

Design and Technology Scheme of work:

These long term plans outline the content from the National Curriculum for each Key Stage. Plans are based on a two year rolling plan with one unit of work per term, with flexibility around which term each unit is implemented.

<u>KS1</u> <u>Even Years</u>	<u>Mechanisms</u> Wheels and axles	<u>Mechanisms</u> Sliders and Levers	<u>Food</u> Preparing fruit and vegetables (including cooking and nutrition requirements for KS1)
<u>Context</u>	Wheeled vehicles - Transport	Christmas cards	Fruit Kebabs
<u>Key Learning</u>	<p>Making</p> <ul style="list-style-type: none"> • Select from and use a range of tools, equipment and materials to perform practical tasks such as cutting and joining to allow movement and finishing. <p>Evaluating:</p> <ul style="list-style-type: none"> • Explore and evaluate a range of products with wheels and axles. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. 	<p>Making</p> <ul style="list-style-type: none"> • Select and use tools, explaining their choices, to cut, shape and join paper and card. • Use simple finishing techniques suitable for the product they are creating <p>Evaluating</p> <ul style="list-style-type: none"> • Explore a range of existing books and everyday products that use simple sliders and levers. • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Explore and use sliders and levers. • Understand that different mechanisms produce different types of movement. 	<p>Designing</p> <ul style="list-style-type: none"> • Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. <p>Making</p> <ul style="list-style-type: none"> • Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. • Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. <p>Evaluating</p> <ul style="list-style-type: none"> • Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> • Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. • Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of <i>The eatwell plate</i>.
<u>Vocabulary</u>	vehicle, wheel, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism	slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards	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
<u>Designers/ inventors</u>	<u>Leonardo De Vinci</u> <u>Karl Benz</u>	<u>Maurice Sendak</u> <u>Eric Carle</u> <u>Beatrix Potter</u>	<u>Jamie Oliver</u> <u>Deliciously Ella</u>
<u>Milestones: 1 by end of year 2:</u>	<ul style="list-style-type: none"> • know the simple working characteristics of materials and components • know the movement of simple mechanisms such as levers, sliders, wheels and axles • 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). • Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. • Create products using levers, wheels and winding mechanisms. 		
		<ul style="list-style-type: none"> • Know that food ingredients should be combined according to their sensory characteristics • Know that all food comes from plants or animals • Know that food has to be farmed, grown elsewhere (e.g. home) or caught • how to name and sort foods into the five groups in The eat well plate • know that everyone should eat at least five portions of fruit and vegetables every day • know how to prepare simple dishes safely and hygienically, without using a heat source • Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients. 	

<u>KS1</u> <u>Odd Years</u>	<u>Structures</u> Free standing structures	<u>Food</u> Preparing fruit and vegetables (including cooking and nutrition requirements for KS1)	<u>Textiles</u> Template and joining techniques
<u>Context</u>	Card Houses – Fire of London	Picnic	African textiles
<u>Key Learning</u>	<p>Making</p> <ul style="list-style-type: none"> Select new and reclaimed materials and construction kits to build their structures. Use simple finishing techniques suitable for the structure they are creating. <p>Evaluating</p> <ul style="list-style-type: none"> Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Know how to make freestanding structures stronger, stiffer and more stable. 	<p>Designing</p> <ul style="list-style-type: none"> Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. <p>Making</p> <ul style="list-style-type: none"> Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. <p>Evaluating</p> <ul style="list-style-type: none"> Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. Evaluate ideas and finished products against design criteria, including intended user and purpose. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of <i>The eatwell plate</i>. 	<p>Making</p> <ul style="list-style-type: none"> Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. Select from and use textiles according to their characteristics. <p>Evaluating</p> <ul style="list-style-type: none"> Explore and evaluate a range of existing textile products relevant to the project being undertaken. Evaluate their ideas throughout and their final products against original design criteria. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand how simple 3-D textile products are made, using a template to create two identical shapes. Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons.
<u>Vocabulary</u>	cut, fold, join, fix, structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved	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,	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
<u>Designers/ inventors</u>	<u>Christopher Wren</u> <u>Isambard Kingdom Brunel</u>	<u>Nadiya Hussain</u>	<u>Zandra Rhodes</u> <u>Althea Mc Nish</u>
<u>Milestones 1 by end of year 2:</u>	<ul style="list-style-type: none"> about the simple working characteristics of materials and components how freestanding structures can be made stronger, stiffer and more stable Cut materials safely using tools provided. 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). Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. 	<ul style="list-style-type: none"> Know that food ingredients should be combined according to their sensory characteristics Know that all food comes from plants or animals Know that food has to be farmed, grown elsewhere (e.g. home) or caught how to name and sort foods into the five groups in The eat well plate know that everyone should eat at least five portions of fruit and vegetables every day know how to prepare simple dishes safely and hygienically, without using a heat source Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales. Assemble or cook ingredients. 	<ul style="list-style-type: none"> Shape textiles using templates. Join textiles using running stitch. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing). Cut materials safely using tools provided. Measure and mark out to the nearest centimetre.

