Design and Technology

Progression Planning Document

Key vocabulary is highlighted throughout curriculum document.

By the end of	Food	Material	Textiles	Electricals and electronics	Construction	Mechanics	Computing	To design, make, evaluate and improve
Foundation stage	Begin to develop a food vocabulary using taste, smell, texture, and feel. Stir, spread, knead, and shape a range of food and ingredients. Begin to work safely and hygienically- children know to wash hands before touching and eating food. Measure and weigh food items, non-statutory measures e.g. spoons, cups.	Select materials from a limited range that will meet simple design criteria e.g. shiny, smooth, stretchy etc) Select and name the tools needed to work the materials e.g. scissors for paper. Select appropriate sizes of material for purpose. Use adhesives to join material.	Use a variety of techniques, e.g. weaving, finger knitting, fabric crayons, sewing and binca. How to thread a needle, cut, glue and trim material. Create images from imagination, experience, or observation. Use a wide variety of media, inc. photocopied material, fabric, plastic, tissue, magazines, crepe paper, etc.	To operate simple equipment (programmable toys, remote controls, recordable devices).	Experience of using construction kits to build walls, towers, and frameworks. Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card. Experience of different methods of joining card and paper. Joins construction pieces together to build and balance. Realises tools can be used for a purpose. Understands that different media can be combined to create new effects. Manipulates materials to achieve a planned effect. Constructs with a purpose in mind, using a variety of resources. Uses simple tools and techniques competently and appropriately. Selects appropriate resources and adapts work where necessary.	Early experiences of working with paper and card to make simple flaps and hinges. Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners, and masking tape. Assemble vehicles with moving wheels using construction kits- Lego and Kinects. Explores and uses ready-made mechanisms such as flaps, sliders, knobs, pulleys and levers.	Completes a simple programme on a computer, such as beebot. Interact with age appropriate computer software (for example, clicker 5) Programming	Explain what they are making and which materials they are using. Select materials from a limited range that will meet simple design criteria e.g. shiny. Select and name the tools needed to work the materials e.g. scissors for paper. Explore ideas by rearranging materials. Describe simple models or drawings of ideas and intentions. Discuss their work as it progresses. Discuss possible changes and improvements they would make in the future.

Design and Technology

Progression Planning Document

By the end of	Food	Material	Textiles	Electricals and electronics	Construction	Mechanics	Computing	To design, make, evaluate and improve
Year 1	Know how to prepare simple dishes safely and hygienically, without using a heat source such as a fruit salad. Know how to use techniques such as cutting, peeling, and grating with support from an adult.	Cut materials safely using tools provided. With help measure, mark out, cut and shape a range of materials. Explore using tools *e.g. scissors and a hole punch* safely. Selects tools and techniques needed to shape, assemble and join materials they are using.	Begin to identify different forms of textiles. Have experience in colouring textiles: printing, fabric crayons. Use more than one type of stitch- cross stitch, running stitch. Explain how to thread a needle and have a go. Have some experience of weaving and understand the process and some techniques. Begin to identify different types and textures of fabric and materials for collage. Use appropriate language to describe colours, media, equipment, and textures. Look and talk about what they have produced, describing simple techniques and media used.	To operate simple equipment (programmable toys, remote controls, recordable devices).	Mark out materials to be cut using a template. Attach wheels to chassis on a model using an axle. With support cut strip wood/dowel using a hacksaw. Begin to assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape. Begin to use simple finishing techniques to improve the appearance of their product.	Make vehicles with construction kits which contain free running wheels.	Create and debug simple programs (give the Bee Bot a complete program, and then debug this to correct any errors)	Draw on their own experience to help generate ideas. Suggest ideas and explain what they are going to do. Identify a target group for what they intend to design and make. Model their ideas in card and paper. Develop their design ideas applying findings from their earlier research.
Year 2	Cut, peel, or grate ingredients safely, hygienically and give opportunities to do this independently. Measure or weigh using measuring cups or electronic scales. Assemble or cook ingredients such as baking.	Cut materials safely using tools provided. Measure and mark out to the nearest centimetre Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). Demonstrate a range of joining techniques (such as gluing, hinges, or combining materials to strengthen).	Shape textiles using templates. Join textiles using running stitch. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins, or printing). Match and sort fabrics and threads for colour, texture, length, size and shape.	Diagnose faults in battery operated devices (such as low battery, water damage, or battery terminal damage).	Model designs using software. Build structures, exploring how they can be made stronger, stiffer, and more stable. With help measure, cut and score with some accuracy. Learn to use hand tools safely and appropriately. Start to assemble, join and combine materials in order to make a product.	Create products using levers, wheels and winding mechanisms.	Model designs using software. Recognise and debug any errors in their own code(coding). Create more complex programs on screen (e.g. using Scratch Jr or Scratch) with a particular goal or purpose in mind (e.g. drawing compound shapes, making a simple scripted animation or modifying someone else's program)- e.g. Correctly complete the more complex programming challenges, such as programming an object to move. Take a simple game or piece of application software and reverse engineer at least some of the steps or rules that were present in the underlying algorithm. E.g. when lives reach zero and health drops to zero, show game over and stop the game	Design products that have a clear purpose and an intended user. Make products, refining the design as work progresses. Use software to design. Start to generate ideas by drawing on their own and other people's experiences. Begin to develop their design ideas through discussion, observation, drawing and modelling. Identify a purpose for what they intend to design and make. Understand how to identify a target group for what they intend to design and make based on a design criteria. Develop their ideas through talk and drawings and label parts. Make templates and mock ups of their ideas in card and paper or using ICT. Evaluate their work against their design criteria. Look at a range of existing products explain what they like and dislike about products and why. Start to evaluate their products as they are developed, identifying strengths and possible changes they might make. With confidence talk about their ideas, saying what they like and dislike about them.

