
Kings Heath
Primary School

The Design and Technology Curriculum at Kings Heath Primary School

Subject intent

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Design and Technology overview

The design and technology projects are well sequenced to provide a coherent subject scheme that develops children's designing, planning, making and evaluating skills.
Each project is based around a design and technology subject focus of structures, mechanisms, cooking and nutrition or textiles. The design and technology curriculum's electronic systems and IT monitoring and control elements are explicitly taught in our science projects to ensure the links between the subjects are highlighted.
Where possible, meaningful links to other areas of the curriculum have been made. For example, the cooking and nutrition project *Eat the Seasons* is taught alongside the geography project S*ow, Grow and Farm*. All the projects follow a structure where children are introduced to key concepts and build up knowledge and skills over time, using a more comprehensive range of equipment and building, cutting, joining, finishing and cooking techniques as they progress through school.
All projects contain focused, practical tasks in the Develop stage to help children gain the knowledge and skills needed to complete their Innovate tasks independently.
Throughout Key Stages 1 and 2, children build up their knowledge and understanding of the iterative design process. They design, make, test and evaluate their products to match specific design criteria and ensure they fit their purpose. Throughout the projects, children are taught to work hygienically and safely.

Key Stage 1

In the autumn term of Year 1, children begin to learn about structures in the project *Shade and Shelter* before designing and making a shelter. In the spring term project *Taxi!*, they learn the term 'mechanism' and assemble and test wheels and axles. In the summer term, children begin to learn about food sources in the project *Chop, Slice and Mash* and use simple preparation techniques to create a supermarket sandwich.
In the autumn term of Year 2, children learn more about food in the project *Remarkable Recipes*, where they find out about food sources, follow recipes and learn simple cooking techniques. In the spring term project *Beach Hut*, children develop their knowledge of structures further, learning to cut, join and strengthen wood for the first time. In the summer term, children begin to develop their understanding of textiles in *Cut, Stitch and Join*. They learn to sew a simple running stitch, use pattern pieces and add simple embellishments. They also continue to learn about mechanisms in the project *Push and Pull* by using sliders, levers and linkages in products.

Lower Key Stage 2

In the autumn term of Year 3, children continue to learn about food, understanding the concept of a balanced diet and making healthy meals in the project *Cook Well, Eatwell*. In the spring term project *Making it Move*, children extend their understanding of mechanisms by exploring cams and using joining and finishing techniques to make automaton toys. In the summer term project *Greenhouse*, they continue to develop their knowledge of structures, using triangles and braces for strength. They design and build a greenhouse, using their understanding of opacity and transparency and the needs of plants from science learning to inform their design. In the autumn term of Year 4, children continue to develop their understanding of food in the project *Fresh Food, Good Food*. They learn about food safety and preservation technologies before designing and making packaging for a healthy snack. During the spring term project *Functional and Fancy*

Fabrics, children continue to explore textiles, learning about the work of William Morris before designing, embellishing and finishing a fabric sample. In the summer term project *Tomb Builders*, they build on their knowledge of mechanisms, learning about six simple machines and using their knowledge to create a lifting or moving device prototype. They also explore and use electrical systems and IT monitoring and control in the science project *Electricity* for the first time.

Upper Key Stage 2

In the autumn term of Year 5, children deepen their understanding of mechanisms by studying pneumatic systems in the project *Moving Mechanisms*. They learn about the forces at play and create a prototype for a functional, pneumatic machine. In the spring term project *Eat the Seasons*, children continue to explore food and nutrition, learning about seasonal foods and the benefits of eating seasonally. In the summer term, they learn more about structures in the project *Architecture*, studying the history of architecture and developing new ways to create structural strength and stability. They use computer-aided design and consolidate their making skills to produce scale models. They also explore the electrical conductivity of materials before making products incorporating circuits in the science project *Properties and changes of materials*.

In the autumn term of Year 6, children learn about processed and whole foods in the project *Food for Life*, creating healthy menus from unprocessed foods. In the spring term project *Engineer*, children consolidate their knowledge of structures, joining and strengthening techniques and electrical systems by completing a bridge-building challenge. In the summer term project *Make Do and Mend*, they extend their knowledge of textiles by learning new stitches to join fabrics and using pattern pieces to create a range of products.

Throughout the design and technology scheme, there is complete coverage of all national curriculum programmes of study.

