Design + Technology Progression Map

Substantive knowledge: the design and technology content pupils know and remember: users, needs, products, materials, tools, techniques, structures, mechanisms, textiles, electrical and digital systems, food, nutrition, vocabulary and key design concepts.

Disciplinary knowledge: the knowledge of how designers, engineers, technologists and makers work: researching, analysing products, developing design criteria, generating ideas, prototyping, testing, making, evaluating, improving and considering impact.

Procedural knowledge: the practical doing of design and technology: using equipment safely and accurately, measuring, cutting, shaping, joining, sewing, cooking, assembling circuits, programming, finishing and communicating design decisions.

	What It Means
User, Purpose and Design Criteria	How products are designed for particular people, needs and contexts, and how success is judged against clear criteria.
Research, Innovation and Iterative Design	How designers investigate existing products, generate ideas, test prototypes, take feedback and improve solutions.
Materials, Tools and Making	How pupils select and use tools, equipment, materials and components according to characteristics, functional properties and aesthetic qualities.
Structures and Construction	How freestanding, frame and shell structures are built, joined, strengthened, stiffened, reinforced and made stable.
Mechanisms and Mechanical Systems	How movement is created and controlled through sliders, levers, wheels, axles, linkages, cams, followers, inputs, processes and outputs.
Textiles, Pattern and Joining	How fabrics are selected, shaped, templated, joined, sewn, decorated and finished to make useful and appealing products.
Food, Nutrition and Seasonality	How food is grown, reared, caught, processed, prepared and cooked, and how healthy, varied and seasonal choices are made.
Electrical and Digital Systems	How circuits, switches, bulbs and programmable devices are used to control designed products.
Evaluation, Impact and Sustainability	How products are tested, evaluated and improved, and how design decisions affect users, communities and the wider environment.

	Substantive knowledge progression	Disciplinary knowledge progression
Year 1 **Units:** • Autumn 2: Sensational Salads - cooking • Spring 2: Fabric Faces - textiles • Summer 2: Moving Pictures Traditional Tales - mechanisms	• Pupils begin to know that designed products are made for users and purposes, and that simple design criteria help decide whether a product works well. • They learn that food comes from different sources, including fruit and vegetables that are grown and fish that is caught, and they begin to group foods as part of a healthy and varied diet. • They know simple food preparation processes such as peeling, cutting, grating, zesting, juicing, mixing and following a simple recipe with adult support. • They learn that fabrics have different names, textures and uses, and that fabric pieces can be shaped with templates and joined using glue, staples and early running stitch. • They know that moving pictures can be made using sliders, levers and wheel mechanisms, and that these mechanisms create movement in a product. • Key vocabulary includes user, purpose, design criteria, product, fruit, vegetable, grown, caught, healthy, recipe, fabric, template, join, running stitch, slider, lever, wheel and mechanism.	• Explore and evaluate simple existing products such as salads, fabric characters and moving books, talking about what they like, what works and what could be improved. • Generate ideas through talking, drawing and templates, beginning to explain who a product is for and what it needs to do. • Select and use simple tools and equipment safely with support, including scissors, safe knives, graters, peelers, spoons, needles, glue and split pins. • Make products by combining ingredients, cutting and shaping fabric, joining materials and using simple mechanisms. • Test and evaluate finished products against simple design criteria, identifying strengths and one possible improvement.
Concept themes: Healthy eating; food origins; textiles; templates; joining; moving pictures; sliders, levers and wheels; user and purpose.		
Values links: Curiosity grows through exploring foods, fabrics and moving parts. Kindness and Respect develop as pupils design for themselves and others. Perseverance is built through practising cutting, stitching, joining and testing.		

