

St Mary's Church of England Primary School
Living, loving and learning in God's care

Subject Leader Planning Grid

Subject: Design and Technology

Leader: Clare Hill

By the end of Key Stage One:

Design - I can design purposeful, functional, appealing products for myself and other users based on design criteria

I can generate, develop, model and communicate my ideas through talking, drawing, templates, mock-ups and, where appropriate, ICT

Make - I can select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]

I can select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate - I can explore and evaluate a range of existing products

I can evaluate my ideas and products against design criteria

Technical knowledge - I can build structures, exploring how they can be made stronger, stiffer and more stable

I can explore and use mechanisms [for example, levers, sliders, wheels and axles], in my products.

Cooking and Nutrition - I can use the basic principles of a healthy and varied diet to prepare dishes

I understand where food comes from.

By the end of Key Stage Two:

Design

I can 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

I can generate, develop, model and communicate my ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

I can select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately

I can 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

I can investigate and analyse a range of existing products

I can evaluate my ideas and products against my own design criteria and consider the views of others to improve their work

I can understand how key events and individuals in design and technology have helped shape the world

Technical knowledge

I can apply my understanding of how to strengthen, stiffen and reinforce more complex structures

I understand and can use mechanical systems in my products [for example, gears, pulleys, cams, levers and linkages]

I understand and can use electrical systems in my products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

I can apply my understanding of computing to program, monitor and control my products.

Cooking and Nutrition

I understand and apply the principles of a healthy and varied diet

I can prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques

I understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Year Group Subject topic areas.	I can statement	Context	Knowledge	Key Vocabulary
Early Years Reception Topic Ideas - Bonfire night, Christmas, Remembrance, Valentine's Day, Easter. Leavers.	I can safely use a range of tools. I can explore a variety of materials and describe and compare them. I can demonstrate a range of techniques. I can share my creations. I can explain the process I have used.	Drawing - Draw with increasing complexity and detail when responding to capturing objects, images and people when exploring topic work. Creating - explore different materials freely to develop their	I know how to carry and use a range of tools safely. I can use a tripod grip with control. I know how to construct with a range	Picture Draw Use Experiment Change Tools Materials Improve

<p>My family. My holidays. Links to weather. Changing seasons.</p> <p>All about me. 4 Seasons. Mini-beasts.</p>	<p>I can say what I like and don't like about my creation. I can say what I would change next time.</p> <p>I can be inspired by artists and have conversations about them.</p>	<p>ideas when responding to topic work. Talk about what they are going to make and how they are going to make it. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures.</p> <p>Food - To create a fruit salad. Preparing and chopping fruit. Exploring fruits, textures, smell, taste.</p>	<p>of materials and join using glue and tape. I can describe colour, shape and texture. I know how to use my hands to spray, chop, thread etc. I know how to mix colours and predict the changes.</p> <p>I know how to manipulate malleable materials. I know how to use an ipad to take a photograph.</p>	<p>Ipad Record Photograph Video Food Meal Snack Healthy Diet</p>
<p>KEY STAGE ONE Year 1 and Year 2 Topic Ideas - Cycle A 2023/2024 (General events - each year - Bonfire night, Christmas, Remembrance, Valentine's Day, Easter, leavers). How have our toys boxes changed? Sock puppets.</p>	<p>I can think of ideas and recognise characteristics of familiar products. My plans show that, with help, I can put my ideas into practice. I can use pictures and words to describe what I want to do. I can explain what I am making and which tools I am using. I can use tools and materials with help, where needed. I can talk about my own and other people's work in simple terms. I can describe how a product works.</p>	<p>Food - Sandwiches. Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales. Assemble a sandwich.</p> <p>Food - Healthy fruit kebabs or vegetable soup Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales. Assemble or cook ingredients</p>	<p>Food. I am able to name the range of ingredients and know how to sequence products. I know the difference between hot and cold, raw and cooked. I know the difference between chop, slice, peel and grate.</p> <p>I know the changes that happen to foods when they are heated.</p>	<p>Cut Peel Grate Measure Weigh Scales Ingredients Recipe Healthy Varied Diet</p> <p>Textiles Needle Thread</p>

