

Design and Technology Progression of Knowledge and Skills



Cycle A 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	Oceans and continents DT – Textiles – Puppets	Cities, countries and regions DT – Structures: constructing a castle	Settlements and economic activity DT – textiles – stuffed toys
Knowledge	Through themed topics: <ul style="list-style-type: none"> Children are given opportunities to explore different materials freely, to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures. 	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'	I know what a puppet is. I know that there are different ways of joining fabric together. I know that pinning, stapling and gluing are ways of joining fabrics.	I know that key features of a castle. I know what a structure is. I know that different materials have different characteristics. I know that some materials are stronger than others. I know that axles are used in structures and mechanisms to make parts turn. I know that some structures are natural and some are man-made.	I know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. I understand that it is easier to finish simpler designs to a high standard. I know that soft toys are often made by creating appendages separately and then attaching them to the main body. I know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely.
Skills	<ul style="list-style-type: none"> Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills. 	<ul style="list-style-type: none"> Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. ELG: Creating with Materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. ELG: Creating with Materials: Share their creations, explaining the process they have used. ELG: Creating with Materials: Make use of props and materials when role playing characters in narratives and stories. <p>Characteristics of effective learning</p> <ul style="list-style-type: none"> > Playing and exploring > Creating and thinking critically 	<p>Design I can use a template to create a design for a puppet. I can use basic labels to annotate a design.</p> <p>Make I can select fabrics for sewing. I can cut fabric neatly with scissors. I can neatly join fabric using a running stitch on a template. I can use joining methods to decorate a puppet. I can thread a needle. I can sequence steps for construction. I can decorate a puppet using fabric glue or a running stitch.</p> <p>Evaluate I can reflect on a finished product, explaining likes and dislikes. I can troubleshoot scenarios posed by a teacher. I can evaluate the quality of the stitching on others' work. I can discuss as a class the success of stitching against success criteria. I can identify aspects of peers' work that I particularly like and why. I can discuss existing puppets and what I like/dislike about them.</p>	<p>Design I can explore the shapes and materials that make structures more/less stable. I can create a design using clear design criteria. I can include individual preferences and requirements in a design. 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. I can design a castle with key features to appeal to a specific person/purpose. I can design and label a castle design, labelling materials and colours.</p> <p>Make I can make a stable structure from card, tape and glue. I can follow instructions to cut and assemble a structure. I can create joints and structures from paper/card and tape. I can make a structure according to design criteria.</p> <p>Evaluate I can explore the features of structures. I can compare the stability of different shapes. I can test the strength of my own structure. I can identify the weakest part of a structure. I can evaluate the strength, stiffness and stability of my own structure. I can evaluate a castle according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't. I can suggest points for improvements.</p>	<p>Design I can design a stuffed toy and consider the main component shapes required to creating an appropriate template. I can consider the proportions of individual components.</p> <p>Make I can create a 3D stuffed toy from a 2D design. I can measure, mark and cut fabric accurately and independently. I can create strong and secure blanket stitches when joining fabric. I can thread needles independently. I can use appliqué to attach pieces of fabric decoration. I can sew blanket stitch to join fabric. I can apply blanket stitch so the spaces between the stitches are even and regular.</p> <p>Evaluate I can testing and evaluate an end product and giving point for further improvements.</p>
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.	Sewing, needle, stitch, pinning, stapling, gluing, running stitch.	Structure, net, 2D, 3D, stiffness, strength, stability, natural, man-made	Accurate, annotate, appendage, blanket stitch, design criteria, detail, evaluation, fabric, sew, shape, stuffed toy, stuffing, template



