

Design Technology Progression – Knowledge (Substantive Knowledge)

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Structures	<p>What they are going to make before they make it. What a product is (by exploring the whole and its parts).</p> <p>Different techniques for joining materials, such as how to use adhesive tape and different sorts of glue.</p>	<p><u>HOME SWEET HOME</u></p> <p>Scissors will cut a variety of materials.</p> <p>Materials can be joined in different ways.</p> <p>A range of materials can be used to make a model.</p> <p>A home is a place where a person or animal live.</p> <p>A home needs to keep the person or animal warm, safe and dry.</p> <p>Simple 2D and 3D shapes.</p> <p>A design is a plan or drawing to help make a structure.</p> <p>Evaluation is important and helps make necessary changes.</p> <p>What works and what needs improving.</p>		<p><u>BUILDING HOUSES</u></p> <p>A roundhouse is a type of house with a circular plan and usually a conical roof.</p> <p>Roundhouses were built in the bronze and iron age.</p> <p>Wattle is a woven construction of twigs or branches used in building walls, fences, or roofs.</p> <p>Daub is covering something with a material such as mud or clay.</p> <p>A stable product means fixed, firm, or steady in position; not shaky or easily moved.</p> <p>A design criteria is the standard our product will be judged by.</p> <p>Adaptations to design can be made during or after the process.</p>	<p><u>KEEP IT SAFE</u></p> <p>A container can be used to store something or transport it safely.</p> <p>The net of a 3D shape is what it looks like if it is opened out flat.</p> <p>A net can be folded up to make a 3D shape.</p> <p>The strength of the product can be improved by adding extra materials to improve its shape and reinforce thinner areas to help stop compression and bending forces damaging the item.</p> <p>Scoring is a process in which one cuts a groove into rigid material. This groove is used to either break the material along the slit, for decoration, or act as a guideline.</p> <p>Designers evaluate their finished products to test whether the product works well, meets the initial design aims and whether anything could be corrected or improved upon.</p> <p><u>BUILDING TOMBS</u></p> <p>Canopic jars were used in ancient Egyptian funerary practices to hold the organs of the deceased. These jars were typically made of stone or pottery.</p> <p>A tomb is a place in which you are buried when you die.</p> <p>The net of a 3D shape is what it looks like if it is opened out flat.</p> <p>A net can be folded up to make a 3D shape.</p> <p>The strength of the product can be improved by adding extra materials to improve its shape and reinforce</p>	<p><u>WIND TURBINES</u></p> <p>Kinetic energy is the energy an object has because of its movement.</p> <p>Wind turbine technology takes kinetic energy from the wind and converts it into electricity.</p> <p>The most common wind turbine has three blades, which are turned by the wind, on a tall tower.</p> <p>Wind turbines need to be sited in areas where there is plenty of wind with little blocking it, such as on the top of a hill.</p> <p>Wind turbines can be used individually, for example to power one home.</p> <p>They can also be grouped together to form wind farms, which feed greater volumes of electricity into the electricity grid.</p> <p>Some wind farms are classed as onshore – they are on land.</p> <p>Others can be out at sea and are called offshore wind farms.</p>	