Curriculum Map
Design and Technology: Whole School

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Y1	**Shade and Shelter** Investigating existing products; Designing and making shelters and dens; Prototypes; Safety rules; Materials		**Taxi** Mechanisms – wheels, axles and chassis		**Chop, Slice, Mash** Sources of food; Food preparation techniques; Hygiene rules; Designing and making salads and sandwiches	
Y2	**Remarkable Recipes** Sources of food; Kitchen tools; Reading recipes; Hygiene rules; Making a school meal		**Beach Hut** Structures – strengthening and joining		**Cut, Stitch, Join** Everyday fabric products; Significant designer – Cath Kidston; Sewing patterns; Running stitch; Adding embellishments; Designing and making a bag tag	**Push and Pull** Machines and mechanisms; Sliders, levers and linkages; Designing and making greetings cards with moving parts
Y3	**Cook Well, Eat Well** Food groups; Eatwell guide; Methods of cooking; Cooking appliances; Hygiene rules; Making taco fillings		**Making it Move** Cam mechanisms; Designing and making automaton toys; Cutting, joining, strengthening and finishing		**Greenhouse** Features of greenhouses; Significant designers – Sir Joseph Paxton and Sir Nicholas Grimshaw; Strengthening techniques; Using tools and safety rules; Properties of materials; Constructing strong frameworks	
Y4	**Fresh Food, Good food** Food preservation techniques; Exploring food packaging; Prototypes; Designing, making and packaging healthy snacks		**Functional and fancy fabrics** Fabrics; Design features; Significant designer – William Morris; Stitching a hem; Embellishment; Designing and making patterned and embellished fabrics		**Tomb builders** Simple and compound machines	
Y5	**Moving Mechanisms** Pneumatic systems; Joining and finishing; Iterative design process; Building pneumatic machine prototypes		**Eat the season** Cooking; Nutrition		**Architecture** Architecture over time; Greek architecture; Structural support, stiffness and stability; Computer-aided design; Building design	
Y6	**Food for life** Whole foods; Processed foods; Making healthy meals; Hygiene and safety		**Engineer** Significant engineers and bridges; Features of bridges; Strengthening techniques; Iterative design; Building prototypes		**Make do and mend** Investigating clothing; Sewing – running stitch, whip stitch and blanket stitch; Repairing clothes; Making products from recycled materials	

Design and Technology Progression of Knowledge and Skills

Big idea	Aspect	Nursery	Reception	1	2	3	4	5	6
Humankind 	Everyday products	Everyday products, such as cups, plates and spoons are designed to help us. Name and explore a range of everyday products and explore how things work.	Everyday products are objects that we use every day. These objects have a specific use. Name and explore a range of everyday products and begin to talk about how they are used.	Everyday products are objects that are used routinely at home and school, such as a toothbrush, cup or pencil. All products are designed for a specific purpose. Name and explore a range of everyday products and describe how they are used.	Products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive. Explain how an everyday product could be improved.	Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box. Explain how an existing product benefits the user.	Design features are the aspects of a product's design that the designer would like to emphasise, such as the use of a particular material or feature that makes the product easier to use or more durable. Investigate and identify the design features of a familiar product.	Culture is the language, inventions, ideas and art of a group of people. A society is all the people in a community or group. Culture affects the design of some products. For example, knives and forks are used in the western world, whereas chopsticks are used mainly in China and Japan. The design of products needs to take into account the culture of the target audience. For example, colours might mean very different things in different cultures. Explain how the design of a product has been influenced by the culture or society in which it was designed or made.	People's lives have been improved in countless ways due to new inventions and designs. For example, the Morrison shelter, designed by John Baker in 1941, was an indoor air-raid shelter used in over half a million homes during the Second World War. It saved the lives of many people caught in bombing raids. Analyse how an invention or product has significantly changed or improved people's lives.
	Staying safe	It is important to listen to adults and follow simple rules and procedures when using equipment and tools. Show an understanding that tools and equipment need to be used safely and collaborate with	Rules keep us safe when using equipment. Safety rules include always listening carefully and following simple instructions, using equipment only for the tasks they are designed for and washing hands	Rules are made to keep people safe from danger. Safety rules include always listening carefully and following instructions, using equipment only as and when directed, wearing protective clothing if	Hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriately and wiping up spills. Work safely and hygienically in construction and	Electrical appliances must only be used under the supervision of an adult. Safety rules must also be followed when using electricity: fingers and other objects must not be put into electrical outlets,	Chemicals are used in the home every day. They include cleaning products, such as bleach and disinfectant, but also paints, glues, oils, pesticides and medicines. Most chemical products carry a hazard symbol showing in	Safety features are often incorporated into products that might cause harm. Some examples include the child-safety caps on medicine bottles, seatbelts in cars, covers for electrical sockets and finger guards on doors.	The safety of the user has to be taken into account when designing a new product. Methods to help keep users safe include providing clear instructions for use; clear indication of the age range for

