Design and Technology Long Term Plan

At Reynolds Academy, we use the milestones created by Chris Quigley Education to support our wider curriculum. We teach Design and Technology at the end of each half term within one week ending in a showcase of the work that the children have produced as part of that unit.

Overview	Autumn term	Spring term	Summer term
Milestone 1	**Year 1 of study** What is Design and Technology? Structures introduction **Year 2 of study** What is Design and Technology? Slider mechanisms	**Year 1 of study** Frame structures Solid structures **Year 2 of study** Lower mechanisms Wheel and axel mechanisms	**Year 1 of study** Portable snacks **Year 2 of study** Couscous dish
Milestone 2	**Year 1 of study** What is Design and Technology? Vegetable soup **Year 2 of study** What is Design and Technology? Paper circuits	**Year 1 of study** Frame structures Shell structures **Year 2 of study** Linked levers Pneumatics	**Year 1 of study** App control **Year 2 of study** Dips
Milestone 3	**Year 1 of study** What is Design and Technology? Cams **Year 2 of study** What is Design and Technology? Pulleys and gears	**Year 1 of study** Arch structures Frame structures **Year 2 of study** Electronic motors Bread	**Year 1 of study** Food throughout the year **Year 2 of study** Artificial intelligence Bolognaise

Key Skills	Master Practical Techniques	Take Inspiration from Design	Design, make, evaluate and improve
Milestone 1	**Materials** • Cut materials safely using tools provided. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and • shaping techniques (such as tearing, cutting, folding and curling). • Demonstrate a range of joining techniques (such as gluing, using hinges or combining materials to strengthen). **Structures** • Practise drilling, screwing, gluing and nailing materials to make and strengthen products. **Mechanisms** • Create products using levers, wheels and winding mechanisms. **Food and nutrition** • Cut, peel and grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble and cook ingredients.	• Explore objects and designs to identify likes and dislikes. • •Suggest improvements to existing designs. • Explore how products have been created.	• Design products that have a clear purpose and an intended user. • Make products, refining the design as work progresses. • Use software to design.
Milestone 2	**Materials** • Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).	• 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 products to understand how they work.	• 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.

	• Select appropriate joining techniques. **Electrics and computing** • Create products with series and parallel circuits. • Control and monitor models using apps designed for this purpose. **Mechanisms** • Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as linked levers or pneumatics). **Structures** • Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques. **Food and nutrition** • Prepare ingredients hygienically using appropriate utensils. • Measure ingredients accurately to the nearest gram. • Follow a recipe. • Assemble and cook ingredients (controlling the temperature of the hob, if cooking).		• Use apps to design and represent product designs.
Milestone 3	**Materials** • Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or using a more precise scissor cut after roughly cutting out a shape). • Show an understanding of the qualities of materials in order	• 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.	• 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.

	to choose appropriate tools to cut and shape (e.g. the nature of fabric may require sharper scissors than would be used to cut paper). **Electrics and computing** • Create products using electronics kits that employ a number of components (such as LEDs and resistors). • Write code to control and monitor models or products. **Structures** • Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding). **Mechanisms** • Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs. **Food and nutrition** • 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.		• Use prototypes, cross-sectional diagrams and computer-aided designs to represent designs.