					thinner areas to help stop compression and bending forces damaging the item. Names and properties of 3D shapes.		
Textiles	<p>How to thread continuously (e.g., using lacing boards).</p> <p>How to thread a bobbin on a string.</p> <p>A textile is a kind of cloth.</p> <p>A textile can be joined by glue.</p>		<p>POUCHES</p> <p>Fabric can be joined together by sewing.</p> <p>Thread a needle through the eye of the needle.</p> <p>Adding a knot at the end of the thread stops it coming apart.</p> <p>A running stitch is a simple straight stitch that weaves in and out of the fabric.</p> <p>Finishing off with a knot stops it coming apart.</p> <p>A money pouch / purse is made from material and used for carrying money safely.</p> <p>Pins can be used to secure fabric before sewing.</p> <p>A template is a pattern used as a guide for cutting or drawing.</p> <p>Evaluation is important and helps make necessary changes.</p> <p>Decoration is something used to make something else more beautiful.</p>	<p>PENCIL CASES</p> <p>Design criteria could be specific, measurable, achievable, relevant, and time-bound.</p> <p>A template is a pattern used as a guide for cutting or drawing. Templates are usually made of thin metal, wood, or plastic.</p> <p>The backstitch is a basic sewing method that creates a strong and continuous line.</p> <p>A back stitch is sewn backwards and then forwards, making stitches that overlap. The result is a solid and noticeable line of stitches.</p> <p>A running stitch is a simple straight stitch that weaves in and out of the fabric.</p> <p>Fasteners have a very functional role in a garment. They help the opening of fabrics to close exactly and correctly.</p> <p>Embellishments can be an easy way to add some visual texture and fun to a sewing project.</p> <p>Appliqué means sewing a piece of fabric (usually a shape) onto another piece of cloth. It adds patterns and shapes.</p>			<p>DRAWSTRING BAG</p> <p>Cotton is seed-hair fibre of several species of plants of the genus <i>Gossypium</i>.</p> <p>Cotton is , one of the world's leading agricultural crops, is plentiful and economically produced, making cotton products relatively inexpensive.</p> <p>Cotton fibres can be made into a wide variety of fabrics.</p> <p>Simple sewing stitches such as running stitch, back stitch and whip stitch.</p> <p>A clothing manufacturer is someone who is skilled and well-equipped with all the tools and machinery for manufacturing clothes.</p> <p>Fashion designing is the art of creating clothing and accessories that reflect individual styles and trends.</p> <p>It blends creativity and technical expertise to make garments that express personality and cultural influences.</p> <p>Using a pattern, involves reading the directions carefully to understand the pattern shape and layout.</p> <p>Then cutting out the material carefully.</p> <p>Pin the cut pieces of fabric and join them by hand sewing.</p> <p>A seam is a term that refers to the stitching line where two fabrics are stitched together.</p> <p>A hem is the edge of a piece of cloth or clothing which has been turned under and sewn.</p>
Mechanisms	The difference between a moving part and a non-moving part.	FIRE! FIRE! Wheels are a round frame that turns on the axle.	MOVING MONSTERS A mechanism is the parts of an object that move together.			DART FROGS Solids, liquids and gases are called the three states of matter.	STEADY HANDS An electrical system is a group of parts (components) that work together to carry electricity around a circuit.

