Design Technology Knowledge Progression Document

Features					
Strand	**Designing**	**Making**	**Evaluating**	**Technical knowledge**	**Food Technology**
Key Stage 2	• 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.	• 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.	• 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.	• 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	• 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

Year 3	**How my body works Food technology**	**How my body works Levers and Linkages**
Substantive Knowledge & Disciplinary Knowledge	To know how to: •Be both hygienic and safe in the kitchen •Describe how food ingredients come together •Weigh out ingredients and follow a given recipe to create a dish •Talk about which food is healthy and which food is not • **To know when food is ready for harvesting** **Designing** • To prove that a design meets a set criterion • To design a product and make sure that it looks attractive **Making** • To follow a step-by-step pan, choosing the right equipment and materials **Evaluating** • To explain what changes they made, and why • To know that design can be changed to improve it the product were to be created again	**Technical knowledge** To know how to: •Make cuts and holes accurately •Strengthen a product by stiffening a given part or reinforce a part of the structure • To Know that simple linkages can be used to create movement •To Know that textiles can be joined in different ways. **Designing** • To choose a material for both its suitability and its appearance **Making** • To select the most appropriate tools and techniques for a given task • Work accurately to measure cuts and make holes • To know that there are appropriate tools/materials chosen which are fit for purpose **Evaluating** •Explain how to improve a finished model • To know why a model has or has not been successful
Oracy	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet	mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating
Year 4	**Cracking the Earth's core Structures**	**Innovation station Electricity**
Substantive Knowledge & Disciplinary	Know how to: •Strengthen a product by stiffening a given part or reinforcing a part of the structure Designing • To know how to use ideas from other people when designing	**Know how to:** • create simple electrical circuits and components e.g. bulbs, switches or buzzers that can be used to create functional products • Link scientific knowledge by using lights, switches, or buzzers • Use electrical systems (series or parallel) to enhance the quality of the product

Knowledge	• To produce a plan and explain it • To communicate ideas in a range of ways, including by sketches and cross-sectional drawings which are annotated Making • To know which tools to use for a particular task and show knowledge of handling the tool Evaluating • To know how to evaluate and suggest improvements for designs • Evaluate products for both their purpose and appearance • Explain how the original design has been impro	• **Know that mistakes can be avoided by measuring carefully** **Designing** • To persevere and adapt work when original ideas do not work • To know that a design can be based upon research **Making** • To know which material is likely to give the best outcome • To measure accurately **Evaluating** • To present a product in an interesting way **To know that existing products can be evaluated**
Oracy	shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision,	series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device
Year 5	**Gods and Mortals Cams**	**Tides of Change Pulleys and gears**
Substantive Knowledge	**Technical knowledge** • To know that products need to be strong and fit for purpose by being precise • To know that cams can be used to create movement • To k**now that a 3D frame can be reinforced and strengthened.** **Designing** • To produce a detailed step by step plan • Use exploded diagrams • Know that design criteria can be developed **Making** • To use a range of tools and equipment competently • Make a product that relies on cams **Evaluating** • To evaluate appearance and unction against original criteria • To know that the purpose and appearance of a product can be evaluated	**Technical knowledge** • To know that products need to be strong and fit for purpose by being precise • To know that cams can be used to create movement • To k**now that a 3D frame can be reinforced and strengthened.** **Designing** • To produce a detailed step by step plan • Use exploded diagrams • Know that design criteria can be developed **Making** • To use a range of tools and equipment competently • Make a product that relies on cams **Evaluating** • To evaluate appearance and unction against original criteria • To know that the purpose and appearance of a product can be evaluated
Oracy	am, movement, linear motion, rotary motion, off-centre, crank handle, axle, frame	pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output
Year 6	**How to mind your heart Food Technology**	**Light it up Electricity**
Substantive Knowledge	To know how to: • Prepare a meal by collecting the ingredients in the first place • Know which seasons various foods are available for harvesting • Adapt and aspect of a recipe • Understand the difference between a savoury and sweet dish • Know that the seasons affect the food available **Designing** • To know how to use market research to inform plans and ideas • Follow and refine original plans **Making** • To know which tools to use for a specific practical task • To know how to use tools safely **Evaluating**	**Technical knowledge** Know how to: • Explore more complex electrical circuits and components, e.g. resistors or LEDs, to create functional products • Use electrical systems correctly and accurately to enhance a given product e.g. using transistors or chips **Designing** • To know that a design specification is used to guide thinking **Making** • To know what tools and materials are used for **Evaluating** • To know how to test and evaluate designed products

