



Curriculum overview for parents and carers

Design and technology

Summary of key Design and technology learning for Reception to Year 6.

EYFS: Reception			
Unit 1	Workshop	Autumn lesson	Hibernation box Designing and making a hibernation box, children consider the function of a product.
	Junk modelling Exploring materials through junk modelling, children develop their scissor skills and awareness of different materials and joining techniques. Children begin to make verbal plans and material choices before starting, and problem solve while making their model.		
Unit 2	Cooking and nutrition	Christmas lesson	Sliding picture Creating a sliding mechanism chimney picture, children develop their cutting and joining skills.
	Soup Learning about vegetables and where they come from while preparing to make a soup. Children describe the taste of a range of vegetables and design a soup recipe as a class. They practise cutting skills and prepare the vegetables for their class soup before testing the final product.		
Unit 3	Textiles	Spring lesson	Flower threading Creating their own threading cards, children practise using scissors and a hole punch.
	Bookmarks Developing fine motor skills through a range of threading activities before moving on to use binka and a needle. Children design a bookmark, considering what to include and why and then follow their designs to complete their bookmarks.		
Unit 4	Structures	Easter lesson	Hanging decoration Designing a hanging egg decoration, children make choices about how to decorate their egg.
	Boats Considering the properties of materials through water play, children discover which materials are waterproof and whether they float or sink. Children evaluate a variety of boats and use their new-found knowledge to design and make a boat that is waterproof and floats.		
		Summer lessons	Rainbow salad Researching, designing and making a colourful and healthy salad.

Year 1			
Unit 1	Mechanisms	Unit 4	Cooking and nutrition
	<p>Making a moving story book Experimenting with sliders, pupils then plan and make three pages of a moving story book - drawing the page backgrounds, creating the moving parts and assembling it.</p>		<p>Smoothies Handling and exploring fruits and vegetables and learning how to identify a fruit. Undertaking taste tests to identify ingredients for a smoothie they make, and designing and creating packaging for their smoothie.</p>
Unit 2	Structures/ Mechanisms	Unit 5	Mechanisms
	<p>Constructing a windmill Designing, decorating and building a windmill, developing an understanding of different types of windmill, how they work and their key features. Looking at examples of windmills and exploring the functions that they carry out.</p>		<p>*New* Wheels and axles Learning how to cut straight and rounded edges using scissors, developing an understanding of how wheels, axles and axle holders work, and problem-solving to improve their original wheels. Pupils then design and build pull-along toys and evaluate them against design criteria.</p>
Unit 3	Textiles		Wheels and axles
	<p>Puppets Exploring different ways of joining fabrics before creating hand puppets based upon characters from a well-known fairytale. Developing technical skills of cutting, glueing, stapling and pinning.</p>		<p>Learning about the main components of a wheeled vehicle. Developing understanding of how wheels, axles and axle holders work and problem-solving why wheels won't rotate. Pupils then design and build their own vehicles and evaluate them against a set design criteria.</p>

Year 2			
Unit 1	Mechanisms	Unit 4	Structures
	<p>Fairground wheel Designing and creating a functional fairground wheel, children consider how the different components fit together so that the wheel rotates and the structure stands freely. They select appropriate material properties and develop their cutting and joining skills. Research existing structures and survey to further inform the design.</p>		<p>Baby bear's chair Using the tale of Goldilocks and the Three Bears as inspiration, pupils help Baby Bear by making him a brand new chair, exploring different shapes and materials. When designing the chair, they consider his needs and what he likes.</p>
Unit 2	Cooking and nutrition	Unit 5	Textiles
	<p>Balanced diet Exploring and learning what forms a balanced diet, pupils taste test ingredient combinations from different food groups to inform a wrap design of their choice which will include a healthy mix of protein, vegetables and dairy.</p>		<p>Pouches An introduction to sewing, pupils learn to sew a basic running stitch and then use and create templates to then make their own pouches, designing, cutting, sewing and decorating them.</p>
Unit 3	Mechanisms		
	<p>Making a moving monster Learning the terms: pivot, lever and linkage, pupils then design a monster that will move using a linkage mechanism. Pupils practise making linkages and experiment with various materials to bring their monsters to life.</p>		

Year 3			
Autumn 1	Textiles	Autumn 2	Electrical systems
	<p>Cross stitch and appliqué Cushions or Egyptian collars Pupils learn two new sewing skills: cross stitch and appliqué and then apply these to the design, decoration and assembly of their own cushions or Egyptian collars.</p>		<p>Electric poster An introduction to information design and electrical systems, pupils create an electronic poster using a basic circuit to develop a museum display.</p>
Spring 1	Mechanical systems	Spring 2	Digital world
	<p>*New* Pneumatic toys Exploring how squashed air can be used to create movement within a mechanism and applying this to design and build a working pneumatic toy. Understanding that different diagrams have their own purpose and using different drawings as part of the design process.</p> <p>Pneumatic toys Designing and creating a toy with a pneumatic system, learning how trapped air can be used to create a product with moving parts. Pupils are introduced to thumbnail sketches and exploded diagrams.</p>		<p>Wearable technology Designing, coding and promoting a piece of wearable technology to use in low light conditions, developing their understanding of programming to monitor and control products to solve a design scenario.</p>
Summer 1	Cooking and nutrition	Summer 2	Structure
	<p>Eating seasonally Discovering when and where fruits and vegetables are grown and learning about seasonality in the UK. Pupils respond to a brief to design a seasonal food tart using ingredients harvested in the UK in May and June.</p>		<p>Constructing a castle Learning about the features of a castle, pupils design and make one of their own. Using configurations of handmade nets and recycled materials to make towers and turrets and constructing a stable base.</p>

