

Design and Technology Long Term Plan

Subject: Design and Technology

The aim of the Design and Technology (D&T) curriculum is to develop pupils' proficiency, confidence, and understanding across key areas, enabling them to master practical skills, design, make, evaluate, and draw inspiration from historical design. The programme is broad, balanced, and aligned with the National Curriculum, ensuring all children—regardless of ability, gender, ethnicity, or background—receive high-quality learning opportunities.

In the Early Years Foundation Stage (EYFS, children engage in activities that nurture creativity, imagination, and problem-solving, using a range of materials and media. These experiences are essential for developing communication, vocabulary, and understanding through design. In Key Stages 1 and 2, pupils build progressively on core skills in food, materials, textiles, construction, and mechanics. Learning is often linked to wider themes and subjects, including art and design, supporting a cohesive and enriched educational experience.

Foundation Stage		
	FS1	FS2
Creating with materials	Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. Provide lots of flexible and open-ended resources for children's imaginative play. 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. Offer opportunities to explore scale using long strips of wallpaper, child size boxes and different surfaces to work on e.g, paving, floor, table or easel. Use glue and masking tape for sticking pieces of scrap materials onto old cardboard boxes, hammers and nails, glue guns, paperclips and fasteners.	Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills. Provide opportunities to work together to develop and realise creative ideas. Provide children with a range of materials for children to construct with. Encourage them to think about and discuss what they want to make Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims. Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. Provide a range of materials and tools and teach children to use them with care and precision and independence.

Early Learning Goal: Creating with materials

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.

Year	Year 1 Theme 1	Year 1 Theme 2	Year 1 Theme 3
Theme	Post a Pringle (Structures and Materials)	Create a UK Landmark (Construction)	Design and Make a Snack (Food)
Substantive Knowledge	<u>Design, Make, Evaluate, Improve</u> - Products are designed for a specific purpose and user. - The design process includes planning, making, evaluating, and improving. - Evaluation helps identify what works well and what could be improved in a product. <u>Materials</u> - Materials have different properties, such as strength, shape, and stability. - Cutting, shaping, folding, and joining are techniques used to manipulate materials. - Tools should be used safely to work with various materials during construction tasks. <u>History of Design</u> - Products can be evaluated by discussing their features, function, and effectiveness. - Discussion supports comparison of different products, including those made by others and by oneself. - Evaluation encourages reflection and helps develop design thinking.	<u>Design, Make, Evaluate, Improve</u> - A simple model of a UK landmark can be researched, planned, and created. - Design criteria, such as height and stability, are used to evaluate the final structure. - Evaluation involves comparing the finished product to the original design plan. <u>Construction</u> - Materials can be made stronger, stiffer, or more stable through specific techniques. - Tools such as glue, nails, and screws are used for joining materials under supervision. - Different joining and construction methods include slotting, folding, gluing, and fastening. - Construction techniques affect the strength and durability of a structure. <u>History of Design</u> - Building design includes elements such as structure, shape, and function. - Understanding design history helps explain how and why buildings are constructed in particular ways. - Knowledge of past and present structures supports the development of design ideas.	<u>Food – Healthy and Varied Diet</u> - A healthy diet consists of different components, including fruits, vegetables, proteins, grains, and dairy. - Foods originate from various sources, following the journey from farm to fork. - Basic food preparation skills include cutting, grating, and peeling. - Non-standard measurements such as cups and spoons are used in food preparation to measure ingredients. <u>History of Design</u> - Some food products and cooking styles are associated with well-known chefs, such as Jamie Oliver.
	<u>Design, Make, Evaluate, Improve</u> - Suggest simple improvements to designs <u>Materials</u> - Investigate how materials can be strengthened and stiffened - Build and test mock-ups (e.g., Rapunzel tower, Baby Bear’s bed) - Discuss materials and their properties - Use construction and materials vocabulary (e.g., fold, join, base, structure) - Plan and build protective packaging (e.g. for a Pringle) using cutting and joining techniques - Investigate and test strength of materials	<u>Design, Make, Evaluate, Improve</u> - Design products that have a clear purpose and an intended user. - Make products, refining the design as work progresses. - To evaluate their product and/or others - probably best done as a discussion. <u>Construction</u> - Label and select appropriate materials and joining techniques - Begin to use specific vocabulary to describe design choices (e.g., sturdy, tall)	<u>Design, Make, Evaluate, Improve</u> - Design products that have a clear purpose and an intended user. - Make products, refining the design as work progresses. - To evaluate their product and/or others - probably best done as a discussion. <u>Food- Healthy and varied diet</u> - Group food types (fruit, vegetables, dairy, meat) - Use senses to evaluate food ,(texture, smell) - Prepare simple foods safely and hygienically - Reflect on which skills were easy/tricky and how to improve snacks - Begin using specific food vocabulary (e.g., juicy, crunchy, smooth) <u>History of Design</u> - Explore how products have been created – link to a recipe that Jamie Oliver has made which is similar to sandwich/snack/kebab or whatever is focus of project.

