



Grange Primary Academy

The best in everyone™

Part of United Learning

DT (Design and Technology)

End of Year

Expectations

Overview: Whole School

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn	<p>Fruit and Vegetable Smoothie</p> <p><i>Children learn how to identify fruits and vegetables and then design and make a smoothie</i></p>	<p>Mechanisms: Moving Monsters</p> <p><i>Pupils analyse existing levers and linkage systems to identify components that they can use to plan, design and develop a mechanical monster</i></p>	<p>Food: Eating Seasonally</p> <p><i>Pupils learn about seasonality and how the climate a food is grown in can alter the way it tastes and make a crumble and tart using seasonal ingredients</i></p>	<p>Mechanisms: Pop Up Card</p> <p><i>Pupils use a range of mechanisms and construction techniques to create a pop up card for a holy celebration.</i></p>	<p>Structures: Bridges</p> <p><i>Pupils explore and experiment with a range of different bridge structures, forces and components involved in bridge building, before designing and making their own to test to destruction</i></p>	<p>Electrical Systems: Steady Hand Games</p> <p><i>Pupils create electromagnetic toys and more complex electronic circuits to create a steady hand game</i></p>
Spring	<p>Textiles: Puppets</p> <p><i>Children learn the different ways they can join fabrics together through the creation of a puppet</i></p>	<p>Structures: Baby Bear's Chair</p> <p><i>Pupils experiment with different shapes and manipulate materials to explore and evaluate a range of structural properties. They apply this knowledge to their own design, make and test task</i></p>	<p>Mechanisms: Pneumatic Systems</p> <p><i>Pupils examine pneumatic systems using syringes and balloons then apply their understanding of mechanical systems to create their own pneumatic toys</i></p>	<p>Electrical Systems: Torches</p> <p><i>Pupils are introduced to electricity and electrical safety before making a simple electric circuit to create a functioning torch</i></p>	<p>Textiles: Stuffed Toys</p> <p><i>Pupils learn blanket stitch and then design and make 3D stuffed toys</i></p>	<p>Food: Come Dine With Me</p> <p><i>Working in groups, children research and prepare a three course meal that will be taste tested and scored as well as researching the journey of their main ingredient ,from 'farm to fork'</i></p>
Summer	<p>Mechanisms: Wheels and Axles</p> <p><i>Pupils experiment with mechanisms and troubleshoot why some wheels don't rotate, before designing and building a moving vehicle</i></p>	<p>Textiles: Pouches</p> <p><i>Children design and make their own wallet or purse, learning to use running stitch to join two pieces of fabric together</i></p>	<p>Structures: Castles</p> <p><i>Pupils learn more advanced construction techniques and plan for complex arrangements of structures with continual emphasis on evaluating throughout</i></p>	<p>Textiles: Fastenings</p> <p><i>Pupils research different types of fabric fastenings before deciding which they want to use in their design for a book sleeve</i></p>	<p>Food: What could be healthier?</p> <p><i>Pupils adapt a bolognese recipe by adding or altering ingredients and learn about the ethical and hygienic issues of food</i></p>	<p>Mechanisms: Automata Toys</p> <p><i>Pupils develop their woodworking skills and explore cams to design and make mechanical window displays</i></p>
STEM WEEK/DT WEEK	<p>Mechanisms: Moving Story Books</p> <p><i>Children explore levers and sliders to make a moving story book</i></p>	<p>Mechanisms: Ferris Wheel</p> <p><i>Pupils explore existing mechanisms in order to design, test and make their own big wheel style ride</i></p>	<p>Textiles: Cushions</p> <p><i>Pupils learn to sew cross stitch and appliqué and then apply this to the design and creation of a cushion</i></p>	<p>Structures: Pavilions</p> <p><i>In an introduction to pavilion architecture, pupils experiment with frame structures before designing their own landscape and pavilion, using a wider range of materials and construction techniques</i></p>	<p>Electrical Systems: Electric Greetings Cards</p> <p><i>Pupils explore electric circuits and apply this knowledge to design and make their own electric greetings cards</i></p>	<p>Textiles: Waistcoats</p> <p><i>After drawing a design in accordance with their own criteria, pupils learn how to measure, cut and assemble fabric to create a waistcoat</i></p>

DT National Curriculum Expectations

Statements which are either derived directly from the programmes of study for D&T or provide an age-related interpretation of the requirements are shown in regular font. **Statements which are additional to the programmes of study for D&T are shown in red font.** This will be broken down further to match units where needed (See unit overviews).

	EYFS		Key Stage 1		Key Stage 2				Key Stage 3
	Nursery	Reception	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	
	Designing								
	<p style="text-align: center;">ELG</p> <ul style="list-style-type: none"> Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. Children represent their own ideas, thoughts and feelings through design and technology. 		<ul style="list-style-type: none"> 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 		<ul style="list-style-type: none"> 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 				<ul style="list-style-type: none"> use research and exploration, such as the study of different cultures, to identify and understand user needs identify and solve their own design problems and understand how to reformulate problems given to them develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools
Understanding contexts, users and purposes			<ul style="list-style-type: none"> work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment state what products they are designing and making say whether their products are for themselves or other users describe what their products are for say how their products will work 		<ul style="list-style-type: none"> work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment describe the purpose of their products indicate the design features of their products that will appeal to intended users explain how particular parts of their products work 				
					<ul style="list-style-type: none"> gather information about the needs and wants of particular individuals and groups 	<ul style="list-style-type: none"> carry out research, using surveys, interviews, questionnaires and web-based resources 			

