Design Technology
Year 3/4

Key Threshold Concepts

- To design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values.
- To draw on disciplines such as mathematics, science, engineering, computing and art.
- To take risks, becoming resourceful, innovative, enterprising and capable citizens.
- Through the evaluation of past and present design and technology, 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.

Key Skills

All DT units will follow the stages of: Share design brief	Explore existing products	Evaluate existing products	Design and generate ideas	Make, including planning	Evaluate own ideas and products

Explore and Evaluate – Existing products	Design and Generating ideas	Making - Planning	Making – Practical skills and techniques	Evaluating Own ideas and products
• Identify how well products have been designed and made, including how they appeal and their appearance • Explain why materials have been chosen • Identify what methods of construction have been used	Describe the purpose of their products • Gather information about needs and wants of particular individuals and groups • Develop their own design criteria and use these to inform their ideas • Indicate the design features of their products that will appeal to intended users • Explain how particular parts of their products work • Model their ideas using prototypes and pattern pieces • Use accurately labelled sketches, to develop and communicate their ideas • Generate realistic ideas, focusing on the needs of the user	• Select tools and equipment suitable for the task • Explain their choice of tools and equipment in relation to the skills and techniques they will be using • Select materials and components suitable for the task • Explain their choice of materials and components according to functional properties and aesthetic qualities • Order the main stages of making	• Follow procedures for safety and hygiene • Measure, mark out, cut and shape materials and components with some accuracy • Assemble, join and combine materials and components with some accuracy • apply a range of finishing techniques, including those from art and design, with some accuracy	• Identify the strengths and areas for development in their ideas and products • Consider the views of others, including intended users, to improve their work • Refer to their design criteria as they design and make • Use their design criteria to evaluate their completed products • Identify how well products work to achieve their purposes • Identify how well products meet user needs and wants

Design Vocabulary

user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, function, planning, design criteria, annotated sketch, appealing planning, investigating, design, evaluate, make, user, purpose, ideas, product, names of tools and utensils design brief / criteria, innovative, prototype, function, prototype, appealing

Structures **Shell Structures**	**Textiles**	**Electrical Systems**	**Mechanical Systems** **Levers and Linkages**	**Mechanisms** **Pneumatics**	**Food Technology**
Design Brief: Design and create a gift box for a specific product and target audience (Link to Christmas) Materials: card, paper, joining materials	**Design Brief:** Create a bag suitable to take camping to keep essential items in. *Materials: fabric, range of stiches*	**Design Brief:** Create a torch / nightlight *Materials: plastics, cardboard and 1 electrical circuit*	**Design Brief:** Create a information book for KS1 Children (link to science) that has lever and linkages to create moving parts) Materials: card, paper, joining materials	**Design Brief:** Create a monster that will appeal to KS1 that has a moving part. *Materials: fabric, card, pneumatic system*	**Design brief:** Create a healthy, traditional meal for your parents to show that freshly prepared food is easy to prepare and tastier than a similar processed meal. Prepare Greek food *(not full unit – food preparation skills)*
Technical Knowledge	**Technical Knowledge**	**Technical Knowledge**	**Technical Knowledge**	**Technical Knowledge**	**Technical Knowledge**
• I know to construct strong, stiff shell structures. • I can use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes in my design. • I know that materials have both functional properties and aesthetic qualities. • I know different methods for stiffening/strengthening structures • I know what a net is • I know which tools are appropriate for cutting and scoring materials • I know how to test a material's strength • I know how to use CAD to develop a product	• I know how to strengthen, stiffen and reinforce existing fabrics. • I know how to securely join two pieces of fabric together using a range of stitches • I understand the need for patterns and seam allowances • I know how/when to use decorative stitches to finish a product	• I know how to construct a simple series circuit • I know how to make a range of simple secure connections (twisting wires together, wrapping ends, taping over, connecting block) • I can apply understanding of computing to program and control products. • I know a range of simple electrical components and their uses such as bulb, buzzer and switch	• I know where loose and fixed pivots are used in products • I know how to use lever and linkage mechanisms • I know the difference between inputs and outputs • I know how to increase accuracy when measuring, marking out and cutting (i.e. measure in mm rather than cm or inches	• I can select and use tools with some accuracy, cut and join materials and components such as tubing, syringes and balloons. • I can investigate and find information on and products with pneumatic mechanisms and evaluate their own products and ideas against criteria and user needs. constitutes • I understand and use pneumatic mechanisms.	• I know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • I know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking • I know how to use appropriate equipment and utensils to prepare and combine food.
Wider Knowledge	**Wider Knowledge**	**Wider Knowledge**	**Wider Knowledge**	**Wider Knowledge**	**Wider Knowledge**
I know the names of 3d shapes such as cubes, cuboids, prism. I know why engineers use certain structures for certain uses. I know some simple facts about more than one structural engineer (i.e. Gustavo Eiffel, Peter Rice, Fazlur Khan)	I know what a prototype is I know how different fabrics are constructed (i.e. woven materials, spun materials, knitted materials) I know why designers use patterns I know what renewable/sustainable materials/fabrics are	I know a range of places where electrical systems are used (i.e. lighting in a house, display signs, traffic lights) I know some materials that are conductors and insulators	I know where levers and linkages are used in products or industry. I know why levers are used to lift loads	I know materials can be joined to allow movement I know that push and pull is a force	Understand that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Plate Understand that to be active and healthy, food and drink are needed to provide energy for the body Know that food is grown (such as tomatoes, wheat and potatoes), Know that food is reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world
Vocabulary					
Structures	**Textiles**	**Electrical Systems**	**Mechanisms**	**Mechanisms**	**Food**
shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision,	fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance	Torch, series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device	mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output, linear, rotary, oscillating, reciprocating	components, fixing, tubing, syringe, plunger, attaching, split pin, paper fastener, finishing control, pneumatic system, compression, pressure, inflate, deflate, input, output, pump, seal, air tight, pivot, hinge, fastest, slowest, often, always, sometimes, never	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet