

Design & Technology Progression of Skills and Knowledge

Key to understanding this document: Black = National Curriculum objectives Red = Knowledge/Skills to be taught Green = Resources to be used

Area of Learning	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technical Knowledge		<p>Explore and use mechanisms, e.g. levers, sliders and wheels and axels, in their products. GETAWAY CARS, BOOK COVER</p> <p>Use lever and linkages board</p>	<p>To build structures, exploring how they can be made stronger, stiffer and more stable. DWELLING (bridges)</p> <p>That a 3D textile product can be assembled from two identical pieces of fabric. BAGS</p>	<p>Understand and use mechanical systems in their products. That mechanical systems have an input, process and output and create movement ie levers and linkages. (Use lever and linkages board) CARDS</p> <p>That a simple fabric shape can be used to make a 3D textile product. PENNANT</p> <p>To apply their understanding of computing to program, monitor and control their products.</p>	<p>Understand and use mechanical systems in their products and have an input process and output. e.g. pneumatics. How pneumatic systems create movement. ANIMAL</p> <p>To understand and use simple electrical systems in their products e.g. series circuits incorporating switches, bulbs, buzzers and motors. LIGHT</p>	<p>That mechanical systems have an input, process and output. Understand how cams, gears and pulleys create movement and use them in their products. (Use cams/gears board) TOY/LUNAR BUGGY</p> <p>Apply their understanding of how to strengthen and stiffen more complex structures.</p> <p>To apply their understanding of computing to program, monitor and control their products. K'nex Challenge</p>	<p>Understand and use more complex electrical systems in their products e.g. series circuits incorporating switches, bulbs, buzzers and motors. MORSE CODE MACHINE</p> <p>That a combination of fabric shapes can be used to make a 3D textile product. DECORATION</p>
Evaluate Existing Products		<p>Talk about: What products are and what they are for. Who products are for and how they are used. How products work. What materials have been used? What they like and dislike about products.</p>	<p>Briefly explain in writing: What products are and what they are for. Who products are for and how they are used. How products work What materials products are made from.</p>	<p>Investigate and analyse a range of existing products: What is the product and how is it used? How well do products work, achieve their purpose and meet the user's needs and wants?</p>	<p>Investigate and analyse a range of existing products: What is the product and how is it used? How well do products work, achieve their purpose and meet the user's needs and wants? Why materials have been chosen - what</p>	<p>Investigate and analyse a range of existing products: What is the product and how is it used? How well do products work, achieve their purpose and meet the user's needs and wants? Why materials have been chosen - what</p>	<p>Investigate and analyse a range of existing products: What is the product and how is it used? How well do products work, achieve their purpose and meet the user's needs and wants? Why materials have been chosen - what properties do they have?</p>

			What they like and dislike about products		properties do they have?	properties do they have? How well have the products been designed and made?	How well have the products been designed and made? What methods of construction have been used?
				How have key events and individuals helped shape the world? Focus: Archimedes of Syracuse, Italy who discovered the laws of pulleys. What was the impact of pulleys?	How have key events and individuals helped shape the world? Focus: Robert William Thomson of Scotland; the inventor of the pneumatic tyre. What was the impact of the pneumatic tyre?	How have key events and individuals helped shape the world? Focus: Eduardo San Juan the designer of the Lunar Rover. What was the impact of the Lunar Rover design and what did it mean for the world?	How have key events and individuals helped shape the world? Focus: Samuel Morse the inventor of the telegraph. What was the impact of the telegraph?
Design Understanding contexts, users and purpose	Constructs with a purpose in mind using a variety of materials	Design purposeful, functional, appealing products for themselves and others based on design criteria:	Design purposeful, functional, appealing products for themselves and others based on design criteria:	Use research and develop design criteria that informs the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups:	Use research and develop design criteria that informs the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups:	Use research and develop design criteria that informs the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups:	Use research and develop design criteria that informs the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups:
		Choose between 2 different criteria and talk about the criteria given to them, what/who their product is for, and how it will work. (wolf, self and class)	Given a choice of 2 different products (e.g. differently shaped bags) use children's own simple design criteria including what/who the product is for and how it will work. (Paddington Bear, self)	Gather information about the intended user to inform the design criteria - self, historical figure, imaginary figure Develop and use own design criteria	Gather information, including web-based sources, about the intended user - self, group outdoors, wildlife campaigner Develop and use own design criteria	Gather information including web-based sources to inform own design criteria. Identify the needs and wants and preferences intended user - young child, astronaut	Gather information including web-based sources to inform own design criteria. Identify the needs and wants, preferences of individuals and groups - WW2 child, WW2 code talker, customers Work in a range of relevant contexts: Enterprise, industry, home
		Work confidently within relevant contexts: imaginary	Work confidently within relevant contexts: local community, school,	Work in a range of relevant contexts: School, home, culture	Work in a range of relevant contexts: Wider environment, leisure, culture	Work in a range of relevant contexts: Culture, industry, school	

