



**Spalding St Paul's Primary School & Nursery – Design & Technology Progression**

KEY STAGE 1	ESSENTIAL CHARACTERISTICS IN OUR SCHOOL
<p>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 and school, gardens and playgrounds, the local community, industry and the wider environment].</p> <p>When designing and making, pupils should be taught to:</p> <p><u>Design</u></p> <ul style="list-style-type: none"> <li>design purposeful, functional, appealing products for themselves and other users</li> <li>based on design criteria</li> <li>generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</li> </ul> <p><u>Make</u></p> <ul style="list-style-type: none"> <li>select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</li> <li>select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</li> </ul> <p><u>Evaluate</u></p> <ul style="list-style-type: none"> <li>explore and evaluate a range of existing products</li> <li>evaluate their ideas and products against design criteria</li> </ul> <p><u>Technical knowledge</u></p> <ul style="list-style-type: none"> <li>build structures, exploring how they can be made stronger, stiffer and more stable</li> <li>explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</li> </ul> <p><u>Cooking and Nutrition</u></p> <ul style="list-style-type: none"> <li>use the basic principles of a healthy and varied diet to prepare dishes</li> <li>understand where food comes from.</li> </ul>	<p>Comprehensive coverage of the Design and Technology Programme of Study in our school is ensured by our use of the Cornerstones Curriculum. Teachers have access to detailed, high quality long, medium and short term planning.</p> <p>Essential characteristics of DT in our school are:</p> <ul style="list-style-type: none"> <li>Originality and the willingness to take creative risks to produce innovative ideas and products.</li> <li>An excellent attitude to learning and independent working.</li> <li>The ability to use time efficiently and work constructively and productively with others</li> <li>The ability to carry out thorough research, show initiative and ask questions</li> <li>The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely.</li> <li>A sound knowledge of which tools, equipment and materials to use to make their products.</li> <li>The ability to manage risks and to manufacture products safely and hygienically.</li> <li>A passion for the subject and knowledge</li> </ul>
<p>Key stage 2</p> <p>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].</p> <p>When designing and making, pupils should be taught to:</p> <p><u>Design</u></p> <ul style="list-style-type: none"> <li>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</li> <li>generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</li> </ul> <p><u>Make</u></p> <ul style="list-style-type: none"> <li>select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</li> <li>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</li> </ul> <p><u>Evaluate</u></p> <ul style="list-style-type: none"> <li>investigate and analyse a range of existing products</li> <li>evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</li> <li>understand how key events and individuals in design and technology have helped shape the world</li> </ul> <p><u>Technical knowledge</u></p> <ul style="list-style-type: none"> <li>apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li> <li>understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</li> <li>understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</li> <li>apply their understanding of computing to program, monitor and control their products.</li> </ul> <p><u>Cooking and Nutrition</u></p> <ul style="list-style-type: none"> <li>understand and apply the principles of a healthy and varied diet</li> <li>prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</li> <li>understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</li> </ul>	

Big Idea:	Humankind		Processes		Creativity			Investigation		Materials	Nature			Comparison	Significance
Aspect:	Everyday products	Staying safe	Electricity	Mechanisms and movement	Generation of ideas	Use of ICT	Structures	Investigation	Evaluation	Materials for a purpose	Food preparation and cooking	Nutrition	Origins of food	Compare and contrast	Significant people
Year 6	Analyse how an invention or product has significantly changed or improved people's lives	Demonstrate how their products take into account the safety of the user.	Apply their understanding of computing to program, monitor and control their products.	Explain and use mechanical systems in their products to meet a design brief.	Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways.	Use a sensor to monitor an environmental variable, such as temperature, sound or light.	Select the most appropriate materials and frameworks for different structures, explaining what makes them strong.	Select appropriate tools for a task and use them safely and precisely.	Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others.	Choose the best materials for a task, showing an understanding of their working characteristics.	Follow a recipe that requires a variety of techniques and source the necessary ingredients independently.	Plan a healthy weekly diet, justifying why each meal contributes towards a balanced diet.	Explain how organic produce is grown.	Create a detailed comparative report about two or more products or inventions.	Present a detailed account of the significance of a favourite designer or inventor.
Year 5	Explain how the design of a product has been influenced by the culture or society in which it was designed or made.	Explain the functionality and purpose of safety features on a range of products	Use electrical circuits of increasing complexity in their models or products, showing an understanding of control.	Use mechanical systems in their products, such as pneumatics and hydraulics.	Use pattern pieces and computer-aided design packages to design a product.	Link a physical device to a computer or tablet so that it can be controlled (such as changing motor speed or turning an LED on and off) by a program.	Build a framework using a range of materials to support mechanisms.	Name and select increasingly appropriate tools for a task and use them safely.	Test and evaluate products against a detailed design specification and make adaptations as they develop the product.	Select and combine materials with precision.	Use an increasing range of preparation and cooking techniques to cook a sweet or savoury dish.	Evaluate meals and consider if they contribute towards a balanced diet.	Describe what seasonality means and explain some of the reasons why it is beneficial.	Survey users in a range of focus groups and compare results.	Describe the social influence of a significant designer or inventor.
Year 4	Investigate and identify the design features of a familiar product.	Work safely with everyday chemical products under supervision, such as disinfectant hand wash and surface cleaning spray	Incorporate circuits that use a variety of components into models or products.	Use mechanical systems in their products, such as pneumatics and hydraulics.	Use annotated sketches and exploded diagrams to test and communicate their ideas.	Write a program to control a physical device, such as a light, speaker or buzzer.	Prototype shell and frame structures, showing awareness of how to strengthen, stiffen and reinforce them.	Select, name and use tools with adult supervision.	Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making improvements.	Choose from a range of materials, showing an understanding of their different characteristics.	Identify and use a range of cooking techniques to prepare a simple meal.	Design a healthy snack or packed lunch and explain why it is healthy.	Identify and name foods that are produced in different places in the UK and beyond.	Create and complete a comparison table to compare two or more products.	Explain how and why a significant designer or inventor shaped the world.

