Design and TechnologyKnowledge and Skills Progression

Design and Technology Skills

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Research	To look at existing products and discuss them – What do they look like? What are they used for?	To explore some existing products. Who is it for? What is the product used for? Where might youfind the product?	To explore some existing products. What materials are used? How do the products work? Who madethe product? To express opinions about the different products that they have researched.	To explore some existing products. When was the product made? Where was the product designed and made? What methods of construction have been used? To evaluate the product on its design, material,and use. To research famous inventorsand designers.	To explore some existing products. How well does the products achieve its purpose? How environmentally friendly is the product? How environmentallyfriendly are the resources? To evaluate the product on designand use and appearance. To research and find out about famous inventorsand designers	To explore some existing products. Does the product have any other purpose? How environmentally friendly is the product? How environmentally friendly are the resources?	To research the costs involved in creating a product, sell a product and what the profit margin would be. To use research into famous designers and inventors and to use market research to inform the design of theirproduct.
Design	To talk about what they are going to make and what materials they might use To draw and talk about their design drawings	To create simple design drawingson paper Talk about what they are going tomake. To suggest ideas and explain whatproduct they will be designing and making to others.	To plan specific elements of their design with sketches and notesto support their ideas. To develop theirdesign ideas through discussion, observation, drawing and modelling. To identify a clear purpose for their product	To identify a purpose and establish a design criterion for their product (i.e., what do they want the product to do or achieve). To develop ideasby producing drawings and diagrams. To develop more than one design oradaptation of the original design. To generate realistic ideas thatmeet the needs of the user/s.	To describe the design purpose of their product. Produce detailed designs, annotatedwith materials, measurements, and joins.	To develop their own design criteria To create designs using simple computer programmes To identify design features that will appeal to intended users.	To generate, develop, model, and communicate their design ideas through annotatedsketches, cross- sectional and exploded diagramsand computer aided design programmes.
Make	To begin to use tools effectivelyand safely e.g., scissors, hole punch. To be supported to	equipment to perform practical tasks e.g., cutting,shaping, joining, and finishing. To use a range of tools	techniques, and materials from awide range usingthe correct vocabulary to name them.	with someaccuracy To make sensiblechoices from a wider range of tools To use a range of techniques to join and	involves severalprocesses. To select suitable tools and begin touse them accurately. To use a range of techniques	techniques to refine and rework their product to improve its functional and aesthetic qualities.To	tools, equipment,and materials. Where possible, allocate jobs withina team.

	select and use appropriate processes and tools e.g., cuttingand chopping. To know different fixing techniques e.g., masking tape, glue, sticky tape. To use a hole punch and paper fasteners such as split pins. To cut paper with scissors following curved and straight lines.	to cut, join and combine materials safely and correctly e.g.,scissors. To use techniquessuch as cutting, chopping, and pealing to prepare fruits and vegetables.	To safely measure,mark out, cut, andshape materials from a wide rangeusing a range of tools showing some accuracy. To use simple tools to prepare ingredients e.g., chopping, cutting, peeling, and grating. To measure and weigh ingredients.	combine materials or ingredients e.g., slicing and mixing.To measure and weight ingredientsusing scales with support. Follow procedures for safety and hygiene e.g., usingan oven.	to assemble, join and combine materialsand/or components with some accuracy. Follow procedures for safety and hygiene.	use tools to make careful measurements so that joins, holes, and openings are accurate. To use technical knowledge and skills to problem solve during the making process. To use advanced methods for mixing ingredients.To measure and weigh ingredients using different scales. To cook using a heat source such as an oven under supervision using the basic functions independently. To use a range of cooking techniques e.g., chopping, peeling, grating, slicing, mixing, kneading.	To make products that are accurately assembled and well finished. To work within constraints of timeand resources andadapt ideas to meet these constraints. To follow procedures for safety and hygiene.
Evaluate	To talk about their design ideas and what they have made. To identify what they liked and didn't like abouttheir product. To share their creations, explaining the process they have used.	To talk about their design ideas and what they have made. To talk about what they like about their product. To identify strengths and weaknesses, what works and what doesn't?	To discuss more closely how theirproduct meets their design criteria. To discuss howtheir product could be improved.	To evaluate their product against their original design (criteria) atthe end of the process. To use their designcriteria to evaluatetheir product; identify strengths and areas for development. To consider the views of the userwhilst evaluating.	To evaluate their product against the original design criteria throughoutthe process. To use the design criteria to evaluatetheir product, identifying strengths and areas for development. To consider the views of the user in their evaluation.	To evaluate theirwork both duringand at the end ofthe process. To discuss how appropriate testscould be carried out to test for improvements. To evaluate the product based on what does/doesn't work and seek advice from otherson improvements.	To critically compare the finalproduct to the original design. To test products with intended users(if possible) to evaluate the qualityof design, manufacture, and fitness for purpose.