	<p>How to select correct materials which allow for movement. A wheel makes a vehicle move.</p>	<p>Wheels are found on cars, trucks, bikes, wagons and help objects move. Fire engines are an emergency vehicle used when there is a fire or accident. Fire engines have changed over time, but all have wheels, a chassis and axles. Different methods to join materials together. Materials have different strengths and properties. Simple 3D shapes e.g. cube, cuboid, sphere, cylinder. Evaluation is an important part of making something.</p>	<p>Many different everyday objects use mechanisms from cars to pop-up books. An input is something that starts a system, for example: pushing a bicycle. An output is the result of the input, for example, bicycle wheels turning. A lever turns on a pivot. A linkage is a system of levers. A pivot is a central point from where something can turn. A design criteria is the standard our product will be judged by. Use drawings and labels to design a product.</p>			<p>Pneumatics looks at the use of compressed air to create a circuit. A pneumatic circuit is made up of an input, process, and output. Pneumatics are used in everyday life for example compressed air is used for airbrushes, dentist drills, lorry breaks and bicycle pumps. Dart Frog - these frogs are considered one of Earth's most toxic, or poisonous, species. A syringe is the tube with a plunger that usually connects to a needle. In mechanics, compression is the application of balanced inward ("pushing") forces to different points on a material or structure, that is, forces with no net sum or torque directed so as to reduce its size in one or more directions. A pneumatic system is a connection of various components that converts the pressure energy of compressed air into mechanical work.</p>	<p>A battery contains stored electricity that can be used to power products. Series circuits only have one direction for the electricity to flow. A switch can be used to complete and break an electrical circuit, and if there is a break in a series circuit, all components will turn off. Form Over Function means prioritising how a product looks over its practical functionality/ability to do what it was designed for. As technology advances, toys increasingly incorporate technology elements. Toy design has an impact during play on child development. Successful toy designs strike a perfect balance between visual appeal and practical functionality. The difference between a side view, front view or top view of a design / product. The user is someone who will use the product. Using a net template to make a 3D shape. Evaluating a product for both form and function.</p>
<p>Food</p>	<p>Which foods they like to eat. How to wash hands before and after eating There are healthy and unhealthy foods. How to make some simple healthy food choices. How to use a knife and fork when supported by an adult. How to combine different ingredients to create a dish with adult support. The names of well-known fruit and vegetables. The use of simple kitchen utensils (e.g. spoon, knife, fork, grater, whisk)</p>	<p><u>OUR FOOD</u> Food sources include plants and animals. The five senses are sight, hearing, smelling, tasting and touch. Chopping, grating and slicing is a way of cutting food. Peeling is used to remove a part of the food we may not wish to eat. Words like appearance and texture help describe how food looks and feels. A salad is a mixture of cold vegetables such as lettuce, tomato, and cucumber, sometimes served with a dressing.</p>	<p><u>DELICIOUS DISHES</u> Know that food comes from plant and animal sources. Scales are used to measure accurately. The human body needs a balanced diet to work properly. Good health involves drinking enough water and eating the right amount of foods from the different food groups: - Carbohydrates give us energy. They are found in foods such as bread, potatoes and pasta. - Proteins help our bodies to repair themselves. They are found in foods such as fish,</p>	<p><u>BRITISH FOODS</u> A national dish is a culinary dish that is strongly associated with a particular country. Cuisine is a particular type of cooking, especially that of a particular region, or the food in general that is prepared in this way. Savoury dishes are meals that are not sweet. A dessert is a sweet dish eaten at the end of a meal. A ploughman's lunch is a British dish. It is a meal of bread and cheese, typically with pickle and salad. The recommended daily allowance (RDA) is the level</p>	<p><u>GOOD FRESH FOOD</u> Polar regions cover the top and bottom of planet Earth at the North and South Poles. Climate is a description of the average weather conditions in a certain place for a period of time. Different areas of the world have different climates. These are called climate zones. There are five types of climate zones – Polar, temperate, dry, tropical, Mediterranean. Food miles describe the distance that food travels from where it is grown or</p>	<p><u>COME DINE WITH ME</u> A three course meal is a traditional dining experience consisting of appetizer, main course, and dessert. The meaning of bitter, sweet, sour, umami, salty, complement, flavour, combination, enhance, balance, pairing, taste. Which seasonal fruit and vegetables are available when designing recipes. There are five food groups: fruit and vegetables, carbohydrates, proteins, dairy, fats and oils. Use a range of measurements for ingredients (ml, l, g, kg),</p>	<p><u>RATIONED RECIPES</u> In 1940, the British government introduced food rationing. Rationing was designed to ensure fair shares for all at a time of national shortage. The Ministry of Food was responsible for overseeing rationing. Every man, woman and child was given a ration book with coupons. These were required before rationed goods could be purchased. Basic foodstuffs such as sugar, meat, fats, bacon and cheese were directly rationed by an allowance of coupons. Housewives had to register with particular retailers.</p>

		<p>Health and safety rules in the kitchen must be followed for safety. Use kitchen tools safely</p>	<p>meat, beans, nuts, seeds, eggs and cheese. - Fats help store energy for our bodies. They are found in foods such as butter, cheese, nuts and fried food. - Fibre is important for helping us digest our foods. It's found in fruit and vegetables. - Dairy is a source of calcium good for bones and teeth. Using senses to evaluate the dishes made. How kitchen utensils are used for slicing, grating, peeling, mashing.</p>	<p>of food intake which needs the needs of an individual. Nutrition information labels can help you choose between products and keep a check on the amount of foods you're eating that are high in fat, salt and added sugars. Most pre-packed foods have a nutrition information label on the back or side of the packaging. Nutrition information labels to help you eat a balanced diet. Most people in the UK eat and drink too many calories, too much fat, sugar and salt, and not enough fruit, vegetables, oily fish or fibre. Seasonal foods are the foods most likely to be available at that time of year.</p>	<p>produced to where it is consumed. Seasonality refers to the times of year when different fruits, vegetables and other crops are ready to be harvested naturally. The properties of food can change when cooked or cooled.</p>	<p>accurately measuring requirements. Preparation time is the amount of time it takes to prepare a recipe before cooking. This includes gathering ingredients, measuring, chopping and other tasks. A variety of cooking methods: boiling, poaching, air-frying, baking, BBQ, stewing, frying, grilling, microwaving, roasting. Use ratio and proportion to change amounts of a recipe.</p>	<p>Governments encouraged people to grow as much of their own food as possible. Some people ate better during this rationing period than they did before. This is because everyone was supplied the same weekly quota of food, whether rich or poor. The Eatwell Guide shows that to have a healthy, balanced diet, people should try to: - eat at least 5 portions of a variety of fruit and vegetables every day (see 5 A Day) - base meals on higher fibre starchy foods like potatoes, bread, rice or pasta - have some dairy or dairy alternatives (such as soya drinks) - eat some beans, pulses, fish, eggs, meat and other protein - choose unsaturated oils and spreads, and eat them in small amounts - drink plenty of fluids (at least 6 to 8 glasses a day)</p>
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Design Technology Progression – Skills (Disciplinary Knowledge)