<p>People who help us.</p> <p>Where am I in the world? My country.</p> <p>Seasonal changes.</p> <p>Everyday materials.</p> <p>Mini-beasts. Living things and habitats.</p> <p>Cycle B</p> <p>(General events - each year - Bonfire night, Christmas, Remembrance, Valentine's Day, Easter, leavers).</p> <p>Great Fire of London Gunpowder plot</p> <p>Seasonal changes.</p> <p>How do we know where we are? Uses of everyday materials.</p> <p>What makes our world so beautiful? Plants. Animals including humans.</p>		<p>Textiles -- puppets Shape textiles using templates. Join textiles using running stitch. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).</p>	<p>I know vocabulary to describe sense of taste, sweet, sour, salty, bitter etc.</p> <p>Textiles. I know that the design is the picture of the product I want to make. I know how to join two pieces of fabric with glue, tape or thread. I know that different decorations create different effects. I know what my product will be used for. I know what would improve and make it better.</p>	<p><i>Wool Stitch Dyeing Decorating</i></p>
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<p>Year 2 extend and challenge.</p> <p>Cycles as above</p>	<p>I can think of ideas and plan what to do next, based on my experience of working with materials and components.</p> <p>I can use models, pictures and words to describe my designs.</p> <p>I can select appropriate tools, techniques and materials, explaining my choices.</p> <p>I can use tools and assemble, join and combine materials and components in a variety of ways.</p> <p>I can recognise what I have done well as my work progresses, and suggest things I could do better in the future.</p>	<p>Mechanisms – Pop-up Books/ cards –</p> <p>Cut materials safely using tools provided.</p> <p>Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).</p> <p>Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.</p> <p>Create products using levers.</p> <p>Structures –</p> <p>Cut materials safely using tools provided.</p> <p>Measure and mark out to the nearest centimetre.</p> <p>Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).</p> <p>Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).</p> <p>Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).</p>	<p>Mechanisms.</p> <p>I know that my mechanism will be a slider, lever or pop up.</p> <p>I know how to operate my mechanism.</p> <p>I know the tools and resources I will need and I am able to name them correctly.</p> <p>I know correct directional language – up, down, forwards, backwards, left, right and diagonal.</p> <p>I know which joining technique to use and know how to use tap, glue and joins correctly.</p> <p>Structures.</p> <p>I know which part of the mechanism is the pivot.</p> <p>I know how to replicate the movement and understand the purpose of my product.</p>	<p>Year 2 –</p> <p><i>Cut</i></p> <p><i>Peel</i></p> <p><i>Grate</i></p> <p><i>Measure</i></p> <p><i>Weigh</i></p> <p><i>Scales</i></p> <p><i>Ingredients</i></p> <p><i>Recipe</i></p> <p><i>Healthy</i></p> <p><i>Varied</i></p> <p><i>Diet</i></p> <p><i>Textiles</i></p> <p><i>Needle</i></p> <p><i>Thread</i></p> <p><i>Wool</i></p> <p><i>Stitch</i></p> <p><i>Dyeing</i></p> <p><i>Decorating</i></p> <p>Extending Vocabulary–</p> <p><i>Gluing</i></p> <p><i>Hinge</i></p> <p><i>Mechanism</i></p> <p><i>Drilling</i></p> <p><i>Screwing</i></p> <p><i>Folds</i></p> <p><i>Levers</i></p> <p><i>Cutting</i></p>