		<ul style="list-style-type: none"> • say how they will make their products suitable for their intended users • use simple design criteria to help develop their ideas 	<ul style="list-style-type: none"> • develop their own design criteria and use these to inform their ideas 	<ul style="list-style-type: none"> • identify the needs, wants, preferences and values of particular individuals and groups • develop a simple design specification to guide their thinking 	
Generating, developing, modelling and communicating ideas		<ul style="list-style-type: none"> • generate ideas by drawing on their own experiences • use knowledge of existing products to help come up with ideas • develop and communicate ideas by talking and drawing • model ideas by exploring materials, components and construction kits and by making templates and mockups • use information and communication technology, where appropriate, to develop and communicate their ideas 	<ul style="list-style-type: none"> • share and clarify ideas through discussion • model their ideas using prototypes and pattern pieces • use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas • use computer-aided design to develop and communicate their ideas 		
			<ul style="list-style-type: none"> • generate realistic ideas, focusing on the needs of the user • make design decisions that take account of the availability of resources 	<ul style="list-style-type: none"> • generate innovative ideas, drawing on research • make design decisions, taking account of constraints such as time, resources and cost 	
Making					
		<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture • select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties 	
Planning		<ul style="list-style-type: none"> • plan by suggesting what to do next • select from a range of tools and equipment, explaining their choices • select from a range of materials and components according to their characteristics 	<ul style="list-style-type: none"> • select tools and equipment suitable for the task • explain their choice of tools and equipment in relation to the skills and techniques they will be using • select materials and components suitable for the task • explain their choice of materials and components according to functional properties and aesthetic qualities 		
			<ul style="list-style-type: none"> • order the main stages of making 	<ul style="list-style-type: none"> • produce appropriate lists of tools, equipment and materials that they need 	

				<ul style="list-style-type: none"> • formulate step-by-step plans as a guide to making 	
Practical skills and techniques		<ul style="list-style-type: none"> • follow procedures for safety and hygiene • use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components • measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design 	<ul style="list-style-type: none"> • follow procedures for safety and hygiene • use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components 		
			<ul style="list-style-type: none"> • measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some accuracy • apply a range of finishing techniques, including those from art and design, with some accuracy 	<ul style="list-style-type: none"> • accurately measure, mark out, cut and shape materials and components • accurately assemble, join and combine materials and components • accurately apply a range of finishing techniques, including those from art and design • use techniques that involve a number of steps • demonstrate resourcefulness when tackling practical problems 	
Evaluating					
	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria 	<ul style="list-style-type: none"> • 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 		<ul style="list-style-type: none"> • investigate new and emerging technologies • test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups
Own ideas and products		<ul style="list-style-type: none"> • talk about their design ideas and what they are making • make simple judgements about their products and ideas against design criteria 	<ul style="list-style-type: none"> • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work 		
		<ul style="list-style-type: none"> • suggest how their products could be improved 	<ul style="list-style-type: none"> • refer to their design criteria as they design and make • use their design criteria to evaluate 	<ul style="list-style-type: none"> • critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make 	

			their completed products	<ul style="list-style-type: none"> • evaluate their ideas and products against their original design specification 	
Existing products		<ul style="list-style-type: none"> • what products are • who products are for • what products are for • how products work • how products are used • where products might be used • what materials products are made from • what they like and dislike about products 	<ul style="list-style-type: none"> • how well products have been designed • how well products have been made • why materials have been chosen • what methods of construction have been used • how well products work • how well products achieve their purposes • how well products meet user needs and wants 		
			<ul style="list-style-type: none"> • who designed and made the products • where products were designed and made • when products were designed and made • whether products can be recycled or reused 	<ul style="list-style-type: none"> • how much products cost to make • how innovative products are • how sustainable the materials in products are • what impact products have beyond their intended purpose 	

DT Subject Knowledge Progression

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	Key Stage 1		Key Stage 2				Key Stage 3
	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	
Research/Evaluating							
			<ul style="list-style-type: none"> understand how key events and individuals in design and technology have helped shape the world 				<ul style="list-style-type: none"> analyse the work of past and present professionals and others to develop and broaden their understanding understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists
Key events and individuals	Not a requirement in KS1		Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products				
Technical Knowledge							
	<ul style="list-style-type: none"> 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 		<ul style="list-style-type: none"> 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. 				<ul style="list-style-type: none"> understand and use the properties of materials and the performance of structural elements to achieve functioning solutions understand how more advanced mechanical systems used in their products enable changes in movement and force understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs] apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].
Making products work	<ul style="list-style-type: none"> about the simple working characteristics of materials and components about the movement of simple mechanisms such as levers, sliders, wheels and axles how freestanding structures can be made stronger, stiffer and more stable that a 3-D textiles product can be assembled from two identical fabric shapes that food ingredients should be combined according to their sensory characteristics 		<ul style="list-style-type: none"> how to use learning from science to help design and make products that work how to use learning from mathematics to help design and make products that work that materials have both functional properties and aesthetic qualities that materials can be combined and mixed to create more useful characteristics that mechanical and electrical systems have an input, process and output 				

	<ul style="list-style-type: none"> the correct technical vocabulary for the projects they are undertaking 	<ul style="list-style-type: none"> the correct technical vocabulary for the projects they are undertaking 	
		<ul style="list-style-type: none"> how mechanical systems such as levers and linkages or pneumatic systems create movement how simple electrical circuits and components can be used to create functional products how to program a computer to control their products how to make strong, stiff shell structures that a single fabric shape can be used to make a 3D textiles product that food ingredients can be fresh, pre-cooked and processed 	<ul style="list-style-type: none"> how mechanical systems such as cams or pulleys or gears create movement how more complex electrical circuits and components can be used to create functional products how to program a computer to monitor changes in the environment and control their products how to reinforce and strengthen a 3D framework that a 3D textiles product can be made from a combination of fabric shapes that a recipe can be adapted by adding or substituting one or more ingredients
Cooking and Nutrition			
	<ul style="list-style-type: none"> use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> understand and apply the principles of nutrition and health cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes] understand the source, seasonality and characteristics of a broad range of ingredients.
Where food comes from	<ul style="list-style-type: none"> that all food comes from plants or animals that food has to be farmed, grown elsewhere (e.g. home) or caught 	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	
			<ul style="list-style-type: none"> that seasons may affect the food available