Design and Technology

Progression Planning Document

By the end of	Food	Material	Textiles	Electricals and electronics	Construction	Mechanics	Computing	To design, make, evaluate and improve.
Year 3	Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. Begin to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	Measure and mark out accurately. Cut materials accurately and safely by selecting appropriate tools. Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).	Use a variety of techniques, Inc. printing, dying, quilting, weaving, embroidery, paper and plastic trappings, and applique. Name the tools and materials they have used. Develop skills in stitching, cutting, and joining. Experiment with a range of media e.g. overlapping, layering etc. Show awareness and name a range of different fabrics. Use a variety of techniques, e.g. printing, dyeing, weaving, and stitching to create different textural effects. Apply decoration using beads, buttons, feathers etc. Continue to gain experience in applying colour with printing. Explore using resist paste and batik. Show further experience in changing and modifying threads and fabrics, knotting, fraying, fringing, pulling threads, twisting, plaiting. To record textile explorations and experimentations as well as try out ideas. Identify changes they might make or how their work could be developed further.	Create series circuits. Know how simple electrical circuits and components can be used to create functional products. Start to understand that electrical systems have an input, process and output.	Strengthen frames using diagonal struts.	Start to understand that mechanical systems have an input, process and output. Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys, and gears).	Explain what the main parts of a computer do(e.g. RAM, hard drive, CPU) Understand that computers need precise instructions- create a program that allows an object to move around the screen (scratch). e.g.: a typical program might be a scripted animation for a joke, part of a story, or linked to another area of the curriculum. Programs could use pre-built sprites or ones designed by the child. Expect programs to include movement and dialogue; they may also include sound effects and some use of costumes to allow for animated movement. There may be more than one sprite in the animation.	With growing confidence generate ideas for an item, considering its purpose and the user/s. Start to order the main stages of making a product. Identify a purpose and establish criteria for a successful product. Understand how well products have been designed, made, what materials have been used and the construction technique. Learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. Start to understand whether products can be recycled or reused. Know to make drawings with labels when designing. When planning explain their choice of materials and components including function and aesthetics.
Year 4	Prepare ingredients hygienically using appropriate utensils. Measure ingredients to the nearest gram accurately. Follow a recipe. Assemble or cook savoury dishes (controlling the temperature of the oven or hob, if cooking). Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading, and baking.	Cut materials accurately and safely by selecting appropriate tools. Measure and mark out to the nearest millimetre. Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). Create nets and select appropriate joining techniques.	Understand the need for a seam allowance. Join textiles with appropriate stitching. Select the most appropriate techniques to decorate textiles. Use a technique as a basis for stitch embroidery. Become confident in applying colour with printing, tie dye. Create and use dyes. Use resist paste and batik.	Create series and parallel circuits.	Choose suitable techniques to construct products or to repair items. Strengthen materials using suitable techniques.	Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).	Control and monitor models using software designed for this purpose. Write a program in Scratch (or similar) in which the user has to provide some input, perhaps as an answer to a question on screen, or by using key presses or the mouse. The program could be a simple game or a set of questions and typed responses- .e.g. Plan and develop a simple educational game, e.g. a maths quiz, in Scratch or plan and develop a prototype for an interactive toy in Scratch.	Design with purpose by identifying opportunities to design. Make products by working efficiently (such as by carefully selecting materials). Refine work and techniques as work progresses, continually evaluating the product design. Use software to design and represent product designs

Design and Technology

Progression Planning Document

By the end of	Food	Material	Textiles	Electricals and electronics	Construction	Mechanics	Computing	To design, make, evaluate and improve
Year 5	Understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. Understand how food is processed into ingredients that can be eaten or used in cooking. Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source Start to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading, and baking.	Cut materials with precision. Cut accurately and safely to a marked line. Join/combine materials with temporary, fixed or moving joints.	Join fabrics in different ways, including stitching. Use different grades and uses of threads and needles. Extend their work within a specified technique. Use a range of media to create collage. Experiment with using batik safely- create design with wax and dye. Change and modify threads and fabrics.	Control a model using an ICT control model.	Use a glue gun with close supervision. Join materials using appropriate methods. Use hand drill to drill tight and loose fit holes.	Use innovative combinations of electronics (or computing) and mechanics in product designs.	Know how to write a simple program to control a product. Use the correct technical vocabulary for the project.	Start to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and CAD. Begin to use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. With growing confidence apply a range of finishing techniques, including those from art and design Draw up a specification for their design- link with Mathematics and Science. Use results of investigations, information sources, including ICT when developing design ideas. With growing confidence select appropriate materials, tools and techniques. Start to understand how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose.
Year 6	Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. Demonstrate a range of baking and cooking techniques, savoury and sweet dishes. Create and refine recipes, including ingredients, methods, cooking times and temperatures.	Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper).	Create objects (such as a cushion) that employ a seam allowance. Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion).	Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).	Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding).	Convert rotary motion to linear using cams. Use innovative combinations of electronics (or computing) and mechanics in product designs.	Write code to control and monitor models or products e.g. write a program to monitor changes in the environment and control a product. Understand how computers can be networked together.	Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). Make products through stages of prototypes, making continual refinements. Ensure products have a high quality finish, using art skills where appropriate. Use prototypes, cross-sectional diagrams, and computer aided designs to represent designs.