St Nicholas C of E (VA) Primary School and Nursery

Design and Technology Curriculum Overview 2023-25 Year B

	Autumn	Spring	Summer
Values	Year A Compassion and Thankfulness Year B Generosity and Perseverance	Forgiveness and Truthfulness Trust and Respect	Service and Justice Friendship and Courage
Nursery	Knowing how to use different tools for different purposes Creating models with construction kits and recycled materials Joining things together in a variety of ways Cooking a variety of things like cookies, pinwheel pizza's, gingerbread man with adult support		
Reception	During their journey through reception the children will: Explore the textures, movement, feel and look of different media and materials. • Respond to a range of media and materials developing an understanding that they manipulate and create effects with these. • Use different media and materials to express their own ideas. • Construct with a purpose in mind using a variety of resources. Develop skills to use simple tools and techniques competently and appropriately. Select appropriate resources for a product and adapt their work where necessary.		
National Curriculum Expectation **Key Stage 1**	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. When designing and making, pupils should be taught to: **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.		

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	Cooking and nutrition As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. Pupils should be taught use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from.		
Year 1 and 2 **Year B**	**Textiles:** Bookmarks **Skills** **Design** Design a bookmark **Make** Selecting and cutting fabrics for sewing Decorating a bookmark using fabric glue or running stitch. Threading a needle Sewing running stitch, with evenly spaced, neat, even stitches to join fabric neatly pinning and cutting fabric using a template. **Evaluate** Troubleshooting scenarios posed by the 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 explaining why. **Knowledge** To know that sewing is a method of joining fabric To know that different stitches can be used when sewing. To understand the importance of tying a knot after sewing the final stitch. To know that a thimble can be used to protect my fingers when sewing.	**Mechanisms:** Wheels and Axels **Skills** **Design** Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. Creating clearly labelled drawings that illustrate movement. **Make** Adapting mechanisms, when: they do not work as they should. to fit their vehicle design. to improve how they work after testing their vehicle. **Evaluate** Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move. **Knowledge** To know that wheels need to be round to rotate and move. To understand that for a wheel to move it must be attached to a rotating axle. To know that an axle moves within an axle holder which is fixed to the vehicle. To know that the frame of a vehicle (chassis) needs to be balanced. To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicle.	**Cooking and Nutrition**: Smoothies **Skills** **Design** Designing smoothie carton packaging by-hand. Write ingredients needed **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 information to be included on packaging. Comparing their own smoothie with someone else's. **Knowledge** To know that a blender is a machine which mixes ingredients together into a smooth liquid. To know that a fruit has seeds. To know that fruits grow on trees or vines. To know that vegetables can grow either above or below ground. To know that vegetables is any edible part of a plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).

	Vocabulary Accurate, Fabric, Knot, Pouch, Running-stitch, Sew, Shape, Stencil, Template, Thimble	**Vocabulary** Axle, Axle holder, Chassis, Design, Evaluation, Fix, Mechanic, Mechanism, Model, Test, Wheel	**Vocabulary** Blender, Carton, Fruit, Healthy, Ingredients, Peel, Peeler, Recipe, Slice, Smoothie, Stencil, Template, Vegetable
	Enrichment opportunities:, Visit to the Transport museum, Skate board workshops, visit from school cook or local restaurant, speak to a visitor who auditioned for 'The great British Sewing Be.		
National Curriculum Expectation **Key Stage 2**	When designing and making, pupils should be taught to: **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. **Cooking and Nutrition** 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.		
Lower KS2 **Year B**	**Mechanical**: Sling Shots/Catapults used in the Stone/Iron age **Skills** **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.	**Structures:** Round houses Iron Age Homes. Inside the hill forts, families lived in round houses. These were simple one-roomed homes with a pointed thatched roof and walls made from wattle and daub (a mixture of mud and twigs). In the centre of a round house was a fire where meals were cooked in a cauldron. **Skills**	**Electrical:** Torches **Skills** **Design** Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.

