

Design and Technology

Know how to:				Know what/key concepts:					
Investigate existing products.	Design a product to meet the given criteria.	Make a product fit for purpose.	Evaluate their final product and suggest improvements.	Mechanisms	Food and Nutrition	Textiles	Structures	Mechanical systems	Electrical systems
	Autumn			Spring			Summer		
EYFS	<p>Children in the EYFS are given lots of opportunities to develop their skills of Design and Technology through continuous provision opportunities and support from adults. Through construction activities children begin to explore the stability of constructions and naturally work to adapt their creations to solve problems. The children are given the freedom to develop their own ideas and then decide which materials to use to express them and how best to join different materials together. Children have the opportunity to return to and build on their previous learning, refining ideas and developing their ability to represent them. Children are encouraged to create collaboratively, sharing ideas, resources and skills. By the end of Reception, it is expected that children can:</p> <ul style="list-style-type: none"> - safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. - share their creations, explaining the process they have used 								
<p>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:</p> <ul style="list-style-type: none"> - 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 <p>Cooking and nutrition</p> <p>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:</p> <ul style="list-style-type: none"> - use the basic principles of a healthy and varied diet to prepare dishes - understand where food comes from. 									
Year 1	<p>Key concept/Skill: Mechanisms: Sliders and Levers Know how to: Specific Objective: To create a moving picture to demonstrate the moon landing to EYFS. Key questions: Can I...? Can I research how a slider and lever works? Can I design a Moon Landing slider or lever? Can I test out different methods of attaching a slider or lever? Can I create my slider and lever design? Can I evaluate my slider and lever design? Key vocabulary: design, investigate, make, evaluate Move, Up, Down, Sideways, Turn, Join, Split pin</p>			<p>Key concept/Skill: Food and Nutrition: Preparing fruit and vegetables Know how to: Specific Objective: To create a fruit salad, containing at least 3 different fruits for Goldilocks. Key questions: Can I...? Can I name different fruits and explain what a fruit salad is? Can I explore where food comes from? Can I design a fruit salad for Goldilocks? Can I make a fruit salad by chopping the fruit safely? Can I evaluate my final product? Key vocabulary: design, investigate, make, evaluate, chop, Fruit and vegetable names, Names of equipment, Healthy, Varied Diet, Preparation, Bridge grip, Claw grip,</p>			<p>Key concept/Skill: Textiles: Templates and joining Know how to: Specific Objective: To create a puppet, using a template and simple stitch, to retell a story. Key questions: Can I...? Can I research different types of puppets and recognise how they work? Can I explore creating and using templates and different fastening techniques? Can I design a puppet? Can I create my puppet? Can I evaluate my puppet? Key vocabulary: design, investigate, make, evaluate, Needle, Stitch, Running Stitch, Sew, Pin, Thread, Needle, Knot, Loop,</p>		

		Texture, Taste, Smell	Fabric, Material, Puppet, Template, Secure, Edge, Embellishments	
Year 2	2 projects completed in Summer	<p>Key concept/Skill: Mechanism: Wheels and Axels</p> <p>Know how to: Specific Objective: To create a moving toy fire engine for children to play with.</p> <p>Key questions: Can I research the features of fire engines and identify similarities and differences? Can I investigate wheels and axels? Can I design my toy fire engine? Can I evaluate my toy fire engine?</p> <p>Key vocabulary: Vehicle, Axle, Axle holder, Wheel, Circular disc, Movement, Moving, Non-moving, Attach, Fix, Strength, Appearance, Chassis</p>	<p>Key concept/Skill: Structures: Free-Standing structures</p> <p>Know how to: Specific Objective: To create a new park at Chester zoo using flexible and rigid materials.</p> <p>Key questions: Can I research current parks at Chester Zoo and identify things that I like and dislike about them? Can I investigate how to make structures more stable? Can I work in a team to design a structure for a purpose? Can I make a structure for a purpose? Can I consider how to make the structure stronger and more stable throughout the process? Can I evaluate my final product?</p> <p>Key vocabulary: Structure, Net, Supporting structure, Axle, Strong, Stiff, Stable, Cylinder, Card, Tape, Pipe cleaner, Glue/stick, Turn, Move</p>	<p>Key concept/Skill: Food and Nutrition: Preparing fruit and vegetables</p> <p>Know how to: Specific Objective: To make a sandwich for a picnic at the zoo.</p> <p>Key questions: Can I explain where food comes from? Can I understand the importance of a balanced diet? Can I research different types of sandwiches? Can I design a sandwich for a picnic? Can I prepare a sandwich safely and hygienically? Can I demonstrate peeling, grating and cutting skills? Can I evaluate my final product?</p> <p>Key vocabulary: design, investigate, make, evaluate, chop, Fruit and vegetable names, Names of equipment, Healthy, Varied Diet, Preparation, Bridge grip, Claw grip, Texture, Taste, Smell</p>
<p>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:</p> <ul style="list-style-type: none"> - 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.
- 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.

