

Design and technology -Long-term plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Mechanisms: Matching slider game	Structures: Stable structures	Textiles: Simple stitches	Cooking and nutrition: Smoothies	Mechanisms: Wheels and axles	. ★ Celebrate KS1’s achievements in D&T, with a gallery of their products. ★ Set an invention challenge with scrap materials. ★ Extra-curricular trips. ★ Overflow time to complete units.
Year 2	Cooking and nutrition: Balanced diet	Mechanisms: Levers	Textiles: Pouches	Mechanisms: Fairground wheel	Structures: A chair for a bear	. ★ Celebrate KS1’s achievements in D&T, with a gallery of their products. ★ Set an invention challenge with scrap materials. ★ Extra-curricular trips. ★ Overflow time to complete units.
Year 3	Structures: Product packaging	Coming soon! Mechanical systems: Making a moving monster	Digital world: Wearable technology	Textiles: Egyptian collars	Cooking and nutrition: Eating seasonally	Mechanical systems: Pneumatic toys
Year 4	Cooking and nutrition: Adapting a recipe	Structures: Helmets	Textiles: Fastenings	Mechanical systems: Mechanical cars	Digital world: Mindful moments timer	Electrical systems: Exploring electrical products
Year 5	Electrical systems: Wobble bots	Digital world: Monitoring devices	Mechanical systems: Gears and pulleys	Textiles: Stuffed toys	Coming soon! Structures: Bridges	Cooking and nutrition: Developing a recipe
Year 6	Mechanical systems: Automata toys	Textiles: Bags	Cooking and nutrition: Come dine with me	Structures: Playground pioneers	Electrical systems: Steady hand game	Digital world: Navigating the world



'In faith we grow and flourish'

Design and technology -Year Group Plan

Year 1 – 6

Year 1

Autumn 1	<u>Mechanisms: Matching slider game</u> 5 lessons Exploring different types of mechanisms used in products, with a focus on how sliding mechanisms create movement. Pupils investigate simple paper sliders before designing and making a game that uses two sliding mechanisms, in both a mock-up and a final product.	Autumn 2	<u>Structures: Stable structures</u> 5 lessons Investigating stable shapes and using an understanding of balance to discover how wide or heavy bases improve stability in freestanding structures. Pupils apply their understanding by designing and making a fun, stable pencil pot for a Year 1 pupil.
Spring 1	<u>Textiles: Simple stitches</u> 5 lessons Examining fabrics, practising basic sewing techniques and identifying how different materials are made from threads. Pupils learn how to thread a needle and sew simple stitches before designing and creating a piece of decorative bunting.	Spring 2	<u>Cooking and nutrition: Smoothies</u> 6 lessons Examining and taste-testing different fruits and vegetables to identify and compare ingredients. Pupils select ingredients for a smoothie before making their product and designing accompanying packaging.
Summer 1	<u>Mechanisms: Wheels and axles</u> 5 lessons Developing an understanding of how wheels, axles and axle holders work while practising cutting straight and curved shapes with scissors. Pupils problem-solve to improve their wheel designs before designing, building and evaluating a pull-along toy against design criteria.	Summer 2	★ Celebrate KS1's achievements in D&T, with a gallery of their products. ★ Set an invention challenge with scrap materials. ★ Extra-curricular trips. ★ Overflow time to complete units.

Year 2

Autumn 1	<u>Cooking and nutrition: Balanced diet</u> 6 lessons Learning about the importance of a balanced diet and using that knowledge to create a tasty wrap, this unit includes new lessons with both teacher and pupil videos.	Autumn 2	<u>Mechanisms: Levers</u> 5 lessons Investigating different types of levers and how they work in everyday mechanisms. Pupils identify pivots and levers in products before creating their own lever systems and exploring how they make tasks easier.
Spring 1	<u>Textiles: Pouches</u> 4 lessons Developing basic sewing skills by learning how to create templates, cut fabric accurately and sew a running stitch. Pupils apply these techniques to design and make a simple pouch using fabric and hand-stitching methods.	Spring 2	<u>Mechanisms: Fairground wheel</u> 5 lessons Investigating how rotating structures work by researching existing fairground wheels and considering how different components fit together. Pupils select suitable materials and develop cutting and joining skills to design and create a functional fairground wheel that rotates and stands freely.
Summer 1	<u>Structures: A chair for a bear</u> 5 lessons Investigating strong shapes and the properties of stiff and flexible materials by designing a chair inspired by the story 'There's a Bear on My Chair'. Pupils apply their understanding to build a suitable chair for the bear using appropriate materials and construction techniques.	Summer 2	★ Celebrate KS1's achievements in D&T, with a gallery of their products. ★ Set an invention challenge with scrap materials. ★ Extra-curricular trips. ★ Overflow time to complete units.