		others when moving large equipment.	before touching food. Follow rules and instructions to keep safe.	appropriate and washing hands before touching food. Follow the rules to keep safe during a practical task.	cooking activities.	anything with a cord or plug should never be used around water and a plug should never be pulled out by its cord. Use appliances safely with adult supervision.	what way the chemical could be harmful. Chemicals should only be used under adult supervision. Appropriate safety precautions, such as wearing goggles and gloves, working in a well-ventilated room, wiping up spills and tying back long hair, should be taken. Work safely with everyday chemical products under supervision, such as disinfectant hand wash and surface cleaning spray.	Explain the functionality and purpose of safety features on a range of products.	which it is designed; safety features (such as child-resistant packaging); warning symbols and electrical safety checks. Demonstrate how their products take into account the safety of the user.
Processes 	Mechanisms and movement	Vehicles and ride-on toys have wheels to help them move. Explore, build and play with a range of resources and construction kits with wheels.	Vehicles and machines have wheels and axles to help them move. Explore, build and play with a range of resources and construction kits with wheels and axles.	An axle is a rod or spindle that passes through the centre of a wheel to connect two wheels. Use wheels and axles to make a simple moving model.	A mechanism is a device that takes one type of motion or force and produces a different one. A mechanism makes a job easier to do. Mechanisms include sliders, levers, linkages, gears, pulleys and cams. Use a range of mechanisms (levers, sliders, wheels and axles) in models or products.	Levers consist of a rigid bar that rotates around a fixed point, called a fulcrum. They reduce the amount of work needed to lift a heavy object. Sliders move from side to side or up and down, and are often used to make moving parts in books. Axles are shafts on which wheels can rotate to make a moving vehicle. Cams are devices that can convert circular motion into up-and-down motion. Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products.	Mechanisms can be used to add functionality to a model. For example, sliders or levers can be used in moving pictures, storybooks or simple puppets; linkages in moving vehicles or puppets; gears in motorised vehicles or spinning toys; pulleys in cable cars or transport systems and cams in 3-D moving toys or pictures. Explore and use a range of mechanisms (levers, axles, cams, gears and pulleys) in models or products.	Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. These effects can be achieved using syringes and plastic tubing. Use mechanical systems in their products, such as pneumatics.	Mechanical systems can include sliders, levers, linkages, gears, pulleys and cams. Other mechanisms include pneumatics and hydraulics. Explain and use mechanical systems in their products to meet a design brief.
	Electricity	Batteries power some objects. A switch turns them	Many appliances at home and school need electricity to	Electricity is a form of energy. Many household	A series circuit is made up of an energy source,	An electric circuit can be used in a model, such as a	Components can be added to circuits to achieve	Electrical circuits can be controlled by a simple on/off	Computer programs can control electrical

		off and on. Explore battery-powered objects using switches to turn them off and on.	work. The appliances need to be attached to electricity through a plug and socket, or use batteries. Identify products that use electricity to make them work.	appliances use electricity, such as kettles, televisions and washing machines. They can be switched on by completing the circuit to allow the flow of electricity or off by breaking the circuit to prevent electricity from flowing. This can be a switch on the appliance or a wall socket switch. Identify products that use electricity to make them work and describe how to switch them on and off.	such as a battery or cell, wires and a bulb. The circuit must be complete for the electricity to flow. Create an operational, simple series circuit.	lighthouse. It can be controlled using a switch. Incorporate a simple series circuit into a model.	a particular goal. These include bulbs for lighthouses and torches, buzzers for burglar alarms and electronic games, motors for fairground rides and motorised vehicles and switches for lights and televisions. Incorporate circuits that use a variety of components into models or products.	switch, or by a variable resistor that can adjust the size of the current in the circuit. Real-life examples are a dimmer switch for lights or volume control on a stereo. Use electrical circuits of increasing complexity in their models or products, showing an understanding of control.	circuits that include a variety of components, such as switches, lamps, buzzers and motors. Understand and use electrical circuits that incorporate a variety of components (switches, lamps, buzzers and motors) and use programming to control their products.
Creativity	Generation of ideas	Develop their own ideas and explore a variety of resources, including blocks and construction kits to create 'small worlds' and objects linked to their interests.	Create collaboratively, share ideas and use a variety of resources to make products inspired by existing products, stories or their own ideas, interests or experiences.	Design criteria are the explicit goals that a project must achieve. Create a design to meet simple design criteria.	Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology. Generate and communicate their ideas through a range of different methods.	Design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user. Develop design criteria to inform a design.	Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way. Use annotated sketches and exploded diagrams to test and communicate their ideas.	A pattern piece is a drawing or shape used to guide how to make something. There are many different computer-aided design packages for designing products. Use pattern pieces and computer-aided design packages to design a product.	Design criteria should cover the intended use of the product, age range targeted and final appearance. Ideas can be communicated in a range of ways, including through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways.
	Structures	Different materials can be used for construction. They have different properties. Make	Different materials have different properties and can be used for different purposes.	Different materials can be used for different purposes, depending on their properties. For	Structures can be made stronger, stiffer and more stable by using cardboard rather	Shell structures are hollow, 3-D structures with a thin outer covering, such as a	A prototype is a mock-up of a design that will look like the finished product	Various methods can be used to support a framework. These include cross	Strength can be added to a framework by using multiple layers. For

