

# Design and Technology Progression of Knowledge and Skills



Cycle B Autumn 2					
	Nursery	Reception	Year 1 & 2 (KS1)	Year 3 & 4 (LKS2)	Year 5 & 6 (UKS2)
		Once upon a time DT – mechanisms – sliding Santa chimneys	Wonderful weather DT – textiles – pouches	Italy and the UK DT – Food – Adapting a recipe	Settlement and migration DT – mechanical systems – Automata toys
Knowledge	<p>Through themed topics:</p> <ul style="list-style-type: none"> <li>Children are given opportunities to explore different materials freely, to develop their ideas about how to use them and what to make.</li> <li>Develop their own ideas and then decide which materials to use to express them.</li> <li>Join different materials and explore different textures.</li> <li>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</li> <li>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</li> <li>Create collaboratively, sharing ideas, resources and skills.</li> </ul>	<p>I understand the purpose of the sliding Santa chimney I understand how it links to current celebrations and use it to practise and perform a song 'When Santa got stuck up the chimney'</p>	<p>I know that sewing is a method of joining fabric. I know that different stitches can be used when sewing. I understand the importance of tying a knot after sewing the final stitch. I know that a thimble can be used to protect my fingers when sewing</p>	<p>I know that the amount of an ingredient in a recipe is known as the 'quantity.' I know that it is important to use oven gloves when removing hot food from an oven. I know the following cooking techniques: sieving, creaming, rubbing method, cooling. I understand the importance of budgeting while planning ingredients for biscuits.</p>	<p>I understand that the mechanism in an automata uses a system of cams, axles and followers. I understand that different shaped cams produce different outputs. I know that an automata is a hand powered mechanical toy. I know that a cross-sectional diagram shows the inner workings of a product. I understand how to use a bench hook and saw safely. I know that a set square can be used to help mark 90° angles.</p>
Skills		<ul style="list-style-type: none"> <li>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</li> <li>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</li> <li><b>ELG: Creating with Materials:</b> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</li> <li><b>ELG: Creating with Materials:</b> Share their creations, explaining the process they have used.</li> <li><b>ELG: Creating with Materials:</b> Make use of props and materials when role playing characters in narratives and stories.</li> </ul> <p>Characteristics of effective learning &gt; Playing and exploring &gt; Creating and thinking critically</p>	<p><b>Design</b> I can design a pouch.</p> <p><b>Make</b> I can select and cut fabrics for sewing. I can decorate a pouch using fabric glue or running stitch. I can thread a needle. I can sew running stitch, with evenly spaced, neat, even stitches to join fabric. I can neatly pin and cut fabric using a template.</p> <p><b>Evaluate</b> I can troubleshoot scenarios posed by the teacher. I can evaluate the quality of the stitching on others' work. I can discuss as a class the success of our stitching against the success criteria. I can identify aspects of my peers' work that I particularly like and explain why.</p>	<p><b>Design</b> I can design a biscuit within a given budget, drawing upon previous taste testing judgements.</p> <p><b>Make</b> I can follow a baking recipe, from start to finish, including the preparation of ingredients. I can cook safely, following basic hygiene rules. I can adapt a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet).</p> <p><b>Evaluate</b> I can evaluate a recipe, considering: taste, smell, texture and appearance. I can describe the impact of the budget on the selection of ingredients. I can evaluate and compare a range of food products. I can suggest modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins.).</p>	<p><b>Design</b> I can experiment with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement. I understand how linkages change the direction of a force. I can make things move at the same time. I understand and can draw cross-sectional diagrams to show the inner-workings of my design.</p> <p><b>Make</b> I can measure, mark and check the accuracy of the jelutong and dowel pieces required. I can measure, mark and cut components accurately using a ruler and scissors. I can assemble components accurately to make a stable frame. I understand that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles. I can select appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set.</p> <p><b>Evaluate</b> I can evaluate the work of others and receiving feedback on own work. I can apply points of improvement to their toys. I can describe changes I would make/do if I were to do the project again.</p>