			<ul style="list-style-type: none"> • how food is processed into ingredients that can be eaten or used in cooking 	
Food preparation, cooking and nutrition	<ul style="list-style-type: none"> • how to name and sort foods into the five groups in The eatwell plate • that everyone should eat at least five portions of fruit and vegetables every day • how to prepare simple dishes safely and hygienically, without using a heat source • how to use techniques such as cutting, peeling and grating 	<ul style="list-style-type: none"> • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking 		
		<ul style="list-style-type: none"> • that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate • that to be active and healthy, food and drink are needed to provide energy for the body 	<ul style="list-style-type: none"> • 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 	

DT Subject Skills Progression

	Research	Design	Make-Construction	Make-Textiles	Make- Food	Evaluate
Y1	<ul style="list-style-type: none"> Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. Children represent their own ideas, thoughts and feelings through design and technology. 	<ul style="list-style-type: none"> Talk about what they want to make, in relation to the design brief and their research. Draw a labelled picture of their product, which may include parts, components, materials. Choose the materials/ingredients/tools they will use, from a selection. Write a list of the materials/ ingredients/tools they will need. <p>Food and cookery</p> <ul style="list-style-type: none"> Understand that the basic principles of a healthy and varied diet feature within their design. Create a basic recipe, using drawings and labels. 	<ul style="list-style-type: none"> Mark materials before cutting and sometimes measure. Cut paper and other materials safely and with increasing accuracy. Begin to choose the most effective joining methods for the task/materials. Use simple components, such as split pins. Test their product as they work, to see if it meets the requirements of the intended user. Apply their knowledge of materials to make a structure stiffer/ more stable as they work. 	<p>Making/using simple paper pattern pieces.</p> <ul style="list-style-type: none"> Cutting fabric carefully. Learning sewing basics – threading a needle, knotting your thread, finishing off. Sewing using running stitch, attempting to produce neat, equal stitches Creating a design on fabric using applique. Creating a design on fabric using pens/paint. 	<ul style="list-style-type: none"> Observe basic food hygiene procedures with support – washing hands; washing fruit/veg; keeping meat separate; cleaning surfaces before and after preparing food. Use a knife and chopping board to neatly chop ingredients. Use a spoon to add condiments. Carefully roll up their wrap. Serve food in an appealing way. Clean/wash up after themselves. 	<ul style="list-style-type: none"> Describe what went well and which aspects of their product they are pleased with. Describe anything that didn't work as well and any changes they had to make. Discuss what the intended user might think about the product. Suggest how their product could be improved.
Y2						
Y3	<ul style="list-style-type: none"> Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. Children represent their own ideas, thoughts and feelings through design and technology. 	<ul style="list-style-type: none"> Use their research to develop some of their own design criteria. Draw a fully labelled sketch/diagram of their product, including some measurements. Indicate where electrical components will go and briefly explain how they will function. Choose the materials/ ingredients /tools they will use, based on their suitability for the task. List the materials/ ingredients/tools they will need. Order the main stages of making. Use computer aided design. <p>Food and cookery</p>	<p>Measure and mark materials before cutting.</p> <ul style="list-style-type: none"> Cut materials accurately, using appropriate tools. Score and fold paper/card accurately. Join a range of materials using a variety of methods, usually choosing the method most suited to the task. Test their product as they work, making informed adjustments to ensure their product meets the design criteria. Apply their prior knowledge and understanding to make structures stiffer/ more stable as they work. Create a basic electrical circuit and incorporate it into their product. 	<ul style="list-style-type: none"> Making/using simple paper pattern pieces. Cutting fabric carefully. Learning sewing basics – threading a needle, knotting your thread, finishing off. Sewing using running stitch, attempting to produce neat, equal stitches Creating a design on fabric using applique. Creating a design on fabric using pens/paint. Sewing basics – threading a needle, knotting your thread, finishing off. Sewing on simple components – buttons/sequins/ribbons. Using stuffing 	<ul style="list-style-type: none"> Observe basic food hygiene procedures – washing hands, washing fruit/veg; avoiding cross contamination when preparing raw meat; cleaning surfaces before and after preparing food. Use appropriate tools to peel, chop, slice, grate and mix ingredients. Knead and roll out dough. Cook the product in the oven, ensuring it is fully cooked. Serve food in an appealing way. Clean/wash up after themselves 	<ul style="list-style-type: none"> Identify and discuss the strengths of their product. Identify any areas for development/ improvements that could be made. Discuss whether the product meets the requirements of the brief/the needs of the user – is it fit for purpose? Take part in peer evaluation, giving and receiving feedback from fellow pupils.
Y4						