<u>Lower KS2</u> <u>Even Years</u>	<u>Structures</u> Shell structures (including computer generated design)	<u>Food</u> Health and varied diet (including cooking and nutrition requirements for KS2)	<u>Electrical systems</u> Simple circuits and switches (including programming and control)
<u>Context</u>	3D design - Truffle boxes	Bread making	Night Lights
<u>Key Learning</u>	<p>Making</p> <ul style="list-style-type: none"> Order the main stages of making. Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. Explain their choice of materials according to functional properties and aesthetic qualities. Use finishing techniques suitable for the product they are creating. <p>Evaluating</p> <ul style="list-style-type: none"> Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. Test and evaluate their own products against design criteria and the intended user and purpose. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Develop and use knowledge of how to construct strong, stiff shell structures. Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. 	<p>Making</p> <ul style="list-style-type: none"> Plan the main stages of a recipe, listing ingredients, utensils and equipment. Select and use appropriate utensils and equipment to prepare and combine ingredients. Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. <p>Evaluating</p> <ul style="list-style-type: none"> Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Know how to use appropriate equipment and utensils to prepare and combine food. Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. 	<p>Making</p> <ul style="list-style-type: none"> Order the main stages of making. Select from and use tools and equipment to cut, shape, join and finish with some accuracy. Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities. <p>Evaluating</p> <ul style="list-style-type: none"> Investigate and analyse a range of existing battery-powered products. Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. Apply their understanding of computing to program and control their products.
<u>Vocabulary</u>	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	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	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 user, purpose, function, prototype
<u>Designers/ inventors</u>	<u>Robert Gair</u> <u>Tetra pack</u>	<u>Paul Hollywood</u> <u>Mary Berry</u>	<u>Thomas Eddison</u> <u>Alexandra Graham Bell</u>
<u>Milestone 2 by end of year 4:</u>	<ul style="list-style-type: none"> 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). Select appropriate joining techniques. How to make strong, stiff shell structures Choose suitable techniques to construct products or to repair items. Strengthen materials using suitable techniques. 	<ul style="list-style-type: none"> that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eat well plate that to be active and healthy, food and drink are needed to provide energy for the body Prepare ingredients hygienically using appropriate utensils. Measure ingredients to the nearest gram accurately. Follow a recipe. Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). 	<ul style="list-style-type: none"> how simple electrical circuits and components can be used to create functional products Create series and parallel circuits. assemble, join and combine materials and components with some accuracy

