 **Big Picture for Curriculum Subjects**

Design and Technology

# What are the Key Concepts and Ideas that we want children to learn about in this subject through their education?

1. Children will research a range of real life products and evaluate their purpose and function so that they can solve problems and innovate for themselves.
2. Children will use their creativity and imagination to become interdependent designers and creators with a desire to enhance or adapt existing products.
3. Children will develop and use a range of materials and embed and apply a range of practical skills in order to create an end product.
4. Children will show resilience when continuously critiquing their own and others designs and products.
5. Each year, children will have an opportunity to learn about food preparation, hygiene and cooking techniques. Children will apply the principles of nutrition and healthy eating, instilling a love of cooking.
6. Children will combine and apply skills and knowledge of Design and Technology through the exploration of STEM learning.

How do these concepts progress throughout the school?

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| EYFS | KS1 | KS2 |
| * Children to develop creativity and imagination when creating complex ‘own worlds’ using experiences and stories to help encourage design ideas. (1, 2,   3)   * Children will begin to develop fine motor skills to explore and use a range of different materials. (3, 7) * Children will begin to share their creations, explaining the process they have used. (2,4) | * Children’s designs will include more technical aspects, where they will choose the appropriate materials to create effective joins for a range of products. (1, 2, 3) * A broader range of stimulus including designers and existing products are used to help influence the design ideas, process and help children reflect on their own ideas. (1, 2, 4) | * Children are given the opportunity for the full design cycle to be more independent, and also to develop more technical skills that would be necessary to have when creating a certain type of product and fulfil a design purpose / brief. (1, 2, 3) * Children will evaluate their work continuously throughout the whole process and be expected to make adaptations if designs are not effective. They will understand that sometimes initial designs change and consider how they would improve a product if their designed / made again. (1, 2, 4) |
| Each year, children will build on knowledge and embed further skills surrounding food hygiene. They will grow throughout school and promote a love for cooking. (5) | | |

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|  | Autumn | Spring | Summer |
| Nursery | * Children will begin to make imaginative and complex ‘small worlds’. * Children will begin to become familiar with softer materials and look at how to join them together. This will be through sewing stockings. | * Children will begin to understand the importance of food hygiene by baking. * Children will understand how different foods are healthy for our bodies and how fruit is important for us. | * Children will begin to use a range of materials in their provision. They will build structures of their homes using the different materials. |
| Reception | * Children will begin to make imaginative and complex ‘small worlds’. * Children will begin to progress their understanding of food hygiene through learning how to make pumpkin soup. | * Children explore different materials freely in order to develop ideas and make choices. * Children will develop their small motor skills in order to use a range of tools competently, safely and confidently. * Children will be using a range of different materials with the outcome of building a castle. | * Children will safely use and explore a variety of materials,   tools and techniques   experimenting with texture,   form and function. * Children will use trial and error to determine how materials have different functions. They will decide which material will be most suited to make a boat. |
| Year 1 | * Children will learn the importance of a clear design criteria and include individual preferences and requirements in a design for a windmill. * Children develop their skills in cutting, puncturing holes and adding weight to structures to make them stable. * Children will create a windmill and begin to adapt mechanisms. * Children will use testing to identify which parts make their moving product and begin to understand how a windmill works and its uses. | * Children will continue to follow clear designs and begin to use a template when creating their own designs for a puppet. * Children will build on prior knowledge of materials to follow instructions when cutting and assembling materials/structures. * Children will describe their product and begin to explain why they used specific materials. | * Children will continue their understanding of how different foods are healthy for us and design a smoothie. * Children will begin to use a range of safe cutting methods to create their own smoothie. * Children will be able to discuss which fruits they used in their smoothie and their nutritional value. * They will understand the nature of fruits and vegetables and where they grow. |
| Year 2 | * Children will begin to generate and communicate their ideas by sketching and modelling. * Building on their prior learning, pupils will design their products based on a clear design criteria and create a baby bear’s chair. * Children will begin to evaluate their own work based on a design criteria and opinions from their peers. | * Children will design a fairground wheel creating more detailed, labelled design plans * They will choose from a wider range of materials and tools, knowing the safe use of them. * They will be able to consider balance in their decorations and evaluate their likes and dislikes of their finished products. * They will widen their knowledge that everyday objects have mechanisms and have moving parts inside to help them work. | * Children will create a class design criteria for a moving monster for a specific audience. * They will build on their knowledge of mechanisms experimenting with linkages, levers and pivots. * They will evaluate their own designs against the design criteria and use peer feedback to modify their design. * They will widen their knowledge that moving parts collectively create a machine and what levers and linkages produce. |