	• To know how to test and evaluate designed products • To explain how products should be stored and give reasons	
Oracy	ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble	reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series circuit, parallel circuit

Strand	Year 3	Year 4	Year 5	Year 6
Designing	To know how to: • prove that a design meets a set criteria. • produce a step by step plan • design a product and make sure that it looks attractive • choose a material for both its suitability and its appearance **Know that a design must meet a range of requirements.**	To know how to: • use ideas from other people when designing • produce a plan and explain it • persevere and adapt work when original ideas do not work • communicate ideas in a range of ways, including by sketches and cross-sectional drawings which are annotated **Know that a design can be based upon research.**	To know how to: • come up with a range of ideas after collecting information from different sources • produce a detailed, step-bystep plan • use exploded diagrams explain how a product will appeal to a specific audience • design a product that requires pulleys or gears **Know that design criteria can be developed**	To know how to: use market research to inform plans and ideas. follow and refine original plans justify planning in a convincing way show that culture and society is considered in plans and designs **Know that a design specification is used to guide thinking.**
Making	To know how to: • follow a step-by-step plan, choosing the right equipment and materials • select the most appropriate tools and techniques for a given task • make a product which uses both electrical and mechanical components • work accurately to measure, make cuts and make holes **Know that there are appropriate tools / materials chosen which are fit for purpose.**	To know how to: • know which tools to use for a particular task and show knowledge of handling the tool • know which material is likely to give the best outcome • measure accurately **Know that there are explanations behind choosing the appropriate tools / materials**	To know how to: • use a range of tools and equipment competently • make a prototype before making a final version • make a product that relies on pulleys or gears Make a product that relies on cams **Know that appropriate tools / materials are used with precision.**	To know how to: • know which tool to use for a specific practical task • know how to use any tool correctly and safely • know what each tool is used for • explain why a specific tool is best for a specific action **Know that functionality and aesthetics are considered when selecting the appropriate tools / material**
Evaluating	To know how to: • explain what changes they made and why • explain how to improve a finished model • know why a model has or has not been successful **Know that a design can be changed to improve it if the product were to be created again**	To know how to: • evaluate and suggest improvements for designs • evaluate products for both their purpose and appearance • explain how the original design has been improved • present a product in an interesting way **Know that existing products can be evaluated**	To know how to: • suggest alternative plans; outlining the positive features and draw backs • evaluate appearance and function against original criteria **Know that the purpose and appearance of a product can be evaluated**.	To know how to: know how to test and evaluate designed products • explain how products should be stored and give reasons • evaluate product against clear criteria **Know that a product can be evaluated against the design specification**

Technical knowledge	To know how to: • • make cuts and holes can be made accurately. • strengthen a product by stiffening a given part or reinforce a part of the structure **Know that simple linkages can be used to create movement.** **Know that textiles can be joined in different ways.**	To know how to: • strengthen a product by stiffening a given part or reinforce a part of the structure • create simple electrical circuits and components, e.g. bulbs, switches or buzzers, can be used to create functional products • link scientific knowledge by using lights, switches or buzzers • use electrical systems (series or parallel) to enhance the quality of the product **Know that mistakes can be avoided by measuring carefully**.	To know how to: • link scientific knowledge to design by using pulleys or gears Know that products need to be strong and fit for purpose by being precise. **Know that cams can be used to create movement.** **Know that a 3D frame can be reinforced and strengthened** **Know that pulleys and gears can be used to create movement.**	To know how to: explore more complex electrical circuits and components, e.g. resistors or LEDs, to create functional products use electrical systems correctly and accurately to enhance a given product, e.g. using transistors or chips **Know that a 3D textiles product can be made by joining a combination of fabric shapes** **Know that user and aesthetics are considered when choosing and joining textiles.**
Food Technology	To know how to: • be both hygienic and safe in the kitchen • describe how food ingredients come together • weigh out ingredients and follow a given recipe to create a dish • can talk about which food is healthy and which food is not • know when food is ready for harvesting **Know that food comes from the UK or wider world.** **Know that food is grown, reared and caught in the UK, Europe and wider world.** **Know that there are a wide range of food preparation techniques**.			To know how to: • prepare a meal by collecting the ingredients in the first place know which season various foods are available for harvesting • adapt an aspect of a recipe • understand the difference between a savoury and sweet dish Know that the seasons affect the food available. Know that recipes can be adapted to change appearance, taste, texture and aroma. **Know that different preparation techniques are used depending on the food type.**