Cycle A Spring 2					
	Nursery	Reception	Year 1 & 2 (KS1)	Year 3 & 4 (LKS2)	Year 5 & 6 (UKS2)
		Let's play DT – structures - Boats	United Kingdom DT- Structures - Constructing a windmill	The water cycle DT – mechanical systems: Pneumatic toys	Attenborough's/Greta's army DT – Mechanical systems – making a pop up book
Knowledge	<p>Through themed topics:</p> <ul style="list-style-type: none"> Children are given opportunities to Explore different materials freely, to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures. Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills. 	<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 the shape of materials can be changed to improve the strength and stiffness of structures. I know that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). I know that axles are used in structures and mechanisms to make parts turn in a circle. To begin to understand that different structures are used for different purposes. I know that a structure is something that has been made and put together. I know that a client is the person I am designing for. I know that design criteria is a list of points to ensure the product meets the clients needs and wants. I know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. I know that windmill turbines use wind to turn and make the machines inside work. I know that a windmill is a structure with sails that are moved by the wind. I know the three main parts of a windmill are the turbine, axle and structure.</p>	<p>I know that pneumatic systems force air over a distance to create movement. I know that mechanisms are a system of parts that work together to create motion. I know that pneumatic systems can be used as part of a mechanism. I know that all moving things have kinetic energy.</p>	<p>I know that mechanisms control movement. I understand that mechanisms can be used to change one kind of motion into another. I understand how to use sliders, pivots and folds to create paper-based mechanisms. 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 a design brief is a description of what I am going to design and make. I know that designers often want to hide mechanisms to make a product more aesthetically pleasing.</p>

Design and Technology Progression of Knowledge and Skills



Skills		<ul style="list-style-type: none"> To understand what waterproof means and to test whether materials are waterproof. Articulate their ideas and thoughts in well-formed sentences. Connect one idea or action to another using a range of connectives. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. ELG: Speaking: Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary ELG: Speaking: Offer explanations for why things might happen. Explore the natural world around them. ELG: The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants <p>Characteristics of effective learning</p> <ul style="list-style-type: none"> > Playing and exploring > Creating and thinking critically 	<p>Design</p> <p>I know the importance of a clear design criteria. I can include individual preferences and requirements in a design.</p> <p>Make</p> <p>I can make stable structures from card, tape, and glue. I can turn 2D nets into 3D structures. I can follow instructions to cut and assemble the supporting structure of a windmill. I can make functioning turbines and axles which are assembled into a main supporting structure.</p> <p>Evaluate</p> <p>I can use my design criteria to evaluate my windmill, testing whether the structure is strong and stable and altering it if it isn't I can suggest points for improvement.</p>	<p>Design</p> <p>I can explore how pneumatic systems work. I can design a toy which uses a pneumatic system. I can develop design criteria from a design brief. I can generate ideas using thumbnail sketches and exploded diagrams. I can learn that different types of drawings are used in design to explain ideas clearly. I can draw a net to create a structure from. I can design a shape that reduces air resistance. I can choose shapes that increase or decrease speed as a result of air resistance. I can personalise a design.</p> <p>Make</p> <p>I can create a pneumatic system to create a desired motion. I can build secure housing for a pneumatic system. I can use syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. I can select materials due to their functional and aesthetic characteristics. I can manipulate materials to create different effects by cutting, creasing, folding or weaving. I can measure, mark, cut and assembly with increasing accuracy. I can make a model based on a chosen design.</p> <p>Evaluate</p> <p>I can use the views of others to improve designs. I can test my product and suggest improvements. I can understand the purpose of exploded-diagrams through the eyes of a designer and their client. I can evaluate the speed of a final product based on the effect of shape on speed and the accuracy of construction on performance.</p>	<p>Design</p> <p>I can design a pop-up book which uses a mixture of structures and mechanisms. I can name each mechanism, input and output accurately. I can use storyboarding ideas for a book.</p> <p>Make</p> <p>I can follow a design brief to make a pop up book, neatly and with focus on accuracy. I can make mechanisms and/or structures using sliders, pivots and folds to produce movement. I can use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.</p> <p>Evaluate</p> <p>I can evaluate the work of others. I can receive feedback on own work. I can suggesting points for improvement.</p>
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.	Axle, bridge, design, design criteria, model, net, packaging, structure, template, unstable, stable, strong, weak	Force, wheel, axle, gear, chassis, aerodynamics, pneumatic, speed, function, system, gravity	Design, input, motion, mechanism, criteria, research, reinforce, model



