

Kapow

Long-term plan: Design and technology

Overview (All year groups)

	Autumn 2		Spring 2		Summer 2	
EYFS	Structures: Junk modelling		Cooking and nutrition: Soup		Structures: Boats	
Year 1	Mechanisms: Matching slider game		Structures: Stable structures		Cooking and nutrition: Smoothies	
Year 2	Mechanisms: Fairground wheel		Cooking and nutrition: Balanced diet		Textiles: Pouches	
Year 3	Mechanical systems: Pneumatic toys		Cooking and nutrition: Eating seasonally		Textiles: Egyptian collars	
Year 4	Textiles: Fastenings		Mechanical systems: Mechanical cars		Cooking and nutrition: Adapting a recipe	
Year 5	Mechanical systems: Gears and pulleys		Digital world: Monitoring devices		Cooking and nutrition: Developing a recipe	
Year 6	Structures: Playground pioneers		Mechanical systems: Automata toys		Cooking and nutrition: Come dine with me	

Suggested long-term plan: Design and technology

Overview - EYFS

EYFS

Autumn 2

Structures: Junk modelling

6 lessons

Investigating materials and construction techniques using junk modelling while developing scissor skills and joining methods. The children make verbal plans, choose suitable materials and solve problems as they design and build their own models.

Spring 2

Cooking and nutrition: Soup

6 lessons

Exploring vegetables, where they come from and how they can be prepared for cooking by designing and making a class soup. The children describe and compare the tastes of different vegetables, practise cutting skills and evaluate the finished soup.

Summer 2

Structures: Boats

6 lessons

Investigating the properties of materials through water play to discover which materials are waterproof and whether they float or sink. Pupils evaluate different boats before applying their understanding to design and make a boat that is waterproof and able to float

Suggested long-term plan: Design and technology

Overview - Key stage 1

Year 1

Autumn 1	<u>Mechanisms: Matching slider game</u> 6 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> 6 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> 6 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>Mechanisms: Wheels and axles</u> 6 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 1	<u>Cooking and nutrition: Smoothies</u> 7 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 2	Use this time to: ★ Extend projects ★ Attend trips ★ Celebrate (gallery) ★ Set challenges

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Overview - Key stage 1

Year 2

Autumn 1	<u>Mechanisms: Fairground wheel</u> 6 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.	Autumn 2	<u>Cooking and nutrition: Balanced diet</u> 7 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.
Spring 1	<u>Mechanisms: Levers</u> 6 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 2	<u>Structures: A chair for a bear</u> 6 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 1	<u>Textiles: Pouches</u> 5 lessons Developing basic sewing skills by learning how to create templates, cut fabric accurately and sew a running stitch. Pupils apply these techniques	Summer 2	Use this time to: ★ Extend projects ★ Attend trips ★ Celebrate (gallery) ★ Set challenges

	to design and make a simple pouch using fabric and hand-stitching methods.		
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Suggested long-term plan: Design and technology

Overview - Lower key stage 2

Year 3

Autumn 1	<u>Textiles: Egyptian collars</u> 5 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.	Autumn 2	<u>Electrical systems: Electric poster</u> 5 lessons Exploring information design and simple electrical systems by creating an electronic poster using a basic circuit. Pupils apply their understanding to design and make an interactive museum display about the Romans.
Spring 1	<u>Mechanical systems: Pneumatic toys</u> 6 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.	Spring 2	<u>Digital world: Wearable technology</u> 7 lessons Developing an understanding of programmable products by designing, coding and promoting wearable technology for use in low-light conditions. Pupils monitor and control their product to a real-world design scenario.
Summer 1	<u>Cooking and nutrition: Eating seasonally</u> 7 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>Structures: Product packaging</u> 6 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.

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Overview - Lower key stage 2

Year 4

Autumn 1	<u>Electrical systems: Torches</u> 5 lessons Applying scientific understanding of electrical circuits through designing and making a torch using recycled and reclaimed materials. Pupils construct and evaluate their product against design criteria to improve its effectiveness and functionality.	Autumn 2	<u>Mechanical systems: Mechanical cars</u> 6 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.
Spring 1	<u>Digital world: Mindful moments timer</u> 7 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.	Spring 2	<u>Cooking and nutrition: Adapting a recipe</u> 7 lessons Adapting a simple biscuit recipe for a chosen target audience. Pupils work collaboratively to select suitable ingredients, manage a budget for overheads and ingredients, and create a biscuit that meets specific design criteria.
Summer 1	<u>Structures: Helmets</u> 6 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.	Summer 2	<u>Textiles: Fastenings</u> 5 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.

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Overview - Upper key stage 2

Year 5

Autumn 1	<u>Mechanical systems: Gears and pulleys</u> 6 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.	Autumn 2	<u>Digital world: Monitoring devices</u> 5 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>Cooking and nutrition: Developing a recipe</u> 7 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.	Spring 2	<u>Structure: Bridges</u> 5 lessons Investigating different types of bridges and how structural strength is affected by shape and design. Pupils apply woodworking tools and techniques to design, build and test the durability of their own bridge structure.
Summer 1	<u>Textiles: Stuffed toys</u> 5 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 2	<u>Electrical systems: Wobble bots</u> 6 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.
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Overview - Upper key stage 2

Year 6

Autumn 1	<u>Digital world: Navigating the world</u> 6 lessons Programming a navigation tool to produce a multifunctional device for trekkers. Pupils combine 3D virtual objects to form a complete product concept using 3D computer-aided design modelling software.	Autumn 2	<u>Cooking and nutrition: Come dine with me</u> 7 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 1	<u>Structures: Playground pioneers</u> 6 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.	Spring 2	<u>Textiles: Bags</u> 6 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.
Summer 1	<u>Electrical systems: Steady hand game</u> 5 lessons Developing knowledge of electrical circuits by designing and creating a steady hand game with an operational buzzer system. Pupils use nets to	Summer 2	<u>Mechanical systems: Automata toys</u> 5 lessons Applying woodworking skills by constructing an automaton with moving parts and mechanisms. Pupils measure and cut materials, assemble a

	construct the base before building and testing a circuit that activates when the handle touches the wire.		frame, select suitable cams and design characters to create an interactive shop display.
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