		<ul style="list-style-type: none"> • Use the principles of a healthy and varied diet to help inform their design decisions. • Understand seasonality and locality of food and use this knowledge when designing their product. • Create/adapt a recipe, including some weight/volume measurements. 	<ul style="list-style-type: none"> • Pay attention to the finishing of their product. 			
Y5	<ul style="list-style-type: none"> • Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. • Children represent their own ideas, thoughts and feelings through design and technology. 	<ul style="list-style-type: none"> • Use their research to develop their own design criteria. • Draw a fully labelled/annotated sketch/diagram of their product, including measurements and cross-sections. • Indicate where/how materials will be joined in order to create a stable structure. • Indicate where electrical components will go and explain how they will function. • Explain how computer programming will control the product. • Indicate where mechanisms will go and explain how they will function • Choose the materials/ingredients/tools they will use, based on their suitability for the task, including sourcing their own materials where appropriate. • List the materials/ingredients/tools they will need. • Write (brief) instructions for how they intend to make their product. 	<ul style="list-style-type: none"> • Measure and mark materials with increased accuracy, before cutting. • Cut materials accurately, using appropriate tools. • Join a range of materials using a variety of suitable methods. • Test their product as they work, making informed adjustments and striving to address any anticipated problems. • Apply their prior knowledge and understanding to make structures stiffer/ more stable as they work. • Create a working mechanism (pulleys and gears) and incorporate it into their product. • Create a basic electrical circuit and incorporate it into their product. • Programme a computer to control their product. • Create a polished and well-finished product. 	<ul style="list-style-type: none"> • Making/using a paper pattern (front and back pieces). • Including a seam allowance. • Cutting fabric accurately. • Sewing basics – threading a needle, knotting your thread, finishing off. • Sewing neatly using running stitch/back stitch. • Turning out so stitching is hidden. • Creating designs on fabric using applique/pens/ paint. • Incorporating a fastening component – button/zip/press stud. 	<ul style="list-style-type: none"> • Observe basic food hygiene procedures – washing hands, washing fruit/veg; avoiding cross contamination when preparing raw meat; cleaning surfaces before and after preparing food. • Use appropriate tools to peel, chop, slice, grate and mix ingredients. • Cook food in the oven and/or on a stove top, ensuring it is fully cooked. • Serve food in an appealing way. • Clean/wash up after themselves 	<ul style="list-style-type: none"> • Identify and discuss the strengths of their product. • Identify any areas for development/ improvements that could be made. • Discuss whether the product meets the requirements of the brief/the needs of the user – is it fit for purpose? • Take part in peer evaluation, giving and receiving feedback from fellow pupils
Y6		<p>Food and cookery</p> <ul style="list-style-type: none"> • Independently apply the principles of a healthy and varied diet to inform their design decisions. 				

	<ul style="list-style-type: none">• Apply their knowledge of seasonality and locality of food to inform their design decisions.• Create/adapt a recipe, including weight/volume measurements.				
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Overview: EYFS

	Opportunities for design and technology in ‘Development Matters in the Early Years Foundation Stage’ non-statutory guidance for age 30-60+ months	Notes on effective design and technology practice
Expressive Arts and Design	<p>Exploring and Using Media and Materials Examples of children’s learning:</p> <ul style="list-style-type: none"> • Uses various construction materials. • Beginning to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces. • Joins construction pieces together to build and balance. • Realises tools can be used for a purpose. • Manipulates materials to achieve a planned effect. • Constructs with a purpose in mind, using a variety of resources. • Uses simple tools and techniques competently and appropriately. • Selects appropriate resources and adapts work where necessary. • Selects tools and techniques needed to shape, assemble and join materials they are using. <p>What adults could do and provide:</p> <ul style="list-style-type: none"> • Introduce vocabulary to enable children to talk about their observations and experiences, e.g. ‘smooth’ ‘shiny’ ‘rough’ ‘prickly’ ‘flat’ ‘patterned’ ‘jagged’, ‘bumpy’ ‘soft’ and ‘hard’. • Support children in thinking about what they want to make, the processes that may be involved and the materials and resources they might need, such as a photograph to remind them what the climbing frame is like. • Talk with children about where they can see models and plans in the environment, such as at the local planning office, in the town square, or at the new apartments down the road. • Demonstrate and teach skills and techniques associated with the things children are doing, for example, show them how to stop the paint from dripping or how to balance bricks so that they will not fall down. • Provide resources for mixing colours, joining things together and combining materials, demonstrating where appropriate. <hr/> <p>Being Imaginative Examples of children’s learning:</p> <ul style="list-style-type: none"> • Engages in imaginative role-play based on own first-hand experiences. • Uses available resources to create props to support role-play. • Creates simple representations of objects. • Chooses particular colours to use for a purpose. <p>What adults could do and provide:</p> <ul style="list-style-type: none"> • Support children’s excursions into imaginary worlds by encouraging inventiveness, offering support and advice on occasions and ensuring that they have experiences that stimulate their interest. • Help children to gain confidence in their own way of representing ideas. 	<p>This is the area of learning where design and technology is specifically named as a requirement within the new EYFS framework. The area focuses on children’s creative development and also includes art, music, movement, dance and role-play. This provides opportunities for children’s learning in D&T to draw on the ‘arts’ when they are designing and making. It is equally important to be aware of the distinctive nature of D&T so that children receive a genuine design and technological experience. Through this area of learning children design and make products for a purpose and a user using a variety of materials and engage in imaginative role-play where they create and use indoor and outdoor environments based on the designed and made world.</p> <p>Tips on effective practice:</p> <ul style="list-style-type: none"> 3 Children’s learning In D&T should include planned, purposeful play and child-initiated and adult-led activities. 3 Encourage children to think about what their product is for e.g. fruit drink for a party. 3 Ask them to say who their product is for e.g. coat for Teddy. 3 Function – make sure that children have opportunities to create products that have to work in some way in order to be successful e.g. construction kit wall strong and stable enough for Humpty. 3 Aesthetics – ask children to think about the appearance, finish and texture of the product e.g. decorative effects used on a simple textiles bag to suit the user. 3 Children should have freedom to select media and materials from an appropriate range. 3 Using the senses, as appropriate, they should explore the simple working characteristics of materials including food, textiles and construction materials. 3 They need frequent opportunities to play with and explore a range of large and small construction kits that use different forms of joining. 3 Construction kits should enable children to build towers, walls, frameworks and shell structures. 3 Encourage children to think how they can stop their structures from falling over and how to make them stronger. 3 Some construction kits should include moving parts such as wheels, levers and hinges. 3 Designing should not necessarily entail drawing, but children may retrospectively draw what they have made. 3 Designing includes physically arranging and re-arranging materials and components and orally communicating what they are doing and have done. 3 Designing is typically intuitive i.e. children design as they make.