	Substantive knowledge progression	Disciplinary knowledge progression
Year 2 **Units:** • Autumn 2: Dips and Dippers - cooking • Spring 2: Fabric Bunting - textiles • • Summer 2: Pirate Paddy's Packed Lunch Problems - construction	• Pupils deepen knowledge of healthy eating, food hygiene and the Eatwell Guide, knowing that a balanced diet includes different food groups and that food can be combined for texture, flavour and appeal. • They learn that dips and dippers can be designed for users by evaluating existing products and selecting suitable ingredients. • They know that fabric products can be designed with a theme, using digital graphics, templates, felt, running stitch, glue and staples to join and decorate materials. • They learn that lunch boxes and containers are structures that need to be strong, stiff, stable and sometimes waterproof, and that reclaimed materials can be selected for particular characteristics. • They know that testing helps designers find problems and improve products. • Key vocabulary includes hygiene, food group, balance, ingredient, evaluate, appeal, bunting, graphics, felt, seam, running stitch, structure, strong, stiff, stable, waterproof and reclaimed material.	• Compare existing products more deliberately, describing positives, problems and suitability for different users. • Design purposeful and appealing products using drawings, templates, simple ICT and spoken explanations. • Select materials, ingredients and tools for a purpose, beginning to justify choices using observable characteristics. • Measure, cut, join, decorate and assemble products with increasing accuracy and independence. • Test structures and food products against criteria, suggest improvements and begin to retest after making changes.
Concept themes: Healthy and varied diets; product evaluation; digital textile design; running stitch; structures; stability; waterproofing; reuse and improvement.		
Values links: Hope and Community link to reuse, problem solving and making practical improvements. Respect and Kindness grow through designing for users. Perseverance develops through testing, improving and retesting.		

	Substantive knowledge progression	Disciplinary knowledge progression
Year 3 **Units:** • Autumn 2: The Great Bread Bake Off - cooking • Spring 2: Juggling Balls - textiles • • Summer 2: Battery Operated Lights - electrical systems	• Pupils move into Key Stage 2 design by using research and design criteria to inform products for specific users and purposes. • They learn about bread products, ingredients and production, including how dough is shaped, kneaded, proved and baked, and how recipes can be adapted with selected ingredients. • They know that textile products can be analysed, decorated and joined, including tie-dye, fabric paint, hemming, running stitch and overcast stitch. • They learn that battery-operated products use electrical systems, including cells, wires, bulbs, series and parallel circuits and switches, and that circuits must be made safely. • They understand that key events and individuals have shaped food production, lighting and design technology over time. • Key vocabulary includes research, specification, sensory property, knead, prove, bake, dough, textile, hem, overcast stitch, filling, circuit, battery, bulb, switch, series circuit and parallel circuit.	• Investigate existing products and key events, using findings to generate design criteria and design ideas. • Use annotated sketches, discussion and simple prototypes to communicate how a product should look, work and meet criteria. • Select tools, equipment, ingredients, textiles and electrical components according to functional and aesthetic needs. • Work with increasing accuracy when measuring, shaping, kneading, sewing, assembling and constructing circuits. • Evaluate products against design criteria and use feedback to identify refinements to appearance, function and finish.
Concept themes: Food technology; bread and recipes; textiles and stitching; fabric decoration; electrical systems; switches; design criteria; key events in DT.		
Values links: Curiosity is encouraged through investigating how bread, textiles and circuits work. Perseverance is developed through practising technical skills and diagnosing faults. Hope and Community connect to designing useful products for others.		

	Substantive knowledge progression	Disciplinary knowledge progression
Year 4 **Units:** • Autumn 2: Edible Garden - food • Spring 2: Let's Go Fly a Kite - construction • • Summer 2: Mechanical Posters - mechanisms	• Pupils deepen knowledge of food provenance by learning how herbs, strawberries and tomatoes are grown, cared for and used in cooking, including links to seasonality and healthy balanced meals. • They know that ingredients can be measured, assembled and cooked using appropriate kitchen tools and, where relevant, controlled heat. • They learn that kites are frame structures with specific parts and shapes, and that materials can be strengthened, stiffened and joined to improve flight and stability. • They understand that key kite-related events and individuals have influenced design and technology, including how small design events can shape the wider world. • They learn that mechanical posters use levers and linkages, with inputs and outputs creating movement for a particular audience or message. • Key vocabulary includes seasonality, grown, harvest, balanced meal, millilitre, heat source, frame structure, strengthen, stiffen, reinforce, kite, linkage, lever, input, output, prototype and audience.	• Use research and existing product analysis to create and refine design criteria for food, structures and mechanisms. • Communicate ideas through annotated sketches, design criteria, prototypes and discussion of materials and function. • Select and use tools and materials with improving accuracy, including measuring ingredients, using kitchen equipment, cutting kite materials and constructing lever/linkage systems. • Apply understanding of structure and movement to solve practical design problems, explaining why components are placed or joined in particular ways. • Evaluate products in relation to criteria and audience, considering peer views and making improvements to function, stability, finish or message.
Concept themes: Growing and cooking; seasonality; frame structures; strengthening and stiffening; key events; levers and linkages; recycling messages; audience.		
Values links: Hope links to growing food and sustainable messages. Community is explored through food, local growing and recycling. Perseverance develops through careful construction, testing and improving mechanisms and structures.		