		simple structures using a range of materials.	Construct simple structures and models using a range of materials.	example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink. Construct simple structures, models or other products using a range of materials.	than paper and triangular shapes rather than squares. A broader base will also make a structure more stable. Explore how a structure can be made stronger, stiffer and more stable.	box. Frame structures are made from thin, rigid components, such as a tent frame. The rigid frame gives the structure shape and support. Diagonal struts can strengthen the structure. Create shell or frame structures using diagonal struts to strengthen them.	but may not be full size or made of the same materials. Shell and frame structures can be strengthened by gluing several layers of card together, using triangular shapes rather than squares, adding diagonal support struts and using 'Jinks' corners (small, thin pieces of card cut into a right-angled triangle and glued over each joint to straighten and strengthen them). Prototype shell and frame structures, showing awareness of how to strengthen, stiffen and reinforce them.	braces, guy ropes and diagonal struts. Frameworks can be built using lolly sticks, skewers and bamboo canes. Build a framework using a range of materials to support mechanisms.	example, corrugated cardboard can be placed with corrugations running alternately vertically and horizontally. Triangular shapes can be used instead of square shapes because they are more rigid. Frameworks can be further strengthened by adding an outer cover. Select the most appropriate materials and frameworks for different structures, explaining what makes them strong.
	Use of ICT	Seek support from adults to use digital devices to create a digital record of their creations.	Digital devices can be used to share information about creations with others. Use digital devices to take digital images or recordings of their creations to share with others.	Computer-aided design is when computers are used to help design products. It has advantages over paper design in that it will show how finished products will look. Different colours and textures can also be trialled. Use design software to create a simple plan for a design.	Computer software can be used to help design or plan a product. Advantages include identifying and solving problems before the product is made and experimenting with different materials and colours. Labels can be added to designs for clarity. Use design software to create a simple labelled design or plan.	A program is a set of instructions written to perform a specified task on a computer. Write a program to make something move on a tablet or computer screen.	Remote control is controlling a machine or activity from a distance. Computers can be used to remotely control a device, such as a light, speaker or buzzer. Write a program to control a physical device, such as a light, speaker or buzzer.	Equipment and devices can be controlled by pressing buttons on a control panel, such as on a washing machine or microwave. Link a physical device to a computer or tablet so that it can be controlled (such as changing motor speed or turning an LED on and off) by a program.	Computer monitoring uses sensors as a scientific tool to record information about environmental changes over time. Computer monitoring can also log data from sensors and record the resulting information in a table or graph. Use a sensor to monitor an environmental variable, such as temperature, sound or light.
Investigation 	Investigation	Tools have different purposes. For example, scissors are used for cutting and glue is used for	Different tools are needed for different tasks. For example, pencils and paper are needed for drawing	Specific tools are used for particular purposes. For example, scissors are used for cutting and glue is	Different tools have characteristics that make them suitable for specific purposes. For	Specific tools can be used for cutting, such as saws. Wood can be joined using glue, nails, staples, or a	Useful tools for cutting include scissors, craft knives, junior hacksaws with pistol grip and	There are many rules for using tools safely and these may vary depending on the tools being used.	Precision is important in producing a polished, finished product. Correct selection of tools

		sticking. Explore simple tools within practical tasks and experiment with joining materials.	pictures. Choose and explore appropriate tools for simple practical tasks.	used for sticking. Select the appropriate tool for a simple practical task.	example, scissors are used for cutting paper because they have sharp, metal blades that can cut through thin materials. Select the appropriate tool for a task and explain their choice.	combination of these. Safety rules must be followed to prevent injury from sharp blades. These rules include using a bench hook to keep the wood still, using a junior hacksaw with a pistol grip and working under adult supervision. Use tools safely for cutting and joining materials and components.	bench hooks. Useful tools for joining include glue guns. Tools should only be used with adult supervision and safety rules must be followed. Select, name and use tools with adult supervision.	For example, someone using a chisel should chip or cut with the cutting edge pointing away from their body. All tools should be cleaned and put away after use, and should not be used if they are loose or cracked. Name and select increasingly appropriate tools for a task and use them safely.	and careful measurement can ensure the parts fit together correctly. Select appropriate tools for a task and use them safely and precisely.
	Evaluation	Different aspects of designing and making can be discussed with others. Share their creations with others and respond to questions and suggestions about how it was made.	Recognise that it is possible to change and alter their designs and ideas as they are making them. Adapt and refine their work as they are constructing and making.	A strength is a good quality of a piece of work. A weakness is an area that could be improved. Talk about their own and each other's work, identifying strengths or weaknesses and offering support.	Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned. Explain how closely their finished products meet their design criteria and say what they could do better in the future.	Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.	Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. Evaluation also includes suggesting improvements and explaining why they should be made. Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making improvements.	Testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture. Test and evaluate products against a detailed design specification and make adaptations as they develop the product.	Design is an iterative process, meaning alterations and improvements are made continually throughout the manufacturing process. Evaluating a product while it's being manufactured, and explaining these evaluations to others, can help to refine it. Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others.
Materials 	Cutting and joining textiles			Scissors are used to cut fabrics. Glue and simple stitches, such as running stitch, can be used to join fabrics. Running	A running stitch is a basic stitch that is used to join fabric. It is made by passing a needle in and out of fabric at an even	A loom is a piece of equipment that is used for making fabric by weaving wool or thread. Weaving involves interlacing pieces	A hem runs along the edge of a piece of cloth or clothing. It is made by turning under a raw edge and sewing to give a	A collage is artwork made by sticking materials, such as scraps of paper or fabric, onto a background. A mixed media	Pinning with dressmaker pins and tacking with quick, temporary stitches holds fabric together in preparation for and