		<p>Mechanical Systems - Cut materials safely using tools provided. Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. Create products wheels and winding mechanisms</p>	<p>I know which material to select depending on its characteristics i.e. strength, pliability, size. I know how to create a template and the reason I use it to support making my final product. I know I can use technology to support my learning, google to research topics and D and T ideas and techniques. I know how to operate a saw safely and correctly and sand to finish. I know how to create a corner with glue and card right angled triangles. I know how to use wood nails and a hammer accurately and safely.</p>	<p><i>Shaping Tearing Curling Strengthen Joining Winding Mechanism Tenon saw Hacksaw Bench hook Clamp Dowel Pulley Drill</i></p>
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<p>KEY STAGE TWO Year 3 and Year 4</p> <p>Cycle A 2022/2023 What do Mexico and chocolate have in common?</p> <p>The Mayans.</p> <p>What did the Egyptians achieve?</p> <p>Why do we need to know what the world looks like from the sky?</p> <p>Light, sound. States of matter. Plants. Living things and their habitats.</p> <p>Cycle B 2023/2024 What lasting legacy did the Romans leave on Britain?</p>	<p>I can explore ideas and collect visual and other information for my work (Exploring and developing).</p> <p>I can investigate visual and tactile qualities in materials and processes (Investigating and making).</p> <p>I can demonstrate my ideas and meanings, and design and make images and artefacts for different purposes.</p> <p>I can comment on similarities and differences between my own and others' work.</p> <p>I can adapt and improve my own work (Evaluating and developing).</p>	<p>Food – Chocolate Cakes Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales. Prepare ingredients hygienically using appropriate utensils. Measure and mark out to the nearest millimetre. Follow a recipe.</p> <p>Mechanical Systems – Pneumatics – Tomb raiders Cut materials accurately and safely by selecting appropriate tools. Select appropriate joining techniques. Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).</p> <p>Structures – Grand United Kingdom Designs Choose suitable techniques to construct products or to repair items. Strengthen materials using suitable techniques. Design with purpose by identifying opportunities to design. Identify some of the great designers in all of the areas of study (including</p>	<p>Food. I know how to maintain high hygiene levels when I am preparing food. I know about bacteria and conditions such as warm, wet and dark environments for optimum breeding. I know how to wash my hands thoroughly and effectively. I know how to measure out and weigh my ingredients. I know how to sequence and follow instructions to follow a recipe. I know the effects of heating, cooling and freezing food. I know where foods come from. I know how to evaluate in a written method and oral report on how I could change and improve my product. Mechanical Systems. I know the difference between a lever and a linkage.</p>	<p>Year 3 – vocabulary plus all above. <i>Hygiene</i> <i>Electronic scales</i> <i>Utensils</i> <i>Millimetre</i> <i>Accurate</i> <i>Appropriate</i> <i>Filing</i> <i>Sanding</i> <i>Gears</i> <i>Design</i> <i>Purpose</i> <i>Architect</i> <i>Stable</i></p>
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<p>What can we know about World War 2 from sources?</p> <p>Why are Rainforests important to us in the UK?</p> <p>Forces, magnets, electricity, animals including humans. Rocks.</p>		<p>pioneers in horticultural techniques) to generate ideas for designs. Improve upon existing designs, giving reasons for choices.</p>	<p>I know how my product will move and its purpose.</p> <p>I know how to measure, mark out, cut, join and finish.</p> <p>I know how to question my design ideas to improve and evaluate my product.</p>	
<p>Year 4 extend and challenge</p>	<p>I can explore ideas and collect visual and other information for my work (Exploring and developing).</p> <p>I can investigate visual and tactile qualities in materials and processes (Investigating and making).</p> <p>I can demonstrate my ideas and meanings, and design and make images and artefacts for different purposes.</p> <p>I can comment on similarities and differences between my own and others' work.</p> <p>I can adapt and improve my own work (Evaluating and developing).</p>	<p>Mechanisms with pulleys and levers</p> <p>Cut materials accurately and safely by selecting appropriate tools.</p> <p>Select appropriate joining techniques.</p> <p>Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding).</p> <p>Make products by working efficiently (such as by carefully selecting materials).</p> <p>Structures</p> <p>Cut materials accurately and safely by selecting appropriate tools.</p> <p>Select appropriate joining techniques.</p> <p>Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding).</p> <p>Make products by working efficiently (such as by carefully selecting materials).</p>	<p>I know the function of the axle, axle holders and wheels.</p> <p>I know the difference between fixed and free moving.</p> <p>I know what type of mechanical components I have used and explain why.</p> <p>I know how to apply maths skills and science skills to my project.</p> <p>I know how to build a simple circuit to operate a gear.</p> <p>I know how to build a circuit incorporating a battery, motor and hand- made switch that can reverse direction.</p>	<p><i>Year 4 - vocabulary plus all above.</i></p> <p><i>Screwing</i></p> <p><i>Filling</i></p> <p><i>Refine</i></p> <p><i>Technique</i></p> <p><i>Battery</i></p> <p><i>Terminal</i></p> <p><i>Diagnose</i></p> <p><i>Bulb</i></p> <p><i>Wire</i></p> <p><i>Motor</i></p> <p><i>Connection</i></p> <p><i>Circuit</i></p> <p><i>Axle</i></p>