<u>Lower KS2</u> <u>Odd Years</u>	<u>Mechanical systems</u> Levers and linkages	<u>Textiles</u> 2D shape to 3D product	<u>Food</u> Health and varied diet (including cooking and nutrition requirements for KS2)
<u>Context</u>	<u>Pop up cards</u>	<u>Purse – Vikings/ Anglo Saxons</u>	<u>Sandwiches</u>
<u>Key Learning</u>	<p>Making</p> <ul style="list-style-type: none"> Order the main stages of making. Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. Select from and use finishing techniques suitable for the product they are creating. <p>Evaluating</p> <ul style="list-style-type: none"> Investigate and analyse books and, where available, other products with lever and linkage mechanisms. Evaluate their own products and ideas against criteria and user needs, as they design and make. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand and use lever and linkage mechanisms. Distinguish between fixed and loose pivots. 	<p>Making</p> <ul style="list-style-type: none"> Plan the main stages of making. Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing. Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern. <p>Evaluating</p> <ul style="list-style-type: none"> Investigate a range of 3-D textile products relevant to the project. Test their product against the original design criteria and with the intended user. Take into account others' views. Understand how a key event/individual has influenced the development of the chosen product and/or fabric. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Know how to strengthen, stiffen and reinforce existing fabrics. Understand how to securely join two pieces of fabric together. Understand the need for patterns and seam allowances. 	<p>Making</p> <ul style="list-style-type: none"> Plan the main stages of a recipe, listing ingredients, utensils and equipment. Select and use appropriate utensils and equipment to prepare and combine ingredients. Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. <p>Evaluating</p> <ul style="list-style-type: none"> Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Know how to use appropriate equipment and utensils to prepare and combine food. Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.
<u>Vocabulary</u>	mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, process, output, linear, rotary, oscillating, reciprocating, user, purpose, function prototype,	fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance, user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces	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
<u>Designers/ inventors</u>	<u>Rob Ryan</u> <u>Jan Pienkowski</u>	<u>Louis Vuitton</u> <u>Gucci</u> <u>Michael Kors</u>	<u>Heston Blumenthal</u>
<u>Milestone 2 by end of year 4:</u>	<ul style="list-style-type: none"> how mechanical systems such as levers and linkages or pneumatic systems create movement Choose suitable techniques to construct products or to repair items. Strengthen materials using suitable techniques. Master practical skills using materials* Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears). 	<ul style="list-style-type: none"> Understand the need for a seam allowance. Join textiles with appropriate stitching. Select the most appropriate techniques to decorate textiles. that a single fabric shape can be used to make a 3D textiles product measure, mark out, cut and shape materials and components with some accuracy assemble, join and combine materials and components with some accuracy 	<ul style="list-style-type: none"> that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The eat well plate' that to be active and healthy, food and drink are needed to provide energy for the body Prepare ingredients hygienically using appropriate utensils. Measure ingredients to the nearest gram accurately. Follow a recipe. Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).

<u>Upper KS2 Even Years</u>	<u>Mechanical systems</u> Pulleys or gears	<u>Computer Design</u> Tinker CAD	<u>Food</u> Celebrating culture and seasonality (including cooking and nutrition requirements for KS2)
<u>Context</u>	<u>Moving Toys - cams</u>	<u>3D digital design</u>	<u>Ginger bread</u>
<u>Key Learning</u>	<p>Making</p> <ul style="list-style-type: none"> Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. <p>Evaluating</p> <ul style="list-style-type: none"> Compare the final product to the original design specification. Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. Investigate famous manufacturing and engineering companies relevant to the project. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand that mechanical and electrical systems have an input, process and an output. Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. Know and use technical vocabulary relevant to the project. 	<ul style="list-style-type: none"> Create a pixel picture Save a JPEG as a bitmap Understand the fetch, decode, execute cycle in relation to real life situations. Use 3D design tools Apply tools to their design 	<p>Making</p> <ul style="list-style-type: none"> Write a step-by-step recipe, including a list of ingredients, equipment and utensils Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. Make, decorate and present the food product appropriately for the intended user and purpose. <p>Evaluating</p> <ul style="list-style-type: none"> Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. Understand how key chefs have influenced eating habits to promote varied and healthy diets. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Know how to use utensils and equipment including heat sources to prepare and cook food. Understand about seasonality in relation to food products and the source of different food products. Know and use relevant technical and sensory vocabulary.
<u>Vocabulary</u>	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, design decisions, functionality, innovation,	3D, CAD, binary image, compression, drag and drop, fetch, decode, execute, input, JPEG, pixels	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
<u>Designers/ inventors</u>	<u>Peter Markey</u> <u>Paul Spooner</u>	<u>Shigeru Miyamoto – Donkey Kong; Mario Bros; The Legend of Zelda.</u> <u>Markus Alexej Persson: Minecraft.</u>	<u>Nigella Lawson</u>
<u>Milestone 3 by end of year 6:</u>	<ul style="list-style-type: none"> Convert rotary motion to linear using cams. Use innovative combinations of electronics (or computing) and mechanics in product designs. how mechanical systems such as cams or pulleys or gears create movement accurately measure, mark out, cut and shape materials and components accurately assemble, join and combine materials and components demonstrate resourcefulness when tackling practical problems 	<ul style="list-style-type: none"> Control and monitor models using software designed for this purpose. Write code to control and monitor models or products. 	<ul style="list-style-type: none"> that seasons may affect the food available how food is processed into ingredients that can be eaten or used in cooking that recipes can be adapted to change the appearance, taste, texture and aroma that different food and drink contain different substances – nutrients, water and fibre – that are needed for health 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.

