

Subject content	Objectives – Technical knowledge	Vocabulary	Books/ resources/ scientists/ technologists	Objectives - Process
Structures Playgrounds (or Boats)	<p>Build structures, exploring how they can be made stronger, stiffer and more stable. Framework structures</p> <p>Use simple methods for making freestanding structures stronger and more stable. Name different types of a product and main features. Observe carefully, draw and name simple mathematical shapes in the context of a product. Use basic cutting, shaping and joining techniques for 3D modelling, for example with paper and card using glues and masking tape; Make simple hinges. Use construction kits to aid modelling. Assemble, join and combine 2D and 3D materials into a model. Evaluate products made, commenting on main features.</p>	<p>designing eg drawing, user, model, plan making eg equipment, parts, construction kits, join, fix knowledge and understanding eg framework, movement, structure, weak, strong, side, edge, surface, thinner, thicker, corner, point, symmetrical edge, straight, curved; names and shapes of materials which are used in full-size playground equipment eg metal, wood, plastic; types of playground equipment eg swing, see-saw, roundabout, climbing frame, slide; names of mathematical 2D shapes eg circle, triangle, square, rectangle & 3D shapes eg cuboid, cube</p>	<p>Explore range of full-size size items of playground equipment on a visit to a park.</p> <p>Boats – science (materials) link. 'Lost and Found' by Oliver Jeffers</p>	<p>Design:</p> <p>design purposeful, functional, appealing products for themselves and other users based on design criteria</p> <p>generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p>
Textiles Bookmark	<p>Select from and use a wide range of materials and components according to their characteristics: Sew together two pieces of fabric</p> <p>Draw around a template. Make simple drawings and label parts. Recognise that ideas for their own designs can be developed by looking at existing products. Identify simple design criteria. Model ideas by making a paper mock-up using glue as a joining technique. Mark out, cut and join fabric pieces to make the main part of a product using simple joining techniques, e.g. gluing and stitching (running stitch). Use appropriate finishing techniques.</p>	<p>designing eg user, label, drawing, ideas, mock-up, choose, decide, evaluate, try out ideas making eg plan, template, fabric, cutting out, sewing, needle, running stitch, gluing, adding knowledge and understanding eg stitch, thread, needle, strong, quality, features</p>		<p>Make:</p> <p>select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> <p>select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p>
Cooking and nutrition Fruit/vegetable kebab, salad	<p>Use the basic principles of a healthy and varied diet to prepare dishes, Understand where food comes from.</p> <p>Recognise and name a number of different fruit and vegetables. Classify some fruit/vegetables by colour, texture and taste, how and where they are grown, what they are used for, how they are eaten (eg peeled). Know and practise the hygiene rules for fruit and vegetable preparation. Carry out simple tasting of fruit and vegetables and record results. Know that fruit and vegetables are an important part of a healthy diet. Select and use appropriate equipment and ingredients, including simple tools in preparation. Talk about their finished product, and record through pictures and words how it looks and tastes and how well it matches their original ideas and chosen target group.</p>	<p>designing eg choosing, investigating, tasting, arranging, experimenting, popular, sort, blockgraph, pictogram making eg washing, cleaning, peeling, cutting, slicing, grating knowledge and understanding eg salad, fruit, vegetables, peel, flesh, skin, grater, chopping board, peeler, seeds, pips, stalk, juice, root, leaf, stone, bunch, skewer; sensory eg crisp, sharp, juicy, sweet, sour, sticky, squashy, smooth, crunchy, scented, waxy</p>	<p>'Handa's Surprise' by Eileen Browne</p>	<p>Evaluate:</p> <p>explore and evaluate a range of existing products and evaluate their ideas and products against design criteria</p> <p>Skills:</p> <p>focused practical tasks</p>