		<p>Refine work and techniques as work progresses, continually evaluating the product design. Improve upon existing designs, giving reasons for choices.</p> <p>Electrical systems Cut materials accurately and safely by selecting appropriate tools. Select appropriate joining techniques. Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage). Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears). Design with purpose by identifying opportunities to design.</p> <p>Create series and parallel circuits. Make products by working efficiently (such as by carefully selecting materials).</p>	<p>I know how to strip wire to ensure a good connection and contact. I know how to evaluate and improve mine and others products and suggest changes and improvements.</p>	
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<p>Year 5/6 Cycle A 2022/2023 Why was the change from Stone Age to Iron Age so significant?</p> <p>Why did the Vikings and Anglo-Saxons just not get along?</p> <p>Just how geographically different are the Americas?</p> <p>Earth and space. Living things and habitats.</p> <p>Animals including humans. Forces. Properties of materials. Cycle B - 2023/2024 Can we still see the Ancient Greeks today?</p> <p>Why are primary sources so important when studying the Shang Dynasty?</p> <p>How is our world changing? How has it already changed?</p>	<p>I can explore ideas and collect visual and other information to help me develop my work (Exploring and developing). I can use my knowledge and understanding of materials and processes to communicate ideas and meanings (Investigating and making). I can make images and artefacts, combining and organising visual and tactile qualities to suit my intentions (Investigating and making). I can compare and comment on ideas, methods and approaches used in my own and others' work, relating these to the context in which the work was made (Evaluating and developing). I can adapt and improve my work to realise my own intentions (Evaluating and developing). I can explore ideas and select visual and other information (Exploring and developing). I can use my ideas to develop my work, taking into account the purpose (Exploring and developing). I can manipulate materials and processes to communicate ideas and meanings and make images and artefacts, matching visual and tactile qualities to my intentions (Investigating and making). I can analyse and comment on ideas, methods and approaches used in my own and others' work, relating these to its context (Evaluating and developing).</p>	<p>Textiles Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). Create objects (such as a cushion) that employ a seam allowance. Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). Use the qualities of materials to create suitable visual and tactile effects in decoration of textiles. (Such as a soft decoration for comfort on a cushion)</p> <p>Construction - Viking Boats Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). Ensure products have a high quality finish, using art skills where appropriate. Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.</p>	<p>I know how to use a selection of stitches to secure 2 or more pieces of fabric. I know how to join, fasten and finish to match to the purpose of my product. I know about products from the past such as Velcro and zips that are used for a purpose and to improve function. I know how to question types of resources and link them to purpose e.g. suitability of fabrics and why.</p> <p>Structures. I know the difference between a shell (a box of type of packaging), a structure and a framed structure such as tent, umbrella etc. I know how to select appropriate resources to match purpose and need. I know how to use a range of joining and fixing techniques to</p>	<p>Year 5 - vocabulary <i>Plus, all above.</i> <i>Seam</i> <i>Running stitch</i> <i>Back stitch</i> <i>Tactile</i> <i>Decoration</i> <i>Precision</i> <i>Refine</i> <i>Prototype</i> <i>Cross-section</i> <i>Computer Aided Design (CAD)</i></p>
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<p>All living things and their habitats.</p> <p>Light</p> <p>Evolution and inheritance.</p> <p>Electricity.</p> <p>Animals including humans.</p>	<p>I can adapt and refine my work to reflect my own view of its purpose and meaning (Evaluating and developing).</p> <p>I can apply my knowledge of computer systems to program, monitor and control my product.</p>	<p>Evaluate the design of products so as to suggest improvements to the user experience.</p> <p>Clockwork - Cams and Gears</p> <p>Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). Ensure products have a high quality finish, using art skills where appropriate. Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. Evaluate the design of products so as to suggest improvements to the user experience.</p>	<p>create a product that matches my design. I know how to use design features and techniques to improve use. I know what will be the most effective size and weight.</p>	
<p>Year 6 Extend and challenge.</p>	<p>I can explore ideas and collect visual and other information to help me develop my work (Exploring and developing). I can use my knowledge and understanding of materials and</p>	<p>Food - Sandwich making/pizzas</p> <p>Prepare ingredients hygienically using appropriate utensils. Understand the importance of correct storage and handling of</p>	<p>Food.</p> <p>I know how to maintain high hygiene levels when I am preparing food. I know about bacteria and conditions such as warm, wet and</p>	<p>Year 6 - Vocabulary Storage Handling Micro-organisms Oven</p>

	<p>processes to communicate ideas and meanings (Investigating and making). I can make images and artefacts, combining and organising visual and tactile qualities to suit my intentions (Investigating and making). I can compare and comment on ideas, methods and approaches used in my own and others' work, relating these to the context in which the work was made (Evaluating and developing). I can adapt and improve my work to realise my own intentions (Evaluating and developing). I can explore ideas and select visual and other information (Exploring and developing). I can use my ideas to develop my work, taking into account the purpose (Exploring and developing). I can manipulate materials and processes to communicate ideas and meanings and make images and artefacts, matching visual and tactile qualities to my intentions (Investigating and making). I can analyse and comment on ideas, methods and approaches used in my own and others' work, relating these to its context (Evaluating and developing). I can adapt and refine my work to reflect my own view of its purpose and meaning (Evaluating and developing).</p>	<p>ingredients (using knowledge of micro-organisms). Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. Demonstrate a range of baking and cooking techniques. Create and refine recipes, including ingredients, methods, cooking times and temperatures.</p> <p>Individual Choice of Product Consolidation of previous skills and knowledge demonstrated through pupils' individual choice of subject.</p>	<p>dark environments for optimum breeding. I know how to wash my hands thoroughly and effectively. I know how to measure out and weigh my ingredients. I know how to sequence and follow instructions to follow a recipe. I know the effects of heating, cooling and freezing food. I understand seasonality and understand how a variety of ingredients are grown, reared, caught and processed.</p> <p>Electrical systems. I know about the dangers of mains electricity. I know how to find a fault in an electrical circuit and fix it. I know why different types of switches are used in different types of products. I know an input device is a switch</p>	<p><i>Hob</i> <i>Temperature</i> <i>Calculate</i> <i>Ratio</i> <i>Proportion</i> <i>Refine</i> <i>consolidate</i> <i>seasonality</i></p>
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