		and story-based, garden and home	elderly people, industry, or the wider environment.				Enterprise Week: questionnaires, costings, sustainability
Generating, developing, modelling and communicating ideas.		<p>Pupils should be taught through a variety of creative and practical activities. Generate, develop, model, and communicate their ideas (based on their own experiences) through talking, drawing and mock-ups.</p> <p>Use ICT where appropriate to generate, develop, and communicate ideas Use 2Animate to design a background and character for the levers and sliders unit.</p>	<p>Pupils should be taught through a variety of creative and practical activities. Generate, develop, model and communicate their ideas (drawing on their own experiences and knowledge of existing products) through talking, drawing, mock-ups and templates.</p> <p>Use ICT where appropriate to generate, develop, and communicate ideas. Use Paint to design bags.</p>	<p>Pupils should: Generate, develop, model and communicate their ideas through: discussion, annotated sketches, pattern pieces and prototypes. e.g. for the monster maze.</p> <p>Describe how the product is fit for purpose. Indicate the design features of their product that will appeal to the intended user. Explain how particular parts of their product will function.</p> <p>Generate realistic ideas focusing on the needs of the user. Communicate ideas through: discussion</p>	<p>Pupils should: Generate, develop, model and communicate their ideas through: discussion, annotated sketches, pattern pieces, prototypes and computer-aided design. e.g. to design a monster.</p> <p>https://www.gamesolo.com/flash-game/create-a-monster.html</p> <p>Describe how the product is fit for purpose. Indicate the design features of their product that will appeal to the intended user. Explain how particular parts of their product will function.</p> <p>Generate realistic ideas focusing on needs of user. to communicate ideas through discussion and sketches.</p>	<p>Pupils should: Generate, develop, model and communicate their ideas through: discussion, annotated sketches, pattern pieces, prototypes, and computer-aided design e.g. Word shapes to design a lunar buggy.</p> <p>Describe how the product is fit for purpose. Indicate the design features of their product that will appeal to the intended user. Explain how particular parts of their product will function.</p> <p>Generate innovative ideas having identified the user and their needs. Begin to use cross-sectional diagrams and exploded diagrams.</p>	<p>Pupils should: Generate, develop, model and communicate their ideas through: discussion, annotated sketches, pattern pieces and prototypes.</p> <p>Describe how the product is fit for purpose. Indicate the design features of their product that will appeal to the intended user. Explain how particular parts of their product will function.</p> <p>Generate innovative ideas having identified the user and their needs. Independently use cross-sectional diagrams and exploded diagrams.</p>