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Structures Homes	<p>Build structures, exploring how they can be made stronger, stiffer and more stable. Framework structures</p> <p>Show through simple drawings the main features of a building, with a sense of proportion. Recognise and name mathematical shapes <i>eg square, rectangle, triangle, circle</i> in the context of buildings.</p> <p>Join 2D and 3D materials effectively in different ways, making effective hinges. Begin to understand how they can make their structures more stable. Use construction kits to help develop their ideas. Construct model by joining/combining 2D and 3D materials in appropriate ways. Evaluate their finished structure, testing for strength and stability.</p>	<p>designing eg choose, try out ideas, discuss, drawing, label, list</p> <p>making eg join, fix, plan, scissors, hole punch, masking tape, PVA glue</p> <p>knowledge and understanding eg structure, framework, strong, weak, wall, roof, window, stairs, guttering, glass, brick, transparent, hinge; mathematical understanding eg square, rectangle, triangle cube, cuboid, side, edge, surface, on top of, underneath, smaller than, symmetrical, beside, next to, triangulation for strength</p>	‘Home’ by Carson Ellis	<p>Design:</p> <p>design purposeful, functional, appealing products for themselves and other users based on design criteria</p> <p>generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p>
Mechanisms Vehicles	<p>Explore and use mechanisms in their products: Wheels and axles</p> <p>Give examples of how different vehicles are used for different purposes and what features they may contain, naming the main parts of a vehicle. Make simple drawings, with some labels of parts. Join wheels and axles effectively on a chassis and explain how they work. Develop ideas for making a model vehicle which has a purpose, and which reflects their original idea, applying what they have learnt. Construct a vehicle which functions. Use a range of finishing techniques including a label or logo. Evaluate their finished vehicle, recording how it works and matches the original ideas.</p>	<p>designing eg purpose, ideas, discuss, explore, predict, guess, survey, table, Venn diagram, most/least common</p> <p>making eg joining, combining, connecting, testing, punching</p> <p>knowledge and understanding eg vehicle, wheels, chassis, axles, doweling, hole punch, logo, distance</p>	‘Duck in the Truck’ by Jez Alborough; toy vehicles, photos of various vehicles	<p>Make:</p> <p>select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> <p>select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p>
Cooking and nutrition Fruit smoothie or cordial	<p>Use the basic principles of a healthy and varied diet to prepare dishes, Understand where food comes from.</p> <p>Consider how to make a smoothie/cordial healthy – sugar content. Explore different flavour combinations and textures (eg seeds) with regard to taste, learning how to balance the combination of ingredients. Consider seasonality/availability of ingredients. Select and use appropriate equipment, including cooking fruit for cordials. Evaluate their finished product by market testing and suggest improvements.</p>	<p>designing eg choosing, investigating, tasting, arranging, experimenting, popular, sort, blockgraph, pictogram</p> <p>making eg washing, cleaning, peeling, cutting, slicing, grating, chopping, cooking, blending</p> <p>knowledge and understanding eg salad, fruit, vegetables, peel, flesh, skin, grater, chopping board, peeler, pan, cooker, blender, seeds, pips, stalk, juice, root, leaf, stone, bunch, skewer; sensory eg crisp, sharp, juicy, sweet, sour, sticky, squashy, smooth, crunchy, scented, waxy</p>	‘Oliver’s Vegetables’ by Vivian French and Alison Bartlett; Arcimboldo fruit and vegetable art	<p>Evaluate:</p> <p>explore and evaluate a range of existing products and evaluate their ideas and products against design criteria</p> <p>Skills:</p> <p>focused practical tasks</p>