	EYFS	Year 1 and 2	Year 3 and 4	Year 5 and 6
Design	<ul style="list-style-type: none"> talk about what they want to make; create simple representations of objects; use simple planning sheets to represent their ideas in simple form. 	<ul style="list-style-type: none"> identify the design features of their products that will appeal to intended customers; use their knowledge of a broad range of existing products to help generate their ideas; design innovative and appealing products that have a clear purpose and are aimed at a specific user; explain how particular parts of their products work; use annotated sketches and cross-sectional drawings to develop and communicate their ideas; when designing, explore different initial ideas before coming up with a final design; when planning, start to explain their choice of materials and components including function and aesthetics; test ideas out through using prototypes; use computer-aided design to develop and communicate their ideas develop and follow simple design criteria; work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment. 	<ul style="list-style-type: none"> identify the design features of their products that will appeal to intended customers; use their knowledge of a broad range of existing products to help generate their ideas; design innovative and appealing products that have a clear purpose and are aimed at a specific user; explain how particular parts of their products work; use annotated sketches and cross-sectional drawings to develop and communicate their ideas; when designing, explore different initial ideas before coming up with a final design; when planning, start to explain their choice of materials and components including function and aesthetics; test ideas out through using prototypes; use computer-aided design to develop and communicate their ideas develop and follow simple design criteria; work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment. 	<ul style="list-style-type: none"> use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market; use their knowledge of a broad range of existing products to help generate their ideas; design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user; explain how particular parts of their products work; use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas; generate a range of design ideas and clearly communicate final designs; consider the availability and costings of resources when planning out designs; work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.
Make (Plan)	<ul style="list-style-type: none"> selects appropriate resources and adapt work where necessary; 	<ul style="list-style-type: none"> with support, follow a simple plan or recipe; 	<ul style="list-style-type: none"> with growing confidence, carefully select from a range of tools and equipment, explaining their choices; 	<ul style="list-style-type: none"> independently plan by suggesting what to do next;

	<ul style="list-style-type: none"> • constructs with a purpose in mind, using a variety of resources; • understands that media can be combined to create new effects; • collaborate to create individual and small group models and constructions. 	<ul style="list-style-type: none"> • begin to select from a range of hand tools and equipment, such as scissors, graters, zesters, safe knives, juicer • select from a range of materials, textiles and components according to their characteristics; 	<ul style="list-style-type: none"> • select from a range of materials and components according to their functional properties and aesthetic qualities; • place the main stages of making in a systematic order; 	<ul style="list-style-type: none"> • with growing confidence, select from a wide range of tools and equipment, explaining their choices; • select from a range of materials and components according to their functional properties and aesthetic qualities; • create step-by-step plans as a guide to making;
Make (Practical Skills and Techniques)	<ul style="list-style-type: none"> • uses simple tools and techniques competently and appropriately; • children safely use and explore a variety of materials, tools and techniques, experimenting with design, form and function. 	<ul style="list-style-type: none"> • learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures; • use a range of materials and components, including textiles and food ingredients; • with help, measure and mark out; • cut, shape and score materials with some accuracy; • assemble, join and combine materials, components or ingredients; • demonstrate how to cut, shape and join fabric to make a simple product; • manipulate fabrics in simple ways to create the desired effect; • use a basic running stitch; • cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups; • begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations. 	<ul style="list-style-type: none"> • learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures; • use a wider range of materials and components, including construction materials and kits, textiles and mechanical and electrical components; • with growing independence, measure and mark out to the nearest cm and millimetre; • cut, shape and score materials with some degree of accuracy; • assemble, join and combine material and components with some degree of accuracy; • demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product; • join textiles with an appropriate sewing technique; • begin to select and use different and appropriate finishing techniques to improve the appearance of a product such as hemming, tie-dye, fabric paints and digital graphics. 	<ul style="list-style-type: none"> • learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures; • independently take exact measurements and mark out, to within 1 millimetre; • use a full range of materials and components, including construction materials and kits, textiles, and mechanical components; • cut a range of materials with precision and accuracy; • shape and score materials with precision and accuracy; • assemble, join and combine materials and components with accuracy; • demonstrate how to measure, make a seam allowance, tape, pin, cut, shape and join fabric with precision to make a more complex product; • join textiles using a greater variety of stitches, such as backstitch, whip stitch, blanket stitch; • refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.