<p>Make Planning/ Practical skills and Techniques</p>	<p>Uses simple tools and techniques competently and appropriately.</p> <p>Selects appropriate resources and adapts where necessary.</p>	<p>Pupils should: Select from and use a range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing.</p> <ul style="list-style-type: none"> •Follow procedures for safety and hygiene. •Measure, mark out, cut and shape materials and components: ruler, pencil, saw, sawing block, scissors •Assemble, join and combine materials and components: blutac, a gluestick, masking tape, sticky tape, masking tape <p>Select from and use a wide range of materials and components: cardboard, cotton wheels, wood, including construction materials and kits (LEGO) ingredients according to their characteristics.</p> <ul style="list-style-type: none"> •Use finishing techniques 	<p>Pupils should: Select from and use a range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing.</p> <ul style="list-style-type: none"> •Follow procedures for safety and hygiene. •Measure, mark out, cut and shape materials and components: ruler, scissors, pencil, chalk, needle, pins •Assemble, join and combine materials and components: thread, split pins, PVA glue, paperclips, sticky tape <p>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients according to their characteristics.</p> <ul style="list-style-type: none"> •Use finishing techniques 	<p>Pupils should: Begin to order the main stages of making.</p> <ul style="list-style-type: none"> •Follow procedures for safety and hygiene. •Measure, mark out, cut and shape materials and components with some accuracy: ruler, scissors, pencil, chalk, needle, pins •Assemble, join and combine materials and components with some accuracy. •Use a wider range of materials and components including, food ingredients, mechanical components. •Experiment with simple finishing techniques 	<p>Pupils should: Independently order the main stages of making.</p> <ul style="list-style-type: none"> •Follow procedures for safety and hygiene. •Measure, mark out, cut and shape materials and components with more accuracy. •Assemble, join and combine materials and components with some accuracy. •Use a wider range of materials and components including, food ingredients, pneumatic and electrical components. •Use simple finishing techniques accurately. 	<p>Pupils should: List tools, equipment and materials needed.</p> <p>Begin to formulate simple step by step plans as a guide to making.</p> <ul style="list-style-type: none"> •Follow procedures for safety and hygiene. • Measure, mark out, cut and shape materials and components accurately. • Assemble, join and combine materials and components accurately. •Use a wider range of materials and components including construction materials and kits, and mechanical components. •Use a range of finishing techniques accurately. 	<p>Pupils should: List tools, equipment and materials needed.</p> <p>Independently formulate detailed step by step plans as a guide to making.</p> <ul style="list-style-type: none"> •Follow procedures for safety and hygiene. • Measure, mark out, cut and shape materials and components accurately using a range of tools: ruler, scissors, pencil, chalk, needle, pins • Assemble, join and combine materials and components accurately with a wider range of techniques. •Use a wider range of materials and components including textiles, food ingredients, and electrical components. •Use a wider range of finishing techniques accurately. •Demonstrate resourcefulness when tackling practical problems.
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Evaluate Own products and ideas		<p>Pupils should be taught to:</p> <p>Make simple judgements about their ideas and products against design criteria.</p> <p>Suggest how their products could be improved.</p>	<p>Pupils should be taught to:</p> <p>Explain their design ideas and what they are making.</p> <p>Make simple judgements about their ideas and products against design criteria.</p> <p>Suggest how their products could be improved.</p>	<p>Refer to their design criteria as they design and make.</p> <p>Evaluate their ideas and products against their own design criteria and identify strengths and areas for development in their ideas and products.</p>	<p>Refer to their design criteria as they design and make.</p> <p>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p>	<p>Critically evaluate the quality of design, manufacture and fitness for purpose as they design and make against original design criteria.</p> <p>Evaluate and feedback on the work of others against their design criteria.</p>	<p>Critically evaluate the quality of design, manufacture and fitness for purpose as they design and make against original design criteria.</p> <p>Evaluate and feedback on the work of others against their design criteria.</p>
Nutrition and Healthy Eating Where food comes from	<p>Eats a healthy range of foodstuffs and understands need for variety in food. Shows some understanding that good practices with regard to exercise, eating, sleeping and hygiene can contribute to</p>	<p>To understand where food comes from.</p> <p>•That all food comes from plants or animals.</p>	<p>To understand where food comes from.</p> <p>•That food must be farmed, grown or caught.</p>	<p>•To understand seasonality.</p> <p>•To use food packaging to find out where the food they eat comes from.</p> <p>•Which types of foods are processed?</p>	<p>•To understand seasonality.</p> <p>•Using a world map identify where different types of food are grown, reared and caught.</p>	<p>•To understand seasonality.</p> <p>•To understand what Fairtrade is.</p> <p>•How food is processed into ingredients that can be eaten or used in cooking.</p>	<p>•To understand seasonality.</p> <p>•To understand the principles of organic farming.</p> <p>•To understand how organic food is processed into ingredients that can be eaten or used in cooking.</p>