Year 3	<ul style="list-style-type: none"> <li>• Explain how an existing product benefits the user.</li> <li>• Explain the similarities and difference between the work of two designers.</li> </ul>	Use appliances safely with adult supervision	<ul style="list-style-type: none"> <li>• Incorporate a simple series circuit into a model.</li> </ul>	<ul style="list-style-type: none"> <li>• Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop design criteria to inform a design.</li> </ul>	<ul style="list-style-type: none"> <li>• Write a program to make something move on a tablet or computer screen.</li> </ul>	<ul style="list-style-type: none"> <li>• Create shell or frame structures using diagonal struts to strengthen them.</li> </ul>	<ul style="list-style-type: none"> <li>• Use tools safely for cutting and joining materials and components.</li> </ul>	<ul style="list-style-type: none"> <li>• Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.</li> </ul>	<ul style="list-style-type: none"> <li>• Plan which materials will be needed for a task and explain why.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare and cook a simple savoury dish.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the main food groups (carbohydrates, protein, dairy, fruits and vegetables, fats and sugars).</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and name foods that are produced in different places.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain the similarities and difference between the work of two designers.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe how key events in design and technology have shaped the world.</li> <li>• Explain the similarities and difference between the work of two designers.</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>• Explain how an everyday product could be improved.</li> <li>• Explain why a designer or inventor is important.</li> </ul>	Work safely and hygienically in construction and cooking activities	<ul style="list-style-type: none"> <li>• Create an operational, simple series circuit.</li> </ul>	<ul style="list-style-type: none"> <li>• Use a range of mechanisms (levers, sliders, wheels and axles) in models or products.</li> </ul>	<ul style="list-style-type: none"> <li>• Generate and communicate their ideas through a range of different methods.</li> </ul>	<ul style="list-style-type: none"> <li>• Use design software to create a simple labelled design or plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Explore how a structure can be made stronger, stiffer and more stable.</li> </ul>	<ul style="list-style-type: none"> <li>• Select the appropriate tool for a task and explain their choice.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain how closely their finished products meet their design criteria and say what they could do better in the future.</li> </ul>	<ul style="list-style-type: none"> <li>• Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare ingredients by peeling, grating, chopping and slicing.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the origin of some common foods (milk, eggs, some meats, common fruit and vegetables).</li> </ul>	<ul style="list-style-type: none"> <li>• Explain why a designer or inventor is important.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain why a designer or inventor is important.</li> </ul>
Year 1	<ul style="list-style-type: none"> <li>• Name and explore a range of everyday products and describe how they are used.</li> <li>• Describe why a product is important.</li> </ul>	Follow the rules to keep safe during a practical task.	<ul style="list-style-type: none"> <li>• Identify products that use electricity to make them work and describe how to switch them on and off.</li> </ul>	<ul style="list-style-type: none"> <li>• Use wheels and axles to make a simple moving model.</li> </ul>	<ul style="list-style-type: none"> <li>• Create a design to meet simple design criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• Use design software to create a simple plan for a design.</li> </ul>	<ul style="list-style-type: none"> <li>• Construct simple structures, models or other products using a range of materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Select the appropriate tool for a simple practical task.</li> </ul>	<ul style="list-style-type: none"> <li>• Talk about their own and each other's work, identifying strengths or weaknesses and offering support.</li> </ul>	<ul style="list-style-type: none"> <li>• Select and use a range of materials, beginning to explain their choices.</li> </ul>	<ul style="list-style-type: none"> <li>• Measure and weigh food items using non-standard measures, such as spoons and cups.</li> </ul>	<ul style="list-style-type: none"> <li>• Select healthy ingredients for a fruit or vegetable salad.</li> </ul>	<ul style="list-style-type: none"> <li>• Sort foods into groups by whether they are from an animal or plant source.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe why a product is important.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe why a product is important.</li> </ul>