

Design and Technology Curriculum Pathway

Secondary School

KS2 EXPECTATIONS:

Pupils should be taught to:

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

- 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.

Digital world: Navigating the world

Programming a navigation tool to produce a multifunctional device for trekkers. Combining 3D objects to form a complete product in CAD 3D modelling software and presenting a pitch to 'sell' their product.

Structure: Playgrounds

Designing and creating a model of a new playground featuring five apparatus, made from three different structures. Creating a footprint as the base, pupils visualise objects in plan view and get creative with their use of natural features.

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Year 6

Textiles: Waistcoats

Selecting suitable fabrics, using templates, pinning, decorating and stitching to create a waistcoat for a person or purpose of their choice.

Food: What could be healthier?

Researching and modifying a traditional bolognese sauce recipe to make it healthier. Children cook their healthier versions, making appropriate packaging and learn about farming cattle.

KS2 EXPECTATIONS:

Design

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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.

Year 5

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Electrical systems: Electronic greetings cards

Exploring how circuits can be adapted to suit different purposes, children explore series circuits and recreate one using conductive adhesive tape. They then apply this knowledge to design and create an electronic greeting card.

Mechanical systems: Making a slingshot car

Transforming lollipop sticks, wheels, dowels and straws into a moving car. Using a glue gun to, making a launch mechanism, designing and making the body of the vehicle using nets and assembling these to the chassis.

Mechanical systems: Making a pop-up book

Creating a four-page pop-up storybook design incorporating a range of mechanisms and decorative features, including: structures, levers, sliders, layers and spacers.

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Digital world: Electronic charm

Designing, coding, making and promoting a Micro:bit electronic charm to use in low-light conditions. Children develop their understanding of programming to monitor and control their products.

Electrical systems: Torches

Applying their scientific understanding of electrical circuits, children create a torch, designing and evaluating their product against set design criteria.

Structure: Pavilions

Exploring pavilion structures, children learn about what they are used for and investigate how to create strong and stable structures before designing and creating their own pavilions, complete with cladding.

Structures: Constructing a castle

Learning about the features of a castle, children design and make one of their own. Using configurations of handmade nets and recycled materials to make towers and turrets and constructing a base to secure them.

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Year 4

Mechanisms: Fairground wheel

Designing and creating their own Ferris wheels, considering how the different components fit together so that the wheels rotate and the structures stand freely. Pupils select appropriate materials and develop their cutting and joining skills

Food: Eating seasonally

Discovering when and where fruits and vegetables are grown. Learning about seasonality in the UK and the relationship between the colour of fruits and vegetables and their health benefits by making three dishes.

KS1 EXPECTATIONS:

Technical Knowledge

Pupils should be taught to: 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.

Cooking and Nutrition

Pupils should be taught to: use the basic principles of a healthy and varied diet to prepare dishes; understand where food comes from.

Year 3

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Food: Fruit and vegetables

Handling and exploring fruits and vegetables and learning how to identify which category they fall into, before undertaking taste testing to establish their chosen ingredients for the smoothie they will make a design packaging for.

Structures: Baby bear's chair

Using the tale of Goldilocks and the Three Bears as inspiration, children help Baby Bear by making him a brand new chair. When designing the chair, they consider his needs and what he likes and explore ways of building it so that it is strong.

Mechanisms: Making a moving monster

After learning the terms; pivot, lever and linkage, children design a monster which will move using a linkage mechanism. Children practise making linkages of different types and varying the materials they use to bring their monsters to life.

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KS1 B

Structures: Constructing windmills

Designing, decorating and building a windmill for their mouse client to live in, developing an understanding of different types of windmill, how they work and their key features.

Textiles: Puppets

Exploring different ways of joining fabrics before creating their own hand puppets based upon characters from a well-known fairytale. Children work to develop their technical skills of cutting, gluing, stapling and pinning.

Develop their own ideas and then decide which materials to use to express them.

Create collaboratively, sharing ideas, resources and skills.

KS1 A

EYFS

Nursery

Share their creations, explaining the process they have used.

Return to and build on their previous learning, refining ideas and developing their ability to represent them

Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Use a range of small tools, including scissors, paintbrushes and cutlery

Explore different materials freely, in order to develop their ideas about how to use them and what to make.

Explore how things work.