. with some accuracy Use finishing techniques, including skills learnt in Art and Design with some accuracy. Follow procedures for safety and hygiene. Think about their ideas as they make progress and be willing to change things if this helps them improve their work.	components accurately in temporary and permanent ways. Apply a range of finishing techniques, including those from Art and Design, with some accuracy. Demonstrate resourcefulness when tackling practical problems. Follow procedures for safety and hygiene. Make and represent simple electrical circuits to create functional products. Understand and demonstrate how electrical systems have an input and output process. Apply their understanding of how to strengthen, stiffen and reinforce more	mechanical systems such as cams, pulleys and gears create movement. Independently measure and mark out accurately to within 1mm. Assemble, join and combine materials and components with accuracy, weighing and measuring with precision. Demonstrate resourcefulness when tackling practical problems. Follow procedures for safety and hygiene. Understand and demonstrate that mechanical and electrical systems have an input, process and output. Explain how mechanical systems, such as cams, create movement and use	Independently plan by suggesting what to do next. Independently take measures and mark out accurately to within 1mm. Use a full range of construction materials and components. Refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut. Know how to reinforce and strengthen a 3D framework. Construct products using permanent joining techniques. Make modifications as

				complex structures in order to create more useful characteristics of products. Understand that materials have both functional properties and aesthetic qualities.	mechanical systems in their products. Apply their understanding of computing to program and control a product	they go along.
Evaluation						
Referring to planning and initial ideas in evaluating their product	Evaluate existing products by exploring what products are for and how products work. Evaluate their product by discussing how well it works in relation to the purpose. Suggest how their products could be improved by asking questions about what they have made and how they have gone about it.	Suggest how their product could be improved. Evaluate their produce against a design criterion. Evaluate their products as they are developed, identifying strengths and possible changes they might make.	Refer to their design criteria while they are designing and making. Consider the views of others, including intended users, to improve their work. Understand how significant inventors/designers/ manufacturers have helped shape the world.	Know about significant inventors/designers who have developed ground breaking practise in set design/animation. Refer to their design criteria as they design and make. Identify the strengths and areas for development in their ideas and products.	Know about significant inventors, engineers and manufacturers who have developed ground breaking practice in transport, public health and the use of waste materials. Complete detailed competitor analysis of other products on the market. Investigate and analyse how much products cost to make and how innovative products are. Critically evaluate the quality of the	Evaluate their products identifying the strengths and areas for development having carried out appropriate tests. Investigate and analyse existing products focusing on how sustainable the material in products are and what impact products have beyond their intended purposes. Critically

					design, manufacture and fitness of purpose of their products as they design and make	evaluate the quality of design, manufacture and fitness for purpose of their products against their original design.

Cooking and Nutrition			
Phase/Year groups	**KS1**	**LKS2**	**UKS2**
	Year1 and Year 2	**Year 3 and Year 4**	**Year 5 and Year 6**
Healthy eating	Begin to talk about how to be healthy. Begin to show an understanding of a varied diet.	Begin to understand the appropriate portion sizes for regular meals and healthy snacks. Understand what makes a healthy and balanced diet and that different foods and drinks provide different substances that the body needs to be healthy and active.	Understand that food is processed into ingredients that can be eaten or used in cooking. Explain that foods contain different substances such as protein that are needed for health and be able to apply these principles when planning and preparing. Know the appropriate portion sizes for regular meals and healthy snacks.
Consumer awareness	Show some understanding about where different foods come from.	Understand that food is caught or farmed and changed to make it safe/palatable/tasty. Understand that people have different views on how food is produced and this influences the food they buy. Understand that there are a variety of influences on the food we eat (season, cost). Know the importance of, and be able to, recycle food related waste. Begin to be able to read and understand food labels.	Understand social influences on the food we choose to eat. Be able to use information on food labels to inform choice. Understand some of the ethical dilemmas associated with the food people choose to buy. Understand some of the basic processes to get food from farm to plate.

		Know the importance of, and be able to, recycle food-related waste.	
Food safety and hygiene	Begin to show some safety and hygiene when handling food. Know how to get ready to prepare food: 1. Hair back 2. Wash hands 3. Keep hands away from nose, mouth and eyes	Know and can follow basic food safety rules. Understand how bacteria in food can cause food poisoning or food to go mouldy. Know how to get ready to cook: 1. Hair back 2. Wash and dry hands 3. Clean apron 4. Remove jewellery/watch With guidance, follow procedures for cleaning up such as washing and drying utensils, clearing and cleaning tables, sweeping the floor, disposing of rubbish, putting equipment away. Understand how a variety of foods are stored differently to ensure they are safe to eat.	Be able to independently follow procedures for clearing up. Know and follow food safety rules and understand their purpose. Demonstrate good food safety practices when getting ready to store, prepare and cook food (eg keep raw meats away from other foods) Are able to independently get ready to cook: 1 Tie back long hair 2 Wash and dry hands 3 Wear a clean apron 4 Remove jewellery/watch
Recipes and ingredients	Recognise and name a range of fresh ingredients. With support, follow a simple recipe. Begin to explain the different ways ingredients are grown or made. Begin to use simple food descriptors. Use counting and measuring spoons to proportion ingredients.	Recognise and name a broad range of ingredients. Read and follow a simple recipe. Know where and how a variety of ingredients are grown. Use simple food descriptors relating to smell, flavour, texture and appearance. Begin to use a jug to measure liquids. Begin to use digital weighing scales.	Know, explain and give examples of food that is grown, reared and caught in the UK, Europe and the wider world. Understand about seasonality, how this may affect the food availability and plan recipes according to seasonality. Know an extensive range of ingredients and how these are grown. Identify how they would change a recipe to improve the food they have made. Use a range of food descriptors relating to smell, flavour, texture and appearance. Confidently read and follow a recipe.
Food preparation	With support, can peel, cut or grate. Begin to measure or weigh using	With supervision, use a masher to mash food to a smooth texture.	With supervision, confidently use both the bridge hold and claw grip to cut the same

