Skills Progression: Design and Technology

	EYFS
	<u>ELG: Fine Motor Skills</u> - *Use a range of small tools, including scissors, paint brushes and cutlery* *<u>ELG: Speaking</u>* - *Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary* *<u>ELG: Managing self</u>* - *Manage their own basic hygiene and personal needs, including… understanding the importance of healthy food choices.* *<u>ELG: Creating with material</u>* - *Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.* - *Share their creations, explaining the process they have used.* *<u>ELG: The Natural World</u>* - *Explore the natural world around them, making observations and drawing pictures of animals and plants.* **Structures: Junk Modelling –** Physical Development **Textiles: Bookmarks** – Physical Development **Cooking and Nutrition: Food Soup** – Communication and Language; Personal, Social and Emotional Development; Physical Development

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge: *(National Curriculum Coverage)*	KS1 *Design* • *design purposeful, functional, appealing products for themselves and other users based on design criteria* • *generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology* *Make* • *select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]* • *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics* *Evaluate* • *explore and evaluate a range of existing products* • *evaluate their ideas and products against design criteria* *Technical knowledge* • *build structures, exploring how they can be made stronger, stiffer and more stable* • *explore and use mechanisms [for*		KS2 *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.*		

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	example, levers, sliders, wheels and axles], in their products.					
Structures	<u>Constructing a Windmill</u> Design - Learning the importance of a clear design criteria. - Including individual preferences and requirements in a design. Make - Making stable structures from card. - Following instructions to cut and assemble the supporting structure of a windmill. - Making functioning turbines and axles which are assembled into a main supporting structure. - Finding the middle of an object. - Puncturing holes.					<u>Playgrounds</u> Design - Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs. Make - Building a range of play apparatus structures drawing upon new and prior knowledge of structures. - Measuring, marking and cutting wood to create a range of structures. - Using a range of materials to reinforce and add decoration to structures.

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	- Adding weight to structures. - Creating supporting structures. - Cutting evenly and carefully. Evaluate - Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't. - Suggest points for improvements.					Evaluate - Improving a design plan based on peer evaluation. - Testing and adapting a design to improve it as it is developed. - Identifying what makes a successful structure.
Textiles		<u>Pouches</u> Design - Designing a pouch. Make - Selecting and cutting fabrics for sewing. - Decorating a pouch using fabric glue or running stitch. - Threading a needle. - Sewing running stitch, with evenly spaced, neat, even		<u>Fastenings</u> Design - Writing design criteria for a product, articulating decisions made. - Designing a personalised book sleeve. Make - Making and testing a paper template with accuracy and in keeping with the		

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		stitches to join fabric. - Neatly pinning and cutting fabric using a template. Evaluate - Troubleshooting scenarios posed by teacher. - Evaluating the quality of the stitching on others' work. - Discussing as a class, the success of their stitching against the success criteria. - Identifying aspects of their peers' work that they particularly like and why.		design criteria. - Measuring, marking and cutting fabric using a paper template. - Selecting a stitch style to join fabric. - Working neatly by sewing small, straight stitches. - Incorporating a fastening to a design. Evaluate - Testing and evaluating an end product against the original design criteria. - Deciding how many of the criteria should be met for the product to be considered successful. - Suggesting modifications for improvement. - Articulating the advantages and disadvantages of different fastening		

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				types.		
Mechanisms/Mechanical Systems	<u>Making a Moving Storybook</u> Design - Explaining how to adapt mechanisms, using bridges or guides to control the movement. - Designing a moving story book for a given audience. Make - Following a design to create moving models that use levers and sliders. Evaluate - Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. - Reviewing the success of a product by testing it with its intended	<u>Fairground Wheel</u> Design - Conducting simple surveys or discussions to gather opinions on what others need or like in a design. - Knowing that a survey is used to find out what people like. - Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria. - Knowing that a design brief helps to decide what to make. - Knowing that design criteria are the steps for making a product successful.		<u>Making a Slingshot Car</u> Design - Designing a shape that reduces air resistance. - Drawing a net to create a structure from. - Choosing shapes that increase or decrease speed as a result of air resistance. - Personalising a design Make - Measuring, marking, cutting and assembling with increasing accuracy. - Making a model based on a chosen design. Evaluate - Evaluating the speed of a final product based on: the effect of shape on speed and the	<u>Making a Pop-up Book</u> Design - Designing a pop-up book which uses a mixture of structures and mechanisms. - Naming each mechanism, input and output accurately. - Storyboarding ideas for a book. Make - Following a design brief to make a pop up book, neatly and with focus on accuracy. - Making mechanisms and/or structures using sliders, pivots and folds to produce movement. - Using layers and spacers to hide the workings of mechanical parts	

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	audience.	- Creating ideas with design criteria in mind. - Referring to specific parts of existing products when generating ideas. - Knowing that the design criteria help when thinking of ideas. - Using labels to explain parts of a design, label materials, etc. - Using labels to explain parts of a design, label materials, etc. - Knowing that drawings can help explain how something works. - Knowing that a label explains part of a drawing. Make - Choosing materials, ingredients or components from a wider range of materials,		accuracy of workmanship on performance.	for an aesthetically pleasing result. Evaluate - Evaluating the work of others and receiving feedback on own work. - Suggesting points for improvement.	

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		ingredients or components. - Explaining their choices based on the properties of materials and components. - Knowing some properties of materials like hard, soft, flexible, waterproof, strong etc. - Following and recalling simple safety instructions. - Knowing that some tools are sharp like scissors and knives. - Choosing known geometric shapes when making. - Beginning to shape objects to improve how they work. - Knowing the names of some geometric shapes: triangle, pyramid, square, cube, circle, sphere.				

