Design and Technology in Upper Key Stage Two

Pupils will:	To master practical skills To design, make, evaluate and improve To take inspiration from design throughout history
You will see them:	• 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. • 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). • 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). • Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips). • Write code to control and monitor models or products. • Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). • Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product 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. • 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.
Year 5 and 6 will learn through:	**Design** Using 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** Selecting from and using a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately Selecting from and using a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities **Evaluate** Investigating and analysing a range of existing products Evaluating their ideas and products against their own design criteria and consider the views of others to improve their work Understanding how key events and individuals in design and technology have helped shape the world **Technical knowledge** Applying their understanding of how to strengthen, stiffen a and reinforce more complex structures Understanding and using mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] Understanding and using electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] Applying their understanding of computing to program, monitor and control their products