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Key Vocabulary	Stick join create make paper glue tape masking tape sticky scissors cut draw, decorate	Santa, chimney, Christmas, slide, sliding, paper, cut, draw, scissors, make, decorate.	Decorate, fabric, fabric glue, knot, needle, needle threader, running stitch, sew, template, thread	Design criteria, research, texture, innovative, aesthetic, measure, cross-contamination, diet, processed, packaging	Accurate, assembly-diagram, automata, axle, bench hook, cam, clamp, component, cutting list, diagram, dowel, drill bits, exploded-diagram, finish, follower, frame, function, hand drill, jelutong, linkage, mark out, measure, mechanism, model, research, right-angle, set square, tenon saw
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Cycle B Spring 2					
	Nursery	Reception	Year 1 & 2 (KS1)	Year 3 & 4 (LKS2)	Year 5 & 6 (UKS2)
		Let's play DT – structures - boats	Where we live – Shawbury DT – Structures – Baby bear's chair	Where we live -Shrewsbury/Shropshire DT – Structures – Pavilions	The United Kingdom DT - Structures: playgrounds
Knowledge	<p>Through themed topics:</p> <ul style="list-style-type: none"> <li>Children are given opportunities to Explore different materials freely, to develop their ideas about how to use them and what to make.</li> <li>Develop their own ideas and then decide which materials to use to express them.</li> <li>Join different materials and explore different textures.</li> <li>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</li> <li>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</li> <li>Create collaboratively, sharing ideas, resources and skills.</li> </ul>	<p>I know if a material is waterproof or not. I know about floating and sinking and can talk about it. I know what a boat needs to be successful.</p>	<p>I know that shapes and structures with wide, flat bases or legs are the most stable. I understand that the shape of a structure affects its strength. I know that materials can be manipulated to improve strength and stiffness. I know that a structure is something which has been formed or made from parts. I know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. I know that a 'strong' structure is one which does not break easily. I know that a 'stiff' structure or material is one which does not bend easily I know that natural structures are those found in nature. I know that man-made structures are those made by people</p>	<p>I understand what a frame structure is I know that a 'free-standing' structure is one which can stand on its own I know that a pavilion is a decorative building or structure for leisure activities. I know that cladding can be applied to structures for different effects. I know that aesthetics are how a product looks. I know that a product's function means its purpose. I understand that the target audience means the person or group of people a product is designed for. I know that architects consider light, shadow and patterns when designing.</p>	<p>I know that structures can be strengthened by manipulating materials and shapes. I understand what a 'footprint plan' is. I understand that in the real world, design, can impact users in positive and negative ways. I know that a prototype is a cheap model to test a design idea.</p>
Skills		<ul style="list-style-type: none"> <li>To understand what waterproof means and to test whether materials are waterproof.</li> <li>Articulate their ideas and thoughts in well-formed sentences.</li> <li>Connect one idea or action to another using a range of connectives.</li> <li>Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</li> <li>ELG: Speaking: Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary</li> <li>ELG: Speaking: Offer explanations for why things might happen.</li> <li>Explore the natural world around them.</li> <li>ELG: The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants</li> </ul> <p>Characteristics of effective learning &gt; Playing and exploring &gt; Creating and thinking critically</p>	<p><b>Design</b> I can generate and communicate ideas using sketching and modelling. I can learn about different types of structures, found in the natural world and in everyday objects</p> <p><b>Make</b> I can make a structure according to design criteria. I can create joints and structures from paper/card and tape. I can build a strong and stiff structure by folding paper.</p> <p><b>Evaluate</b> I can explore the features of structures. I can compare the stability of different shapes. I can test the strength of own structures. I can identify the weakest part of a structure. I can evaluate the strength, stiffness and stability of own structure.</p>	<p><b>Design</b> I can design a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.</p> <p><b>Make</b> I can build frame structures designed to support weight. I can create a range of different shaped frame structures. I can make a variety of free-standing frame structures of different shapes and sizes. I can select appropriate materials to build a strong structure and cladding. I can reinforce corners to strengthen a structure. I can create a design in accordance with a plan. I can create different textural effects with materials.</p> <p><b>Evaluate</b> I can evaluate structures made by the class. I can evaluate what characteristics of a design and construction made it the most effective. I can consider effective and ineffective designs.</p>	<p><b>Design</b> I can design a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.</p> <p><b>Make</b> I can build a range of play apparatus structures drawing upon new and prior knowledge of structures. I can measure, mark and cut wood to create a range of structures. I can use a range of materials to reinforce and add decoration to structures.</p> <p><b>Evaluate</b> I can improve a design plan based on peer evaluation. I can test and adapt a design to improve it as it is developed. I can identify what makes a successful structure.</p>