Year	Year 2 Theme 1	Year 2 Theme 2	Year 2 Theme 3
Theme	Lift the Teacher (Mechanisms, Levers & Catapults)	Fabulous Fabrics (Textiles – Stitching and Dyeing)	Cooking Up a Storm (Healthy Meals & Snacks)
Substantive Knowledge	<u>Design, Make, Evaluate, Improve</u> - Products are designed with a specific purpose and user in mind. - Product designs are refined during the making process to improve function and appearance. - Software tools are used to support and enhance the design process. <u>Mechanics</u> - Levers, sliders, wheels, and axles are mechanical components used in product design. - Winding mechanisms can be incorporated to create functional moving parts. - Understanding mechanical parts helps in creating working models and products. Design History - Past designs influence the development of present-day objects and products. - Existing designs can be identified, critiqued, and analysed to suggest improvements. - Evaluating designs supports innovation and creative problem-solving.	<u>Design, Make, Evaluate, Improve</u> - Designs are created with a clear purpose and specific user in mind. - Designs are refined and improved throughout the making process. - Software is used for planning and visualising designs before making. <u>Textiles & Materials</u> - Textiles are joined using hand sewing techniques such as running stitch and over sewing. - Fabrics are cut and shaped accurately using templates. - Decoration techniques include fabric paint, dye, and adding embellishments like beads or sequins. <u>Design History</u> - Textiles have traditional and cultural uses across different societies. - Global and historic textile designs influence contemporary fabric and fashion design. - Studying textile history helps understand design patterns, techniques, and cultural significance.	<u>Design, Make, Evaluate, Improve</u> - Food products are designed with a specific purpose and user in mind. - Recipes are made and refined based on taste preferences and nutritional healthiness. - Evaluation and adjustment of recipes improve the final food product. <u>Food</u> - A healthy diet follows basic principles, including balanced intake of dairy, fruit, vegetables, proteins, and grains. - Kitchen tools such as knives, graters, and peelers must be used safely for food preparation. - Ingredients are measured using spoons and cups for accuracy. - Foods come from different sources and are grouped into categories like dairy, fruit, and vegetables. <u>Design History</u> - Food products and recipes are developed over time, often influenced by chefs and culinary traditions. - The development process involves experimentation, cultural influence, and innovation.
	<u>Design, Make, Evaluate, Improve</u> - Evaluate catapults based on effectiveness and improvement ideas <u>Mechanics</u> - Investigate mechanisms in real life (e.g. doors, scissors, drawers) - Build and test functional catapults using levers - Use mechanism vocabulary (slider, lever, pivot) - Understand how different joining methods affect product strength <u>Design History</u> - Use real-world examples from history to inspire design	<u>Design, Make, Evaluate, Improve:</u> - Suggest improvements and reflect on what worked well <u>Textiles & Materials</u> - Practise running stitch using binka and blunt needle - Add embellishments such as buttons, sequins, beads - Evaluate own work using specific criteria (strength, accuracy, decoration) - Create textile projects (e.g. bookmarks, T-shirts) - Use templates and cutting techniques accurately	<u>Design, Make, Evaluate, Improve:</u> - Plan, design, and prepare simple dishes - Use senses to evaluate food (taste, smell, texture) - Evaluate snacks based on taste and nutrition - Discuss improvements or alternative ingredients <u>Food</u> - Use kitchen tools safely under supervision - Sort and categorise food groups - Understand hygiene and safety in food preparation