				stitch is made by passing a needle in and out of fabric at an even distance. Cut and join textiles using glue and simple stitches.	distance. Use different methods of joining fabrics, including glue and running stitch.	of thread or yarn. Cut and join wools, threads and other materials to a loom.	neat and quality finish. Hand sew a hem or seam using a running stitch.	collage is made using various materials and media, such as ink and paint. Combine stitches and fabrics with imagination to create a mixed media collage.	during sewing. Pin and tack fabrics in preparation for sewing and more complex pattern work.
	Materials for purpose	Explore and choose freely from a variety of materials when making.	Different materials are suitable for different purposes, such as construction kits for modelling and ingredients for baking. Select appropriate materials when constructing and making.	Different materials are suitable for different purposes, depending on their specific properties. For example, glass is transparent, so it is suitable to be used for windows. Select and use a range of materials, beginning to explain their choices.	Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint. Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.	Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost. Plan which materials will be needed for a task and explain why.	Different materials and components have a range of properties, making them suitable for different tasks. It is important to select the correct material or component for the specific purpose, depending on the design criteria. Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season. Choose from a range of materials, showing an understanding of their different characteristics.	Materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together using a variety of stitching techniques. Select and combine materials with precision.	It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability. Choose the best materials for a task, showing an understanding of their working characteristics.
	Decorating and embellishing textiles			• Fabric can be decorated using materials and small objects, such as buttons and sequins. Decorations can be attached to the fabric by gluing, stapling or tying. Use gluing, stapling or tying to decorate fabric, including buttons and sequins.	• Embellishment is a decorative detail or feature added to something to make it more attractive. Add simple decorative embellishments, such as buttons, prints, sequins and appliqué.	• A loom weaving is a piece of fabric that has been woven on a loom by interlacing threads. An embellishment is a decorative detail or feature, such as a silk flower, tassel or bow, added to something to make it more attractive. Decorate a loom weaving using embellishments, such as natural or silk flowers, tassels and bows.	• Block printing techniques and fabric paint are used to create decorative, repeated patterns on fabrics. Create detailed decorative patterns on fabric using printing techniques.	• Applique is a technique where pieces of material are attached to another material by stitching or gluing. Use applique to add decoration to a product or artwork.	• Fastenings hold a piece of clothing together. Types of fastenings include zips, press studs, Velcro and buttons. Use different methods of fastening for function and decoration, including press studs, Velcro and buttons.

Nature 	Food preparation and cooking		A recipe is set of instructions for preparing a dish and includes a list of the ingredients required. Follow instructions, including simple recipes, that include measures and ingredients.	Using non-standard measures is a way of measuring that does not involve reading scales. For example, weight may be measured using a balance scale and lumps of plasticine. Length may be measured in the number of handspans or pencils laid end to end. Measure and weigh food items using non-standard measures, such as spoons and cups.	Some ingredients need to be prepared before they can be cooked or eaten. There are many ways to prepare ingredients: peeling skins using a vegetable peeler, such as potato skins; grating hard ingredients, such as cheese or chocolate; chopping vegetables, such as onions and peppers and slicing foods, such as bread and apples. Prepare ingredients by peeling, grating, chopping and slicing.	Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning. Prepare and cook a simple savoury dish.	Cooking techniques include baking, boiling, frying, grilling and roasting. Identify and use a range of cooking techniques to prepare a simple meal or snack.	Sweet dishes are usually desserts, such as cakes, fruit pies and trifles. Savoury dishes usually have a salty or spicy flavour rather than a sweet one. Use an increasing range of preparation and cooking techniques to cook a sweet or savoury dish.	Ingredients can usually be bought at supermarkets, but specialist shops may stock different items. Greengrocers sell fruit and vegetables, butchers sell meat, fishmongers sell fresh fish and delicatessens usually sell some unusual prepared foods, as well as cold meats and cheeses. Follow a recipe that requires a variety of techniques and source the necessary ingredients independently.
	Nutrition	Some foods are healthy. These include fruits, vegetables, nuts and seeds. Help to prepare a range of healthy snacks.	There are healthy and unhealthy foods. Fruit and vegetables are an important part of a healthy diet. Suggest healthy ingredients that can be used to make simple snacks.	Fruit and vegetables are an important part of a healthy diet. It is recommended that people eat at least five portions of fruit and vegetables every day. Select healthy ingredients for a fruit or vegetable salad.	A healthy diet should include meat or fish, starchy foods (such as potatoes or rice), some dairy foods, a small amount of fat and plenty of fruit and vegetables. Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal.	There are five main food groups that should be eaten regularly as part of a balanced diet: fruit and vegetables; carbohydrates (potatoes, bread, rice and pasta); proteins (beans, pulses, fish, eggs and meat); dairy and alternatives (milk, cheese and yoghurt) and fats (oils and spreads). Foods high in fat, salt and sugar should only be eaten occasionally as part of a healthy, balanced diet. Identify the main food groups (carbohydrates, protein, dairy, fruits and vegetables, fats and sugars).	Healthy snacks include fresh or dried fruit and vegetables, nuts and seeds, rice cakes with low-fat cream cheese, homemade popcorn or chopped vegetables with hummus. A healthy packed lunch might include a brown or wholemeal bread sandwich containing eggs, meat, fish or cheese, a piece of fresh fruit, a low-sugar yoghurt, rice cake or popcorn and a drink, such as water or semi-skimmed milk. Design a healthy snack or packed lunch and explain why it is healthy.	A balanced diet gives your body all the nutrients it needs to function correctly. This means eating a wide variety of foods in the correct proportions. Evaluate meals and consider if they contribute towards a balanced diet.	Eating a balanced diet is a positive lifestyle choice that should be sustained over time. Food that is high in fat, salt or sugar can still be eaten occasionally as part of a balanced diet. Plan a healthy daily diet, justifying why each meal contributes towards a balanced diet.