	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 accuracy of workmanship on performance. **Knowledge** To understand that all moving things have kinetic energy. To understand that kinetic energy is the energy that something (object/person) has by being in motion. To know that air resistance is the level of drag on an object as it is forced through the air. To understand that the shape of a moving object will affect how it moves due to air resistance. To understand that products change and evolve over time. To know that aesthetics means how an object or product looks in design and technology. To know that a template is a stencil you can use to help you draw the same shape accurately. To know that a birds-eye view means a view from a high angle (as if a bird in flight). To know that graphics are images which are designed to explain or advertise something. To know that it is important to assess and evaluate design ideas and models against a list of design criteria. **Vocabulary** Aesthetic, Air resistance, Chassis, Design ,Design criteria , Function, Graphics, Kinetic energy, Mechanism, Structure, Net	Building frame structures designed to support weight. **Design** Designing a stable structure selecting materials to create a desired effect. Drawing and labelling the design using 2D shapes, labelling: -the 3D shapes that will create the features –labelling the materials needed. **Make** Making a variety of free standing frame structures of different sizes. Selecting appropriate materials to build a strong structure and roofing. • Consider how to strengthen the structure. Creating a design in accordance with a plan. • Learning to create different textural effects with materials **Evaluate** Evaluating structures made by the class.• Describing what characteristics of a design and construction made it the most effective Considering effective and ineffective designs. **Knowledge** To understand what a frame structure is To know that a 'free-standing' structure is one which can stand on its own **Vocabulary** 2D shapes, 3D shapes, Design criteria, Evaluate, Feature, Net , Recyclable, Scoring, Stable, Strong, Structure, Tab, Weak	**Make** 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** Evaluating electrical products. Testing and evaluating the success of a final product **Knowledge** To understand that electrical conductors are materials which electricity can pass through To understand that electrical insulators are materials which electricity cannot pass through To know that a battery contains stored electricity that can be used to power products. 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 To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison. **Vocabulary** Battery, Bulb, Buzzer, Cell, Component, Conductor, Copper, Design criteria, Electrical item, Electricity, Electronic item, Function, Insulator, Series circuit, Switch, Test, Torch, Wire

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THE CHURCH OF ENGLAND

Upper KS2 **Year B**	**Cooking and Nutrition:** Greek Recipe - developing a recipe **Skills** **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 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. **Knowledge** To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed. To know that recipes can be adapted to suit nutritional needs and dietary requirements. To know that I can use a nutritional calculator to see how healthy a food option is To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. To know that coloured chopping boards can prevent cross-contamination. To know that nutritional information is found on food packaging.	**Mechanical:** Automata Toys **Skills** **Design** Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement. Understanding how linkages change the direction of a force Making things move at the same time. Understanding and drawing cross-sectional diagrams to show the inner-workings of my design. **Make** Measuring, marking and checking the accuracy of the jelutong and dowel pieces required Measuring, marking and cutting components accurately using a ruler and scissors. Assembling components accurately to make a stable frame. Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles. Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set. **Evaluate** Evaluating the work of others and receiving feedback on own work. Applying points of improvement to their toys. Describing changes they would make/do if they were to do the project again **Knowledge** To understand that the mechanism in an automata uses a system of cams, axles and followers. To understand that different shaped cams produce different outputs.	**Textiles**: Bags **Skills** **Design** Designing a bag in accordance to a specification linked to set of design criteria. Annotating designs, to explain their decisions **Make** 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 bag, attaching features (such as appliqué) using thread. Finishing the bag with a secure fastening (such as buttons). Learning different decorative stitches. Sewing accurately with evenly spaced, neat stitches. **Evaluate** Reflecting on their work continually throughout the design, make and evaluate process. **Knowledge** To understand that it is important to design items with the client/ target customer in mind. To know that using a template (or pattern) helps to accurately mark out a design on fabric. To understand the importance of consistently sized stitches. **Vocabulary** Accurate, Adapt, Annotate, Design, Design criteria, Detail, Fabric, Fastening, Knot, Properties, Running-stitch, Seam, Sew,

	To know that food packaging serves many purposes. **Vocabulary** Equipment, flavours, ingredients, method, research, recipe, bridge method, cookbook, cross-contamination, farm to fork, preparation	To know that an automata is a hand powered mechanical toy. To know that a cross-sectional diagram shows the inner workings of a product. To understand how to use a bench hook and saw safely. To know that a set square can be used to help mark 90° angles **Vocabulary** Accurate, Assembly-diagram, Automata, Axle, Bench hook, Cam, Clamp, Component, Cutting list, Diagram. Dowel, Drill bits, Exploded-diagram, Finish, Follower, Frame, Function, Hand drill, Jelutong, Mark out ,Measure, Mechanism, Model, Research, Right-angle, Set square, Tenon saw	Shape, Target audience, Target customer, Template, Thread, Unique
	Enrichment opportunities Stem projects (For eg like the roots research project), After School Code Club run by our Computing Lead, School wide Bake Off, Visit to Tesco, farm to fork.		