



Purpose of study

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.

Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

Term	Theme 1	Theme 2	Theme 3
Year 1	<p>Paws, Claws and Whiskers</p> <p>Textiles-templates and joining-glove puppets</p> <p>Key Question/Design Brief: Can you design and make a puppet for a child that they can use for story telling?</p> <p>Knowledge: What is a puppet? How can you join different materials together?</p> <p>Skills: To identify different ways of joining, evaluating a range of products, design and make a purposeful product</p> <p>NC links: English – Drama, Science – Animal Antics (features of different animals)</p>	<p>Splendid Skies</p> <p>Food technology- sandwiches</p> <p>Key Question/Design Brief: How can we make a sandwich healthy?</p> <p>Knowledge: Instruction writing, healthy eating</p> <p>Skills: spreading, slicing and cutting</p> <p>Health and safety of shared tool use. Hygiene.</p> <p>NC links: Maths-shopping for a recipe, fractions</p> <p>Guided reading: tier 2 vocabulary (verbs) in instructions</p> <p>Science/PSHE – Keeping healthy</p>	<p>Bright lights, Big city</p> <p>Mechanisms-wheels and axles</p> <p>Schneider electric</p> <p>Key Question/Design brief: How can we make a vehicle move?</p> <p>Knowledge: Understand the purpose of wheels, axles and chassis, know and use technical vocabulary</p> <p>Skills: Select tools and materials, joining materials, measure accurately</p> <p>NC links: Science – compare and use materials according to their properties</p> <p>Maths – Identify 3-D shapes, measures using non-standard/standard units</p> <p>Computing – Use Purple Mash to design a vehicle (2Design and make)</p>
Year 2	<p>Towers, Turrets and Tunnels</p> <p>Free standing structures-castles</p> <p>Key Question/Design Brief: How can we make a strong wall for a castle?</p> <p>Knowledge: What makes a strong structure? How do castle designs vary?</p> <p>Skills: Designing, joining materials in a range of ways</p> <p>NC links: Maths – measuring</p> <p>History - castles</p>	<p>Land Ahoy!</p> <p>Mechanisms-levers and sliders linked to non-chronological writing</p> <p>Key Question/Design Brief: Can you make a moving part for a book so that it interests the reader?</p> <p>Knowledge: What are levers and sliders? How many different ways can things move? What makes something interesting to the reader?</p>	<p>Wriggle and crawl</p> <p>Food technology- vegetable cous cous</p> <p>Key Question/Design: How can we make a healthy meal (for Atir's journey)?</p> <p>Knowledge: Healthy eating, what makes a balanced diet? How do we prepare food hygienically?</p> <p>Skills: Slicing, cutting, peeling</p> <p>NC links: English – Zeraffa Giraffa</p> <p>Geography – Africa, habitats and food origins</p>

