

Design and Technology

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Cooking and nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

National curriculum in England 2014 DfE

	Term 1 and 2 Discover	Term 3 and 4 Explore	Term 5 and 6 Create
EYFS	<p>Pupils in the EYFS will build their knowledge, skills and understanding through planned, purposeful play including both child initiated, and adult led activities.</p> <p>Designing, making and evaluating is typically intuitive at this stage and often occurs at the same time, i.e. physically arranging and re-arranging materials and components and orally communicating what they are doing and have done as they make.</p> <p>Cooking and nutrition</p> <ul style="list-style-type: none"> • Begin to understand some of the tools, techniques and processes involved in food preparation. • Discussion about hygiene and appropriate use of senses when tasting food • Discussing healthy foods and the importance of drinking water <p>Suggested activities: Make pumpkin soup and bread. Make and decorate individual Christmas cake as gift. Make healthy sandwiches for teddy bears picnic/ make a healthier sandwich for Paddington. Make and decorate a biscuit. Cooking opportunities may arise as a result of children's interests.</p>		
Design (Plan)	<ul style="list-style-type: none"> • Talk about what they want to make and who and/or what it is for • Planning and adapting initial ideas to make them better • Discuss and notice materials around them 		
Make (Do)	<ul style="list-style-type: none"> • Make models using variety of materials. Such as Construction toys, junk materials, wooden blocks • Learn to construct with a purpose in mind • Observe closely and replicate a structure, e.g. a castle out of small wooden bricks • Use the language of designing and making 		
Evaluate (Review)	<ul style="list-style-type: none"> • Be excited about what they have made • Exploration – build and join for a purpose and testing their models • Use of evaluative and comparative language, “longer”, “shorter”, “heavier”, “stronger” • Discuss problems and how they might be solved as they arise. 		

Cross year links	Preparing: Y1 make a freestanding structure (bridge). Y1 breakfast pots		
Technical knowledge	Use a range of tools with increasing care and precision - scissors, hole punch, hammer, screw driver, rolling pin, cutter, knife (with supervision) Joining techniques - glue, string, masking tape, clear tape Stirring, mixing, pouring, blending		
Subject specific vocabulary	Materials, join, cut, attach, fold, tear, build, shape, heavier, shorter, longer, stronger, stable, Plan, create, improve, test, stir, mix, pour, blend, roll, cut, taste		
Y1	Aspect: Mechanisms Focus: Sliders and levers Design make and evaluate assignment: Protection for a medieval castle	Aspect: Food Focus: Preparing fruit and vegetables Design make and evaluate assignment: 'Bring on Breakfast' – breakfast pots	Aspect: Structures Focus: Free standing structures Design make and evaluate assignment: A bridge for the Billy Goats Gruff
Cross year links	Anchoring: Using joining techniques Use of basic tools – scissors, hole punches Use of tape and glue to join card and paper	Anchoring: EY – Healthy eating. Making sandwiches, soup	Anchoring: Use of construction kits and wooden blocks to build walls and towers Use of basic tools – scissors, hole punches Use of tape and glue to join card and paper
	Preparing: Mechanisms Year 4 – pop up book	Preparing: preparing fruit and vegetables Y2 fruit skewers	Preparing:
Technical knowledge	Explore and use sliders and levers. Understand that different mechanisms produce different types of movement. Know and use technical vocabulary relevant to the project.	This food project has been developed to help children learn about healthy eating (specifically the importance of breakfast and 5 A DAY), where some of their food comes from and how to prepare a simple dish safely and hygienically. This learning will be delivered within the context of making a dish for breakfast.	Know how to make a free standing structure stronger, stiffer and more stable Know and use technical vocabulary relevant to the project
Subject specific vocabulary	slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join pull, push, up, down, straight, curve, forwards, backwards design, make, evaluate, user, purpose, ideas, design criteria, product, function	Fork secure, bridge hold, peeling, threading	Cut, fold, join fix Structure, framework, weak, strong, stable, base, top, surface. Thinner, thicker, corner, point, straight, curve Design, make evaluate, user, purpose, ideas, design criteria, function