<p>Year 3</p>	<p>Key concept/Skill: Mechanical systems: Levers and linkages Know how to: Specific Objective: To create a moving picture to show what happens in space. Key questions: Can I research how levers and linkages work? Can I design a space moving picture using a linkage or lever? Can I test out different methods of creating a lever or linkage? Can I create my moving space picture? Can I evaluate my final product? Key vocabulary: Mechanism, Lever, Linkage, Pivot, Slot, Functional, Guide System, Input, Process, Output</p>	<p>Key concept/Skill: Textiles: 2D shape to 3D products Know how to: Specific Objective: To create a small bag to carry money. Key questions: Can I research different types of money pouches and how they are assembled? Can I design a money pouch? Can I explore joining two pieces of fabric using basic stitches? Can I join fabric accurately to create a money pouch? Can I evaluate my money pouch? Key vocabulary: Cross Stitch, Applique, Reverse Applique, Accurate, Seam, Stuff, Double stitch, Assemble, Fastening, Pin, Zip, Popper, Button, Toggle, Velcro, Attach, Functionality</p>	<p>Key concept/Skill: Food and Nutrition: Healthy and Varied Diet Know how to: Specific Objective: To make a vegetable soup to take on a picnic. Key questions: Can I investigate different types of soup? Can I name a variety of vegetables and know where they come from? Can I explain the importance of salt in food and the need for a balanced diet? Can I design a vegetable soup? Can I prepare and cook soup safely and hygienically using a range of techniques such as peeling, chopping, slicing and grating? Can I evaluate my soup and suggest improvements? Key vocabulary: heat, cook, hygiene, proving, ingredients, mixing, Name of products, Names of equipment and ingredients, Recipe, Flavour, Seasonal, Grow, Reared, Caught, Processed, Appearance, Contamination, Nutrition, Bacteria, Appetising, Hygienic</p>
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<p>Year 4</p>	<p>Key concept/Skill: Structures: Shell Structures Know how to: Specific Objective: To create a waterproof structure that carries figures and stays afloat for a length of time. Key questions: Can I research and investigate different floating structures? Can I design my own floating structure? Can I use my design brief to make a floating structure? Can I use materials to finalise my floating structure to ensure it is strong and waterproof? Can I use evaluate my floating structure against the design brief? Key vocabulary: Net, edge, shell, waterproofing, structure, scoring, cutting, Construction, Configuration, Features, Complex, Geometric shapes, Sturdy, Fragile, Combination, Cut, Score, Solid, Stack, Recyclable materials</p>	<p>Key concept/Skill: Food and Nutrition: Healthy and Varied Diet Know how to: Specific Objective: To create a flatbread to serve at a banquet. Key questions: Can I research and investigate different products on the market? Can I create a design criteria and design my own flatbread with a target market in mind? Can I follow a recipe and use ingredients to cook my own flatbread? Can I evaluate my flatbread against the design criteria? Key vocabulary: heat, cook, hygiene, proving, ingredients, mixing, Name of products, Names of equipment and ingredients, Recipe, Flavour, Seasonal, Grow, Reared, Caught, Processed, Appearance, Contamination, Nutrition, Bacteria, Appetising, Hygienic</p>	<p>Key concept/Skill: Electrical Systems: Simple Circuits and Switches Know how to: Specific Objective: To create an electrical torch to use on an adventure. Key questions: Can I identify the different features of a torch? Can I identify the different features of a torch? Can I design a torch with user, function and purpose in mind? Can I make the casing for my torch? Can I evaluate my torch against my design criteria? Key vocabulary: Circuit, conductor, insulator, electricity, program, prototype, control, switch, output device, input device, system, shell.</p>
<p>Year 5</p>	<p>Key concept/Skill: Mechanical Systems: Pulleys or Gears (hydraulics) Know how to: Specific Objective: To create a boatlift for a boater to ensure smooth travel from one lock to another. Key questions: Can I identify the purpose and function of the boat lift? Can I understand how key events and individuals in design and technology have helped shape the world? Can I identify which shapes make a stronger structure than others and explain why? Can I understand how to strengthen a structure? Can I investigate hydraulics? Can I design a functional product which is fit for purpose? Can I evaluate my product? Key vocabulary: Mechanism, Pulley, Drive belt, Gear, Rotation, Motion, Inflate, Deflate, Controlled, Force, Air, Compressed Air, Pressure, Air power, Syringe, Balloon, Tubing, Transmit, Plunger, Functional, Aesthetic</p>	<p>Key concept/Skill: Structures: Frame Structures Know how to: Specific Objective: To build a bridge over the Thames River. Key questions: Can I investigate the Thames River and different kinds of bridges? Can I investigate, trial and build a prototype of different frame structures? Can I look at different types of bridges? Can I complete a range of tasks which allow me to practise skills to help me create my product? Can I design and explain how I am going to make my bridge? Can I use a range of skills, materials and tools to create my bridge across the Thames River? Can I effectively test and evaluate my bridge against my design criteria and project title? Key vocabulary: Arch, Beam, Force, Collapse, Compression, Tension, Rigid, Curve, Truss, Suspension, Parallel, A-frame, Cladding</p>	<p>Key concept/Skill: Food and Nutrition: Celebrating culture and seasonality Know how to: Specific Objective: To make a traditional Mayan dish. Key questions: Can I understand where food comes from and the nutrients they contain? Can I understand how the seasons affect the food available Can I investigate Mayan food? Can I design a traditional Mayan dish? Can I prepare and cook a traditional Mayan dish safely and hygienically using a heat source? Can I evaluate my final dish? Key vocabulary: Ingredients, Utensils, Grow, Reared, Caught, Processed, Combination, Complement, Seasonality, Recipe</p>
<p>Year 6</p>	<p>Key concept/Skill: Textiles: Combining different fabric shapes Know how to:</p>	<p>Key concept/Skill: Food and Nutrition: Celebrating culture and seasonality Know how to:</p>	<p>Key concept/Skill: Electrical Systems: More complex switches Know how to:</p>

