

Design and Technology Curriculum – St Cuthbert Mayne Junior School – 2023/2024

Our Curriculum Vision – PRAY

<p>Protecting our Planet – learn and contribute to protecting God’s creation – in our community and wider work. Caring about the world we live in;</p>	<p>Resilience – be able to face challenges and use them to help us progress. Overcome difficulties that challenge us;</p>	<p>Aspiration – we are created by God to do amazing things – each one of us. Ambitious / belief in ourselves and in what we can achieve.</p>	<p>Yes to equality – we are all equal and important in God’s eyes. Everyone is equal and deserves to be valued and respected.</p>
<p>Children discuss sustainability and using recycled materials as much as possible.</p> <p>Cooking and nutrition- eating seasonally Children understand that eating seasonal fruit and vegetables positively affects the environment.</p>	<p>All aspects of design and technology curriculum allow children to learn new skills and then challenge themselves to improve and make progress.</p> <p>Children are given opportunities to practise these skills over time and build upon them in subsequent year groups.</p> <p>Children take ownership of their designs and have the freedom to adapt and make changes if their design does not work.</p> <p>Children are given opportunities to discuss challenges and how to make changes to overcome this before making their final piece.</p>	<p>Children look at a range of existing designs in order to inspire their own creative journey.</p> <p>Children are inspired by their own work and the work of others.</p> <p>Children look at a range of designers, inventors and existing designs in order to inspire their own creative journey.</p>	<p>Every child will have the opportunity to experience all aspects of design and technology lessons.</p> <p>Children will understand and recognise the valuable contributions their peers make when working within a lesson. Designs and final products will be shared and celebrated.</p>

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Our Subject Philosophy

Our carefully planned and sequenced curriculum develops children's skills, knowledge and understanding across the core strands of structures, mechanisms, electrical systems, cooking, textiles, and the digital world. This document outlines the development of core skills and technical knowledge for clear, measurable progression.

The requirements of the National Curriculum:

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

National Curriculum: https://assets.publishing.service.gov.uk/media/5a7ca43640f0b6629523adc1/PRIMARY_national_curriculum_-_Design_and_technology.pdf

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Design and technology long term plan:

Design and Technology Curriculum Map 2023-24						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3		Structures- Pavilions		Cooking and nutrition- Eating seasonally		Mechanical systems- Designing a pneumatic toy
Year 4		Textiles - Christmas decoration		Cooking and nutrition- Adapting a recipe		Electrical Systems - Torches
Year 5		Mechanical systems: Making a pop-up book		Digital world: Monitori ng devices		Cooking and nutrition: Bread m aking
Year 6		Electrical systems steady hand game		Textiles Waistcoats		Structures Playgrounds

Curriculum Progression at St Cuthbert’s Mayne Junior School

Structures

		LKS2	UKS2
Skills	Design	<ul style="list-style-type: none"> • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Creating a range of different shaped frame structures. • Making a variety of free standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials. 	<ul style="list-style-type: none"> • 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.
	Evaluate	<ul style="list-style-type: none"> • Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs. 	<ul style="list-style-type: none"> • 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.

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Knowledge	<ul style="list-style-type: none"> • To understand what a frame structure is. • To know that a 'free-standing' structure is one which can stand on its own. • To know that cladding can be applied to structures for different effects. • To know that aesthetics are how a product looks. • To know that a product's function means its purpose. • To understand that the target audience means the person or group of people a product is designed for. • To know that architects consider light, shadow and patterns when designing. 	<ul style="list-style-type: none"> • To know that structures can be strengthened by manipulating materials and shapes. • To understand what a 'footprint plan' is. • To understand that in the real world, design , can impact users in positive and negative ways. • To know that a prototype is a cheap model to test a design idea.
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Mechanisms

		LKS2	UKS2
Skills	Design	<ul style="list-style-type: none"> • Designing a toy which uses a pneumatic system. • Developing design criteria from a design brief. • Generating ideas using thumbnail sketches and exploded diagrams. • Learning that different types of drawings are used in design to explain ideas clearly. 	<ul style="list-style-type: none"> • 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.

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	Make	<ul style="list-style-type: none"> • Creating a pneumatic system to create a desired motion. • Building secure housing for a pneumatic system. • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Selecting materials due to their functional and aesthetic characteristics. • Manipulating materials to create different effects by cutting, creasing, folding and weaving. 	<ul style="list-style-type: none"> • 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 for an aesthetically pleasing result.
	Evaluate	<ul style="list-style-type: none"> • Using the views of others to improve designs. • Testing and modifying the outcome, suggesting improvements. • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client. 	<ul style="list-style-type: none"> • Evaluating the work of others and receiving feedback on own work. • Applying points of improvement to their pop up books. • Describing changes they would make/do if they were to do the project again.
Knowledge		<ul style="list-style-type: none"> • To understand how pneumatic systems work. • To understand that pneumatic systems can be used as part of a mechanism. • To know that pneumatic systems operate by drawing in, releasing and compressing air. • To understand how sketches, drawings and diagrams can be used to communicate design ideas. • To know that exploded-diagrams are used to show how different parts of a product fit together. • To know that thumbnail sketches are small drawings to get ideas down on paper quickly. 	<ul style="list-style-type: none"> • To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms. • To know that a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.

