Design and technology

Long-term plan

Condensed

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Suggested long-term plan: Design and technology

Overview (All year groups)

EYFS	Structures: Junk modelling	Textiles: Bookmarks	Structures: Boats	Use this time to: ★ Extend projects ★ Attend trips ★ Celebrate (gallery) ★ Set challenges	Use this time to: ★ Extend projects ★ Attend trips ★ Celebrate (gallery) ★ Set challenges
Year 1	Structures: Stable structures	Mechanisms: Matching slider game	Mechanisms: Wheels and axles	Textiles: Simple stitches	Cooking and nutrition: Smoothies
Year 2	Mechanisms: Fairground wheel	Cooking and nutrition: Balanced diet	Structures: A chair for a bear	Textiles: Pouches	Mechanisms: Levers
Year 3	Textiles: Egyptian collars	Structures: Product packaging	Mechanical systems: Pneumatic toys	Digital world: Wearable technology	Cooking and nutrition: Eating seasonally

Year 4	Mechanical systems: Mechanical cars	Textiles: Fastenings	Structures: Helmets	Cooking and nutrition: Adapting a recipe	Electrical systems: Torches
Year 5	Cooking and nutrition: Developing a recipe	Electrical systems: Wobble bots	Mechanical systems: Gears and pulleys	Digital world: Monitoring devices	Structure: Bridges
Year 6	Structures: Playground pioneers	Mechanical systems: Automata toys	Electrical systems: Steady hand game	Digital world: Navigating the world	Cooking and nutrition: Come dine with me

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Overview - EYFS

EYFS

	Structures: Junk modelling 6 lessons In this unit, pupils explore various junk modelling ideas by learning about different types of permanent and temporary joins. They are encouraged to tinker with a combination of materials and joining techniques in the junk modelling area.		Textiles: Bookmarks 6 lessons Pupils develop and practise threading and weaving techniques using various materials and objects. They look at the history of the bookmark from Victorian times versus modern-day styles. The pupils apply their knowledge and skills to design and sew their own bookmarks.
	Structures: Boats 6 lessons In this unit, children explore what is meant by ‘waterproof’, ‘floating’ and ‘sinking’, then experiment and make predictions with various materials to carry out a series of tests. They learn about the different features of boats and ships before investigating their shape and structures to build their own.		Use this time to: ★ Extend projects ★ Attend trips ★ Celebrate (gallery) ★ Set challenges

EYFS

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Overview - Key stage 1

Year 1

	Structures: Stable structures 6 lessons Exploring how structures can be made more stable with a wide base and extra weight added to the base, the children will apply these skills in designing and making a stable pencil pot for a Year 1 pupil.		Mechanisms: Matching slider game 6 lessons Exploring and making slider mechanisms, the children will create a matching game using simple sliders.
	Mechanisms: Wheels and axles 6 lessons Exploring how a wheel's shape, smoothness and attachment affect movement, the children learn how to use a wheel, axle and axle holder to create the mechanism for a pull-along toy.		Textiles: Simple stitches 6 lessons Learning how to make simple stitches using a needle and thread, creating a piece of celebratory bunting.

Year 1

	## Cooking and nutrition: Smoothies 7 lessons Cutting and juicing fruits and vegetables to create a smoothie that meets a design brief, this unit gives the children opportunities to develop food preparation skills with an increased focus on taste testing and ingredient choices.	

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Overview - Key stage 1

Year 2

	Mechanisms: Fairground wheel 6 lessons Building a rotating fairground wheel with a freestanding structure, this unit offers a simplified wheel design made from repurposed materials and an additional lesson where children design and conduct a survey to gather opinions.		Cooking and nutrition: Balanced diet 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.
	Structures: A chair for a bear 6 lessons Exploring how to strengthen materials, the children will make a strong chair for a bear.		Textiles: Pouches 5 lessons Learn how to sew a running stitch ready to design, make and decorate a pouch using a template.
	Mechanisms: Levers 6 lessons Investigating different types of levers and how they work.		