Technical knowledge to be learnt across the year groups.				
	EYFS	Year 1/2	Year 3/4	Year 5/6
Mechanisms	Junk Modelling Technical knowledge: To be able to manipulate paper by curling, bending, and tearing. To be able to name and use basic joining methods and glue, tape, staples, scissors,hammer, split pin. To be able to safely use and explore a variety of materials, tools, and techniques, experimenting with design, form,and function. Core knowledge: Split pins, tape, staples, and glueare ways of joining materials together.	Sliders and levers Technical knowledge: To know what levers and sliders are and that they can move things. To identify whether a mechanism is a slider or a lever. To understand that different mechanisms create different typesof movement. To know different fixing techniquese.g., masking tape Core knowledge: A lever is a rigid bar that moves around a pivot. A slider is a rigid bar that movesforwards and backwards along astraight line. Levers and sliders make thingsmove. **Wheels and axels** Technical knowledge: To know and understand what wheels, axels and axel holders are. To know the difference between fixed and free moving axels To know how to fix wheels andaxels to a product. To know ways of holding freemoving axels in a product. Core knowledge: An axel holder is the part wherethe axle fits and rotates. An axel is a rod that enables a wheel to rotate	Levers and linkages Technical knowledge: To know the difference between a lever and a linkage To know the difference between a fixed and loose pivot. To know and create guides tocontrol movement. To know the input and output of amechanism To be able to identify levers and linkage mechanisms in everydayobjects. Core knowledge: A lever is a rigid bar which movesaround a pivot. A linkage is the card strips that joins the levers to make the movement. A fixed pivot attaches a lever to a base. A loose pivot attaches two leverstogether	Pulleys and gears Technical knowledge: Know and understand what a gear and a pulley is. To know that gears and pulleys can be used to change speed and direction of movement. To understand the ratio in a gear on a pulley system (how often larger wheels turn in relation to small pulleys or the number of teeth in gears) To be able to identify gear and pulley mechanisms in everydayobjects. Core knowledge: A gear is a wheel with teeth around its circumference. A pulley is a grooved wheel over which a belt can run. Mechanisms need a force to make them move. A force causes an object to start moving, stop moving, slow down or change directions
Structures	**Free standing structures** Technical knowledge: To know what a structure is. To know how they could maketheir structure stronger.	**Free standing structures** Technical knowledge: To know the simple order ofmaking a structure. To know how to create and use a template. To begin to understand and know how to make a free-standing structure stronger, stiffer, and more stable. To use joining, rolling, curling,sticking, or folding to make structures stronger.	**Shell structures** Technical knowledge: Understand what a shell structureis and identify real life examples. Use pre-drawn nets to make 3D card structures. Cut, score and fold card accurately. Use a glue gun (where appropriate) with supervision (one- to -one). Join nets using glue and gluingtabs. Join 2D frames/shapes to create 3Dstructures. Use laminating, corrugating and ribbing techniques to	**Frame structures** Technical knowledge: To know how to stiffen, strengthen and reinforce 3D frameworks. To know which materials are bestsuited to stiffen and reinforce byselecting them due to their properties. To know which shapes are the strongest and will support the most weight in a structure.