	Origins of food	Food can come from plants or animals. Explore and try a range of foods and suggest where they come from.	Food comes from different sources, including from animals, such as meat, fish, eggs and dairy, or from plants, such as fruit and vegetables. Begin to identify the origins of some foods.	Some foods come from animals, such as meat, fish and dairy products. Other foods come from plants, such as fruit, vegetables, grains, beans and nuts. Sort foods into groups by whether they are from an animal or plant source.	Food comes from two main sources: animals and plants. Cows provide beef, sheep provide lamb and mutton and pigs provide pork, ham and bacon. Examples of poultry include chickens, geese and turkeys. Examples of fish include cod, salmon and shellfish. Milk comes mainly from cows but also from goats and sheep. Most eggs come from chickens. Honey is made by bees. Fruit and vegetables come from plants. Oils are made from parts of plants. Sugar is made from plants called sugar cane and sugar beet. Plants also give us nuts, such as almonds, walnuts and hazelnuts. Identify the origin of some common foods (milk, eggs, some meats, common fruit and vegetables).	The types of food that will grow in a particular area depend on a range of factors, such as the rainfall, climate and soil type. For example, many crops, such as potatoes and sugar beet, are grown in the south-east of England. Wheat, barley and vegetables grow well in the east of England. Identify and name foods that are produced in different places.	Particular areas of the world have conditions suited to growing certain crops, such as coffee in Peru and citrus fruits in California in the United States of America. Identify and name foods that are produced in different places in the UK and beyond.	Seasonality is the time of year when the harvest or flavour of a type of food is at its best. Buying seasonal food is beneficial for many reasons: the food tastes better; it is fresher because it hasn't been transported thousands of miles; the nutritional value is higher; the carbon footprint is lower, due to reduced transport; it supports local growers and is usually cheaper. Describe what seasonality means and explain some of the reasons why it is beneficial.	Organic produce is food that has been grown without the use of man-made fertilisers, pesticides, growth regulators or animal feed additives. Organic farmers use crop rotation, animal and plant manures, hand-weeding and biological pest control. Explain how organic produce is grown.
Comparison	Compare and contrast	Share their creations with others and begin to notice how the work of others is the same or different to their own.	Aspects of designing and making can be compared with others, including inspiration for making a product and the tools and techniques used. Describe what, why and how something was made and compare with others.	Two products can be compared by looking at a set of criteria and scoring both products against each one. Describe the similarities and differences between two products.	Products can be compared by looking at particular characteristics of each and deciding which is better suited to the purpose. Compare different or the same products from the same or different brands.	Work from different designers can be compared by assessing specific criteria, such as their visual impact, fitness for purpose and target market. Explain the similarities and difference between the work of two designers.	A comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored. Create and complete a comparison table to compare two or more products.	A focus group is a small group of people whose reactions and opinions about a product are taken and studied. Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria.	Products and inventions can be compared using a range of criteria, such as the impact on society, ease of use, appearance and value for money. Create a detailed comparative report about two or more products or inventions.

								Survey users in a range of focus groups and compare results.	
Significance	Significant people	Important products are those that help people. Begin to talk about important products.	Some products are significant because they have changed the way people live their lives. Explore significant products.	The importance of a product may be that it fulfils its goals and performs a useful purpose. Describe why a product is important.	Many key individuals have helped to shape the world. These include engineers, scientists, designers, inventors and many other people in important roles. Explain why a designer or inventor is important.	Key inventions in design and technology have changed the way people live. Describe how key events in design and technology have shaped the world.	Significant designers and inventors can shape the world. Explain how and why a significant designer or inventor shaped the world.	Many new designs and inventions influenced society. For example, labour-saving devices in the home reduced the amount of housework, which was traditionally done by women. This enabled them to have jobs. Describe the social influence of a significant designer or inventor.	The significance of a designer or inventor can be measured in various ways. Their work may benefit society in health, transport, communication, education, the built environment or technology. It may enhance culture in different areas, such as fashion, ceramics or computer games. Present a detailed account of the significance of a favourite designer or inventor.