Year 4			
Autumn 1	Electrical systems	Autumn 2	Mechanical systems
	<p>Torches Applying their scientific understanding of electrical circuits, pupils design and create a torch made from recycled and reclaimed materials and objects. They then evaluate their products against a set design criteria.</p>		<p>Mechanical cars Using lollipop sticks, wheels, dowels and straws to create three prototype cars with different mechanisms. Pupils then apply their understanding of mechanisms to design a mechanical car kit, giving consideration to cost, durability and sustainability of the materials. They conduct market research of competitor car kits, create design criteria and provide customer feedback to other groups after testing, compare and evaluating their cars.</p> <p>Making a slingshot car Using lollipop sticks, wheels, dowels and straws to create a moving car. Pupils build a car chassis and design the body of the car, giving consideration to how the shape will affect the car's air resistance. They then construct and test their cars.</p>
Spring 1	Digital world	Spring 2	Cooking and nutrition
	<p>Mindful moments timer Evaluating existing timer products, pupils then develop a design criteria for a mindfulness timer. They learn how to use coding to program and control a product before then designing and making their own timer.</p>		<p>Adapting a recipe Evaluating existing biscuits recipes, children then work in groups to adapt a simple biscuit recipe to create a biscuit suited to a chosen target audience. They ensure that their creation comes within a given budget of overheads and ingredients.</p>
Summer 1	Structure	Summer 2	Textiles
	<p>Pavilions Exploring pavilion structures, learning what they are used for and investigating how to create strong and stable structures before designing and creating their own pavilions, complete with cladding.</p>		<p>Fastenings Building upon their sewing skills from previous years, pupils design and create a book sleeve; exploring a variety of fastenings and selecting the most appropriate for their design based on strength and appropriate-use.</p>

Year 5			
Autumn 1	Mechanical systems	Autumn 2	Digital world
	<p>Making a pop-up book Creating a four-page pop-up story book design, incorporating a range of functional mechanisms that use levers, sliders, layers and spacers to give the illusion of movement through interaction.</p> <p>Gears and pulleys Exploring the history, mechanics and uses of gears and pulleys, children apply their understanding to make a gear and a pulley system and design an eco-bike that harnesses the energy from an exercise bike to do work.</p>		<p>Monitoring devices Applying computing skills to program a Micro: bit to monitor optimal temperatures; designing and creating a case or stand for the Micro:bit and developing 3D CAD skills.</p>
Spring 1	Cooking and nutrition	Spring 2	Structures
	<p>Developing a recipe Researching and modifying a traditional bolognese sauce recipe to improve the nutritional value before then cooking an adapted version and creating packaging that fits a given design criteria. Learning where beef comes from.</p>		<p>Bridges Learning about different types of bridges and exploring how the strength of structures can be affected by the shapes used within them. Pupils then create their own bridge and test its durability - using woodworking tools and techniques.</p>
Summer 1	Textiles	Summer 2	Electrical systems
	<p>Stuffed toys Designing and making a stuffed toy. Pupils learn a new stitch - blanket stitch - which they use to join the fabric together for their toys, before creating and adding decoration.</p>		<p>Doodlers Further exploring series circuits and introducing motors. Pupils investigate existing products and use their problem-solving skills to establish how they think the products have been constructed, before then creating their own doodler.</p>

Year 6			
Autumn 1	Digital world	Autumn 2	Cooking and nutrition
	<p>Navigating the world Programming a navigation tool to produce a multifunctional device for trekkers. Combining 3D virtual objects to form a complete product concept in 3D computer-aided design modelling software.</p>		<p>Come dine with me Researching and preparing a three-course meal and taste-testing and scoring their outcomes. Researching the journey of their main ingredient from 'farm to fork' and writing a favourite recipe.</p>
Spring 1	Structures	Spring 2	Textiles
	<p>Playgrounds Designing and creating a model for a new playground featuring five apparatus, made from three different structures. Using a footprint as the base, practising visualising objects in plan view and including natural features within their designs.</p>		<p>Waistcoats Selecting fabrics, using templates, pinning, decorating and stitching materials together to create a waistcoat.</p>
Summer 1	Electrical systems	Summer 2	Mechanical systems
	<p>Steady hand game Designing and creating a steady hand game, using nets to make the bases and applying knowledge of electrical circuits to build an operational circuit with a buzzer.</p>		<p>Automata toys Using woodworking skills, pupils construct an automata; measuring and cutting their materials, assembling the frame, choosing cams and designing the characters that sit on the followers to form an interactive shop display.</p>