	<ul style="list-style-type: none"> • Carefully support children who are less confident. • Offer a story stimulus by suggesting an imaginary event or set of circumstances, e.g. “This bear has arrived in the post. He has a letter pinned to his jacket. It says ‘Please look after this bear.’ We should look after him in our room. How can we do that?” • Make materials accessible so that children are able to imagine and develop their projects and ideas while they are still fresh in their minds and important to them. • Provide children with opportunities to use their skills and explore concepts and ideas through their representations. • Provide opportunities indoors and outdoors and support the different interests of children, e.g. in role play of a builder’s yard, encourage narratives to do with building and mending. 	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Understanding the World</p>	<p>The World</p> <p>Examples of children’s learning:</p> <ul style="list-style-type: none"> • Comments and asks questions about aspects of their familiar world such as the place where they live. • Can talk about some of the things they have observed such as found objects. • Talks about why things happen and how things work. • Looks closely at similarities and differences. <p>What adults could do and provide:</p> <ul style="list-style-type: none"> • Arouse awareness of features of the environment in the setting and immediate local area, e.g. make visits to shops or a park. • Introduce vocabulary to enable children to talk about their observations and to ask questions. • Encourage children to express opinions on natural and built environments and give opportunities for them to hear different points of view on the quality of the environment. • Pose carefully framed open-ended questions, such as “How can we...?” or “What would happen if...?”. • Use the local area for exploring the built environment. • Give opportunities to design practical, attractive environments, for example, organising equipment outdoors. 	<p>Overview:</p> <p>This area of learning enables children to learn about products and environments that have been designed and made by people. Children think about how a range of everyday and less familiar products are used in places such as schools and homes. They select and use these products for particular purposes and investigate and evaluate them using a range of questioning techniques. They talk about features of their indoor and outdoor environment. To support their learning in design and technology, it is essential that children explore the built or design and made world. Children also develop basic knowledge and skills in relation to programmable toys.</p> <p>Tips on effective practice:</p> <ul style="list-style-type: none"> 3 Children need frequent opportunities to explore existing products 3 Ensure they explore products designed for different users and purposes 3 Make sure that existing product collections include those made from textiles, food and construction materials 3 Encourage children to ask questions about who the products are for and what they do 3 Ask them to think about the materials that have been used and how the products have been made 3 Encourage them to say what they like or dislike about the design of the products 3 Ask children to talk about how the products look, feel and smell and explain how they work 3 Children need frequent opportunities to explore aspects of the designed and made world through the indoor and outdoor environment 3 Go on a hunt around the classroom for products of a similar type e.g. those made from textiles or have a strong structure 3 Explore the built environment outdoors including play equipment and class visits
	<p>Technology</p> <p>Examples of children’s learning:</p> <ul style="list-style-type: none"> • Knows how to operate simple equipment e.g. turns on CD player and uses remote control. • Shows an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones. • Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images. <p>What adults could do and provide:</p> <ul style="list-style-type: none"> • Encourage children to speculate on the reasons why things happen or how things work. • Support and extend the skills children develop as they become familiar with simple equipment, such as twisting or turning a knob. • Provide a range of materials and objects to play with that work in different ways for different purposes, for example, egg whisk, torch, other household implements, pulleys, construction kits and tape recorder. • Provide a range of programmable toys, as well as equipment involving ICT, such as computers. 	

Physical Development	<p>Moving and Handling, Health and Self-care</p> <p>Examples of children’s learning:</p> <ul style="list-style-type: none"> • Uses one-handed tools and equipment, e.g. makes snips in paper with child scissors. • Uses simple tools to effect changes to materials. • Handles tools, objects, construction and malleable materials safely and with increasing control. • Eats a healthy range of foodstuffs and understands need for variety in food. • Shows understanding of the need for safety when tackling new challenges, and considers and manages some risks. • Shows understanding of how to transport and store equipment safely. • Practices some appropriate safety measures without direct supervision. <p>What adults could do and provide:</p> <ul style="list-style-type: none"> • Teach children the skills they need to use equipment safely, e.g. cutting with scissors or using tools. • Explain why safety is an important factor in handling tools, equipment and materials, and have sensible rules for everybody to follow. • Provide large portable equipment that children can move about safely and cooperatively to create their own structures, such as milk crates, tyres, large cardboard tubes. • Teach children skills of how to use tools and materials effectively and safely and give them opportunities to practise them. • Provide a range of construction toys of different sizes, made of wood, rubber or plastic, that fix together in a variety of ways, e.g. by twisting, pushing, slotting or magnetism. 	<p>Overview:</p> <p>The practical nature of D&T provides numerous opportunities for children’s physical development. In particular, good quality early learning in D&T will strengthen children’s achievement when they are handling tools, equipment and materials safely. Designing and making also provides many opportunities for children to develop fine motor control. Children can be introduced to the importance of a healthy diet when they are evaluating different types of food. Prior to food activities, it is essential find out from parents, guardians and carers whether the children they are responsible for are not permitted to taste or handle any food ingredients or products due to allergies, food intolerances, cultural or other reasons.</p> <p>Tips on effective practice:</p> <ul style="list-style-type: none"> 3 Children should be encouraged to select tools, materials and techniques appropriate to their task 3 Practical skills and techniques should be taught directly 3 Children need frequent opportunities to develop practical skills and techniques with a range of materials 3 Ensure that children follow procedures for safety and hygiene
Literacy	<p>Examples of children’s learning:</p> <ul style="list-style-type: none"> • Writes labels and captions e.g. labelling materials in a drawing of their completed product. • Attempts to write short sentences in meaningful contexts e.g. saying what they have made or who it is for. <p>What adults could do and provide:</p> <ul style="list-style-type: none"> • Help children to understand what a word is by using names and labels and by pointing out words in the environment e.g. naming parts of a construction kit such as wheel, axle, gear. • Add child-made books to the book area e.g. a book with simple moving parts. • Carry out activities using instructions, such as reading a recipe to make a simple construction kit model. • Model writing for a purpose, e.g. a shopping list of ingredients needed to make a sandwich. • Discuss and model ways of finding out information from non-fiction texts e.g. a book about buildings. • Provide a range of opportunities to write for different purposes about things that interest children e.g. favourite moving toys. • Ensure that role-play areas encourage writing of signs with a real purpose e.g. ‘building site’. • Provide word banks and resources for indoor and outdoor play linked to for example mechanisms, structures, and materials. 	<p>Design and technology activities offer stimulating opportunities for children’s literacy development. The technical and practical nature of designing and making helps to ensure that writing activities meet the needs and interests of all children, including some boys who are otherwise reluctant to write. As part of the EYFS curriculum that many children find accessible, enjoyable and motivational, design and technology provides contexts for children to write about what they have designed and made through captions, labels, simple descriptions and explanations. They develop their reading skills by exploring books with information about products that interest them and by recognising labels for design and technology resources in the classroom.</p>