"Good buildings come from good people, and all problems are solved by good design"
Stephen Gardiner

Progression of vocabulary in Design and Technology

	evaluation	generation of ideas	compare and contrast	staying safe	everyday products	structures	investigation	materials for purpose	Mechanisms and movement	Significant people	Cutting and joining textiles	Decorating and embellishing textiles	Nutrition	Origins of food
1	change criteria difficulty evaluate evaluation improve strength weakness	design design criteria drawing frame function idea label material plan purpose shape size design design criteria diagram label	compare different similar compare difference similarity	safety tool hygiene rule safety	function permanent protection purpose shelter structure temporary axle chassis vehicle wheel	appearance construction design entry point finish functionality joining model product roof safety structure tools wall	attach evaluate strong tool weak chop grate grater knife mash masher peel peeler slice tear	brick construction fabric rope stick tarpaulin wooden cane material purpose	axle chassis connect move roll wheel	product taxi transport vehicle	join running stitch stitch	bead button glue sequin stitch	flavour fruit healthy ingredient salad vegetable	animal dairy product fish flower fruit leaf meat nut plant root seed source stem
	evaluation	**generation of ideas**	**compare and contrast**	**staying safe**	**everyday products**	**structures**	**investigation**	**materials for purpose**	**Mechanisms and movement**	**Significant people**	**Cutting and joining textiles**	**Decorating and embellishing textiles**	**Nutrition**	**Origins of food**
2	change dislike evaluate evaluation improve like success change improve strength success weakness design criteria evaluation finish improvement product successful	design design criteria drawing equipment ingredient instruction label method picture recipe test describe diagram label bag tag design diagram explore talk design criteria labelled diagram plan sketch	compare design different landmarks motif same spots stripes different feature similar	equipment safety tool	attractive cushion hardwearing improve peg bag pillowcase product slippers tablecloth tea cosy tea towel toiletry bag greetings card improve product	construct frame join joint stable stiff strengthen structure	grate grater grip knife mash masher measure measuring spoon peel peeler property purpose slice spoon spread tongs finish model support tool equipment glue join sewing pattern stapler tool	material property use decorative embellishment fabric material textile card material metal plastic property stiff	bar component fixed pivot force lever linkage machine mechanism motion movement moving pivot pivot pull push slider slider mechanism	Cath Kidston brand distinctive fashion homeware designer inspire textile vintage	cut fabric fasten glue join needle running stitch sew stitch textile thread tie	appliqué button decorative embellishment fabric printing sequin textile	ingredient measure preparation	animal diet fish flower fruit leaf mixed nut plant pulse root seed shellfish source stem vegan vegetarian

3	**evaluation**	**generation of ideas**	**compare and contrast**	**staying safe**	**everyday products**	**structures**	**investigation**	**materials for purpose**	**Mechanisms and movement**	**Significant people**	**Cutting and joining textiles**	**Decorating and embellishing textiles**	**Nutrition /food preparation and baking**
	evaluate evaluation improve success demonstrate discussion evaluate explain feedback finish improve improvement quality reflect strength structure change design criteria effective evaluation findings improvement observation suitability	design design criteria diagram health and safety plan design design criteria diagram design design criteria diagram dimension plan	biome compare conservatory designer difference purpose similarity structure style	safety rules supervision	cloche cold frame greenhouse	diagonal strut frame structure stability strength three-dimensional triangular shape	component cut join material test G clamp bench hook butt joint explore gluing hacksaw hot glue gun improve investigate joining reinforcing strengthening test triangular corner	glass hardwearing material plastic property purpose strength transparent waterproof	automaton toy axle cam component down elliptical cam follower heart cam hexagonal cam lever linkage machine mechanical mechanism motion movement off-centre circular cam pear cam rotational slider snail cam square cam up wheel	Food Standards Agency	cloth fabric interlace loom material thread warp weave weaving weft woven yarn	decorate embellish flower fruit grass leaf pattern twig	bake barbecue boil chop cook deseed dice fry grate grill hob ingredient method microwave mix oven peel prepare roast skin slice slow cooker steam Eatwell guide balanced calcium carbohydrate dairy diet fibre food group fruit healthy nutrient nutrition oil protein vegetable vitamin

