Whole School Subject Overview: **Design and Technology**

End Point Expectations

<table>
<tr><td>Nursery</td><td rowspan="3">Educational Programme for expressive arts and design: 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.</td><td>3-4 year olds: Collaborate with others to manage large items, such as moving a long plank safely, carrying large hollow blocks. Use one-handed tools and equipment e.g snips in paper with scissors. Use a comfortable grip with good control when holding pens and pencils. Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. Explore different materials freely, to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures. Create closed shapes and continuous lines and begin to use these shapes to represent objects. Draw with increasing complexity e.g a face with a circle and including details.</td></tr>
<tr><td>Reception ELG</td><td>ELG: Fine Motor Skills Children at the expected level of development will: - Hold a pencil effectively in preparation for fluent writing – using the tripod grip in almost all cases; - Use a range of small tools, including scissors, paint brushes and cutlery; - Begin to show accuracy and care when drawing.</td></tr>
<tr><td></td><td>ELG: Creating with Materials Children at the expected level of development will: - 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; - Make use of props and materials when role playing characters in narratives and stories.</td></tr>
<tr><td>KS1 NC</td><td colspan="2">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 example, levers, sliders, wheels and axles], in their products.</td></tr>
<tr><td>KS2 NC</td><td colspan="2">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: elect 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.</td></tr>
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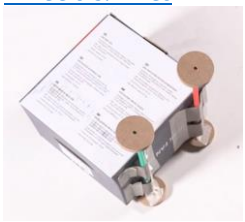
Concepts (KS1 and KS2):
- Mechanisms
- Food and nutrition
- Structures
- Textiles

Concepts (KS2 only):
- Electrical systems
- Digital world

DT	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery NB: a range of tools and materials are available for self directed exploration as well as these planned opportunities.	Materials – collage, junk modelling, puppet making Baking gingerbread	Natural materials creations	Junk modelling Chinese new year animals, pancake making	creating plant pots	3 pigs houses	Making junk boats– do they float?
Reception NB: a range of tools and materials are available for self directed exploration as well as these planned opportunities.	Baking gingerbread men, cutting animal masks, boats for gingerbread man	Wrapping paper designs presents for wrapping collage masks, Design and create calendars.	Building houses, paper plate characters, paper weaving baskets,	split pin characters, making fruit salads	moving emergency vehicles, vegetable superheroes	making lighthouses
Y1		**TEXTILES** Firebird Puppet  …with additional firebird decoration	**STRUCTURES** Baby Bear's Chair 	**MECHANISMS** Wheels & Axles 		
		Use a template to create a design for a puppet. Use joining methods to decorate a puppet. Know that there are various methods or joining fabric. Reflect on a finished product, explaining likes and dislikes	Make a structure from paper, card and tape Test the strength of own structure Know that materials can be manipulated to improve strength and stiffness Generate and communicate ideas by sketching and modelling	Know that wheels need to be round in order to rotate and move a vehicle. Identify what stops wheels from turning. Adapt a mechanism when it does not work, as it should. Create a labelled drawing		
Y2		**STRUCTURES** **Pudding Lane Bakery**	**MECHANISMS** Moving Monsters		**FOOD** Balance Diet Wraps	

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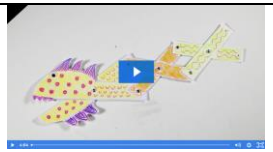
		 (Twinkl)				
		Add strengthening beams to ensure a strong product. Design by drawing a design, which reflect the stimulus of a historic building. Being able to apply just the right amount of glue for a neat, strong join. Evaluate how effective their building techniques were, giving reasons	Create a class design criteria. Making linkages using card for levers and split pins for pivots Evaluate own design against class design criteria Know that mechanisms are moving parts that work together to produce movement		Design a healthy food wrap. Slicing food safely. Describe the taste, texture and feel of fruit and vegetables. Know that 'diet' means the food and drink an animal usually eats	
Y3	**MECHANISMS** Pneumatic Toys - **Crocodiles** 		**FOOD & NUTRITION** Eating Seasonally 		**STRUCTURES** **Mini greenhouses**  (Plan bee)	
	Design a toy that has a pneumatic system Using syringes and balloons to create a desired motion in an appealing toy Use the views of others to improve a design Understand at pneumatic systems can be used as part of a mechanism		Create a healthy and nutritious recipe for a savoury tart, using seasonal ingredients. Knowing how to prepare themselves to cook safely Use a design criteria to help test and review dishes. Know that not all fruits and vegetables are grown in the UK and climate affects food growth		Identify suitable materials for a mini greenhouse and explain why these materials are suitable. Identify what has been successful in their product and any improvements that could be made. Follow a design to make a successful product. Discuss how to make a product more or less stable	

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Y4		**ELECTRICAL** Iron Man Head Night-light 	**DIGITAL WORLD** Mindful Moments 		**TEXTILES** **Anglo-Saxon Applique** -Cushions 	
		Design an Iron Man Head night-light, considering the target audience and focussing on features. Making an Iron Man Head night-light with a working switch. Test and evaluate the success of a final product. Understand that electrical conductors are materials which electricity can pass through and that electrical insulators are materials which electricity cannot pass through	Writing a design criteria for a programmable microchip (micro:bit) timer. Programming a micro:bit to act as a mindfulness timer Investigating and analysing a range of timers by identifying and comparing advantages and disadvantages Know that an algorithm is a set of instructions to be followed by a computer		Design a cushion by applying individual design criteria Selecting and cutting fabrics and threading needles with greater confidence Evaluating an end product and thinking of other ways to create a similar item. Know that when two edges of fabric have been joined together it is called a seam	
Y5		**FOOD** What could be healthier? 		**DIGITAL WORLD** Navigating the World 		**TEXTILES** **Plague -** Stuffed Toys 
		Adapt a traditional recipe, understanding that the nutritional value of the recipe alters Using cooking equipment safely and knowing how to avoid cross-contamination Identifying the nutritional differences between different products and recipes Understand where meat comes from – learning that beef is from cattle and how beef is reared and processed, including welfare issues		Write a design brief from information submitted by a client. Explaining material choices and why they were chosen as part of a product concept. Demonstrating a functional program as part of a product concept pitch. Know that accelerometers detect movement and how sensors can be used in products		Consider the proportions of individual components of a template Measuring, marking and cutting fabric accurately and independently, creating strong and secure blanket stitches which are even and regular Testing and evaluating an end product and giving pointers for further improvements Understand that it is easier to finish a simpler design to a high standard than it is to finish a complicated design to a high standard
Y6		**STRUCTURES** Bridges		**MECHANISMS** Automata Toys - **(cams)**	**ELECTRICAL** Steady Hand Game	

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		Create a frame structure with a focus on triangulation. Using triangles to create a truss bridge that spans a given distance and supports a given load Identifying points of weakness in a bridge structure and reinforcing them as necessary Understand the difference between arch, beam, truss and suspension bridges		Create a design or an automata toy based on a choice of cam to create a desired movement. Assembling components accurately to make a stable frame Evaluating the work of others, receiving feedback on own work and carrying out improvements Understand that a mechanism in an automata uses a system of cams, axles and followers and that different shaped cams produce different outputs	Drawing a design from three different perspectives. Incorporating a circuit into a stable base construction for a steady hand game. Testing own and others finished games, making suggestions for improvement with regard to the conductor and insulator components	