Curriculum links	<p>Spoken language –ask relevant questions to extend their knowledge and understanding. Build technical and directional vocabulary.</p> <p>Art and design–use colour, pattern, line, shape.</p> <p>Mathematics– positional language. Use standard and non-standard measures.</p> <p>History – parts of a castle and protection</p>	<p>PSHE - What helps us stay healthy? That things people put into or onto our bodies can affect how they feel</p> <p>Geography – Where breakfast foods originate from (Sisimiut –Greenland/ Tunbridge Wells – UK)</p>	<p>Mathematics – use standard and non-standard measures</p> <p>Science- properties of materials and suitability for task</p> <p>Spoken language- discussing design ideas. Build technical vocabulary</p>
Y2	<p>Aspect: Mechanisms</p> <p>Focus: Wheels and Axles</p> <p>Design make and evaluate assignment: Design and create a moving 1666 cart</p>	<p>Aspect: Food</p> <p>Focus: Preparing Fruit and Vegetables</p> <p>Design make and evaluate assignment: African Fruit Skewers</p>	<p>Aspect Textiles</p> <p>Focus Templates and Joining Techniques</p> <p>Design make and evaluate assignment Design and make a puppet for a younger child</p>
Cross year links	<p>Anchoring: Y1 – Sliders and Levers (Mechanisms)</p>	<p>Anchoring: Y1 – Breakfast Pots (Fruit and Veg)</p>	<p>Anchoring: Y1 - NA</p>
	<p>Preparing: Y3 - NA</p>	<p>Preparing: Y3 – Healthy Eating</p>	<p>Preparing: Y3 – Bag Making (Textiles)</p>
Technical knowledge	<ul style="list-style-type: none"> - Teach how to create an axel and wheels using Kinex sets - Design 1666 cart using drawings - Create cart using a range of materials - Evaluate cart 	<ul style="list-style-type: none"> - Teach how to wash, peel, cut and thread fruit discretely - Design African themed fruit skewer - Create African themed fruit skewer - Evaluate African themed fruit skewer 	<ul style="list-style-type: none"> - Teach running and whip stitch discretely - Study a range of puppet types - Design a puppet type of their choice - Create puppet - Evaluate puppet
Subject specific vocabulary	vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used design, make, evaluate, purpose, user, criteria, functional	fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria	names of existing products, joining and finishing techniques, tools, fabrics and components template, pattern pieces, mark out, join, decorate, finish features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function
Curriculum links	History – The Great Fire of London	Science – Animals Including Humans Geography – Comparing Eastbourne and Mombasa	Science – Animals including Humans

Y3	<p>Aspect: Food</p> <p>Focus: (Healthy and varied diet – including cooking and nutrition requirements for KS2)</p> <p>Design make and evaluate assignment: healthy snacks and dips</p>	<p>Aspect: Structures</p> <p>Focus: (Shell structures – including computer-aided design)</p> <p>Design make and evaluate assignment: To create a package for a product to keep it secure and appealing to a buyer</p>	<p>Aspect Textiles</p> <p>Focus (2D shape to 3D product)</p> <p>Design make and evaluate assignment: To make a bag for a family member to take shopping.</p>
Cross year links	<p>Anchoring:</p> <p>Y2: African Fruit Skewers</p>	<p>Anchoring:</p> <p>Y1: DMA: Bridge for Billy Goat Gruff</p>	<p>Anchoring:</p> <p>Y2: Make puppets</p>
	<p>Preparing:</p> <p>Y4: fillings for a bread-based product</p>	<p>Preparing:</p> <p>Y6: Structures with CAMs</p>	<p>Preparing:</p> <p>Y6: Collaborative tapestry</p>
Technical knowledge	<p>Use appropriate equipment and utensils to prepare and combine food.</p> <p>Know about fresh and processed ingredients appropriate for the product and whether they are grown, reared or caught.</p> <p>Know and use relevant technical and sensory vocabulary appropriately.</p>	<p>Use IT package (e.g.TechSoft or MS Word) to create nets.</p> <p>Develop and use knowledge of nets of cubes and cuboids and where appropriate more complex 3D shapes.</p> <p>Develop and use knowledge of how to construct strong, stiff structures.</p>	<p>Use some or all of the following: running stitch, backstitch, oversew stitch, demonstrate need for seam allowance.</p> <p>Create and use paper patterns with 2-D shapes.</p>
Subject specific vocabulary	<p>Ingredients, texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, fresh, savoury, hygienic, edible, grown, caught, reared, frozen, tinned, processed, harvested, seasonal, healthy / varied diet</p>	<p>shell structure, 3D, 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</p>	<p>fabric, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance</p>
Curriculum links	<p>Maths: mass kg/g</p> <p>Computing: Making use of mathematical and computing skills to present results of sensory evaluations graphically.</p> <p>Science: Using and developing skills of observing and questioning; humans get nutrition from what they eat</p> <p>Spoken language: develop technical language</p>	<p>Maths: Compare and sort common 2D and 3D shapes in everyday objects; recognise 3D shapes in different orientations; use a ruler to measure to the nearest cm; draw 2D shapes and make 3D objects using modelling materials</p> <p>Science: Discuss the properties and suitability of materials</p> <p>Computing: Design and create digital content on screen, creating nets for products and combining texts with graphics</p>	<p>Maths: Nets of shapes, accurate measurements</p> <p>Science: properties and suitability of fabrics</p> <p>Computing: create pattern pieces</p> <p>History: investigating textiles</p> <p>Art: investigate visual and tactile properties of fabrics</p> <p>Spoken language: develop technical language</p>
Y4	<p>Aspect: Food</p> <p>Focus: Healthy and varied diet</p>	<p>Aspect: Electrical systems</p> <p>Focus: Simple circuits and switches</p>	<p>Aspect Mechanical systems</p> <p>Focus Levers and linkages</p>

