Design Technology

Subject Definitions

KS1 definition:

Design and Technology is learning about how things work and designing and making our own models and food.

KS2 definition:

Design and Technology is applying technical knowledge to design, make and evaluate products including food.

Long Term Plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	**Moving minibeasts** Mechanical systems			**Stable Structures** Materials and Structures		**Eat More Fruit and Vegetables** Cooking and Nutrition
Year 2		**Puppets** Textiles		**Vehicles** Mechanical Systems	**Perfect Pizza** Cooking and Nutrition	
Year 3			**British inventors** Materials and Structures Inventions and Achievements	**Storybooks** Mechanical Systems	**Mini Greenhouse** Materials and Structures	
Year 4		**Sewing Seasonal stockings** Textiles			**Light up signs** Electrical Systems and Programming	**Seasonal Food** Cooking and Nutrition
Year 5	**Building Bridges** Materials and Structures		**Chinese inventions** Mechanical Systems Inventions and Achievements		**Drawstring bags** Textiles	
Year 6		**Burgers** Cooking and Nutrition	**Giant's slipper** Textiles			**Bird Houses** Materials and Structures

Design and Technology progression

Skills

	Nursery	Reception	Year 1	Year 2
Developing, planning and communicating ideas	**Birth to 5 Matters Range 5** Develops an understanding of using lines to enclose a space, and begins to use drawing to represent actions and objects based on imagination, observation and experience	**Birth to 5 Matters Range 6** Uses their increasing knowledge and understanding of tools and materials to explore their interests and enquiries and develop their thinking	Generate ideas by drawing on their own experiences Use knowledge of existing products to help come up with ideas Develop and communicate ideas by talking and drawing Model ideas by exploring materials, components and construction kits and by making templates and mock-ups	Generate ideas by drawing on their own and other people's experiences Develop their design ideas through discussion, observation , drawing and modelling Identify a purpose for what they intend to design and make Identify simple design criteria Make simple drawings and label parts
Working with equipment, tools and components to make quality products	**Birth to 5 Matters Range 5** Uses tools for a purpose Uses various construction materials, e.g. joining pieces, stacking vertically and horizontally, balancing, making enclosures and creating spaces	**Early Learning Goal** Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function	Make their design using appropriate techniques Measure, mark out, cut and shape a range of materials with support Use tools e.g. scissors and a hole punch safely Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape Select and use appropriate fruit and vegetables, processes and tools Use basic food handling, hygienic practices and personal hygiene Use simple finishing techniques to improve the appearance of their product	Begin to select tools and materials; use vocab' to name and describe them Measure, cut and score with some accuracy Use hand tools safely and appropriately Assemble, join and combine materials in order to make a product Follow safe procedures for food safety and hygiene Choose and use appropriate finishing techniques Cut, shape and join felt to make a simple garment. Use basic sewing techniques – running stitch and over stitch to join 2 pieces of fabric Sew a button onto a piece of fabric
Evaluating processes and products		**Early Learning Goal** Share their creations, explaining the process they have used.	Evaluate their product by discussing how well it works in relation to the purpose Evaluate their products as they are developed, identifying strengths and possible changes they might make Evaluate their product by asking questions about what they have made and how they have gone about it	Evaluate against their design criteria Evaluate their products as they are developed, identifying strengths and possible changes they might make Talk about their ideas, saying what they like and dislike about them