Food preparation, cooking and nutrition	<p>good health.</p> <p>Understands that equipment and tools have to be used safely</p>	<p>Select from and use a wide range of ingredients according to their characteristics.</p> <p>•Pupils should be taught that everyone should eat five portions of fruit and veg a day.</p> <p>• Pupils should be taught to prepare a sandwich which includes something from each of the 5 food groups.</p> <p>•Pupils should be taught how to prepare food safely and hygienically without a heat source.</p> <p>• Pupils should be taught how to use the technique of cutting.</p>	<p>Select from and use a wide range of ingredients according to their characteristics.</p> <p>• Pupils should be taught how to name and sort food into the five groups on the eat well plate.</p> <p>• Pupils should be taught how to prepare food safely and hygienically without a heat source.</p> <p>• Pupils should be taught how to use the techniques peeling and grating to make wraps or a layered springtime salad in a jar.</p>	<p>•That a healthy diet is made up from the variety and balance of different foods and drink as depicted in the eat well plate</p> <p>•That to be active and healthy food and drink are needed to provide energy for the body.</p> <p>•How to prepare and cook a savoury dish safely and hygienically using a heat source and boiling to make soup.</p> <p>•How to use the techniques of peeling and chopping.</p>	<p>That a recipe can be adapted by adding or substituting one or more ingredients.</p> <p>•How to prepare and cook a savoury dish safely and hygienically using a heat source and baking to make pizza.</p> <p>How to use the techniques slicing and grating</p>		<p>That food and drink contain different substances – nutrients, fibre and water that are needed for health.</p> <p>•How to prepare and cook a savoury dish safely and hygienically using a heat source and melting and baking to make bread.</p> <p>To instil a love of cooking whilst learning the crucial life skill that enables pupils to feed themselves affordably and well.</p> <p>How to use the techniques mixing, spreading and kneading to make a variety of WW2 recipes.</p>
Key Vocabulary		<p>*slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, straight,</p>	<p>*fruit and vegetable names, names of equipment and utensils flesh, skin, seed, pip, core, peeling, grating,</p>	<p>*mechanism, lever, linkage, pivot, slot, bridge, input, process, output linear, rotary, oscillating, reciprocating</p>	<p>*circuit, switch, diagram, annotated drawings, mechanical system, electrical system, input, process, output</p>	<p>*pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram,</p>	<p>*reed switch, toggle switch, push-to-make switch, push-to-break switch, light light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable,</p>

		<p>curve, forwards, backwards.</p> <p>*vehicle, wheel, axle, axle holder, chassis, body, cutting, joining, shaping, finishing, fixed, free, moving mechanism, names of tools, equipment and materials used</p> <p>*fruit and vegetable names, names of equipment and utensils, cutting, healthy diet, ingredients.</p>	<p>healthy diet, ingredients</p> <p>*cut, fold, join, fix structure, wall, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, circle, triangle, square, rectangle, cuboid, cube, cylinder</p> <p>*joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish</p>	<p>*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, frozen, tinned, processed, seasonal, healthy/varied diet</p>	<p>*series circuit, fault, connection, toggle switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, input device, output device</p> <p>*fabric, names of fabrics, fastening, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance.</p> <p>*name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, fresh, savoury, hygienic, edible,</p>	<p>annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output</p> <p>*shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, corrugating, ribbing, frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent</p>	<p>wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series circuit, parallel circuit</p> <p>*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,</p> <p>*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,</p>
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					reared, caught, frozen, seasonal, harvested healthy/varied diet.		shape, sprinkle, crumble
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