	Core knowledge Some materials are stronger than others. Joining different materials together can make a structure stronger.	(Children should also be given the opportunity to use construction kits during continuous provision) Core knowledge: A structure is something of many parts that is put together. A triangle is the strongest shape fora structure. A free-standing structure is notattached to another structure Making a base wider can make structures stiffer, stronger, and more stable	stiffen andstrengthen products. To know how to test a material's strength. To know how to use CAD todevelop a product. To understand the environmentalissues relating to the wastage of materials Core knowledge: Laminating, corrugating, and ribbing are all ways of stiffeningand strengthening structures. The flat or opened out shape of an object, such as a box, is called a netReducing, recycling, and re-using are three ways to save the environment when using materials	To understand the termtriangulation To know how to perform simple tests to test the functionality and strength of products. Core knowledge: Triangulation is triangular shapesthat make a structure stronger. Frame structures are created by joining straws or thin pieces of wood. Timing, resources, and costs can become constraints when buildinga structure.
Cooking and Nutrition	Technical knowledge: To be able to name and sorthealthy and unhealthy foods. To develop a food vocabulary e.g.,soft, hard To understand the importance of handwashing and wearing an apron whilst cooking To handle cooking equipmentsafely and effectively Core knowledge: Healthy foods are good for yourhealth. Too many unhealthy foods are badfor your health. It is important to always wash your hands and wear an apron when cooking.	Technical knowledge: To understand where food comesfrom (KS1) To understand that food comes from plants and animals, and somemust be farmed, caught, or reared (KS2) To name familiar foods. To know some safety and hygieneprocedures e.g., to know it is important to wash hands before preparing food and to wash fruit before we eat it. To use simple utensils to processfood and make it easier to eat. To peel and chop food when supervised. To mix ingredients with your hands orwith a spoon. To understand the need for avariety of foods in the diet To understand the importance of ahealthy, balanced diet and create aproduct that shows this. To understand that fruit is an essential part of a balanced diet, and 5 portions of fruit and vegetables are recommended perday. Core knowledge Eating a variety of different foodskeeps us healthy. Food comes from plants or animals Safety and hygiene procedures areimportant when handling, preparing, and cooking food.	Technical knowledge: To understand what nutritional benefits different food types giveus. To understand that all foods mustbe farmed, grown, or caught and that food comes from the UK andfrom across the world. To know where to find thenutritional information on packaging. To know safety and food hygienemeasures and to follow them. To know and understand the components of a balanced diet. To make healthy choices for a snack design To follow a simple recipe To understand how to combine ingredients to make a tasty snack,consider flavour and texture. To know how to cut, chop, peel, grate, and slice food safely. To know how to mix ingredientsusing a spoon or whisk. To use an oven (where appropriate, under supervision) Core knowledge: The main food group are carbohydrates, proteins, fruit and vegetables, dairy, oils, and spreads.Farmed foods are grown on farms, allotments, gardens, or windowsills Some animals, such as chickens, are reared for food. Some animals, such as fish, arecaught for food.	Technical knowledge: To understand where food comes from e.g., learning that beef is fromcattle and how beef is reared and processed. To understand where food comes from describing the process of 'farm to fork' for a given ingredient. To understand the environmental impact of products and cost of production To know that a recipe can be adapted by adding or substitutingone or more ingredients. To taste a range of foods todevelop vocabulary. To be able to choose foods for a purpose, showing an awareness ofthe need for a balanced diet. To be able to choose foods which are in season and know where thefood is from/how it has been grown. To know how to combine ingredients by kneading, beating,and whisking. To know how to cook food on astove or in an oven (as appropriate). Core knowledge: Farm to fork is the process of production, processing, distribution, and consumption of Food Overfishing and non-sustainablefarming has an impact on futurefood supplies. Sterilisation and cooking temperatures keep our food safe to eat.

Textiles	Technical knowledge: To know which materials would be best suited for products e.g., soft material for teddy's new socks. To know how to colour fabricsusing paint and fabric paints. To be able to decorate fabrics e.g.,beads and buttons. Core knowledge Fabrics can be joined by glue, tape, staples, or thread. Fabric is a material or cloth formaking items. Fabrics can be coloured using paint or pens.	Technical knowledge: To know what a template is anduse one to cut out shapes. To learn how to join items using asimple stitch such as a running stitch. To know a range of finishing techniques e.g., decoration bygluing or stitching To know the names of differenttypes of fabrics and understandhow they are constructed. To understand how to add fastening such as buttons andVelcro to a product. Core knowledge A template is a mould used as aguide to make something. Fabrics can be combined throughstitching (e.g., running stitch) Paints, shiny sequins, or fabric crayons are all ways of finishing a product	Technical knowledge To know how to securely join fabrics using sewing using crossstitching or over sewing. To know how to use simple and appropriate fastenings for a product e.g., zips, buttons, Velcro.To sew using back stiches or over-sewing. To understand what a seam is andits purpose. Give reasons for selecting fabricsbased on their characteristics. To investigate materials other thanfabrics e.g., plastic bags Core knowledge Cross stitch and over sewing arestitches used to join products. A seam allowance is the area thatstops the stitches from pulling apart. Products can be decorated usingstem, satin, chain, or lazy daisy stitches	Technical knowledge Name and know the properties ofsome common fabrics (cotton, linen, wool & silk) Understand how different fabricscan affect the structure/feel/appearance of a product. Pin and tack pieces before sewing.Join fabrics using the variety of stitches taught (KS1-KS2). Assemble 3D products frompatterns or templates. Core knowledge A pattern is the template from which the parts of a garment are traced onto fabric before being cutout and assembled.
Electrical systems	N/A	N/A	Technical knowledge To know what an electrical circuit is To know what a bulb, buzzer and switch are and their functions. To construct a simple series circuitto generate static electricity. To know how to make simplesecure connections. To know different switch types e.g.,push to break, push to make, reed and toggle switch. Core knowledge An electrical circuit is a path through which electricity passes. A complete circuit is needed for electricity to flow and devices towork.	Technical knowledge To know how to construct a simpleseries circuit confidently. To incorporate simple self-madeswitches into a circuit To know how to test components and assess faults in a series circuit. To know that mechanical and electrical systems have an input, process, and output. To understand the safety riskswhen using electricity To know how to use bulbs, buzzers,motors, and switches. To understand how to draw acircuit diagram.