Design and Technology progression

Skills

	Year 3	Year 4	Year 5	Year 6
Developing, planning and communicating ideas	Generate ideas for an item, considering its purpose and the user/s Identify a purpose and establish criteria for a successful product. Plan the order of their work before starting Explore, develop and communicate design proposals by modelling ideas Make drawings with labels when designing	Generate ideas, considering the purposes for which they are designing Make labelled drawings from different views showing specific features Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail Evaluate products and identify criteria that can be used for their own designs	Generate ideas through brainstorming and identify a purpose for their product Draw up a specification for their design Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail Use results of investigations, information sources, including ICT when developing design ideas	Communicate their ideas through detailed labelled drawings Develop a design specification Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways Plan the order of their work, choosing appropriate materials, tools and techniques
Working with equipment, tools and components to make quality products	Select tools and techniques for making their product Create linkage and lever mechanisms that work well Select and use fonts and graphics that are suited to their purpose. Measure, mark out, cut, score and assemble components with more accuracy Work safely and accurately with a range of simple tools Think about their ideas as they make progress and be willing change things if this helps them improve their work Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT	Select appropriate tools and techniques for making their product Join and combine materials and components accurately in temporary and permanent ways Use simple graphical communication techniques Cut, shape and join fabric to make a simple garment. Measure, tape or pin, cut and join fabric with some accuracy Use running stitch, overstitch and zigzag stitch to join two pieces of fabric together. Hide the finishing knot. Sew a button, bead, sequin or pipe cleaner onto a piece of fabric. Embroider shapes and patterns into a piece of fabric and use appliqué to add decoration to a piece of fabric Create a simple circuit with incandescent bulbs and a switch. Strip, twist and join wire to make permanent connections. Demonstrate hygienic food preparation and storage	Select appropriate materials, tools and techniques Measure and mark out accurately cut and shape a range of materials, using appropriate tools, equipment and techniques Use skills in using different tools and equipment safely and accurately Cut and join with accuracy to ensure a good-quality finish to the product Pin, sew and stitch materials together to create a product Sew using a range of different stitches: a running stitch, overstitch, zigzag stitch, blanket stitch. Sew a hem. Sew an appliqué decoration. Independently thread a needle.	Select appropriate tools, materials, components and techniques Assemble components to make working models Use tools safely and accurately Construct products using permanent joining techniques Make modifications as they go along Achieve a quality product Weigh and measure accurately (time, dry ingredients, liquids) Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens Sew using a range of different stitches: a running stitch, overstitch, zigzag stitch, blanket stitch. and back stitch. Create pattern pieces, including a hem allowance. Tie threads to ensure seams do not unravel.
Evaluating processes and products	Evaluate their product against original design criteria e.g. how well it meets its intended purpose Disassemble and evaluate familiar products	Evaluate their work both during and at the end of the assignment Evaluate their products carrying out appropriate tests	Evaluate a product against the original design specification Evaluate it personally and seek evaluation from others	Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests Record their evaluations using drawings with labels Evaluate against their original criteria and suggest ways that their product could be improved

Textiles knowledge progression

Year 2	Year 4	Year 5	Year 6
Puppets I can name some different types of puppet: marionette, sock, hand, finger, rod. I know that puppets are controlled in different ways: strings, by a person's hand and by a wooden stick. I can name a running and over stitch and know they can be used to add pieces of fabric and other materials.	**Seasonal Stockings** I can explain the difference between the function and visual appearance of a product. I can describe a variety of decorative sewing techniques.	**Fashion and Textiles** I can explain the process of turning raw cotton into cloth. I know that products woven together are called textiles. I can identify running stitch, zigzag stitch, blanket stitch. I know textiles are made from synthetic, plant or animal fibres. I know that before designing and making an item made using textiles, fashion designers develop design criteria by doing research to decide what goals their product must achieve to be successful. I know that sewing a hem on the edge of a piece of fabric gives it a neat, hard-wearing edge.	**Fashion and Textiles** I can identify a blind stitch, buttonhole stitch and overlock stitch on a variety of ready-made garments. I know what a pattern piece is and why they are important when designing a garment. I can describe what the job of a fashion designer is.

Mechanical systems knowledge progression

Year 1	Year 2	Year 3
Moving Minibeasts I know what a pivot and lever are. I know the names of some mechanisms and can match them to the type of movement they produce. I can match the type of lever to the movement created.	**Vehicles** I know what an axle and a chassis is. A vehicle is something with wheels that transports people or objects. Cars, trucks, buses and carts are all types of vehicles.	**Storybooks** A mechanism is the parts that make something work. Fonts and graphics can be used when designing features. I can use a concertina, pop-out, lever and wheel to create different effects.