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Overview - Lower key stage 2

Year 3

	Textiles: Egyptian collars 5 lessons Having learnt the basics of sewing and decorating fabric in key stage one, this unit builds on the children's repertoire by introducing two new skills: cross-stitch and appliqué. After learning these techniques, the children apply their knowledge to the design, decoration and assembly of their very own Egyptian Usekh /Wesekh collars to represent their unique personalities.		Structures: Product packaging 6 lessons Exploring how 3D shell structures are created from nets, investigating their use in packaging and applying this understanding to create original designs.
	Mechanical systems: Pneumatic toys 6 lessons Exploring pneumatic systems, the children will apply their understanding to design and create a pneumatic toy using different types of diagrams.		Digital world: Wearable technology 7 lessons Designing digital wearable technology and developing a program and housing for a Micro:bit, this unit includes new teacher and pupil videos, with an increased focus on evaluation and the use of a virtual Micro:bit.

Year 3

	## Cooking and nutrition: Eating seasonally 7 lessons Learning about seasonal foods and creating a seasonal food tart, this unit provides new lessons with teacher and pupil videos to develop the children’s food preparation skills.	

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Overview - Lower key stage 2

Year 4

	Mechanical systems: Mechanical cars 6 lessons Making and designing mechanical cars that use different methods of movement, this new unit includes new lessons, car designs and teacher and pupil videos.		Textiles: Fastenings 5 lessons Analyse and evaluate a range of existing fastenings, then devise a list of design criteria to design, generate templates and make a fabric book sleeve.
	Structures: Helmets 6 lessons Exploring shell structures, the children investigate how they are strengthened to protect or contain, then apply this knowledge to design and construct their own helmets.		Cooking and nutrition: Adapting a recipe 7 lessons Adapting an existing biscuit recipe while considering the cost of ingredients and other expenses against a set budget, this unit includes new lessons with teacher and pupil videos to develop the children's food preparation skills and adapt a recipe to suit a target audience.

Year 4

	## Electrical systems: Torches 5 lessons Identify the difference between electrical and electronic products. Evaluate a range of existing torches and their features, then develop a new functional torch design.	

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Overview - Upper key stage 2

Year 5

	Cooking and nutrition: Developing a recipe 7 lessons Learning a simple bolognese recipe and adapting it to improve nutritional content, this unit provides new lessons with teacher and pupil videos to develop the children's food preparation skills.		Electrical systems: Wobble bots 6 lessons Build on existing knowledge of circuits by introducing motors and exploring their common applications. Investigate how motors can create movement, such as making products wobble by attaching an off-centre weight to the axle. Use insights gained from experimenting with different components of wobble bots to design and develop a new product tailored to a specific user's needs.
	Mechanical systems: Gears and pulleys 6 lessons 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.		Digital world: Monitoring devices 5 lessons Applying computing skills to program a Micro:bit animal monitor and using 3D CAD tools in Tinkercad to design a case, housing or stand.

Year 5

	## Structure: Bridges 5 lessons Testing and analysing different bridges to determine their strength and stability. Exploring material properties and sources, before marking, sawing and assembling a wooden truss bridge.	

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Overview - Upper key stage 2

Year 6

	Structures: Playground pioneers 6 lessons Designing and building a strong and stable prototype of an innovative playground structure within constraints.		Mechanical systems: Automata toys 5 lessons Developing a functional automata window display, this unit offers clearer video instruction, opportunities to interpret exploded diagrams and additional time to explore different cam shapes and make design choices that impact the final product.
	Electrical systems: Steady hand game 5 lessons Understand what is meant by fit for purpose design and form follows function. Design and develop a steady hand game using a series circuit, including housing and backboard.		Digital world: Navigating the world 6 lessons Design and program a navigation tool to produce a multifunctional device for trekkers using CAD 3D modelling software. Pitch and explain the product to a guest panel.

Year 6

	## Cooking and nutrition: Come dine with me 7 lessons Selecting three recipes to create a three-course meal, this unit includes new lessons that explore basic tastes and complementary flavours.	