<u>Upper KS2 Odd Years</u>	<u>Electrical systems</u> More complex switches and circuits (including programming, monitoring and control)	<u>Structures</u> Frame structures	<u>Textiles</u> Combining different fabric shapes (including computer-aided design)
<u>Context</u>	<u>Electric cars</u>	<u>Shelters</u>	<u>Footwear/ clothing</u>
<u>Key Learning</u>	<p>Making</p> <ul style="list-style-type: none"> Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment. <p>Evaluating</p> <ul style="list-style-type: none"> Continually evaluate and modify the working features of the product to match the initial design specification. Test the system to demonstrate its effectiveness for the intended user and purpose. Investigate famous inventors who developed ground-breaking electrical systems and components. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand and use electrical systems in their products. Apply their understanding of computing to program, monitor and control their products. Know and use technical vocabulary relevant to the project. 	<p>Making</p> <ul style="list-style-type: none"> Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. Use finishing and decorative techniques suitable for the product they are designing and making. <p>Evaluating</p> <ul style="list-style-type: none"> Investigate and evaluate a range of existing frame structures. Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. Research key events and individuals relevant to frame structures. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> Understand how to strengthen, stiffen and reinforce 3-D frameworks. Know and use technical vocabulary relevant to the project. 	<p>Making</p> <ul style="list-style-type: none"> Produce detailed lists of equipment and fabrics relevant to their tasks. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. <p>Evaluating</p> <ul style="list-style-type: none"> Investigate and analyse textile products linked to their final product. Compare the final product to the original design specification. Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. <p>Technical knowledge and understanding</p> <ul style="list-style-type: none"> A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. Fabrics can be strengthened, stiffened and reinforced where appropriate.
<u>Vocabulary</u>	series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart	frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, design brief, design specification, prototype	seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper, design criteria, annotate, design decisions, functionality,
<u>Designers/ inventors</u>	<u>Elon Musk</u> <u>James Dyson</u>	<u>Norman Foster</u> <u>Zaha Hadid</u>	<u>William Morris</u> <u>Cath Kidson</u>
<u>Milestone 3 by end of year 6:</u>	<ul style="list-style-type: none"> how more complex electrical circuits and components can be used to create functional products Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips). accurately assemble, join and combine materials and components 	<ul style="list-style-type: none"> how to reinforce and strengthen a 3D framework Cut materials with precision and refine the finish with appropriate tools Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). accurately assemble, join and combine materials and components 	<ul style="list-style-type: none"> that a 3D textiles product can be made from a combination of fabric shapes Create objects (such as a cushion) that employ a seam allowance. Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion) to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper).

Design and technology

Purpose of study

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.

Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Schools are not required by law to teach the example content in [square brackets].

Subject content

Key stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Technical knowledge

- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

Key stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for

example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

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.

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.

Pupils should be taught to:

Key stage 1

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

Key stage 2

- 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.