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| Year 3 | * They will create a healthy nutritious recipe for a savoury tart using seasonal ingredients. * Children will build on their prior knowledge of food preparation and nutrition including the safe use of knives when chopping and slicing. * They will begin to understand the value of seasonal foods and its impact on the environment. * They will review their dish and recipe. | * The children draw and label designs using 2D and 3D shapes to construct a castle. * They will develop their understanding of nets to construct shapes using recycled materials. * They will evaluate their work. * They will build upon their knowledge of stable structures and strength and stiffness of materials. * They will develop their understanding of the features of buildings and their purpose | * Children will build on prior knowledge of textiles and joining fabrics from Year 1. They will be designing and creating their own Egyptian collar. * Children will be reinforcing the knowledge of joining a range of different materials together using needles and thread and apply embellishment. * Children will be working to a design brief, supporting them with their understanding of textiles. |
| Year 4 | * Building on prior learning of structures, children will build a pavilion that is aesthetically pleasing * They will build upon their knowledge of materials and build frames designed to support weight. * Children will create their designs in accordance with a plan and when evaluating will describe which characteristics of the construction were the most effective. * They will develop their knowledge of decorative buildings and the importance of aesthetics in building design. | * The children will develop their understanding of mechanisms by designing a slingshot car in which the shape reduces air resistance. * They will develop a net and measure, mark, cut and assemble with increasing accuracy based on a design. * They will evaluate their final product based on the effect of shape on speed and accuracy of workmanship. * They will develop their knowledge of templates and aesthetics in design how graphics are used to explain or advertise. | * The children will be introduced to electrical systems by designing a torch, giving consideration to the target audience and creating a design and success criteria focusing on features of individual design ideas. * They will include a working electrical circuit and switch and use appropriate materials to cut and attach materials. * They will know how a circuit must be complete for electricity to flow and a switch can be used to complete or break a circuit. * They will learn the names of different parts of torch and the invention of the light bulb. |

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| Year 5 | * Children will continue developing their understanding of electrical systems from Year 4 by creating an electrical doodler. * They will learn how to alter a product's form by changing its configuration with reference to the design criteria and analyze whether changes impact positively or negatively on an existing product. * They will understand the circuitry in a motorized product and tat product analysis is critiquing the strengths and weaknesses in a product. | * The children will widen their knowledge of mechanisms and design a pop-up book, naming each mechanism. * They will use slider, pivots and other mechanisms learnt in previous year groups to make their book, considering how movement is created and is aesthetically pleasing. * They will know that designers often want to hide mechanisms to improve a product’s appearance. | * Progressing from Year 3, Children adapt a traditional recipe and understand that this can alter the nutritional value of the dish. * Children will follow instructions from a recipe and prepare food safely, using the claw and bridge grips learnt in Year 3 . * They will widen their understanding of what   ‘cross - contamination’ is and how this can be prevented.   * Whilst evaluating, children will consider the impact their chosen food may have food on the environment. |

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| Year 6 | * Buiding on their knowledge and skills from Years 1,3, and 5, The children will write a recipe explaining the key steps, method and ingredients. * They will work to a timescale and adapt a recipe, working hygienically. * They will conduct taste tests and evaluate health and safety. * They will develop their knowledge of processed food and what happens to food before it appears on supermarkets shelves. | * The children will design a playground, using their knowledge of structures developed throughout KS1 and KS 2 considering effective and ineffective designs. * They will include cutting skills already refined and the cutting of wood using tools safely. * They will test and adapt their design and structures with their peers and identify what makes a successful structure. * They will manipulate materials and shapes to good effect. * They will understand what a ‘footprint’ is and know that in the real world, design can impact users in positive and negative ways. * They will understand that a prototype is a cheap model to test design ideas. | * The children will design a waistcoat to a specific design criterion. * They will make annotated designs and use a pinned pattern and decorate their waistcoat appropriately. * They will develop their skills of cutting and joining fabrics learnt in previous year groups and produce consistently sized stitching. * They will understand the design brief for clients. |