Examples of children's learning:

- Shows awareness of similarities of shapes in the environment e.g. windows and doors
- Shows interest in shape by sustained construction activity or by talking about shapes or arrangements e.g. building walls.
- Beginning to talk about the shapes of everyday objects, e.g. 'round' and 'tall'.
- Can describe their relative position such as 'behind' or 'next to'.
- Orders two or three items by length or height e.g. comparing the height of towers they have built
- Uses familiar objects and common shapes to create and recreate patterns and build models.
- Uses shapes appropriately for tasks such as a circle for a wheel

What adults could do and provide:

- Help children to understand that one thing can be shared by number of pieces, e.g. a pizza.
- Demonstrate the language for shape, position and measures in discussions, e.g. 'sphere', 'shape', 'box', 'in', 'on', 'inside', 'under', 'long', 'longer', 'longest', 'short', shorter', 'shortest', 'heavy', 'light', 'full' and 'empty'.
- Encourage children to talk about the shapes they see and use, how they are arranged and used in constructions and how different shapes are used for different purposes.
- Measure for a purpose, such as finding out whether a teddy will fit in a bed.
- Have large and small blocks and boxes available for construction both indoors and outdoors.
- Encourage estimation, e.g. estimate how many sandwiches to make for the picnic.
- Ensure that children are involved in making displays e.g. making their own pictograms of lunch choices.
- Have areas where children can explore the properties of objects and where they can weigh and measure, such as a cookery station or a building area.
- Plan opportunities for children to describe and compare shapes and measures.

Design and technology activities offer frequent opportunities for children:

- to develop and apply their knowledge, understanding and skills in numbers, shape, space and measures through practical activities;
- to use their developing skills in measures when creating products as well as using estimation and comparison;
- to learn how to weigh the ingredients when following a recipe;
- to develop and apply their understanding of shape and space when they are describing the position of various components or the direction of movement in a mechanical product.

Examples of children’s learning:

- Initiates conversations, attends to and takes account of what others say e.g. agreeing what materials to use.
- Explains own knowledge and understanding, and asks appropriate questions of others e.g. sharing what they know about how a product works.
- Can select and use resources with help.
- Confident to speak to others about own needs, wants, interests and opinions e.g. what they like or dislike about an everyday product.
- Begins to accept the needs of others and can take turns and share resources, sometimes with support from others e.g. sharing a construction kit.

What adults could do and provide:

- Value and support the decisions that children make e.g. what product they decide to design and make.
- Teach children to use and care for materials, and then trust them to do so independently.
- Vary activities so that children are introduced to different materials e.g. fabrics, construction materials, food.
- Make materials easily accessible at child height, to ensure everybody can make choices.
- Provide time, space and materials for children to collaborate with one another in different ways, for example, building constructions.
- Provide a role-play area resourced with materials reflecting children’s family lives and communities e.g. familiar products.
- Provide activities that involve turn-taking and sharing in small groups.
- Encourage children to explore and talk about what they are learning, valuing their ideas and ways of doing things.
- Offer help with activities when asked but not before.
- Support children in linking openly and confidently with others, e.g. to seek help or check information.

Design and technology provides unique opportunities for children to develop their selfconfidence and self-awareness, manage their feelings and make relationships. Designing and making provides engaging contexts that enable children to talk with confidence about their ideas, in groups or to the whole class. EYFS providers report that design and technology meets the needs and interests of many children and promotes language development for specific groups who would otherwise lag behind their peers. The collaborative nature of many design and technology activities encourages children to take turns and listen carefully to each other’s ideas.

Examples of children’s learning:

- Understands use of objects (e.g. “What do we use to cut things?”).
- Responds to simple instructions, e.g. to get or put away an object.
- Beginning to understand why and how questions.
- Responds to instructions involving a two-part sequence e.g. using a template to mark and cut out a card shape.
- Listens and responds to ideas expressed by others in conversation or discussion.
- Questions why things happen and gives explanations. Asks who, what, when, how e.g. when investigating products.
- Builds up vocabulary that reflects the breadth of their experiences.