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Structures Packaging	<p>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</p> <p>Investigate a range of commercially made packaging and recognise that many examples are constructed from nets. Make paper models (mock-ups) of their ideas before measuring, marking out, cutting and assembling with accuracy. Evaluate their packaging against their original design criteria. Produce packaging that is visually lively, accurately made and appropriate for its purpose. (Design idea: packaging for sandwiches made in cooking.)</p>	<p>designing eg font, graphic, decision, evaluating, criteria, fit for purpose, holds</p> <p>making eg scoring, tabs, adhesives, join, assemble, accuracy</p> <p>knowledge and understanding eg three-dimensional (3D) shape, cube, cuboid, prism, net, vertex, edge, face, packaging, shell structure, breadth, capacity</p>	<p>The three Ps: protection, preservation, promotion</p> <p>Leo Baekeland (Bakelite) and Jacques E Brandenburger (cellophane)</p> <p>Ant and Bee Go Shopping by Angela Banner</p>	<p>Design:</p> <p>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</p> <p>generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>Make:</p> <p>select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>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</p>
Textiles Wall hangings	<p>Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities.</p> <p>Investigate different wall hangings and tapestries. Experiment with different embroidery stiches (running stitch, backstitch, split stitch, stem stitch etc.). Use applique to attach fabric together. Plan and design wall hanging creating story through fabric.</p>	<p>designing eg specification, flow chart, mock-up, accurate, users, fabric swatches, working drawing</p> <p>making eg pattern/template, working properties</p> <p>knowledge and understanding eg running stitch, backstitch, split stitch, stem stitch, applique</p>	<p>Bayeux Tapestry</p> <p>Aino Kajaniemi</p>	<p>Make:</p> <p>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</p>
Cooking and nutrition Sandwich snacks	<p>Understand and apply the principles of a healthy and varied diet</p> <p>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</p> <p>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p> <p>Use information from an evaluation activity to select and prepare a range of sandwich ingredients for a purpose, combining the ingredients to create an appealing sandwich. Consider how well their sandwich meets the original purpose. Understand the ‘balanced plate’ model for healthy eating and will have applied this to ideas about how the sandwich contributes to a healthy diet.</p>	<p>designing eg texture, taste, appearance, healthy, preference, criteria, cost, questionnaire, data, frequency diagram</p> <p>making eg cut, mix, spread, slice, blend, grate, chop, chopping board, knife, grater</p> <p>knowledge and understanding eg sandwich, filling, ingredients, fridge, food groups, hygiene, high risk, healthy eating, ‘balanced plate’, thick, thin – sensory eg sweet, sour, bitter, salty</p>	<p>‘Sam’s Sandwich’ by David Pelham</p> <p>Max’s Sandwich Book: The Ultimate Guide to Creating Perfection Between Two Slices of Bread by Max Halley</p>	<p>Evaluate:</p> <p>investigate and analyse a range of existing products</p> <p>evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>understand how key events and individuals in design and technology have helped shape the world</p> <p>Skills:</p> <p>focused practical tasks</p>

Year 4 D.T. (The approaches included are suggestions only and teachers are free to choose how they implement the objectives.)

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Mechanisms Storybooks	Understand and use mechanical systems in their products. Levers and linkages	Designing e.g. model, mock-up, plan, fit for purpose Making e.g. fold, adhesive, scoring, cutting, joining, temporary fixing, permanent fixing Knowledge and Understanding e.g. linkage, lever, pivot, flexible, shape, joint, hinge, area, surface, covers—types of movement e.g. rotary, linear.	Heads by Matthew Van Fleet, Oscar the Octopus by Matthew Van Fleet	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
	Use ideas gained from investigating a variety of products and increase their repertoire of skills and techniques. Use tools safely to design and make pages, incorporating levers and linkages, for a book finished to a high standard. Develop skills in making a range of simple mechanisms. Work as part of a group. Evaluate, in use, both their own and others' products.			
Textiles Money containers	Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities.	Designing eg user, purpose, design criteria, model, evaluating, labelled drawings, stiffening, reinforcing, coins, notes Making eg pattern/templates, strength, weaknesses, accurate, finishing Knowledge and Understanding eg fabric, fastening, compartment, zip, press stud, clasp, hook and eye, button, buckle, seam, seam allowance, reinforce, gusset, dye, embroidery – properties eg strength, hardwearing, stretch, fray	Variety of purses	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:
	Show understanding and skills in working with textiles to design and make a money container that meets their design criteria. Evaluated existing products. Test effectiveness of different fabrics.			
Cooking and nutrition Soup making	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.	Designing eg texture, taste, appearance, healthy, preference, criteria, cost, questionnaire, data, frequency diagram Making e.g. cut, mix, spread, slice, bland, grate, chop, chopping board, knife, grater Knowledge and Understanding e.g. soup, ingredients, fridge, food groups, hygiene, high risk, healthy eating, balanced plate, thick, thin, sensory—e.g. sweet, sour, bitter, salty.	Recipe books 'Stone Soup' – traditional tale Pumpkin Soup by Helen Cooper	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 Skills: focused practical tasks
	Undertake independent research to inform a range of ideas. Understand the importance of nutrition and a balanced diet. Create own design criteria to ensure product is purposeful. Create recipes, including ingredients. Understand how to handle foods safely and hygienically.			