Year	Year 3 Theme 1	Year 3 Theme 2	Year 3 Theme 3
Theme	Sliders & Levers (Mechanisms & Materials)	Journey of a Strawberry (Food & Nutrition)	Roman Empire
Substantive Knowledge	<u>Design, Make, Evaluate, Improve</u> - Design begins by identifying opportunities and purposes for creating products. - Designing involves planning solutions to meet specific needs or problems. <u>Materials</u> - Tools and materials are selected based on their suitability for the task. - Different joining techniques are applied appropriately to connect materials securely. - Accurate measuring ensures precision in construction and assembly. <u>Mechanics</u> - Basic mechanisms include components such as sliders and levers. - Sliders enable controlled linear movement within a product. - Levers function as simple machines to create movement or force.	<u>Design, Make, Evaluate, Improve</u> - Recipes or snacks are designed based on evaluation to be part of a varied and healthy diet. - Designing food products involves considering nutritional balance and taste. <u>Food</u> - A healthy diet includes a variety of foods from different groups. - Foods come from different sources and have seasonal availability. - Recipes are followed step-by-step to prepare food safely and hygienically. - Ingredients should be measured accurately, and cooking tools are used safely during preparation. <u>Design History</u> - Famous chefs, such as Gino D'Acampo, develop recipes that influence food design. - Studying chefs' recipes provides insight into culinary innovation and cultural food trends.	<u>Design, Make, Evaluate, Improve</u> - Products should be evaluated based on their function and decorative patterns. - Evaluation considers how well the a product fits its intended purpose and the effectiveness of its design elements. <u>Textiles</u> - Seam allowance is the extra fabric edge allowed for stitching seams. - Simple stitching techniques, such as running stitch, are used to join fabric pieces. - Fabrics are shaped, joined, and decorated using various methods. - Textiles have historical significance, such as the Roman Emperor's toga. <u>Design History</u> - Famous Roman architectures are identified for their design and structural features. - Roman designs demonstrate improvements in construction and aesthetic techniques over time.
	<u>Design, Make, Evaluate, Improve:</u> - Use design software or drawings to plan and evaluate - Evaluate using design criteria (purpose, function, improvement) <u>Materials</u> - Measure, mark and cut materials accurately to the nearest mm <u>Mechanics</u> - Create products with moving parts using slots, linkages or levers	<u>Design, Make, Evaluate, Improve:</u> - Design and refine a recipe or snack based on evaluation <u>Food</u> - Evaluate food based on texture, taste, and smell using sensory vocabulary - Follow steps in a recipe with accuracy - Work hygienically and safely when preparing food <u>Design History</u> - Identify some of the great designers in all of the areas of study, to generate ideas for designs - Famous Chefs - Improve upon existing designs, giving reasons for choices.	<u>Design, Make, Evaluate, Improve:</u> - Evaluate final products for function and decoration <u>Textiles:</u> - Design, prototype and create a textile item using running stitch - Use textile vocabulary to describe design and making process - Explore fastenings, appliqué, and patterns in decorative work <u>Design History</u> - Identify some of the great designs in all of the areas of study to generate ideas for designs. - Improve upon exciting designs, giving reasons for choices

Year	Year 4 Theme 1	Year 4 Theme 2	Year 4 Theme 3
Theme	Electronics & Simple Circuits	European Food Design (Food & Nutrition)	European Structures (Construction & Materials)
Substantive Knowledge	<u>Design, Make, Evaluate, Improve</u> - Series circuits include components such as switches, bulbs, buzzers, and motors connected in a single loop. - Mechanical and electrical systems function through the interaction of their components. <u>Electronics</u> - Series circuits operate by allowing current to flow through connected components in one continuous path. - Key historical designers in electrical engineering include Caroline Haslett and Beatrice Shilling. - Understanding how to assemble and disassemble electronic devices reveals how components work together. <u>Design History</u> - Designs created by engineers are used to improve existing products. - Studying electrical engineers such as Caroline Haslett and Beatrice Shilling highlights contributions to technology development. - Disassembling electronic devices provides insight into product construction and function.	<u>Food</u> - Food preparation and cooking must be done safely and hygienically to prevent contamination. - Food provenance includes understanding where food comes from and how seasonality affects availability, especially in Europe. - A healthy diet is based on principles that include balanced intake of different food groups, each with specific functions. - Famous chefs, such as Cristina Bowerman, influence culinary culture and food traditions.	<u>Design, Make, Evaluate, Improve</u> - Performance and structure of products are tested to assess functionality and durability. - Testing identifies strengths and weaknesses to inform improvements. <u>Materials</u> - Materials are selected based on their suitability for construction tasks. - Joining techniques are chosen appropriately to connect materials securely. - Precise measuring, cutting, and shaping of materials are essential for accurate construction. <u>Construction</u> - Structural strength depends on design and reinforcement methods such as bracing or layering. - Famous European structures demonstrate principles of strength through their architectural design and materials. - Studying structures provides insight into effective building techniques.
Disciplinary Knowledge	<u>Design, Make, Evaluate, Improve:</u> - Evaluate product function and suggest improvements - Refine products as they develop based on testing (e.g., light-up cards or motorised mechanisms) <u>Electronics</u> - Design and test functional mechanisms and electrical systems <u>Design History</u> - Improve upon existing designs, giving reasons for choices. - Disassemble products to understand how they work. - Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.	<u>Food</u> - Use sensory vocab to evaluate food from across Europe. - Measure and combine ingredients accurately. - Follow, adapt, and improve recipes. - Design a dish/menu using balanced nutrition principles. - Evaluate final product and revise recipe if needed.	<u>Design, Make, Evaluate, Improve:</u> - Evaluate and improve based on structure performance <u>Materials</u> - Plan and measure precise dimensions using mm <u>Constructions</u> - Build and reinforce structures using a range of materials - Select appropriate construction tools and techniques - Test structures for stability, height and durability

