

Design Technology Knowledge and Skills Progression (including vocabulary)

EYFS							
Early Learning Goals	Expressive Arts and Design - Creating with Materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations, explaining the process they have used.		Physical Development - Fine Motor Skills Hold a pencil effectively in preparation for fluent writing - using the tripod grip in almost all cases. Use a range of small tools, including scissors, paintbrushes and cutlery. Begin to show accuracy and care when drawing.		Personal, Social and Emotional Development - Self-Regulation Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.		Communication and Language - Speaking Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary
Reception	Term/ Topic	Junk Modelling throughout the school year Autumn Bookmarks (Textiles) Spring Soups (Cookery) Summer Boats (Structures)					
	Skills	Discussion Opportunities to notice and discuss materials around them Opportunities to use the language of designing and making.	Structure and Joins Observing closely and replicating a structure	Using a Range of Tools Learning about planning and adapting initial ideas to make them better	Cooking Beginning to understand some of the tools, techniques and processes involved in food preparation	Exploration Learning about how everyday objects work by dismantling things and looking closely at their component parts	Construction Learning to construct with a purpose in mind
	Sticky Knowledge	To know how to make something appealing to another person. To know how to describe the taste and smell of a variety of vegetables. To know that some fruits and vegetables need to be washed, cut, cored, peeled or grated before they can be eaten. To understand basic food hygiene, e.g. washing hands, tying long hair back and keeping surfaces clean. To be able to describe the purpose of an object					
	Key Vocabulary	taste, smell, healthy, cut, chop, thick, liquid, mix, up and down, floating, sinking, strong, weak, easy, difficult, boat, shape, waterproof, material, purpose					

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Key Stage One						
National Curriculum	<u>Design</u>		<u>Make</u>	<u>Evaluate</u>	<u>Technical knowledge</u>	<u>Cooking and Nutrition</u>
	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		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	Explore and evaluate a range of existing products evaluate their ideas and products against design criteria	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.	Use the basic principles of a healthy and varied diet to prepare dishes Understand where food comes from.
Year 1	Term/ Topic	Spring 2 - Moving Minibeasts Summer 2 - Stable Structures				Autumn 2 - Eat More Fruits and Vegetables
	Skills	Developing, planning and communicating ideas. Draw on their own experience to help generate ideas Suggest ideas and explain what they are going to do Identify a target group for what they intend to design and make Model their ideas in card and paper Develop their design ideas applying findings	Working with tools, equipment, materials and components to make quality products Make their design using appropriate techniques With help measure, mark out, cut and shape a range of materials Use tools eg. scissors and a hole punch safely Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape	Evaluating processes and products Evaluate their product by discussing how well it works in relation to the purpose Evaluate their products as they are developed, identifying strengths and possible changes they might make Evaluate their product by asking questions about what they have made and how they have gone about it		Working with tools, equipment, materials and components to make quality products - <u>food</u> Select and use appropriate fruit and vegetables, processes and tools Use basic food handling, hygienic practices and personal hygiene Use simple finishing techniques to improve the appearance of their product

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		from their earlier research			
	Sticky Knowledge	To know the names of a variety of fruits and vegetables. To know how to use adjectives to describe the taste, smell and texture of a variety of fruits and vegetables. I know that some fruits and vegetables need to be washed, cut, cored, peeled or grated before they can be eaten. I understand basic food hygiene, e.g. washing hands, tying long hair back and keeping surfaces clean. To know how to use a knife to cut some fruits and vegetables in different ways. To know how to grate an apple and a carrot. To know how to peel a banana, apple and cucumber. To know how to identify the features of toy garages. I know what the word 'stable' means. To know how to make changes to the design of a stable structure to make it fit for purpose. To explore a range of materials and evaluate the usefulness of their properties for a particular project. To explore how to make stable structures that hold a given object. To know how to follow a design to make a stable structure. To know some ways to make a structure more stable. To know how to make a sliding mechanism out of card. To know what a pivot and lever are. To know how to use a pivot and lever mechanism using card and a split pin. To know how to make a wheel mechanism using card and a split pin. To know which mechanism matches to the type of movement. To know what worked well and things that could be improved.			
	Key Vocabulary	Wash Cut Peel Grate Hygienic Stable Structure Design Strong Ramp Slider Pivot			