Evaluate	<ul style="list-style-type: none"> • be excited about what they have made; • share their creations; • explain the process they have used. 	<ul style="list-style-type: none"> • explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations; • explain positives and things to improve for existing products; • explore what materials products are made from; • talk about their design ideas and what they are making; • as they work, start to identify strengths and possible changes they might make to refine their existing design; • evaluate their products and ideas against their simple design criteria; • start to understand that the iterative process sometimes involves repeating different stages of the process 	<ul style="list-style-type: none"> • explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose; • explore what materials/ingredients products are made from and suggest reasons for this; • consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product; • evaluate their product against their original design criteria; • evaluate the key events, including technological developments, and designs of individuals in design and technology that have helped shape the world. 	<ul style="list-style-type: none"> • complete detailed competitor analysis of other products on the market; • critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make; • evaluate their ideas and products against the original design criteria, making changes as needed.
Technical Knowledge	<ul style="list-style-type: none"> • selects appropriate resources and adapts work where necessary; • selects tools and techniques needed to shape, assemble and join materials they are using. 	<ul style="list-style-type: none"> • build simple structures, exploring how they can be made stronger, stiffer and more stable; • talk about and start to understand the simple working characteristics of materials and components; • explore and create products using mechanisms, such as levers, sliders and wheels. 	<ul style="list-style-type: none"> • understand that materials have both functional properties and aesthetic qualities; • apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; • understand and demonstrate how mechanical and electrical systems have an input and output process; • make and represent simple electrical circuits, such as a series and parallel, and components to create functional products; • explain how mechanical systems such as levers and linkages create movement; • use mechanical systems in their products. 	<ul style="list-style-type: none"> • apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; • understand and demonstrate that mechanical and electrical systems have an input, process and output; • explain how mechanical systems, such as cams, create movement and use mechanical systems in their products; • apply their understanding of computing to program, monitor and control a product.

<p>Cooking and Nutrition</p>	<ul style="list-style-type: none"> • understand where food comes from; • begin to use simple cooking techniques with support. 	<ul style="list-style-type: none"> • explain where in the world different foods originate from; • understand that all food comes from plants or animals; • understand that food has to be farmed, grown elsewhere (e.g. home) or caught; • name and sort foods into the five groups in the Eatwell Guide; • understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why; • use what they know about the Eatwell Guide to design and prepare dishes. 	<ul style="list-style-type: none"> • start to know when, where and how food is grown (such as herbs, tomatoes and strawberries) in the UK, Europe and the wider world; • understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically; • with support, use a heat source to cook ingredients showing awareness of the need to control the temperature of the hob and/or oven; • use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking; • explain that a healthy diet is made up of a variety and balance of different food and drink, as represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes; • understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body; • prepare ingredients using appropriate cooking utensils; • measure and weigh ingredients to the nearest gram and millilitre; • start to independently follow a recipe; • start to understand seasonality. 	<ul style="list-style-type: none"> • know, explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world; • understand about seasonality, how this may affect the food availability and plan recipes according to seasonality; • understand that food is processed into ingredients that can be eaten or used in cooking; • demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source; • demonstrate how to use a range of cooking techniques, such as griddling, grilling, frying and boiling; • explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and preparing dishes; • adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma; • alter methods, cooking times and/or temperatures; • measure accurately and calculate ratios of ingredients to scale up or down from a recipe; • independently follow a recipe
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