Year	Year 5 Theme 1	Year 5 Theme 2	Year 5 Theme 3
Theme	Ancient Architecture & Structures (Materials & Construction)	Mechanical Engineering (Mechanisms & Cams)	MasterChef Challenge (Food & Nutrition)
Substantive Knowledge	<u>Materials and Construction</u> - Frame structures provide support and shape to buildings and products. - Construction materials have specific properties that determine their use, such as strength and flexibility. - Joining techniques include nailing, sanding, and gluing, applied based on material and purpose. - Tools such as hacksaws and hammers are used safely and effectively to cut and assemble materials. <u>Design History</u> - Historical architecture includes notable examples like the Greek Parthenon. - Key architectural features, such as columns and pediments, are characteristic of different historical styles. - Prominent designers and architects throughout history have influenced architectural development.	<u>Mechanics</u> - Cams convert rotary motion into linear motion. - Mechanical systems include gears, pulleys, levers, and linkages, each serving different functions. - Prototypes of mechanical systems are constructed to test and demonstrate movement and function. - Inventors and engineers have made significant contributions to the development of mechanical designs. - Mechanical systems are designed with specific purposes and functionalities in mind.	<u>Food</u> - Food groups have specific nutritional roles essential for a balanced diet. - Food preparation requires hygienic practices and safe storage to prevent the growth of micro-organisms. - Cooking techniques include folding, kneading, stirring, whisking, and others. - Recipes can be scaled up or down, and ingredients adjusted to meet dietary needs. <u>Design History</u> - Famous chefs and bakers have made important contributions to culinary arts and food culture. - Their innovations influence cooking methods, recipes, and food presentation.
	<u>Materials and Construction</u> - Use detailed sketches and prototypes to design purposeful structures - Apply construction skills (cutting, drilling, screwing, sanding) to build stable frames - Evaluate product strength and stability, suggesting refinements <u>Design History</u> - Incorporate historic design elements creatively in modern models	<u>Design, Make, Evaluate, Improve:</u> - Design and build a functioning mechanical product using cams - Evaluate mechanical function and iterate design accordingly <u>Mechanics</u> - Investigate how different cam shapes affect motion - Refine mechanisms for improved efficiency and performance - Take inspiration from mechanical designs and engineers	<u>Food</u> - Research and follow complex recipes accurately - Measure ingredients precisely using ratio and scaling - Design and improve recipes based on feedback and health criteria - Evaluate taste, texture, and nutrition in final products - Create recipe cards and menus using digital tools and layout awareness

Year	Year 6 Theme 1	Year 6 Theme 2	Year 6 Theme 3
Theme	Conflict & Innovation (Food & Construction)	Food – Wartime Delights	Express Yourself (Textiles & Design)
Substantive Knowledge	<u>Design, Make, Evaluate, Improve</u> - Wartime shelters, such as the Morrison Shelter, were designed for protection during air raids. - The design of wartime shelters reflects specific functional and safety requirements. <u>Construction and Materials</u> - Construction materials have specific properties that determine their use in building. - Tools such as saws, sanders, and joining equipment are used appropriately to shape and assemble materials. - Finishes and cuts are refined using appropriate tools to ensure precision and quality. - Material properties such as strength, stiffness, and durability affect structure design.	<u>Food</u> - Wartime food preparation involved rationing and strict food hygiene practices. - Recipes were followed and adapted using ratios to manage limited ingredients. - War influenced food culture and the design of food products and packaging.	<u>Textiles</u> - Different textiles are joined using techniques such as backstitch and blanket stitch. - Seam allowance is the extra fabric allowed for stitching seams, and finishing techniques include applique and hemming. - Textiles reflect personal and cultural expression through patterns, materials, and design. - Textile materials are sourced and processed globally, involving various natural and synthetic fibres. - Historical and modern textile designers have influenced fabric design and fashion trends.
Disciplinary Knowledge	<u>Design, make, evaluate, improve</u> - Apply the full design process: research, prototype, make, evaluate and refine - Evaluate for strength and suitability, and improve based on criteria - Justify design decisions using technical vocabulary <u>Construction and Materials</u> - Create a stable frame structure using measuring, sawing, gluing, and joining techniques - Build and refine a mechanical or structural model. - Test and compare joining methods for different materials - Evaluate designs based on purpose, stability, and material use.	<u>Food</u> Follow and scale recipes, adapting for purpose and nutritional needs	<u>Textiles</u> - Design and make a soft product (e.g. cushion) using accurate measurement and sewing skills - Use design ideas to inform decoration and function (e.g. comfort, style) - Evaluate textile choices and refine based on feedback - Prototype using templates and fabric patterns - Apply historical design inspiration creatively