	Design, make and evaluate a bread-based product with a filling for lunch such as a wrap, sandwich or roll for a child on a school trip.	Design, make and evaluate a lantern for April from the story 'The Last Bear' to use when she is exploring the island by night.	Design, make and evaluate a pop-up book with levers and linkages for Year 1 children to engage with.
Cross year links	Anchoring: KS1 – preparing fruit and vegetables Year 3 – healthy and varied diet – healthy snacks and dips	Anchoring:	Anchoring: Year 1 – sliders and levers - castles
	Preparing: Year 5/6 - Celebrating culture and seasonality	Preparing: Y5 - electrical system – monitoring and control Y6 – electrical system – fairground rides using more complex switches and circuits	Preparing: Year 5/6 - pulleys and gears
Technical knowledge	Know how to use appropriate equipment and utensils to prepare and combine food. <ul style="list-style-type: none"> • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately. 	<ul style="list-style-type: none"> • Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. • Know and use technical vocabulary relevant to the project. 	Understand and use lever and linkage mechanisms. <ul style="list-style-type: none"> • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project.
Subject specific vocabulary	Utensils, techniques, 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, sensory evaluation	Series circuit, fault, connection, switch, battery, bulb, wire, insulator, conductor, crocodile clip, control, input, output	Mechanism, lever, linkage, pivot, slot, guide, purpose, function, prototype, criteria, innovative, appealing, target audience
Curriculum links	<p>Science – using and developing skills of observing and questioning. Humans get nutrition from what they eat. Discuss changes of state if heat is used.</p> <p>Mathematics – mass kg/g.</p> <p>Writing – new vocabulary. Use non-fiction texts such as description, explanation and instructions e.g. recipes. Organise their work using e.g. headings, subheadings.</p> <p>Art & Design – using and developing drawing skills</p>	<p>Science - know how to construct simple series circuits and have a basic understanding of insulators, conductors and open and closed switches.</p> <p>Art and design – using and developing drawing skills.</p> <p>Spoken language - develop understanding through speculating, hypothesising, imagining and exploring ideas</p>	<p>Spoken language – participate in discussion and evaluation of books and, where available, other products with moving pictures</p> <p>Mathematics – use the vocabulary of position, direction and movement. Use a ruler to measure to the nearest cm, half cm or mm.</p> <p>Art and design – use colour, pattern, line, shape</p> <p>English – choosing vocabulary appropriate for Y1 children, using imagination to write a story</p>

Y5	Aspect: Food Focus: Celebrate culture and seasonality Design make and evaluate assignment: soup			Aspect: Electrical systems Focus: Monitoring and control Design make and evaluate assignment: use crumble to make a sensing device			Aspect: Mechanical systems and Structures Focus: Gears Design make and evaluate assignment: Woodworking toy vehicle with moving parts		
Cross year links	Anchoring: Year 1: preparing fruit and vegetables Year 2: preparing fruit Year 3: Year 4: preparing vegetables			Anchoring: Year 4: Science – electricity Year 5: Programming (Crumble)			Anchoring: Year 4: Science – Circuits Year 5: Science – Gears Year 5: Computing – programming with Crumble		
	Preparing: Year 6: preparing vegetables and cooking			Preparing: N/A			Preparing: Year 6: DT – Mechanical systems Year 6: Maths – Ratios Year 6: DT – Fairground structures		
Technical knowledge	<ul style="list-style-type: none"> Know how to use utensils and equipment including to prepare and cook food, e.g., slicing, chopping, frying, blending, mixing and simmering. Understand about seasonality in relation to food products and the source of different food products. Know and use relevant technical and sensory vocabulary. 			<ul style="list-style-type: none"> Understand and use electrical systems in their products, including Crumble. Understand the use of computer control systems in products, including Scratch. Apply their understanding of computing to program, monitor and control their products, using Crumble and Scratch together. Know and use technical vocabulary relevant to the project. 			<ul style="list-style-type: none"> Using K’Nex gear pieces, explore combinations of two different size gears meshed together. Build a working circuit that incorporates a battery, motor, and a handmade switch. Develop measuring marking, cutting, shaping, and joining skills, using saws, clamps and wood to construct wooden frames. 		
	appearance	flour	hard						
	texture	carbohydrate	combine						
	flavour	sweet	fold						
	smell	savoury	knead						
	cost	crunchy	stir						
	calories	soft	pour						
	ingredients	sticky	mix						
	yeast	smooth							
	dough								
Subject specific vocabulary	vitamins	tool	slice	reed switch	tilt switch	system	gear-up	rotate	
	nutrients	knife	dice	toggle switch	battery holder	input device	gear-down	ratio	
	nutrition	safe	simmer	push-to-make	usb cable	output device	driver	axle	
	healthy	peel	boil	switch	wire	series circuit	follower	motor	
	source	vegetables	fry	push-to-break	insulator	parallel circuit	mesh	circuit	
	spice	wash	sauté	switch	conductor	function	motor spindle	electrical-system	