	<p>Specific Objective: To create a Tudor money pouch by sewing materials.</p> <p>Key questions: Can I research and explain the necessary features of a money-carrying pouch? Can I identify and label the features of a Tudor money pouch? Can I design a money-carrying pouch and label materials and techniques used? Can I make my money pouch? Can I evaluate my money-carrying pouch?</p> <p>Key vocabulary: Running stitch, Blanket stitch, Back stitch, Annotate, Sketch, Garment, Prototype, Cross-sectional and exploded diagram, Sturdy, Washable, Overlap</p>	<p>Specific Objective: To create a traditional British dish.</p> <p>Key questions: Can I understand that food is grown, reared and caught in the UK, Europe and beyond? Can I discuss how seasons affect the availability of food? Can I highlight how food sources differ in the way they are produced? Can I analyse how food can be processed into ingredients and experiment with these? Can I prepare and cook a traditional British dish?</p> <p>Key vocabulary: Ingredients, Utensils, Grow, Reared, Caught, Processed, Combination, Complement, Seasonality, Recipe</p>	<p>Specific Objective: To create a programme to simulate a lighthouse.</p> <p>Key questions: Can I identify the function and purpose of a lighthouse Can I design a lighthouse based on my research and what I know? Can I discuss and analyse the materials I will need and what will work best for my design? Can I create my lighthouse using software? Can I evaluate my product?</p> <p>Key vocabulary: Algorithm, Series circuit, Parallel 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, USB cable, Wire, Insulator Conductor, Crocodile clip, Control program system</p>
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