Design Technology: Long Term Plan

EYFS Expressive Arts and Design Educational Programme (Statutory)				
The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe.				
EYFS Expressive Arts and Design (DT) Skills				
Cooking and Nutrition Talk about healthy and unhealthy foods. Talk about having a balance of these. Talk about likes and dislikes. Use a range of tools with care and precision.	**Design: Developing, Planning and Communicating Ideas** Provide opportunities to work together to develop and realise creative ideas. Encourage them to think about and discuss what they want to make. Look at products to generate inspiration and conversation about art and artists.	**Make** Provide children with a range of materials for children to construct with.	**Evaluate** Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims.	**Technical Knowledge** Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. Provide a range of materials and tools and teach children to use them with care and precision.
Development Matters				
Explore, use, and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources, and skills.				

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery			**Structures: Junk modelling (Vehicles)**	**Food: Pancakes**	**Textiles: Flower threading**	
	To explore different materials freely, to develop their ideas about how to use them and what to make. .	To develop their own ideas and then decide which materials to use to express them. To explore different materials.	To join different materials and explore different textures.	To begin to make imaginative and complex 'small worlds' with blocks and construction kits.	To safely use and explore lots of different tools such as hammers, scissors and saws. To choose the things they want to use to make something – adapting and changing. To choose and use different things like scissors, masking tape, sticky tape, hole punches and string to join and fix things together.	
CONTINUOUS PROVISION	*Explore healthy and unhealthy foods* *Construct homes using different materials (including in the construction area and outside)* *Exploring weaving with different materials – making nests*	*Christmas cards* *Making porridge* *Investigating seasonal constructions using natural objects*	*Joining using e.g. playdough, cardboard, shapes, interlocking cubes* *Exploring textures – sensory bags* *Exploring textures – food*	*Designing and building structures linked to texts e.g. Rosie's Walk* *Mother's Day cards* *Easter cards/ baskets* *Design and make: Gingerbread people*	*Outside area – building resources and tools with variety of construction challenges* *Construction kits: building for a purpose (animal habitats linked to texts)* *Junk modelling: Musical instruments*	

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception	**Food: Soup**	**Structures: Junk modelling**	**Textiles: Bookmarks**			**Structures: Junk modelling (Boats)**
	To explore using different media such as wood, crayons, paints, collage, and junk modelling.	To explore, use and refine a variety of artistic effects to express their ideas and feelings.	To return to and build on their previous learning, refining ideas and developing their ability to represent them.	To create collaboratively, sharing ideas, resources, and skills.	. To create collaboratively, sharing ideas, resources, and skills.	
CONTINUOUS PROVISION	*Hibernation boxes* *Diya lamps using clay/playdough* *Natural collage*	*Christmas cards – sliding mechanism* *Puppets for storytelling (Nativity)*	*Junk modelling – strong and weak constructions*	*Mother's Day cards* *Easter cards/egg hanging decoration* *Retell stories using small world*	*Rainbow salad* *Construction of places of worship* *Bird food/feeders*	*Models of 'The Creation Story' scenes*

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	Autumn	Spring	Summer
Year 1	**Mechanisms (A1)** Making a moving story book	**Food (S2)** Fruit and vegetables: Smoothies	**Structures (S1)** Constructing a windmill
	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.	**Design**: Generate, develop, model, and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology	**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.	**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.	**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.	**Evaluate:** Evaluate their ideas and products against design criteria.	**Evaluate:** Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria.
	Technical knowledge: Explore and use mechanisms [for example, levers, sliders, wheels, and axles], in their products.	**Cooking and Nutrition:** Understand where food comes from.	**Technical knowledge:** Build structures, exploring how they can be made stronger, stiffer, and more stable. Explore and use mechanisms [for example, levers, sliders, wheels, and axles], in their products.

