



Progression Documents

Design & Technology

Intent	Implementation	Impact
The 2014 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 At Spalding St Paul's School we aims to inspire children through a broad range of practical experiences to create innovative designs which solve real and relevant problems within a variety of different contexts. We encourages children to identify real and relevant problems, critically evaluate existing products and then take risks and innovate when designing and creating solutions to the problems. Time is built in to reflect, evaluate and improve on prototypes using design criteria throughout to support this process. Opportunities are provided for children to evaluate key events and individuals who have helped shape the world, showing the real impact of design and technology on the wider environment and helping to inspire children to become the next generation of innovators.	Design and Technology skills and understanding are built into lessons which allows for the revision of ideas to become part of good practice and ultimately helps to build a depth to children's understanding. Through revisiting and consolidating skills, our lesson plans and resources help children build on prior knowledge alongside introducing new skills, knowledge and challenge. The revision and introduction of key vocabulary is built into each lesson. This vocabulary is then included in display materials and additional resources to ensure that children are allowed opportunities to repeat and revise this knowledge. Through lessons, we intend to inspire children to develop a love of Design and Technology and see how it has helped shaped the ever-evolving technological world they live in.	The impact of using the full range of resources, including display materials, will be seen across the school with an increase in the profile of Design and Technology. The learning environment across the school will be more consistent with design and technology technical vocabulary displayed, spoken and used by all learners. Whole-school and parental engagement will be improved through the use of design and technology-specific home learning tasks and opportunities suggested in lessons and overviews for wider learning. Impact can also be measured through key questioning skills built into lessons, child-led assessment such as success criteria grids, jigsaw targets and KWL grids and summative assessments aimed at targeting next steps in learning.

Breadth of Study		
Breadth of study Key Stage 1:		
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 such as 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. Cooking and nutrition - Use the basic principles of a healthy and varied diet to prepare dishes. - Understand where food comes from.		
Breadth of study 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.		

Threshold Concepts		
Master practical skills	Design, make, evaluate and improve	Take inspiration from design throughout history
This concept involves developing the skills needed to make high quality products (we have highlighted a range of skills but they may be added to or changed as appropriate for your school).	This concept involves developing the process of design thinking and seeing design as a process.	This concept involves appreciating the design process that has influenced the products we use in everyday life.

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Master practical Skills	Cooking	Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales. Assemble or cook ingredients.		Follow a recipe. Prepare ingredients hygienically using appropriate utensils. Measure ingredients to the nearest gram accurately. Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).		Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). 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.	
	Cutting	Cut materials safely using tools provided.	Cut materials safely using tools provided. Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).	Cut materials accurately and safely by selecting appropriate tools.	Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).	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).	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).
	Joining	Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).	Use materials to practice drilling, screwing, gluing and nailing materials to make and strengthen products.	Select appropriate joining techniques. Strengthen materials using suitable techniques.	Choose suitable techniques to construct products or to repair items. Strengthen materials using suitable techniques.	Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).	Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).
	Mechanisms	Create products using leavers and slides	Create products using wheels and axes	Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as leavers and linkages)	Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (Pneumatic)	Convert rotary motion to linear using cams.	Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as pulleys and gears)
	Textiles		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).		Join textiles with appropriate stitching. Select appropriate techniques to decorate textiles. Understand the need for a seam allowance. Join textiles with appropriate stitching. Select the most appropriate techniques to decorate textiles.		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 the decoration of textiles (such as a soft decoration for comfort on a cushion).
	Measuring	Measure and mark out to the nearest centimeter with support	Measure and mark out to the nearest centimeter.	Measure and mark out to the nearest millimeter.	Measure and mark out to the nearest millimeter.	Measure and mark out accurately	Measure and mark out accurately

	Circuits				Create series and parallel circuits Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).		Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).
	ICT		Model designs using software.		Control and monitor models using software designed for this purpose.		Write code to control and monitor models or products. Use innovative combinations of electronics (or computing) and mechanics in product designs.
Design, make, evaluate and improve		Design products that have a purpose. Make products, refining the design as work progresses.	Design products that have a clear purpose and an intended user. Make products, refining the design as work progresses. Use software to design	Design with purpose. Make products by working efficiently (such as by carefully selecting materials). Refine work and techniques as work progresses	Design with purpose by identifying opportunities to design. Make products by working efficiently (such as by carefully selecting materials). Refine work and techniques as work progresses, continually evaluating the product design. Use software to design and represent product designs.	Design with the user in mind Make products through stages of prototypes. Ensure products have a high quality finish, using art skills where appropriate. Use prototypes and cross-sectional diagrams to represent designs.	Design with the user in mind, motivated by the service a product will offer (rather than simply for profit) Make products through stages of prototypes, making continual refinements. Ensure products have a high quality finish, using art skills where appropriate. Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.
Take inspiration from design throughout		Explore objects and designs to identify likes and dislikes of the designs. Explore how products have been created.	Explore objects and designs to identify likes and dislikes of the designs. Suggest improvements to existing designs. Explore how products have been created.	Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs. Improve upon existing designs. 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. Improve upon existing designs, giving reasons for choices. Disassemble and reassemble products to understand how they work.	Combine elements of design from a range of inspirational designers throughout history. Create designs that improve upon existing products. Evaluate the design of products so as to suggest improvements to the user experience.	Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. Create innovative designs that improve upon existing products. Evaluate the design of products so as to suggest improvements to the user experience.

DT OVERVIEW

	Autumn		Spring		Summer	
Year 1		Structures Free standing structures Chair for baby bear		Mechanisms Slides and leavers Moving pictures: Characters from stories		Cooking Seaside Snacks
Year 2		Structures Homes		Mechanisms Wheels and Axles Moving Vehicles		Structures Kites
Year 3		Structures Shell structures Desk tidy		Mechanical Systems Leavers & linkages Making story books		Cooking Great British Dishes
Year 4	Electrical Systems Simple circuits and switches Torches / Buzzers		Mechanical Systems Pneumatics		Structures Bridges	
Year 5	Structures Frame Structures Making Hide		Mechanical Systems Cams Moving toys		Cooking American food	
Year 6	Electrical Systems More complex switches and circuits Alarming Vehicles		Mechanical Systems Pulleys and gears Fairgrounds		Structures Bird Houses	

Structures	Mechanisms	Cooking	Electrical Systems
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