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		Lever Split pin Mechanism Wheel Motion			
Year 2	Term/ Topic	Autumn 1 - Vehicles Spring 1- Puppets			Summer 2 - Perfect Pizzas
	Skills	Developing, planning and communicating ideas. Generate ideas by drawing on their own and other people's experiences Develop their design ideas through discussion, observation, drawing and modelling Identify a purpose for what they intend to design and make Identify simple design criteria Make simple drawings and label parts	Working with tools, equipment, materials and components to make quality products Begin to select tools and materials; use vocab' to name and describe them Measure, cut and score with some accuracy Use hand tools safely and appropriately Assemble, join and combine materials in order to make a product Cut, shape and join fabric to make a simple garment. Use basic sewing techniques Choose and use appropriate finishing techniques	Evaluating processes and products Evaluate against their design criteria Evaluate their products as they are developed, identifying strengths and possible changes they might make Talk about their ideas, saying what they like and dislike about them	Working with tools, equipment, materials and components to make quality products - <u>food</u> Follow safe procedures for food safety and hygiene

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	Sticky Knowledge To name a variety of pizza toppings. To know how to use the model of the balanced plate to evaluate how healthy different pizzas are. To know different types of bread and evaluate which would work best for a pizza base. To identify which food group a variety of pizza toppings belong to. To sort pizza toppings into groups based on different criteria, e.g. animal vs plant products. To know why each of the food groups is important for a balanced diet. To know how to evaluate my finished pizza, saying what I think and feel about it. To know how to investigate a range of vehicles, identifying and labelling their features. To know what an axle is. To know what a chassis is. To know the different ways of using axles, chassis and wheels to create a moving base. To know about a variety of puppets, identifying and labelling their features. To know how to cut out felt using a simple template. To know how to stick pieces of felt together to make a finger puppet. To know how to add pieces of felt and other materials to a finger puppet to create features, such as eyes, hats and mouths. To what a running stitch is and how to use it to join two pieces of fabric together. To know about an overstitch and to use it to join two pieces of fabric together. To know how to sew a button onto a piece of fabric.
	Key Vocabulary Balanced Evaluate Vehicle Axle Chassis Moving base Puppet Felt Glue Stick Cut Running stitch Overstitch Button Fabric

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Key Stage Two (Lower)					
National Curriculum	<u>Design</u>	<u>Make</u>	<u>Evaluate</u>	<u>Technical knowledge</u>	<u>Cooking and Nutrition</u>
	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	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,	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	apply their understanding of how to strengthen, stiffen and reinforce more complex structures understand and use mechanical systems in their products [for example,	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

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	diagrams, prototypes, pattern pieces and computer-aided design	textiles and ingredients, according to their functional properties and aesthetic qualities	technology have helped shape the world	gears, pulleys, cams, levers and linkages] understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products.	understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
Year 3	Term/Topic	Autumn 1 - Story Books Spring 1 - British Inventors Summer 2 - Making Mini Greenhouses			
	Skills	Developing, planning and communicating ideas. Generate ideas for an item, considering its purpose and the user/s identify a purpose and establish criteria for a successful product. Plan the order of their work before starting Explore, develop and communicate design proposals by modelling ideas Make	Working with tools, equipment, materials and components to make quality products Select tools and techniques for making their product Measure, mark out, cut, score and assemble components with more accuracy Work safely and accurately with a range of simple tools Think about their ideas as they make progress and be willing change things if this helps them improve their work	Evaluating processes and products Evaluate their product against original design criteria e.g. how well it meets its intended purpose Disassemble and evaluate familiar products	

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		drawings with labels when designing	Measure, tape or pin, cut and join fabric with some accuracy Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT		
	Sticky Knowledge	To know how concrete is used to make structures more stable. To know how to create a structure strong enough to hold a dictionary using just newspaper and tape. To know what a greenhouse is and how they work. To know how greenhouses are used today. To know how the shape of a structure affects its stability. To know that the weight of the structure needs to be evenly spread on the base to make it secure. To know that the wider a structure's base is, the more stable it will be. To know how to use 3D nets to explore potential structures, assessing their stability. To investigate ways of making a structure more stable, e.g. by inserting dowelling or adding triangles at the joins. To know which materials to test which would be most appropriate for making the structure of a mini greenhouse. To know how to select appropriate tools and materials to make a mini greenhouse. To explore moving parts in storybooks, suggesting how they work and what purpose they serve. To know what the words 'linkage', 'pivot', 'rotate' and 'lever' mean. To know how to use a paper concertina to make an object pop out of a book. To know how to arrange and stick paper between pages to create a pop-out. To know how to use levers to create moving parts. To know how to create moving wheel mechanisms to create different effects. To know about different fonts and graphic design features. To know about the invention of the mackintosh. To know different ways of making fabric waterproof. To know about the invention of the world wide web. To know how the invention of the internet has changed the world.			
	Key Vocabulary	Structure Concrete Net Dowelling			