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Key Vocabulary	Stick join create make paper glue tape masking tape sticky scissors cut draw, decorate	Boat, float, sink, waterproof, absorb, water, shape, weight, heavy, light, foil, plastic, cut, stick, test.	Design criteria, man-made, natural, properties, structure, stable, shape, model, test	3D shapes, Cladding, Design criteria, Innovative, Natural, Reinforce, Structure	Apparatus, design criteria, equipment, playground, landscape, features, cladding
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		Cycle B Summer 1				
		Nursery	Reception	Year 1 & 2 (KS1)	Year 3 & 4 (LKS2)	Year 5 & 6 (UKS2)
			Into the woods DT – Textiles – bookmarks	Victorians – Holidays then and now (The seaside) DT – mechanisms – fairground wheel	Vikings DT – Textiles - Fastenings (purses)	Mayans DT – Textiles – waistcoats
Knowledge	<p>Through themed topics:</p> <ul style="list-style-type: none"> <li>Children are given opportunities to Explore different materials freely, to develop their ideas about how to use them and what to make.</li> <li>Develop their own ideas and then decide which materials to use to express them.</li> <li>Join different materials and explore different textures.</li> <li>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</li> </ul>	<p>I know what a bookmark is used for. I know that a bookmark can be made from different materials. I know bookmarks can be made decorated by sewing, using thread.</p>	<p>I know that mechanisms are a collection of moving parts that work together as a machine to produce movement. I know that there is always an input and output in a mechanism. I know that an input is the energy that is used to start something working. I know that an output is the movement that happens as a result of the input. I know that a lever is something that turns on a pivot. I know that a linkage mechanism is made up of a series of levers. I know some real-life objects that contain mechanisms.</p>	<p>I know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro. I know that different fastening types are useful for different purposes. I know that creating a mock up (prototype) of their design is useful for checking ideas and proportions.</p>	<p>I understand that it is important to design clothing with the client/ target customer in mind. I know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. I understand the importance of consistently sized stitches.</p>	

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Skills	<ul style="list-style-type: none"> <li>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</li> <li>Create collaboratively, sharing ideas, resources and skills.</li> </ul>	<p>Physical development</p> <ul style="list-style-type: none"> <li>Develop their small motor skills so that they can use a range of tools competently, safely and confidently.</li> <li><b>ELG: Fine Motor Skills:</b> Use a range of small tools, including scissors, paint brushes and cutlery.</li> </ul> <p>Expressive arts and design</p> <ul style="list-style-type: none"> <li><b>ELG: Creating with materials:</b> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</li> </ul> <p>Characteristics of effective learning</p> <ul style="list-style-type: none"> <li>&gt; Playing and exploring</li> <li>&gt; Active learning</li> </ul>	<p><b>Design</b></p> <p>I can create a class design criteria for a moving monster.</p> <p>I can design a moving monster for a specific audience in accordance with a design criteria.</p> <p><b>Make</b></p> <p>I can make linkages using card for levers and split pins for pivots.</p> <p>I can experiment with linkages adjusting the widths, lengths and thicknesses of card used.</p> <p>I can cut and assemble components neatly.</p> <p><b>Evaluate</b></p> <p>I can evaluate own designs against design criteria.</p> <p>I can use peer feedback to modify a final design.</p>	<p><b>Design</b></p> <p>I can write design criteria for a product, articulating decisions made.</p> <p>I can design a personalised book sleeve.</p> <p><b>Make</b></p> <p>I can make and test a paper template with accuracy and in keeping with the design criteria.</p> <p>I can measure, mark and cut fabric using a paper template.</p> <p>I can select a stitch style to join fabric.</p> <p>I can work neatly by sewing small, straight stitches.</p> <p>I can incorporate a fastening to a design.</p> <p><b>Evaluate</b></p> <p>I can test and evaluate a finished product against the original design criteria.</p> <p>I can decide how many of the criteria should be met for the product to be considered successful.</p> <p>I can suggest modifications for improvement.</p> <p>I can articulate the advantages and disadvantages of different fastening types.</p>	<p><b>Design</b></p> <p>I can design a waistcoat in accordance to a specification linked to set of design criteria.</p> <p>I can annotate designs, to explain their decisions.</p> <p><b>Make</b></p> <p>I can use a template when cutting fabric to ensure they achieve the correct shape.</p> <p>I can use pins effectively to secure a template to fabric without creases or bulges.</p> <p>I can mark and cut fabric accurately, in accordance with their design.</p> <p>I can sew a strong running stitch, making small, neat stitches and following the edge.</p> <p>I can tie strong knots.</p> <p>I can decorate a waistcoat, attaching features (such as appliqué) using thread.</p> <p>I can finish the waistcoat with a secure fastening (such as buttons).</p> <p>I can learn different decorative stitches.</p> <p>I can sew accurately with evenly spaced, neat stitches.</p> <p><b>Evaluate</b></p> <p>I can reflect on my own work continually throughout the design, make and evaluate process.</p>
Key Vocabulary	Stick join create make paper glue tape masking tape sticky scissors cut draw, decorate	Weave, sew, material, fabric, needle, thread, bookmark, wool, string, paper, hessian, design, make, create.	Design, design criteria, wheel, Ferris wheel, pods, axle, axle holder, frame, mechanism	Criteria, Fabric, Fastening, Fix, Mock-up, Stitch, Template	Annotate, decorate, design criteria, fabric, target customer waistcoat, waterproof

Mechanisms
Textiles
Structures
Electrical Systems
Cooking and Nutrition