4	evaluation	generation of ideas	compare and contrast	everyday products	structures	materials for purpose	Mechanisms and movement	Significant people	Cutting and joining textiles	Decorating and embellishing textiles	Nutrition and food prep	Electricity
	evaluation fulfil design criteria improve success appearance attractive design criteria evaluation improvement purpose review success evaluation feedback finish improvement modification change evaluate evaluation improve success	build deconstruct net reconstruct sketch annotate design criteria plan sketch annotated sketch design criteria exploded diagram annotated sketch labelled diagram prototype	appearance colour compare component different embellishment function material pattern property purpose quality similar size compare electrical product manual product purpose usability	Tetra Pak Tupperware bag bottle box can carton cling film compostable food packaging jar recyclable recycle reuse home furnishing home product design feature nightlight programmable programmable device sensor switch compound machine device simple machine	cone cube cuboid hexagonal prism net packaging prototype triangular prism	Polystyrene card cardboard cling film glass paper plastic tin tin foil appearance colour elasticity material natural pattern shape synthetic textile texture yarn comfortable delicate durable fabric flexibility flexible lightweight man-made material natural property soft strength stretchy strong synthetic textile texture tough use versatile waterproof conductive material non-conductive purpose characteristic material property rigid smooth strength	axle compound machine effort first class force fulcrum inclined plane lever load pulley screw second class simple machine third class wedge wheel	Dr Ruben Rausing Earl Tupper Gerald Thomas Henry D Thatcher Jacob Perkins Kruger Brewing Company Louis Pasteur Nicolas Appert Peter Durand Ralph Wiley TV dinners Tetra Pak Tupperware William Cullen William Kellogg best before canning drying freezing pasteurisation pickling refrigeration salting saran wrap use by loom weaver weaving Arts and Crafts movement Morris & Co William Morris textile designer	fraying hem pinking shears running stitch sew	block printing diamond pattern structure trellis wey	bake blender chop chopping board cool crush cut garlic press grate heat knife mash masher mix pastry brush peel slice spread tear wash fresh healthy snack	LED cell circuit coding complete circuit component electricity incomplete circuit lamp light-emitting diode micro:bit program programming push-to-break switch push-to-make switch reed switch rocker switch series circuit toggle switch wire

5	evaluation	generation of ideas	compare and contrast	materials for purpose	everyday products	structures	investigation	Mechanisms and movement	Significant people	Cutting and joining textiles	Decorating and embellishing textiles	Nutrition and food prep
	adjust design analysis deployment evaluate evaluation feedback focus group improvement iterative process problem-solve product prototype success test discuss evaluation improve	computer-aided design design product	difference similarity	appearance functional stability stiffness	heavy lifting equipment jack jack hammer machinery paint sprayer pneumatic machine pneumatic system Baroque Classical Corinthian column Doric column Gothic Industrial Ionic column Modernist Postmodern Renaissance ancient Egyptian architecture building caryatid entablature frieze pediment prehistoric style sustainable temple	brace lifting arm load stable strong structure strut sturdy triangle column framework lintel post stability stiffness structure support	equipment investigate problem-solve technique test version	actuator air air pressure compress compressor force gas hinge lever movement piston plunger pneumatic system pneumatics power reservoir syringe valve	Roman builders ancient Egyptians prehistoric builders	appliqué arrange embellish fabric crumb layer	appliqué embellishment	blend boil brown chop cooked dice food hygiene food preparation grate health and safety mash peel puree raw sauté simmer steam carbohydrate fat fibre fresh fruit healthy kilocalorie kilojoule mineral nutrient nutritional value protein salt saturated fat seasonal food soup sugar vegetable vitamin produce seasonal fruit seasonal vegetable seasonality

6	evaluation	generation of ideas	compare and contrast	everyday products	structures	investigation	materials for purpose	Significant people	Cutting and joining textiles	Nutrition and food prep	Electricity / Use of ICT
	evaluate evaluation feedback modification reflect constructive feedback evaluation improvement modification analysis evaluation feedback improve problem results adapt change repurpose	design criteria exploded diagram annotated diagram design design criteria exploded diagram modelling prototype test	advantage compare comparison disadvantage ingredient nutritional value taste texture use by date arch bridge beam bridge compare material span support suspension bridge truss bridge type compare evaluate	convenience food minimally processed packaging processed ultra-processed unprocessed accelerometer sensor appliance contact sensor level sensor light sensor mains monitor motion sensor proximity sensor sensor sound sensor temperature sensor blouse clothing dress fabric fashion garment handmade hat jacket jeans recycle repair shirt skirt sock trousers	bridge force structure triangle	concertina investigation layers shape strength strengthening Velcro blanket stitch button decorative embroidery fabric property fastening function investigate label needle observation press stud ribbon running stitch seam thread tie toggle whip stitch zip	stability strength strengthening recycled	Isambard Kingdom Brunel Sir Benjamin Baker Sir John Fowler Thomas Telford engineer	pin repair stitch tack	bake blend boil brush chop cool crush cut dough fry halve health and safety heat hygiene knead mash mix peel pour prove recipe reheat simmer slow cook spoon spread sprinkle stir store yeast Eatwell guide balanced carbohydrate daily menu dairy diet fruit healthy oil organic protein vegetable animal feed additive farm fertiliser labour intensive organic pesticide whole food	LED coding debug environmental variable light sensor light-emitting diode micro:bit program programmable sensor programming sensor circuit circuit component debug electricity micro:bit programmable device programming