Cycle A Summer 2					
	Nursery	Reception	Year 1 & 2 (KS1)	Year 3 & 4 (LKS2)	Year 5 & 6 (UKS2)
		People who help us DT – Textiles – bookmarks	Window to the world of Brazil DT – Food – Fruit and vegetables	Road trip to USA DT – Food – Eating seasonally	The Rainforest South America DT – Food – what could be healthier?
Knowledge	<p>Through themed topics:</p> <ul style="list-style-type: none"> Children are given opportunities to Explore different materials freely, to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures. Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills. 	<p>I know what a bookmark is used for.</p> <p>I know that a bookmark can be made from different materials.</p> <p>I know bookmarks can be made decorated by sewing, using thread.</p>	<p>I know the difference between fruits and vegetables.</p> <p>I know how to describe and group fruits by texture and taste.</p> <p>I understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).</p> <p>I know that a blender is a machine which mixes ingredients together into a smooth liquid.</p> <p>I know that a fruit has seeds and a vegetable does not.</p> <p>I know that fruits grow on trees or vines.</p> <p>I know that vegetables can grow either above or below ground.</p> <p>I know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).</p>	<p>I know that not all fruits and vegetables can be grown in the UK.</p> <p>I know that climate affects food growth.</p> <p>I know that vegetables and fruit grow in certain seasons.</p> <p>I know that cooking instructions are known as a 'recipe'.</p> <p>I know that imported food is food which has been brought into the country.</p> <p>I know that exported food is food which has been sent to another country.</p> <p>I understand that imported foods travel from far away and this can negatively impact the environment.</p> <p>I know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre.</p> <p>I understand that vitamins, minerals and fibre are important for energy, growth and maintaining health.</p> <p>I know safety rules for using, storing and cleaning a knife safely.</p> <p>I know that similar coloured fruits and vegetables often have similar nutritional benefits.</p>	<p>I understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues.</p> <p>I know that I can adapt a recipe to make it healthier by substituting ingredients.</p> <p>I know that I can use a nutritional calculator to see how healthy a food option is.</p> <p>I understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects</p>
Skills		<p>Physical development</p> <ul style="list-style-type: none"> Develop their small motor skills so that they can use a range of tools competently, safely and confidently. ELG: Fine Motor Skills: Use a range of small tools, including scissors, paint brushes and cutlery. <p>Expressive arts and design</p> <ul style="list-style-type: none"> ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. <p>Characteristics of effective learning > Playing and exploring > Active learning</p>	<p>Design</p> <p>I can design a smoothie carton packaging by-hand or on ICT software.</p> <p>Make</p> <p>I can chop fruit and vegetables safely.</p> <p>I can identify if a food is a fruit or a vegetable.</p> <p>I can learn where and how fruits and vegetables grow.</p> <p>I can make a smoothie using fruits and vegetables.</p> <p>Evaluate</p> <p>I can taste and evaluate different food combinations.</p> <p>I can describe appearance, smell and taste.</p> <p>I can suggest information to be included on packaging.</p>	<p>Design</p> <p>I can create a healthy and nutritious recipe for a savoury tart using seasonal ingredients.</p> <p>I can consider the taste, texture, smell and appearance of the dish.</p> <p>Make</p> <p>I know how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. I can follow the instructions within a recipe.</p> <p>Evaluate</p> <p>I can establish and use a design criteria to help test and review dishes.</p> <p>I can describe the benefits of seasonal fruits and vegetables and the impact on the environment.</p> <p>I can suggest points for improvement when making a seasonal tart.</p>	<p>Design</p> <p>I can adapt a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients.</p> <p>I can write an amended method for a recipe to incorporate the relevant changes to ingredients.</p> <p>I can design appealing packaging to reflect a recipe.</p> <p>Make</p> <p>I can cut and prepare vegetables safely.</p> <p>I can use equipment safely, including knives, hot pans and hobs.</p> <p>I know how to avoid cross-contamination.</p> <p>I can follow a step by step method carefully to make a recipe.</p> <p>Evaluate</p> <p>I can identify the nutritional differences between different products and recipes.</p> <p>I can identify and describe healthy benefits of food groups.</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.	ingredients, taste, texture, flavour, mix, fruit, vegetable, seed, leaf, root, stem, smoothie, healthy, carton, design, peel, slice	Climate, diet, imported, ingredients, natural, processed, reared, recipe, seasonal, seasons, sugar	Beef, reared, processed, ethical, diet, ingredients, supermarket, farm, balanced

Design and Technology Progression of Knowledge and Skills



Mechanisms
Textiles
Structures
Cooking and Nutrition