What adults could do and provide:

- Talk to children about what they have been doing and help them to reflect upon and explain events, e.g. “You told me this model was going to be a tractor. What’s this lever for?”
- Provide practical experiences that encourage children to ask and respond to questions, e.g. explaining how wheels turn.
- Ask children to think in advance about how they will accomplish a task. Talk through and sequence the stages together.
- Set up displays that remind children of what they have experienced, using objects e.g. a handling collection of similar products.
- Decide on the key vocabulary linked to activities, and ensure that all staff regularly model its use in a range of contexts. e.g. names of materials and components.
- Provide opportunities for talking for a wide range of purposes, e.g. to present ideas to others as descriptions, explanations, instructions or justifications, and to discuss and plan individual or shared activities.
- Provide opportunities for children to participate in meaningful speaking and listening activities. For example, children can take models that they have made to show children in another group or class and explain how they were made.

Through design and technology, children listen carefully to instructions and follow them accurately when using tools and practising techniques.

When responding to questioning, children explain how their own and others’ products work, say who they think they are for and what purposes they fulfil.

They develop technical vocabulary and learn how to express their ideas for what they want to design and make.

Overview: Year 1

	National Curriculum Expectations	DT Subject Knowledge	Vocabulary
Autumn	<p>Food: Fruit and Vegetable Smoothie</p> <p>Designing</p> <ul style="list-style-type: none"> Design appealing products for a particular user based on simple design criteria. Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. Communicate these ideas through talk and drawings. <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 	<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>. how to name and sort foods into the five groups in The eatwell plate that everyone should eat at least five portions of fruit and vegetables every day how to prepare simple dishes safely and hygienically, without using a heat source how to use techniques such as cutting, peeling and grating Know and use technical and sensory vocabulary relevant to the project. 	<p>fruit and vegetable names, names of equipment and utensils</p> <p>sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard</p> <p>flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria</p>
Spring	<p>Textiles: Puppets</p> <p>Designing</p> <ul style="list-style-type: none"> Design a functional and appealing product for a chosen user and purpose based on simple design criteria. Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology. <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. 	<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. Know and use technical vocabulary relevant to the project. 	<p>names of existing products, joining and finishing techniques, tools, fabrics and components</p> <p>template, pattern pieces, mark out, join, decorate, finish</p> <p>features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function</p>
Summer	<p>Mechanisms: Wheels and Axles</p> <p>Designing</p> <ul style="list-style-type: none"> Generate initial ideas and simple design criteria through talking and using own experiences. Develop and communicate ideas through drawings and mock-ups. <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 cutting and joining to allow movement and finishing. Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. <p>Evaluating</p> <ul style="list-style-type: none"> Explore and evaluate a range of products with wheels and axles. Evaluate their ideas throughout and their products against original criteria. 	<ul style="list-style-type: none"> Explore and use wheels, axles and axle holders. Distinguish between fixed and freely moving axles. Know and use technical vocabulary relevant to the project. 	<p>vehicle, wheel, axle, axle holder, chassis, body, cab</p> <p>assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism</p> <p>names of tools, equipment and materials used</p> <p>design, make, evaluate, purpose, user, criteria, functional</p>

Overview: Year 2

	National Curriculum Expectations	DT Subject Knowledge	Vocabulary
Autumn	<p>Mechanisms: Moving Monsters</p> <p>Designing</p> <ul style="list-style-type: none"> • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through drawings and mock-ups with card and paper. <p>Making</p> <ul style="list-style-type: none"> • Plan by suggesting what to do next. • 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. 	<ul style="list-style-type: none"> • Explore and use sliders and levers. • Understand that different mechanisms produce different types of movement. • Know and use technical vocabulary relevant to the project. 	<p>slider, lever, pivot, slot, bridge/guide</p> <p>card, masking tape, paper fastener, join</p> <p>pull, push, up, down, straight, curve, forwards, backwards</p> <p>design, make, evaluate, user, purpose, ideas, design criteria.</p>
Spring	<p>Structures: Baby Bear's Chair</p> <p>Designing</p> <ul style="list-style-type: none"> • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through talking, mock-ups and drawings. <p>Making</p> <ul style="list-style-type: none"> • Plan by suggesting what to do next. • Select and use tools, skills and techniques, explaining their choices. • 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. • Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. 	<ul style="list-style-type: none"> • Understanding the definition and importance of strength, stability and stiffness • Knowing that different shapes can strengthen or weaken structures and that materials can be manipulated to improve strength and stiffness • Know how to make freestanding structures stronger, stiffer and more stable. • Know and use technical vocabulary relevant to the project. 	<p>cut, fold, join, fix</p> <p>structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved metal, wood, plastic</p> <p>circle, triangle, square, rectangle, cuboid, cube, cylinder</p> <p>design, make, evaluate, user, purpose, ideas, design criteria, product, function</p>

<p>Summer</p>	<p>Textiles: Pouches</p>	<p>Designing</p> <ul style="list-style-type: none"> • Design a functional and appealing product for a chosen user and purpose based on simple design criteria. • Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology. <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. 	<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. • Know and use technical vocabulary relevant to the project. 	<p>names of existing products, joining and finishing techniques, tools, fabrics and components</p> <p>template, pattern pieces, mark out, join, decorate, finish</p> <p>features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function</p>
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Overview: Year 3