Year 3

Autumn 1	<u>Structures: Product packaging</u> 5 lessons Exploring how 3D shell structures are created from nets and used in packaging, pupils evaluate what makes good packaging and follow a simple design criteria to create their own.	Autumn 2	<u>Mechanical systems: Making a moving monster</u> 5 lessons Investigating linkage mechanisms by exploring how changing the length and width changes how well they move. Pupils design and make a moving monster toy for a target audience that includes a linkage mechanism.
Spring 1	<u>Digital world: Wearable technology</u> 5 lessons Exploring the development of LEDs and how they have enabled a wide range of light-up wearable technologies. Pupils apply their understanding by creating and testing programs to control an array of LEDs before using computer-aided design (CAD) to develop a wearable product.	Spring 2	<u>Textiles: Egyptian collars</u> 4 lessons Developing sewing and decorative textile skills using cross-stitch and appliqué techniques. Pupils apply their understanding to design, decorate and assemble their own cushion or Egyptian collar using a range of fabrics and stitching methods.
Summer 1	<u>Cooking and nutrition: Eating seasonally</u> 6 lessons Discovering where and when fruit and vegetables are grown by learning about seasonality in the UK. Pupils respond to a brief by designing a seasonal tart using ingredients harvested in the UK during May and June.	Summer 2	<u>Mechanical systems: Pneumatic toys</u> 5 lessons Investigating how compressed air can create movement within a mechanism and be used in a working pneumatic toy. Pupils use different types of diagrams during the design process before designing and building a toy with a moving pneumatic part.

Year 4

Autumn 1	<u>Cooking and nutrition: Adapting a recipe</u> 5 lessons Designing and making biscuits for a chosen target audience by exploring existing products, following recipes and evaluating ingredients, taste and appearance. Pupils develop food preparation skills by adapting a biscuit recipe, creating their own design and evaluating how well their finished product meets the design criteria.	Autumn 2	<u>Structures: Helmets</u> 5 lessons Investigating shell structures and how they can be strengthened to protect or contain objects and people. Pupils apply layering techniques to design and make a helmet for a specific user.
Spring 1	<u>Textiles: Fastenings</u> 4 lessons Designing and creating a book sleeve and exploring a range of fastening techniques. Pupils select the most suitable fastening for their design by considering strength, function and suitability for purpose.	Spring 2	<u>Mechanical systems: Mechanical cars</u> 5 lessons Exploring mechanical systems by building and testing prototype cars to identify effective design features. Pupils conduct market research, create design criteria and evaluate products from a customer perspective before designing their own mechanical car kit.
Summer 1	<u>Digital world: Mindful moments timer</u> 6 lessons Researching, designing and prototyping a Micro:bit timer. Pupils analyse existing products and apply programming and branding techniques to create a personalised timer that meets user needs.	Summer 2	<u>Electrical systems: Exploring electrical products</u> 5 lessons Investigating electrical components and circuits and how they are used in everyday products to improve safety and convenience. Pupils build simple circuits with switches before

			designing their own electrical product using a cross-sectional diagram.
--	--	--	---

Year 5

Autumn 1	<u>Electrical systems: Wobble bots</u> 5 lessons Building on existing knowledge of circuits by introducing motors and exploring how they create movement in products. Pupils investigate wobble mechanisms before designing and developing a wobble bot tailored to a specific user's needs.	Autumn 2	<u>Digital world: Monitoring devices</u> 4 lessons Exploring programmable technology and 3D design by creating a Micro:bit animal monitoring device that responds to temperature changes. Pupils develop CAD skills by learning to use the Tinkercad interface and tools before designing and improving their product.
Spring 1	<u>Mechanical systems: Gears and pulleys</u> 5 lessons Investigating the history, mechanics and uses of gears and pulleys. Pupils build a gear-and-pulley mechanism before applying their understanding to design an eco-bike.	Spring 2	<u>Textiles: Stuffed toys</u> 4 lessons Developing textile and sewing skills by designing and making a stuffed toy using fabric and decorative techniques. Pupils practise blanket stitch, create fabric details and assemble the components of their finished toy.
Summer 1	Structures: Bridges	Summer 2	<u>Cooking and nutrition: Developing a recipe</u> 6 lessons Considering how recipes can be adapted to improve nutritional value by modifying a traditional Bolognese sauce. Pupils cook their improved recipe and design packaging to meet specific design criteria.

Year 6

Autumn 1	<u>Mechanical systems: Automata toys</u> 4 lessons Applying woodworking skills by constructing an automaton with moving parts and mechanisms. Pupils measure and cut materials, assemble a frame, select suitable cams and design characters to create an interactive shop display.	Autumn 2	<u>Textiles: Bags</u> 5 lessons Creating a bag for a specific user using pattern piece templates. Pupils select and sew functional and decorative features, including pockets and fastenings, to meet the needs of their design brief.
Spring 1	<u>Cooking and nutrition: Come dine with me</u> 6 lessons Developing food preparation and evaluation skills by researching and preparing a three-course meal. Pupils investigate the journey of a main ingredient from 'farm to fork', taste-test and score their dishes, and write a recipe for a favourite meal.	Spring 2	<u>Structures: Playground pioneers</u> 5 lessons Investigating how playground structures are designed and reinforced through using triangulation and computer-aided design. Pupils work within a set of constraints to design and build a prototype structure with a wooden frame and a high-quality finish.
Summer 1	<u>Electrical systems: Steady hand game</u> 4 lessons Developing knowledge of electrical circuits by designing and creating a steady hand game with an operational buzzer system. Pupils use nets to construct the base before building and testing a circuit that activates when the handle touches the wire.	Summer 2	<u>Digital world: Navigating the world</u> 5 lessons Designing a product and programming it to function as a compass and a pedometer.