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Structures Kites	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.	designing eg investigate, survey, plan, research, texture, intention, structure, outcome making eg mouldable material, mould, moulding, adhesives, polyvinyl acetate (PVA) wood glue, shaping, cutting knowledge and understanding eg aerobatic, afloat, airbourne, altitude, ascend, crash, descend, dip, dive, dual-line, flexible, flimsy, glide, single-line	Chinese origins Homan Walsh, Niagara suspension bridge	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 Skills: focused practical tasks
	Study a variety of simple kites. Research information from different sources. Set out activities for children to experiment with making things float and stay in the air. Investigate the strengths of different materials and how & where they could be strengthened. Design, make and evaluate a kite that can stay in the air.			
Mechanisms Moving Toys	Understand and use mechanical systems in their products. Cams, axles	designing eg sequence, annotated diagram, sketch, decision, choice, prototype, model, communicate making eg shape, assemble, accurate, saw, mark out knowledge and understanding eg cam, mechanism, movement, linear motion, rotary motion, pivot, off-centre, axle, force, framework, follower, guide, offset, shaft	Toys with moving parts	
	Investigate toys with a cam mechanism, looking at the moving part in more detail. Try different shapes of cam and study their movement. Learn how to set up and use: bench hook, G clamp and measure. Mark and drill an off-centre hole in a wooden wheel. Design, make and evaluate a toy with a moving part, using a cam for a particular purpose.			
Textiles Slippers	Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities.	designing eg specification, flow chart, mock-up, accurate, users, fabric swatches, working drawing making eg pattern/template, working properties knowledge and understanding eg seam, seam allowance, insulation, sole, upper, inner, reinforce, right side/wrong side, stitch, stitching, tacking, wadding, sewing machine, hem	A selection of slippers 'Grandpa's Slippers' by Joy Watson	
	Observe and disassemble a simple slipper, discuss how it has been made. Look at the fabrics used for the different parts e.g. soles, inner and outer layers. Discuss touch and appearance and how material is fit for purpose. Discuss with the children the suitability of the slippers for different users and their different purposes. Show how a pattern is made and used. Demonstrate how to stitch right sides together; using tacking stitch. Design, make and evaluate a prototype slipper and if time, a pair of slippers.			
Cooking and nutrition Main course of an evening meal	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.	designing eg evaluating, investigation, costing preferences, profile, specification, criteria, fair test, making eg ingredients, quantities, shaping, mixing, topping, baking, cooking method, grilling, boiling, frying, glazing knowledge and understanding eg savoury, names of tools and equipment	Menus and recipe books	
	This is an optional unit which can be done if there is time at some point in the year.			

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Structures Shelters	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.	designing eg modelling, scale model, fair test making eg rolling, strengthening, reinforcing knowledge and understanding eg triangulation, diagonal, stable, strength, framework, material, tube, rigid, section, water resistance, tie, strut, beam, bracket, stay, member, horizontal, vertical, gusset – forces eg tension, compression, bending, twisting	Shelter – Celine Claire	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 Skills: focused practical tasks
	Ask children to investigate a range of shelters that are constructed in different ways. Find out about different performance textiles used for tents and outdoor equipment. Investigate how to strengthen structures and how to reinforce a simple square framework. Test a variety of textiles for water resistance and strength. Design, make and evaluate a model of a shelter for a specific purpose. Brainstorm ideas, recording designs on paper. Make shelter, evaluating as it progresses and thinking of alternatives if the first attempt fails. Use simple tests to evaluate the function and strength of the shelter.			
Mechanisms Fairgrounds	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.	designing eg model, mock-up, select, modify, improvements, design proposal, criteria making eg framework, construct, temporary joins, permanent joins knowledge and understanding eg rotation, spindle, axle, drive belt, pulley, electric motor, speed, framework, horizontal, vertical, electric circuit, switch, gearing up or down, computer control, mechanism	Frederick Savage Enoch Farrar	
	Research rides that have rotating parts. Look at mechanisms in which a belt and pulley is used. Investigate different ways of making a framework to hold the model. Find out how a model can be controlled by a computer. Children to design and make a model of a fairground ride which has a rotating part. Evaluate product according to their own criteria for success.			
Cooking and nutrition Making a two course meal	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.	designing eg evaluating, investigation, preferences, profile, specification, criteria, fair test, costing making eg ingredients, quantities, shaping, mixing, topping, baking, cooking method, grilling, boiling, frying, glazing knowledge and understanding eg savoury, names of tools and equipment sensory characteristics eg texture, doughy, crisp, chewy, crunchy, stretchy, elastic food safety eg hygiene, bacteria, mould, decay, food poisoning	Menus and recipe books	
	Research different combinations of meal to ensure they cover all the main food groups. Survey others to decide on what meal would be popular. Look at recipes and further develop their knowledge of seasonality. Learn about different aspects of food safety. Children use the skills that they have developed in cooking and nutrition to plan, cook and evaluate a two course meal.			