		<p>Skills: Cutting and joining, stiffening and strengthening, evaluating existing products and own work. NC links: English – non-chronological reports</p>	
Year 3	<p>Mighty Metals Shell structures – Stone Age box Mighty Metals Key Question: How can you build a structure to protect and display a Stone Age treasure ? Knowledge: What is the purpose of a shell structure ? How has it been constructed ? How has it been stiffened ? Develop and use knowledge of nets Skills: construct nets, scoring, cutting and assembling, ways of stiffening and strengthening, use CAD to design the net and graphics NC links: Computing – CAD Maths – nets of shapes History – Stone age artefacts</p> <p>(these may be altered next year as Shell Structures fits in better with the Tremors topic)</p>	<p>Tremors Textiles-2D to 3D shapes-Mother’s Day Purses Key Question: How can you join 2 pieces of material together to make a new product ? Knowledge: know how to strengthen fabrics and join two pieces of fabric together, understand the need for patterns and seam allowances, select and use appropriate tools Skills: use a range of stitching techniques, create a paper pattern, sketch and annotate possible ideas, create a design brief, evaluate NC links: English - Firebird PSHE – recycling materials</p>	<p>Scrumdiddlyumptious Healthy and varied diet – Healthy Sport’s Day snack ? Key Question: What do you need to consider to make a snack which is part of a healthy, balanced diet ? Knowledge: how to use appropriate equipment, how a variety of ingredients are reared, caught, grown and processed, food hygiene practices. Skills: grating, cutting, spreading, selecting utensils, equipment and ingredients, following instructions NC links: Science – balanced diet, healthy eating Maths – measurements PSHE – healthy diet</p>
Year 4	<p>Burps, Bottoms and Bile Food technology-savoury muffins Key Question: How could we design and make our own healthy food snack? Knowledge: What does a well-balanced diet mean? What ingredients should be avoided in a healthy snack? What is a food recipe? Skills: How to chop, peel and slice. How to crack eggs into a bowl. Using a knife safely. Understanding the importance of hygiene when cooking and sharing tools. To evaluate the finished piece of work. NC links: Science – healthy eating and balanced diet. English – Non-fiction texts (recipes) Maths – quantities of amounts, including fractions.</p>	<p>Misty Mountain, Winding River Mechanisms-linkages and levers linked to Varjak Paw page. Key Question: How could we make a moving picture on a page that fits part of a story? Knowledge: What is a linkage and lever mechanism? What is the science behind a linkage and lever mechanism and how do they work? Skills: To be able to plan and select which type of linkage and lever mechanism will be best suited to their work. To plan their designs with annotated diagrams. To make a working linkage and lever mechanism. To evaluate the finished piece of work. NC links: English: POR reading text Maths – measuring length.</p>	<p>Rainforests Control-circuits and switches- pressure pad alarm? Key Question: How can you make an alarm system to warn an animal of an intruder or danger? Knowledge: What is an electrical circuit? How does an electrical circuit work and how can they vary? What are the different components of an electrical circuit? How do sound and light play a part in a circuit? Skills: Creating a fully working electrical circuit by selecting the different parts to suit their alarm. Understanding what can break a circuit? NC links: Science – electrical circuits. Geography - Rainforests</p>
Year 5	<p>Key Question: How can pulleys help overcome the difficulties faced by tomato farmers in Nepal? Knowledge: What is a pulley? What is the science behind the mechanism? Skills: To identify the components, annotated diagrams, construct an efficient mechanism using both manufactured and self-sourced components.</p>	<p>Traders and Raiders Food technology-vegetable soup and bread Knowledge: recipes, how to prepare and cook a variety of vegetables, use of herbs for fragrance/taste Skills: peeling, chopping, dicing, slicing, trimming, dissolving, measuring liquid. Simmering.</p>	<p>Beast Creator Key Question: Which 3-D framework is best for a human shelter? Frame structure- bird hide Knowledge: Understand how to strengthen, stiffen and reinforce 3-D frameworks. Know and use technical vocabulary relevant to the project.</p>

	<p>NC links: Science- forces (global awareness)</p>	<p>Health and safety of shared tool use. Hygiene. NC links: Maths-scaling quantities, shopping for a recipe Guided reading: tier 2 vocabulary (verbs) in recipes History-food/farming/cooking in Anglo Saxon Britain</p>	<p>Skills: Select tools and materials Joining materials working characteristics of materials Construct a rigid structure NC links: Science – compare and group together everyday materials on the basis of their properties. Maths – identify 3-D shapes from 2-D representations. Spoken language – ask relevant questions, formulate and express opinions, give well structured descriptions and explanations. Computing – use technologies for research purposes and be discerning when evaluating digital content. CAD design-Purple Mash</p>
<p>Year 6</p>	<p>Hola Mexico Food Technology- Mexican savoury dishes Celebrating culture and diversity of foods. Knowledge: research into cultural or personal preferences, to understand which foods can be sourced locally in the UK or from overseas, the nutritional value of foods. Skills: peeling, chopping, dicing, slicing, trimming, NC links: Maths: to convert between imperial/ metric units, scaling quantities, Geography: to understand in more detail about the distribution of materials across the globe and our carbon footprint PSHE: cultural diversity in food</p>	<p>A Child's War Textiles-make do and mend Decorative stitching/embroidery Key Question/ Brief: How can we effectively combine fabrics? Can we create something new out of something old? Knowledge: Is a product functional or decorative? Do the textiles used match the intended purpose? Who would use this product? What components have been used to enhance the appearance? Is the design innovative? Skills: a range of different stitches for both functional and decorative purposes, embroidery, applique, fastening techniques, cutting fabric, templates NC links: History: Second World War- Make Do and Mend Maths:apply knowledge of how 2-D nets can be formed into 3-D shapes; apply skills of accurate measuring using standard units i.e. cm/mm Art and design–investigate methods of adding colour, pattern and texture on to textiles and how to make their own textiles through weaving or felt making.</p>	<p>Blood Heart Control-complex switches-automatic light/alarm</p>

Subject content

Key stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria

- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Technical knowledge

- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

Key stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate

- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

- understand how key events and individuals in design and technology have helped shape the world

Technical knowledge

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- apply their understanding of computing to program, monitor and control their products.

Cooking and nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

Key stage 1

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

Key stage 2

- understand and apply the principles of a healthy and varied diet
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.