	ingredients peel soften recipe chop cook equipment serve	light crocodile clip user dependent control purpose resistor (ldr) program	teeth mechanical-system
Curriculum links	<p>Y1 PSHE – What helps us stay healthy? That things people put into or onto our bodies can affect how they feel</p> <p>Y2 PSHE – What can help us grow and stay healthy? – the different things help their bodies to be healthy</p> <p>Y3 PSHE – Why should we eat well (and look after our teeth)? – how to eat a healthy diet</p> <p>Y6 PSHE – How can we keep healthy as we grow? – planning a healthy meal</p> <p>Y3 Science – <i>Animals including humans</i> – need specific nutrition to help them move and grow</p> <p>Y6 Science – <i>Animals including humans</i> – impact of diet, drugs, lifestyle and alcohol on the body</p>	<p>Y4 Science – <i>Electricity</i> – constructing simple circuits</p> <p>Y5 Computing – <i>Programming A – Selection in physical computing (using Crumble)</i> – to take place before the DT project</p>	<p>Y4 Science – <i>Electricity</i> – constructing simple circuits</p> <p>Y5 Science – <i>Forces</i> – levers, pulleys and gears</p>
Y6	<p>Aspect: Food</p> <p>Focus: Celebrating seasonality</p> <p>Design make and evaluate assignment: design and make food using rationed foods.</p>	<p>Aspect: Textiles including CAD</p> <p>Focus: Collaborative tapestry</p> <p>Design make and evaluate assignment: combining different fabric shapes for a large tapestry on refugee story.</p>	<p>Aspect: Mechanical systems and electrical systems</p> <p>Focus: Frame structures and ‘cams’; Using circuits to achieve functional results</p> <p>Design make and evaluate assignment: design and make a fairground ride including electrical components</p>
Cross year links	<p>Anchoring:</p> <p>Y5 – soup</p> <p>PSHE / PE – healthy eating</p>	<p>Anchoring:</p> <p>Y2 – sewing puppets (running stitch, whip stitch)</p> <p>Y3 – bag for family member (running stitch, back stitch, over sew stitch, using a pattern)</p>	<p>Anchoring:</p> <ul style="list-style-type: none"> Y5 Explore project – ‘understand and use electrical systems’. Y5 vocabulary: battery, input/output device, battery holder, wire, series circuit, parallel circuit, purpose
Technical knowledge	<ul style="list-style-type: none"> Know how to use utensils and equipment including to prepare and cook food, including weighing, mixing, kneading and proving. Know and use relevant technical and sensory vocabulary. 	<ul style="list-style-type: none"> Understand a 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. 	<ul style="list-style-type: none"> Understand that mechanical and electrical systems have an input, process and an output. Understand how circuits can be used to speed up, slow down or change the direction of movement.

		<ul style="list-style-type: none"> Understand that fabrics can be strengthened, stiffened and reinforced where appropriate. 	<ul style="list-style-type: none"> Know and use technical vocabulary relevant to the project. Structural features including strongest shapes.
Subject specific vocabulary	<p>stir pour mix melt dough trim whisk rationing seasonality grams vs ounces</p>	<p>Seam seam allowance Wadding Reinforce Hem Template pattern pieces Pins Needles thread, Annotate design decisions</p>	<p>series circuit parallel circuit input device output device system monitor control program design purpose motor shaft drive belt</p>
Curriculum links	<p>Y2 PSHE – What can help us grow and stay healthy? – the different things help their bodies to be healthy Y3 PSHE – Why should we eat well (and look after our teeth)? – how to eat a healthy diet Y6 PSHE – How can we keep healthy as we grow? – planning a healthy meal Y3 Science – <i>Animals including humans</i> – need specific nutrition to help them move and grow Y6 Science – <i>Animals including humans</i> – impact of diet, drugs, lifestyle and alcohol on the body Y6 History – Second World War</p>	<p>English - ‘The Journey’ picture book based on refugees (pupils choose a picture from the book)</p>	<p>Fairground project:</p> <ul style="list-style-type: none"> English: posters to advertise park Maths: budgeting for park: running costs, entrance fees and marketing Computing: animation (moving ride)