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		Stability Linkage Pivot Rotate Lever Mechanism Concertina Font Graphic design Mackintosh Waterproof Internet			
Year 4	Term/ Topic	Autumn 2 - Seasonal Stockings Spring 2 - Light Up Signs			Spring 1 - Seasonal Food
	Skills	Developing, planning and communicating ideas. Generate ideas, considering the purposes for which they are designing Make labelled drawings from different views showing specific features Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative	Working with tools, equipment, materials and components to make quality products (inc' food) Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques Join and combine materials and components accurately in temporary and permanent ways Sew using a range of different stitches, weave and knit Measure, tape or pin, cut and join fabric with some accuracy	Evaluating processes and products Evaluate their work both during and at the end of the assignment Evaluate their products carrying out appropriate tests	Working with tools, equipment, materials and components to make quality products - food Demonstrate hygienic food preparation and storage Select appropriate tools and techniques for making their product

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		methods of making, if the first attempts fail Evaluate products and identify criteria that can be used for their own designs	Use simple graphical communication techniques		
	Sticky Knowledge	To know what the term 'seasonal food' means. To know that different parts of the world have different seasonal food. To know the benefits and problems of unseasonal food being available in shops all year round. To know that some foods, like wheat, are available all year round in the UK. To know cooking skills including slicing, dicing, beating, whisking, folding, sieving, rolling and grating. To know how to make fairy cakes. To know how about the cycle of wheat production in the UK. To know about fruits that are grown in the UK and those that are grown abroad. To know how food producers can speed up or slow down the ripening process to make fruits and vegetables available all year round. To know how to make fruit tarts using seasonal fruit. To know how to make stuffed peppers. To know some of the nutrients we get from fruits, vegetables, meat, fish and dairy products. To know when certain meats are in season in the UK and which are available all year round. To know how to follow a recipe to make meatballs. To know some vegetarian options that provide the same nutrients as meat. To know how fish are caught or reared, processed and used in healthy meals. To know what an illuminated sign is. To know how to create a simple circuit with incandescent bulbs and a switch. To know the difference between an LED and an incandescent light bulb. To know how to create a simple circuit with an LED bulb and a resistor. To know how to make a circuit with a string of LED lights. To know how to select materials, tools and components to create a free-standing structure. To know how to make a stable, free-standing structure to house an electrical circuit. To know how to strip, twist and join wire to make permanent connections. To know how to insert an electrical circuit into a free-standing structure to create an illuminated light box. To know the difference between the function and visual appeal of a product. To know how to use pins to temporarily fasten two pieces of fabric together. To know how to use running stitch, back stitch, over stitch and zigzag stitch to join two pieces of fabric together. To know how to hide the finishing knot. To know a variety of decorative techniques that have been used to decorate Christmas stockings.			

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		To know how to sew a button, bead, sequin or pipe cleaner onto a piece of fabric. To know how to embroider shapes and patterns into a piece of fabric. To know how to use appliqué to add decoration to a piece of fabric. To know how to use a template to cut out front and back pattern pieces.
	Kew Vocabulary	Seasonal food Slice Dice Beat Whisk Fold Sieve Roll Grate Nutrients Caught reared processed Illuminated Circuit LED Resistor Bulb Structure Fasten Running stitch, back stitch, over stitch, zig zag stitch Knot Button bead sequin pipe cleaner Embroider Applique Template

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Key Stage Two (Upper)					
National Curriculum	Design	Make	Evaluate	Technical knowledge	Cooking and nutrition
	use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities	investigate and analyse a range of existing products evaluate their ideas and products against their own design criteria and consider the views of others to improve their work understand how key events and individuals in design and technology have helped shape the world	apply their understanding of how to strengthen, stiffen and reinforce more complex structures understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products.	understand and apply the principles of a healthy and varied diet prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
Year 5	Term/ Topic	Autumn 2 - Building Bridges Spring 1 - Chinese Inventions Summer 2 - Fashion and Textiles			
	Skills	Developing, planning and communicating ideas. Generate ideas through	Working with tools, equipment, materials and components to make quality products Select appropriate materials, tools and	Evaluating processes and products Evaluate a product against the original design specification Evaluate it personally and seek evaluation from others	

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		brainstorming and identify a purpose for their product Draw up a specification for their design Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail Use results of investigations, information sources, including ICT when developing design ideas	techniques Measure and mark out accurately Use skills in using different tools and equipment safely and accurately Weigh and measure accurately (time, dry ingredients, liquids) Cut and join with accuracy to ensure a good-quality finish to the product		
	Sticky Knowledge	To know what beams and pillars are and how they are used in bridge construction. To know what a cross-section is. To know what a truss is and how trusses make bridges stronger. To know the three types of trusses commonly used in bridge design. To know how to build a truss bridge spanning a width of 40cm using paper straws. To know how to use a fair test to evaluate the strength of my truss bridge. To know how arches work to make bridges stronger. To know how to make an arch frame. To know how suspension bridges use tension forces to work. To explore how different transmissions create different movements. To know how to use a crank to change the motion on a transmission from circular to linear motion.			

