



Rakegate Progression of Skills Upper Key stage 2 Subject: D&T			
National Curriculum		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.	
		Year 5	Year 6
	Design	• Describe in detail the purpose of their products. • Label design features of their products that will appeal to intended users. • Gather information about the needs and wants of individuals or groups. • Develop their own design criteria and use this to inform their ideas. • Develop a simple design specification to guide their thinking. • Produce detailed designs and plans using prototypes and cross-sectional diagrams that include accurate measurements and annotations.	• Describe in detail the purpose of their products. • Indicate design features of their products that will appeal to intended users. • Gather information about the needs and wants of individuals or groups. • Develop their own design criteria and use this to inform their ideas. • Carry out research. E.g. surveys, interviews, questionnaires to identify users' needs, wants and preferences. • Develop detailed design specifications to guide their thinking and planning. • Produce detailed designs and plans drawn to scale from a range of viewpoints. • Use annotated sketches, cross-sectional drawings, exploded diagrams to develop and communicate ideas.



		• Make designs based on research and ideas that consider the intended purpose. • Make design decisions that take account of the availability of resources.	• Generate realistic ideas focusing on the needs of the user. • Make design decisions that take account of the availability of resources. • Generate innovative ideas drawing on research.
	Make	• Select materials and components suitable to the task. • Confidently select tools and equipment suitable to the task. Explain their choices. Produce appropriate list of tools, equipment and materials that they will need. • Order the stages of the making process in logical steps and formulate step-by-step plans as a guide to making. • Measure, mark out and cut shapes, materials, and components with accuracy. • Accurately assemble, joins and combine most materials. • Consider the most effective finish to enhance the appearance of a product using a range of finishing techniques, including those from art and design sessions. • Follow procedures for safety and hygiene.	• Select from and use an extensive range of materials and components E.g. textiles, mechanical, construction kits, electrical and food ingredients. • Select materials and components suitable to the task. • Confidently select tools and equipment suitable to the task. Explain their choices, giving evidence. • Produce appropriate list of tools, equipment and materials that they will need. • Order the stages of the making process in logical steps • Formulate step-by-step plans as a guide to making. • Measure, marks out, cuts and shapes materials and components with accuracy and precision. • Accurately assemble, joins and combine a range of materials and components using the most effective method. • Accurately applies the most effective finish to ensure a high-quality end product using a range of finishing techniques, including those from art and design sessions. • Use techniques that involve several steps. • Explains next steps in learning drawing from prior experience.
	Evaluate	• Identify from a range the key features and functions needed to create an effective and efficient working product. • Identify the strengths and areas for development in their ideas and products.	• Test and evaluate products to identify what may affect the function of a product. • Identify the strengths and areas for development in their ideas and products. • Consider the views of others, including intended users, to improve their work.



		• Consider the views of others, including intended users, to improve their work. • Use their design criteria to evaluate and improve their completed products. • Evaluate their ideas and products against their original design specification giving reasons, supported by factual evidence for the success of aspects of a product. • Consider cost and sustainability. • Recognise several inventors, designers, chefs, manufacturers and engineers, who have been influential in the design and technology industries.	• Use their design criteria to evaluate and improve their completed products. • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products. • Investigate and analyse how well products have been designed and made; why materials have been chosen and what methods of construction were used; how well the products worked; whether they achieved their purpose and the needs/ wants of the users. • Investigate and analyse how much products cost to make, how innovative products are, how sustainable the materials are. • Recognise several inventors, designers, chefs, manufacturers and engineers, who have been influential in the design and technology industries.
	Cooking and Nutrition	• Know that food is farmed, reared, grown, imported or caught locally, regionally and internationally. • Begin to know that seasons and weather affect food availability. • Know how to prepare and cook a variety of savoury and some sweet dishes safely and hygienically, including the use of a heat source. Talk in scientific terms about the physical and chemical changes that take place when food is cooked, e.g. heated and cooled. • Know how to use a wide range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	• Know that food is farmed, reared, grown (home allotments), exported, imported or caught locally, regionally and internationally. • Gain an understanding of the ways in which specific food groups apply to the principles of a health and varied diet. • Know that a healthy diet is made up of a variety and balance of different foods and drinks as depicted on 'The Eatwell Plate.' • Identify what needs to be done in order to work safely and hygienically when working on a range of tasks. • measure and weigh using standard units and scales.



		• Know that a healthy diet is made up of a variety and balance of different foods and drinks as depicted on 'The Eatwell Plate'. • Know that different foods contain substances that are needed for health. E.g. water, fibre, vitamins and nutrients. • Know that to be active and healthy, food is needed to provide energy for the body. • Know that recipes can be adjusted to change the taste, texture, aroma and appearance. • Talk about and give reasons for the need to work safely and hygienically.	• Know how to prepare and cook a variety of savoury and some sweet dishes safely and hygienically, including the use of a heat source. • Know how to use a wide range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.
	Construction Mechanics and electronics	• Describe in detail the way in which an axle and chassis help a vehicle to move. • Use a range of different ways to attach an axle to a chassis. • Create pulley systems. • Explore and describe how electrical circuits can be created and controlled. • Discuss the hazards when using electricity and how to remain safe. • Create a range of sliders and levers to produce horizontal and vertical movement. • Combine sliders and levers to produce a range of movements. • Investigate and compare the efficiency of pneumatic systems. • Describe the way in which a cam changes rotary motion into linear motion. • Explain in detail why some structures fail.	• With support cut wood/dowel with a hacksaw • Construct a range of simple structures • Make a structure more stable by widening the base. • Use materials to practise drilling, screwing, nailing and gluing to strengthen products to enable the object to move. • Attach wheels to a chassis using an axle e.g. cotton reels and dowel. • Make a lever and a hinge using cardboard. • Create a series circuit using a switch, a bulb, a buzzer and a motor.



'Working together to achieve our best.'

		• Use a range of materials to make joints e.g., card strips, elastic bands, thread and ties, and plastic tubing.	
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