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Textiles

		LKS2	UKS2
Skills	Design	<ul style="list-style-type: none"> • Designing and making a template from an existing cushion and applying individual design criteria. 	<ul style="list-style-type: none"> • Designing a waistcoat in accordance to a specification linked to set of design criteria. • Annotating designs, to explain their decisions.
	Make	<ul style="list-style-type: none"> • Following design criteria to create a Christmas decoration. • Threading needles with greater independence. • Tying knots with greater independence. • Measuring, marking and cutting fabric using a paper template. • Selecting a stitch style to join fabric, working neatly by sewing small, straight stitches. • Incorporating fastening to a design. • Completing design ideas with stuffing and sewing the edges. 	<ul style="list-style-type: none"> • Using a template when cutting fabric to ensure they achieve the correct shape. • Using pins effectively to secure a template to fabric without creases or bulges. • Marking and cutting fabric accurately, in accordance with their design. • Sewing a strong running stitch, making small, neat stitches and following the edge. • Tying strong knots. • Decorating a waistcoat, attaching features (such as appliqué) using thread. • Finishing the waistcoat with a secure fastening (such as buttons). • Learning different decorative stitches. • Sewing accurately with evenly spaced, neat stitches.
	Evaluate	<ul style="list-style-type: none"> • 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 types. 	<ul style="list-style-type: none"> • Reflecting on their work continually throughout the design, make and evaluate process.

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Knowledge	<ul style="list-style-type: none"> • To know that when two edges of fabric have been joined together it is called a seam. • To know that it is important to leave space on the fabric for the seam. • To understand that some products are turned inside out after sewing so the stitching is hidden. 	<ul style="list-style-type: none"> • To understand that it is important to design clothing with the client/ target customer in mind. • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches.
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Cooking and nutrition

		LKS2	UKS2
Skills	Design	<p>Year 3:</p> <ul style="list-style-type: none"> • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. <p>Year 4:</p> <ul style="list-style-type: none"> • Designing a biscuit within a given budget, drawing upon previous taste testing judgements. 	<ul style="list-style-type: none"> • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken.
	Make	<p>Year 3:</p> <ul style="list-style-type: none"> • Following the instructions within a recipe. <p>Year 4:</p> <ul style="list-style-type: none"> • Following a baking recipe, from start to finish, including the preparation of ingredients. • Cooking safely, following basic hygiene rules. • Adapting a recipe to improve it or change it to meet new criteria 	<ul style="list-style-type: none"> • Following a recipe, including using the correct quantities of each ingredient. • Adapting a recipe based on research. • Working to a given timescale. • Working safely and hygienically with independence.

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	Evaluate	<p>Year 3:</p> <ul style="list-style-type: none">• 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. <p>Year 4:</p> <ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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 evaluating their own recipe throughout the planning, preparation and cooking process.• Evaluating health and safety in production to minimise cross contamination.
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Knowledge	<p>Year 3:</p> <ul style="list-style-type: none"> • Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. • To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions are known as a 'recipe'. • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country. • To understand that imported foods travel from far away and this can negatively impact the environment. • To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • To know safety rules for using, storing and cleaning a knife safely. <p>Year 4:</p> <ul style="list-style-type: none"> • To know that the amount of an ingredient in a recipe is known as the 'quantity.' • To know that it is important to use oven gloves when removing hot food from an oven. • To know the following cooking techniques: sieving, creaming, rubbing method, cooling. • To understand the importance of budgeting while planning ingredients for biscuits. 	<ul style="list-style-type: none"> • Name and identify the origin of a number of bread products • Talk about the contribution that bread can make to a healthy diet • Demonstrate through their recording sheets understanding of how different bread products can be classified • Use a wide sensory vocabulary to describe bread products • Know about the processes involved in making bread products • Demonstrate accurate, effective and appropriate use of equipment, using safe and hygienic working practices • Understand that the properties and quantities of ingredients will affect the final product • Follow safe procedures for food safety and hygiene
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Electrical systems

		LKS2
Skills	Design	<ul style="list-style-type: none"> • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.
	Make	<ul style="list-style-type: none"> • Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria.
	Evaluate	<ul style="list-style-type: none"> • Evaluating electrical products. • Testing and evaluating the success of a final product.
Knowledge		<ul style="list-style-type: none"> • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit. • To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens.

Digital world

		LKS2
Skills	Design	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 useful for an animal carer including programmed features.

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Knowledge	<ul style="list-style-type: none">• 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.• To understand key developments in thermometer history.• To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future.• To know the 6Rs of sustainability.• To understand what a virtual model is and the pros and cons of traditional vs CAD modelling.
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