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		- Considering balance in their finishing, like evenly spaced decoration Evaluate - Discussing a range of existing products and saying what they like and dislike about them. - Evaluating existing products against design criteria. - Evaluating their ideas and creations against simple design criteria. - Knowing that design criteria help to decide if their product is a success. - Suggesting improvements to their peers' designs and products. - Knowing that improve means to make something better.				

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		- Knowing that their suggestions can improve someone else's work.				
Digital World			<u>Wearable Technology</u> Design - Problem solving by suggesting which features on a Micro:bit might be useful and justifying my ideas. - Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge. - Developing design ideas through annotated sketches to create a product concept. - Developing design criteria to respond to a design brief.		<u>Monitoring Devices</u> Design - Researching (books, internet) for a particular (user's) animal's needs. - Developing design criteria based on research. - Generating multiple housing ideas using building bricks. - Understanding what a virtual model is and the pros and cons of traditional and CAD modelling. - Placing and manoeuvring 3D objects, using CAD. - Changing the properties of, or combining one or more 3D objects, using CAD. Make	

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			Make - Following a list of design requirements. - Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm. Evaluate - Analysing and evaluating wearable technology. - Using feedback from peers to improve design.		- Understanding the functional and aesthetic properties of plastics. - Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range Evaluate - Stating an event or fact from the last 100 years of plastic history. - Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices. - Explaining key functions in my program (audible alert, visuals). - Explaining how my product would be	

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					useful for an animal carer including programmed features.	
Electrical Systems			<u>Electric Poster</u> Design - Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas. - Generate a final design for the electric poster with consideration to the client's needs and design criteria. - Design an electric poster that fits the requirements of a given brief. - Plan the positioning of the bulb (circuit component) and its purpose. Make - Create a final design for the electric poster. - Mount the poster			<u>Steady Hand Game</u> Design - Designing a steady hand game - identifying and naming the components required. - Drawing a design from three different perspectives. - Generating ideas through sketching and discussion. - Modelling ideas through prototypes. - Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'. Make - Constructing a stable base for a

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			onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear. - Measure and mark materials out using a template or ruler. - Fit an electrical component (bulb). - Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge). Evaluate - Learning to give and accept constructive criticism on own work and the work of others. - Testing the success of initial ideas against the design criteria and justifying opinions. - Revisiting the requirements of the client to review developing			game. - Accurately cutting, folding and assembling a net. - Decorating the base of the game to a high quality finish. - Making and testing a circuit. - Incorporating a circuit into a base Evaluate - Constructing a stable base for a game. - Accurately cutting, folding and assembling a net. - Decorating the base of the game to a high quality finish. - Making and testing a circuit. - Incorporating a circuit into a base

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			design ideas and check that they fulfil their needs.			
Knowledge: *(National Curriculum Coverage)*	KS1 • use the basic principles of a healthy and varied diet to prepare dishes. • understand where food comes from.		KS2 • 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.			
Cooking and Nutrition	<u>Smoothies</u> Design - Designing smoothie carton packaging by-hand. Make - Chopping fruit and vegetables safely to make a smoothie. - Juicing fruits safely to make a smoothie. Evaluate - Tasting and evaluating different food combinations. - Describing appearance, smell and taste. - Suggesting	<u>Balanced Diet</u> Design - Designing three wrap ideas based on a food combination which work well together. Make - Chopping foods safely to make a wrap. - Constructing a wrap that meets a design brief. - Grating foods to make a wrap. - Snipping smaller foods instead of cutting. Evaluate - Describing the taste, texture and	<u>Eating Seasonally</u> Design - Designing a recipe for a savoury tart. Make - Following the instructions within a recipe. Tasting seasonal ingredients. - Selecting seasonal ingredients. - Peeling ingredients safely. - Cutting safely with a vegetable knife. Evaluate - Establishing and using design criteria to help test and review dishes. - Describing the	<u>Adapting a Recipe</u> Design - Establishing and using design criteria to help test and review dishes. - Describing the benefits of seasonal fruits and vegetables and the impact on the environment. - Suggesting points for improvement when making a seasonal tart. Make - Following a baking recipe, including the preparation of ingredients. - Cooking safely,	<u>Developing a Recipe</u> Design - Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. - Writing an amended method for a recipe to incorporate the relevant changes to ingredients. - Designing appealing packaging to reflect a recipe. - Researching	<u>Come Dine with Me</u> Design - Writing a recipe, explaining the key steps, method and ingredients. - Including facts and drawings from research undertaken. Make - Following a recipe, including using the correct quantities of each ingredient. - Adapting a recipe based on research. - Working to a

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	information to be included on packaging. - Comparing their own smoothie with someone else's.	smell of fruit and vegetables. - Taste testing food combinations and final products. - Describing the information that should be included on a label. - Evaluating food by giving a score	benefits of seasonal fruits and vegetables and the impact on the environment. - Suggesting points for improvement when making a seasonal tart.	following basic hygiene rules. - Adapting a recipe to meet the requirements of a target audience. - Using a cuboid net to create packaging. Evaluate - Evaluating a recipe, considering: taste, smell, texture and appearance. - Describing the impact of the budget on the selection of ingredients. - Evaluating and comparing a range of food products. - Suggesting modifications to a recipe.	existing recipes to inform ingredient choices. Make - Cutting and preparing vegetables safely. - Using equipment safely, including knives, hot pans and hobs. - Knowing how to avoid cross-contamination. - Following a step by step method carefully to make a recipe. Evaluate - Identifying the nutritional differences between different products and recipes. - Identifying and describing healthy benefits of food groups.	given timescale. - Working safely and hygienically with independence Evaluate - Evaluating a recipe, considering: taste, smell, texture and origin of the food group. - Taste testing and scoring final products. - Suggesting and writing up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process. - Evaluating health and safety in

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						production to minimise cross contamination.