			A bulb is a component that lights up when electricity passes throughit. A switch is a device that opens andcloses an electrical circuit	To understand how to build a circuit for a particular purpose. <u>Core knowledge</u> Lights and buzzers are outputdevices. Batteries and switches are inputdevices. Current is how much electricity isflowing around a circuit. Safety with electronics is very important as electricity can kill.
Key Vocabulary				
Key vocabulary: skills specific	<u>Research</u>: Look, observe, listen, touch, feel, smell. <u>Design</u> Think about ideas, draw, try, talk, listen, share. <u>Make</u>: Join, stick, fix, cut, hold, chop, cut, peel, skin, <u>Evaluate</u>: Design, like, dislike, product	<u>Research</u>: Explore, products, user, existing products, materials, opinion. <u>Design</u> Discussion, observation, drawing, modelling, design criteria, purpose, intent, sketches, notes, record, explanations <u>Make</u> Appropriate, tools,equipment, techniques, equipment, vocabulary, measure, mark out, cut, shape, materials, components, accuracy, chopping, cutting, peeling, grating, measure, weight, scales. <u>Evaluate</u> Design criteria,discussion, product, improve.	<u>Research</u> Existing products, materials, opinion, purpose, design, made, evaluate. <u>Design</u> Design criteria, product, cross- sectional drawings, diagrams, initial, adaptation, generate, ideas. <u>Make</u> Safety, measure, mark, cut, assemble, join, accuracy, tools, junior hacksaw, techniques, ingredients, slicing,mixing, heat source, oven. <u>Evaluate</u> Evaluation, designcriteria, strengths,areas of development, fit for purpose, user needs.	<u>Research</u> Purpose, product, environmentally friendly, consumer, costing, sell, appearance. <u>Design</u>: Inventors, develop, communicate, prototypes, computer aideddesign. <u>Make</u> Refine, aesthetic,functions, measure, mass, weight. <u>Evaluate</u>: Design decisions, functionality, authentic, user, purpose, design specification, design brief, innovative, research, evaluate,design criteria, annotate, evaluate, mock-up,prototype
Key vocabulary: topic specific	**<u>Structures</u>** Sellotape, glue,stick, masking tape, structure, stronger, fold, parts, triangle	**<u>Structure</u>**: Free-standing, cut,fold, join, fix, weak, strong, glue gun, glue, tape, stronger, stiffer, stable, template	**<u>Structures</u>** Shell, structure,net, stiffening, strengthening, strength, computer aideddesign, environmental issues, wastage	***<u>Structures</u>*** Frame structure, stiffen, strengthen,reinforce, triangulation, stability, shape, join, temporary, permanent
	Mechanisms Tear, bend, fold, join, curl, roll, glue, tape, staples, hammer, scissors, move, mechanism.	<u>Mechanisms</u> Mechanism, lever,slider, slot, pivot, guide/bridge, masking tape, fastener, movement, fixing technique. <u>Mechanisms</u> Wheel, axel, fixed, free, design, make,cutting, joining, product, axel holder, rode, rotate.	<u>Mechanisms</u> Levers, linkage, fixed, loose, guide,movement, mechanism, input, output	<u>Mechanisms</u> pulley, drive belt,gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electricalsystem, input, process, output

	Textiles Join, fasten, bead, button, material, fabric, felt, colour, decorate	**Textiles** Template, mould, joining, running stitch, finishing technique, decoration, fabrics, constructed, fastenings	**Textiles** Template, mould, joining, running stitch, finishing technique, decoration, fabrics, constructed, fastenings, 2 dimensional, 3dimensional	**Textiles** Seam, seamallowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings,
	Cooking and Nutrition Fruit, vegetables, healthy, unhealthy, taste, smell, texture, appearance, safety, hygiene, hand washing, apron,	Cooking and Nutrition: Fruit, vegetables, healthy diet, plants, animals, safety, food hygiene, procedures, balanced diet, preparing, handling, cooking	Cooking and Nutrition: Nutrition, food types, farmed, grown, caught, UK, world, nutritional information, packaging, safety, food hygiene, carbohydrates, proteins, fruits and vegetables dairy, oils, and spreads.	Cooking and Nutrition ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, rollout, shape, sprinkle, crumble
			Electrical systems 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, control, program, system, input device, output device	**Electrical systems** Reed switch, toggle switch, push-to-make switch, push-to- break switch, light dependent resistor(LDR), tilt switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series, circuit, parallel circuit