		National Curriculum Expectations	DT Subject Knowledge	Vocabulary
Autumn	Food: Eating Seasonally	<p>Designing</p> <ul style="list-style-type: none"> • Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. • Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. <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. 	<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. • Knowing what foods are in season and when • Understanding the benefits of foods by their colour • Knowing how climate alters the sweetness of food • Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate • Understand that to be active and healthy, food and drink are needed to provide energy for the body • Know and use relevant technical and sensory vocabulary appropriately 	<p>name of products, names of equipment, utensils, techniques and ingredients</p> <p>texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury</p> <p>hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet</p> <p>planning, design criteria, purpose, user, annotated sketch, sensory evaluations</p>
Spring	Mechanisms: Pneumatic Systems	<p>Designing</p> <ul style="list-style-type: none"> • Generate realistic and appropriate ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. <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 and join materials and components such as tubing, syringes and balloons. • 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, videos and products with pneumatic mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make. . 	<ul style="list-style-type: none"> • Understand and use pneumatic mechanisms. • Know that these mechanisms can create movement • Know and use technical vocabulary relevant to the project 	<p>components, fixing, attaching, tubing, syringe, plunger, split pin, paper fastener</p> <p>pneumatic system, input movement, process, output movement, control, compression, pressure, inflate, deflate, pump, seal, air-tight</p> <p>linear, rotary, oscillating, reciprocating</p> <p>user, purpose, function, prototype, design criteria, innovative, appealing, design brief, research, evaluate, ideas, constraints, investigate</p>

<p>Summer</p>	<p>Structures: Castles</p>	<p>Designing</p> <ul style="list-style-type: none"> • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. <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. 	<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. • Know and use technical vocabulary relevant to the project. 	<p>shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity</p> <p>marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating</p> <p>font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype</p>
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Overview: Year 4

		National Curriculum Expectations	DT Subject Knowledge	Vocabulary
Autumn	Mechanisms: Pop Up Card	<p>Designing</p> <ul style="list-style-type: none"> • Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. <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. 	<ul style="list-style-type: none"> • Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project. 	<p>mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output</p> <p>linear, rotary, oscillating, reciprocating user, purpose, function</p> <p>prototype, design criteria, innovative, appealing, design brief</p>
Spring	Electrical Systems: Torches	<p>Designing</p> <ul style="list-style-type: none"> • Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. <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. 	<ul style="list-style-type: none"> • Know electricity is energy • Know batteries are used to store electricity • Know terminology of: insulator, conductor, L.E.D., battery, coin cell batteries • 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. • Know and use technical vocabulary relevant to the project 	<p>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</p> <p>control, program, system, input device, output device</p> <p>user, purpose, function, prototype, design criteria, innovative, appealing, design brief</p>

<p>Summer</p>	<p>Textiles: Fastenings</p>	<p>Designing</p> <ul style="list-style-type: none"> • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. • Produce annotated sketches, prototypes, final product sketches and pattern pieces. <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. 	<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. • Know and use technical vocabulary relevant to the project. 	<p>fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance</p> <p>user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces</p>
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Overview: Year 5

	National Curriculum Expectations	DT Subject Knowledge	Vocabulary
Autumn	<p>Structures: Bridges</p> <p>Designing</p> <ul style="list-style-type: none"> Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. <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. 	<ul style="list-style-type: none"> Understand the importance of compression and tension in bridge structures Understand how to strengthen, stiffen and reinforce 3-D frameworks. Know and use technical vocabulary relevant to the project. 	<p>frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent</p> <p>design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional</p>
Spring	<p>Textiles: Stuffed Toys</p> <p>Designing</p> <ul style="list-style-type: none"> Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. <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. 	<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. Know how to create a hidden seam Fabrics can be strengthened, stiffened 	<p>seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces</p> <p>name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper</p> <p>design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype</p>

<p>Summer</p>	<p>Food: What could be healthier?</p>	<p>Designing</p> <ul style="list-style-type: none"> • Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. • Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. <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. 	<ul style="list-style-type: none"> • Know how to use utensils and equipment including heat sources to prepare and cook food. <p>Know where meat comes from and understand ethical issues around beef</p> <p>Know nutritional values of packaged food</p> <ul style="list-style-type: none"> • Know and use relevant technical and sensory vocabulary. 	<p>ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs</p> <p>fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality</p> <p>utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble</p> <p>design specification, innovative, research, evaluate, design brief</p>
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Overview: Year 6

	National Curriculum Expectations	DT Subject Knowledge	Vocabulary
Autumn	<p>Electrical Systems: Steady Hand Games</p> <p>Designing</p> <ul style="list-style-type: none"> • Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost. • Generate and develop innovative ideas and share and clarify these through discussion. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. <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. 	<ul style="list-style-type: none"> • Understand and use electrical systems in their products. • Create and use electric circuits in their designs • Know how to make electromagnetic motors • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to the project. 	<p>series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart</p> <p>function, innovative, design specification, design brief, user, purpose</p>
Spring	<p>Food: Come Dine With Me</p> <p>Designing</p> <ul style="list-style-type: none"> • Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. • Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. <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"> • 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. • Understanding the risks of meat or fish when not cooked or stored properly • Understanding safe storage of meat/fish • Know that a recipe can be adapted by adding or substituting one or more ingredients • Know and use relevant technical and sensory vocabulary 	<p>ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs</p> <p>fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality</p> <p>utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble</p> <p>design specification, innovative, research, evaluate, design brief</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 		
Summer	Mechanisms: Automata Toys	<p>Designing</p> <ul style="list-style-type: none"> • Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide their thinking. • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. <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 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 the intended user, where safe and practical, 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. 	<ul style="list-style-type: none"> • Understand that mechanical systems have an input, process and an output. • Name different types of cam • Understand how cams can be used to produce different types of movement and change the direction of movement. • Know and use technical vocabulary relevant to the project. 	<p>cam, snail cam, off-centre cam, peg cam, pear shaped cam</p> <p>follower, axle, shaft, crank, handle, housing, framework</p> <p>rotation, rotary motion, oscillating motion, reciprocating motion annotated sketches, exploded diagrams</p> <p>mechanical system, input movement, process, output movement</p> <p>design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief</p>