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	Autumn	Spring	Summer
Year 2	**Textiles (A2)** Different stiches: Christmas decorations	**Mechanisms (S1)** Wheels and Axles: Designing a vehicle -*Y1 adapted unit	**Food (S1)** A balanced diet: Healthy wraps
	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.	**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.	**Design:** Design purposeful, functional, appealing products for themselves and other users based on design criteria.
	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.	**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.
	Evaluate: Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria.	**Evaluate:** Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria **Technical knowledge:** Explore and use mechanisms [for example, levers, sliders, wheels, and axles], in their products.	**Cooking and Nutrition**: Use basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from.

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	Autumn	Spring	Summer
Year 3	**Textiles (A2)** Cross-stich and applique: Cushions	**Structures (S1)** Constructing a castle: Roman Forts	**Food (S1)** Eating seasonally: Fruit/Vegetable tarts
	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.	**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.	**Cooking and Nutrition:** Understand and apply principles of a healthy and varied diet. Prepare and cook 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.
	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 wide range of materials and components, including construction materials, textiles, and ingredients, according to their characteristics.	**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 wide range of materials and components, including construction materials, textiles, and ingredients, according to their characteristics.	
	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.	**Evaluate:** Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.	
		Technical knowledge: Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.	

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	Autumn	Spring	Summer
Year 4	**Electrical systems (A2)** Torches	**Digital World (S1)** Mindful Moments Timer	**Food (S2)** Adapting a recipe: Biscuits
	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.	**Design:** Write design criteria for a programmed timer (Micro:bit). Explore different mindfulness strategies. Apply the results of research to further inform design criteria. Develop a prototype case for a mindful moment timer. Use and manipulate shapes and clipart by using computer-aided design (CAD), to produce a logo. Follow a list of design requirements.	**Cooking and Nutrition:** Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques.
	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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.	**Make:** Develop a prototype case for my mindful moment timer. Create a 3D structures using modelling materials. Programme a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press.	
	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.	**Evaluate:** Investigate and analyse a range of timers by identifying and comparing their advantages and disadvantages. Evaluate Micro:bit program against points on a design criteria and amending them to include any changes made. Document and evaluate a project. Understand what a logo is and why they are important in the world of design and business. Test a program for bugs (errors in the code). Find and fix the bugs (debug) in a code. Use an exhibition to gather feedback. Gather feedback from the user to make suggested improvements to a product.	
	Technical knowledge: Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers, and motors].	**Technical knowledge:** To understand what variables are in programming. To know some of the features of a Micro:bit. To know that an algorithm is a set of instructions to be followed by the computer. To know that it is important to check my code for errors (bugs). To know that a simulator can be used as a way of checking your code works before installing it onto an electronic device.	

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	Autumn	Spring	Summer
Year 5	**Food (A1)** What could be healthier? Making spaghetti Bolognese	**Digital World (S1)** Monitoring devices	**Structures (S1)** Bridges
	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.	**Design:** Research (books, internet) for a particular (user's) animal's needs. Develop design criteria based on research. Generate multiple housing ideas using building bricks. Understanding what a virtual model is and the pros and cons of traditional and CAD modelling. Place and manoeuvre 3D objects, using CAD. Change the properties of, or combining one or more 3D objects, using CAD.	**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.	**Make:** Understand the functional and aesthetic properties of plastics. Programme to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range.	**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, textile, 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.	**Evaluate:** State an event or fact from the last 100 years of plastic history. Explain how plastic is affecting planet Earth and suggesting ways to make more sustainable choices. Explain key functions in my program (audible alert, visuals). Explain how a product would be useful for an animal carer including programmed features.	**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.
	Cooking and Nutrition: Understand and apply principles of a healthy and varied diet. Prepare and cook 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.	**Technical knowledge:** To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record. To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose. To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.	**Technical knowledge:** Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

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	Autumn	Spring	Summer
Year 6	**Mechanical systems (A2)** Automata toys	**Textiles (S2)** Stuffed Toys *adapted from Y5 unit	**Electrical systems (S2)** Steady Hand Game
	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.	**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.	**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.	**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.	**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.	**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.	**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: Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].		**Technical knowledge:** Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].