Materials and Structures knowledge progression

Year 1	Year 3	Year 3	Year 5	Year 6
Stable Structures I know that toy garages can be made from wood, plastic and cardboard. Toy garages have different levels and ramps. A stable object is something that is not going to fall over.	**British Inventors** I can explain how concrete is used to make structures more stable. I can explain about the invention of the mackintosh. I can explain about the invention of the world wide web. I can describe how the invention of the internet has changed the world.	**Making Mini Greenhouses** green house keeps plants alive by providing shelter and sunlight. To make a stable structure the base needs to be wider to spread the weight. Mini greenhouses can be made out of cardboard, straws, cling film and bubble wrap.	**Building Bridges** I know what beams and pillars are and how they are used in bridge construction. I can explain what a truss is and how trusses make bridges stronger. I can identify the three types of trusses commonly used in bridge design. I can explain how arches work to make bridges stronger. I can explain how suspension bridges use tension forces to work.	**Bird House Builders** Birds houes can be made from different materials such as wood, plastic and metal. That these materials can be joined in different ways. That different diagrams, mainly flat pack, can be used to represent a bird house design.

Electrical systems and programming knowledge progression

Year 4
<u>Light-Up Signs</u> I can describe the function of an illuminated sign. I can explain why a criteria is important.

Cooking and Nutrition knowledge progression

Year 1	Year 2	Year 4	Year 6
Eat More Fruits and Vegetables I can name a variety of fruits and vegetables I know how to use my senses to explore different vegetables and can use adjectives to describe their taste, texture and smell. I understand the basics of food hygiene such as washing hands, tying long hair back and keeping the surfaces clean.	**Perfect Pizzas** Pizzas have a topping. Some toppings are cheese, pepperoni, peppers, ham and pineapple. Pizza bases are made from a type of bread. A balanced diet means eating foods from different groups. That we need to have a balanced diet.	**Seasonal Food** I know that some foods, like wheat, are available all year round and describe the cycle of wheat production in the UK. I can distinguish between fruits that are grown in the UK and those that are grown abroad. I know some of the nutrients we get from fruits, vegetables, meat, fish and dairy products. I know when meats are in season in the UK and which are available all year round.	**Burgers** I can compare different burgers and assess which is healthiest I can add ingredients to a basic burger patty to reflect global cuisine. I can add mixtures of herbs and spices to a basic bread dough to make flavoured burger buns.

Inventions and achievements knowledge progression

Year 3	Year 5
British Inventors I can explain about the invention of the mackintosh. I can investigate ways of making fabric waterproof. I can explain about the invention of the world wide web. I can describe how the invention of the internet changed the world.	**Chinese Inventions** I can explain why kites were first invented and how they were made. Kites were originally used to send signals or measure long distances. The sail of a kite should be strong and light to create resistance against the wind. The frame should be strong to support the sail. The kite tail should be light and balances the kite. The line of the kite should be strong and thin so it doesn't create too much air resistance.

Vocabulary progression

Year 1	Year 2	Year 3
Mechanism, design, evaluate Stable structure Skin, seed, flesh	Needle, fabric, attach. Wheel, axel, chassis, vehicle body. Dough, kneading.	Reinforce, inventor, invention, properties. Rotate, linkage, graphics. Structure, design criteria, capacity.
Year 4	**Year 5**	**Year 6**
Join, functionality, hidden knot, visually appealing. Illuminate, circuit, freestanding. Recipe, climate, processed, preserved, savoury, seasonal food.	Pillar, beam, girder, tension, compression. Invention, movable type press, machine, resistance, prototype. Textiles, synthetic, hem, pattern, drawstring channels.	Calories, patty, gluten, hygiene. Specification, flow chart, seam allowance, insulation, sole, wadding. Construct, join, drill bit, clamp.