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		To know the process of turning raw cotton into cloth. To know that products that are woven together are called textiles. To know that different textiles have different properties, and can match these to their purpose. To know what a straight stitch, zigzag stitch, whip/blanket stitch, blind stitch, buttonhole stitch and overlock stitch look like on ready-made garments. To know what the job of a fashion designer entails. To know how to sew a basting stitch. To know how to sew a whip stitch. To know how to sew a hem. To know how to sew back stitch. To know how to sew an appliqué decoration. To know how to use back stitch to embroider. To know what a pattern piece is and why they are important when designing a garment. To know how to use pattern pieces to measure, mark, cut and sew fabric. To know how to join two pieces of fabric by hand sewing, using an appropriate stitch. To know how to explain how the invention of paper helped shape the world. To know about the traditional method for making paper. To know how to make recycled paper. To know how gunpowder was invented. To know how the invention of gunpowder helped shape the world. To know how the invention of the compass changed the world. To know how to make a hanging/floating compass. To know what water-powered machines are and how they helped change the world. To know why kites were first invented and how they were made. To know how to test the effectiveness of a kite.
	Key Vocabulary	Beams Pillars Cross-section Truss Bridge Suspension Arch Transmission Circular motion Linear motion Cotton Textiles Straight stitch, zig zag stitch, whip/blanket stitch, blind stitch, button hole stitch, overlock stitch, basting stitch

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		Hem Applique Embroider Garment Pattern piece Gun powder Compass Kite Water power			
Year 6	Term/ Topic	Autumn 1 - Programming Pioneers Spring 1 - Bird House Builders			Summer 2 – A Perfectly Balanced Burger
	Skills	Developing, planning and communicating ideas. Communicate their ideas through detailed labelled drawings Develop a design specification Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways Plan the order of their work, choosing appropriate	Working with tools, equipment, materials and components to make quality products Select appropriate tools, materials, components and techniques Assemble components make working models Use tools safely and accurately Construct products using permanent joining techniques Make modifications as they go along Pin, sew and stitch materials together create a product Achieve a quality product	Evaluating processes and products Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests Record their evaluations using drawings with labels Evaluate against their original criteria and suggest ways that their product could be improved	Working with tools, equipment, materials and components to make quality products -food Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens

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		materials, tools and techniques			
	Sticky Knowledge	To know that most foods we buy have nutrition labels to help us make informed choices about what we eat. To know that calories come from fats, proteins and carbohydrates. To know how healthy a burger is based on its nutrition label. To know different ways in which burger patties are cooked. To know how to follow a recipe to make a beef, turkey or vegetable burger patty. To know how to add ingredients to a basic burger patty to reflect global cuisine. To know how to follow a recipe to make different burger sauces, including salsa, tzatziki and barbecue sauce. To know how to design a burger menu to incorporate different patties, sides and sauces. To know some alternatives for bread. To know how to add mixtures of herbs and spices to a basic bread dough to make flavoured burger buns. To know how the appearance and function of a variety of different bird houses. To know what materials have been used to construct a variety of bird houses and suggest how the parts have been joined together. To know what a flat pack diagram is and can use it to identify each part of a structure. To know how to create a flat pack diagram of a constructed bird house. To know how to draw an exploded diagram. To know the tools associated with basic woodworking. To know how to measure, clamp, saw, sand and join wood. To know how to use a hand drill to drill a hole in a piece of wood. To know the safety rules I need to follow when doing woodworking. To know the appropriate tools and materials to use when making a bird house. To know how to create a sturdy bird house frame using wood. To know how computers and computer programs are used in a variety of products. To know how modern memory chips work to store information. To know how to write an algorithm to suggest how various appliances might work. To know what a computer engineer is and what they do. To know how some examples of how computer hardware and software specialists work together to create new products. To know how to develop and build a prototype pedestrian crossing using computer programming. To know how to develop, model and communicate ideas for an embedded system which monitors and controls a door, room or both. To know how to describe the typical design process for computer-controlled electronic products. To know how to debug errors in an algorithm. To know how to suggest ways to change an algorithm to improve a system. To know how to select and use electronic components to construct a prototype.			

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		To know that Charles Babbage created the first mechanical computer. To know that Ada Lovelace is referred to as the world's first computer programmer. To know that Steve Jobs and Steve Wozniak co-founded Apple, Inc. to make the first Apple computers.
	Key Vocabulary	Nutrition Calories Alternative Mixture Function Flat pack Exploded diagram Clamp Saw Sand Hand drill Memory chip Algorithm Engineer Embedded Debug Component Prototype Mechanical Programmer