	Substantive knowledge progression	Disciplinary knowledge progression
Year 5 **Units:** • Autumn 2: Global Food - cooking • Spring 2: Automata Animals - mechanisms • • Summer 2: Programming Adventures - design and computing	• Pupils broaden knowledge of global food, including where ingredients flourish, how diets vary around the world and how meals can still be understood through common food groups and nutrition principles. • They know a wider range of preparation and cooking techniques, including boiling rice, preparing savoury dishes from different countries and following recipes with increasing independence. • They learn that automata use mechanical systems such as cams and followers, and that different cam shapes create different movements. • They understand that frameworks, handles and moving parts must be accurately cut, shaped, joined and finished so the mechanism works reliably. • They learn that computing can be applied in DT by programming and monitoring floor robots, designing adventure maps and selecting materials based on how they affect robot movement. • Key vocabulary includes global, ingredient, staple food, nutrition, recipe, technique, cam, follower, framework, mechanism, movement, input, output, floor robot, program, obstacle, scale and material property.	• Research ingredients, animals, mechanisms and materials to inform design decisions and develop criteria for specific users or purposes. • Generate, communicate and refine ideas through annotated designs, prototypes, practical trials and group discussion. • Use a wider range of tools and equipment safely and accurately, including kitchen tools, measuring equipment, construction tools and components for mechanisms. • Apply testing evidence to explain why particular ingredients, cams, materials or joining methods are fit for purpose. • Evaluate products and systems against design criteria, using peer feedback and evidence from testing to suggest meaningful improvements.
Concept themes: Global food and nutrition; recipes from different cultures; cams and followers; mechanical movement; frameworks; programming; material properties; testing.		
Values links: Respect is developed through learning about food from around the world without stereotypes. Curiosity drives investigation of mechanisms and programming. Perseverance is needed to refine working systems and debug movement or construction problems.		

	Substantive knowledge progression	Disciplinary knowledge progression
Year 6 **Units:** • Autumn 2: Seasonal Food - cooking • Spring 2: Marbulous Structures - construction • • Summer 2: Felt Phone Cases - textiles	• Pupils consolidate DT knowledge by designing products with clearer attention to users, target markets, functionality, aesthetics, safety, quality and evaluation. • They know that foods may be grown, reared, caught and processed, and that seasonality affects availability, recipe planning and sustainability in the UK. • They learn to create balanced seasonal recipes, prepare and cook ingredients using a range of techniques, and understand safe storage and handling of higher-risk foods such as meat and fish. • They know that free-standing structures can be reinforced and stabilised, and that marble runs require accurate measuring, joining, shaping, bends, testing and aesthetic finish. • They learn that textile products for a target market require accurate templates, seam allowances, cutting lines, sewing lines, fastenings and a wider range of stitches including backstitch, whip stitch and blanket stitch. • Key vocabulary includes target market, functionality, aesthetics, seasonal, reared, caught, processed, cross-contamination, reinforcement, stability, precision, template, seam allowance, backstitch, whip stitch, blanket stitch and fastening.	• Use research to develop detailed design criteria and prioritise specifications according to user need, function and intended market. • Communicate ideas through annotated sketches, templates, step-by-step plans, prototypes and technical diagrams where appropriate. • Select and use tools, ingredients, materials, components and finishing techniques with increased precision, including measuring and cutting to millimetres where needed. • Work iteratively by testing, evaluating and improving during the making process, not only at the end. • Critically evaluate final products against original design criteria, considering fitness for purpose, quality of finish, user feedback and possible adaptations.
Concept themes: Seasonal food and provenance; safe preparation; freestanding structures; reinforcement; marble runs; textile templates; advanced stitching; target market and quality finish.		
Values links: Perseverance is strengthened through precise making, testing and refining. Hope and Community link to seasonal and sustainable choices. Respect and Kindness are shown when pupils design thoughtfully for real users and respond constructively to feedback.		