	measuring cups or electronic scales. With support, assemble and refrigerate or freeze ingredients.	With supervision, cut foods into evenly sized pieces. With supervision, begin to use the claw grip to cut harder foods using a serrated vegetable knife. With supervision, begin to peel harder foods. With supervision, grate harder food using a grater. Combine ingredients using a sieve, flour, raising agents and spices together in a bowl. Crack an egg and beat with a balloon whisk. Mix, stir and combine wet and dry ingredients uniformly. Use hands to rub fat into flour. Knead and shape dough to a specific thickness. Use a biscuit cutter. Coat food with ingredients such as beaten egg. With help and supervision, begin to handle hot foods safely once adults have removed food from oven or hob. Understand how to use a hob safely by observing adults cooking on the hob and putting in and removing food from the oven. Use oven gloves and a fish slice to remove food from the baking tray.	food using a serrated vegetable knife (eg onion). With supervision, dice foods and cut them into evenly sized, fine pieces. With supervision, confidently peel harder foods with a peeler. With support, use a can opener and open ring-pull tins. Sieve dry ingredients with precision. With supervision, use a food processor or electric hand blender to mash, blend or puree hard ingredients or hot food. Adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste and texture and aroma. Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. Independently follow a recipe. Accurately use a jug to measure liquids Accurately using weighing scales. Use hands to shape mixtures into evenly sized pieces. With help and supervision, begin to use the hob or electric saucepan to cook simple dishes.

Technical knowledge, skills progression, tool use			
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Structures	Create freestanding structures Use a template Make a structure stiffer, stronger and more stable Join using: ▪ Glue ▪ Tape	Create a frame structure. Explore how to make structures stiffer, stronger and more stable. Measure, mark and cut to an accuracy of 1cm. Use tools to join: ▪ Glue ▪ Tape ▪ Glue gun (under supervision) Use strategies in design to strengthen and stiffen: • Reinforcing with double layers • Creating hinge mechanisms • Exploring hidden stands for props/characters	Create complex structures. Experiment with stiffening and reinforcement Experiment with waterproofing and insulation. Join materials. Create a framework to support mechanisms. Make, mark and cut to an accuracy of 1mm.
Cooking and Nutrition	Skills taken from the 3 domains: Healthy eating Cooking skills Food safety and hygiene Combine ingredients according to their sensory characteristics	Food preparation - With supervision, use a masher to mash food to a smooth texture. - With supervision, cut foods into evenly sized - With supervision, begin to sue the claw grip to cut harder foods	Food Preparation - With supervision, confidently use both the bridge hold and claw grip to cut the same food using a serrated vegetable knife - With supervision, confidently peel harder food using a peeler

		using a serrated vegetable knife - With supervision, begin to peel harder foods - With supervision, grate harder food using a grater Mixing and combining - Combine suing a sieve, flour, raising agents and spices together in a bowl - Crack and egg and beat with a balloon whisk - Mix, stir and combine wet and dry ingredients uniformly - Use hands to rub fat into flour Shaping and assembly - Knead and shape dough our dough to a specific thickness - Use a biscuit cutter - Coat food with ingredients such as beaten egg and breadcrumbs Heating - With very close supervision and physical guidance when necessary, handle hot food safely; once adults have removed food from the hob or oven - Although pupils will not be cooking food on the hob or in the oven, pupils should understand how to use them safely by	- With supervision, dice foods and cut them into evenly sized fine pieces (e.g. garlic, vegetable batons, herbs) - With supervision, finely grate foods - With supervision, use a can opener and open ring-pull times Shaping and assembling - Be able to choose appropriate ingredients to garnish hot and cold food - With supervision, be able to use a spoon, ladle or jug to serve hot liquids Heating - With help and supervision, begin to use the hob or saucepan to cook simple dishes - To understand how to use the grill and oven safely by observing adults - With supervision, handle hot food safely, using oven gloves to carefully remove cooked food with a fish slice from a baking tray onto a cooling rack.

		observing adults cooking on the hob and putting in and removing food from the oven	
Mechanisms (KS1)/Mechanical and Electrical Systems (KS2)	Use appropriate tools: ▪ Scissors ▪ Hole punch ▪ Glue ▪ Tape ▪ Split pins Know about the working/movements of: ▪ Levers ▪ Sliders ▪ Wheels Experiment with levers and sliders	Use electrical systems (to make a product functional): ▪ Switches ▪ Bulbs including LEDs Use ICT systems to film animation and edit to include additional information and sound. To use ICT systems to programme light up signs.	Use mechanical systems and know how they create movement: - Cams - Pulleys - Gears Use ICT systems to make produce functional products Programme, monitor and control using ICT.
Textiles	Draw around a template. Cut out using straight and curved lines. Decorate with attached items ▪ Buttons ▪ Beads ▪ Sequins ▪ Braids ▪ Ribbons Join fabrics using glue.	Create a prototype and use this to make a pattern. Cut straight, zig zag and curved lines accurately. Join fabrics using over sewing, running stitch and glue. Attach buttons and decorate items using stitches. Understand that a single fabric shape can be used to make a 3D textile product. Understand seam allowance. Explore the strength and stiffness of fabrics.	