Design & Technology Curriculum Overview 2019

	Autumn	Spring	Summer
Year 1	**Mechanisms** Sliders and Levers	**Structures** Freestanding structures	**Food** Prepare fruit and vegetables. Use the basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from.
Vocabulary	mechanism, lever, slider, slot, bridge, cut, join	freestanding structure, frame structure, shell structure, stability, buttress, brick bonding, mock-up	fruit, vegetable, pith, salad, core, peel
Targets Expected	• Use pictures and words to describe what he/she wants to do. • Create a simple design and annotate where the slider or lever will appear. • Mark out and use scissors to cut a slot. • Explore how a lever can be used with and without a slot. • Join using a split-pin	• Build structures exploring how they can be made stronger, stiffer and more stable. • Select and use simple tools to cut, form and shape and join a variety of materials. • Select appropriate materials for building a structure and give reasons.	• Talk about what he/she eats at home. • Say where food comes from and give examples of food which is grown. • Use simple tools with help to prepare food safely. (cut, slice, peel)
Targets Exceeding	• Measure and cut to size strips of card to act as a handle or lever. • Ask simple questions about existing products and those that he/she has made. • Evaluate and improve their existing design.	• Explore and use mechanisms in their product e.g. a wheel, an axel, a slider or lever.	• Understand the need for a balanced and varied diet. Understand that all food must be farmed, grown or caught.

Year 2	**Mechanisms** Wheels and axles Making a moving vehicle	**Food** Prepare fruit and vegetables. Use the basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from.	**Textiles** Templates and joining techniques
Vocabulary	axle, axle holder, chassis, friction, dowel	pith, nutrients, chop, blend, seed, pip, slice	applique, design, fabric, fray, seam, sew, template
Targets Expected	• Design purposeful, functional, appealing products for himself/herself and other users based on design criteria • Choose appropriate tools, equipment, techniques and materials from a wide range • Safely measure, mark out, cut and shape materials and components using a range of tools • Ask questions about existing products. • Evaluate and assess existing products and those that he/she has made using a design criteria	• Understand the need for a varied and balanced diet. • Understand that all food needs to be farmed, grown or caught. Use simple tools with help to prepare food safely. (cut, slice, peel, juice and blend)	• Create simple designs for a product. • Use pictures and words to describe what they want to create. • Ask questions about existing products. • Use simple threading techniques. • Work with a plastic needle. • Use a simple running stitch • Add details to a product using fabric glue.
Targets Exceeding	• Measure, mark out and create a mock-up of a product design. • Investigate different techniques for stiffening a variety of materials.	• Understand the different food groups.	• Thread and knot independently. • Experiment with different stitch types (overstitch, cross stitch

Year 3	**Structures** Shell structures (including computer aided design)	**Food** 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. Know where and how a variety of ingredients are grown, reared, caught and processed.	**Textiles** 2D shape to 3D product
Vocabulary	edge, face, net, join, scoring, shell structure	texture, taste, sweet, greasy, savoury, hygienic, harvested, tinned, frozen, cut, slice, grate, spread, bake	pattern, template, seam, seam allowance, aesthetics, stitch, sew
Targets Expected	• Use knowledge of existing products to design a functional product. • Create a design using an annotated sketch and cross-sectional diagrams. • Make suitable choices from a wider range of tools and unfamiliar materials and plan out the main stages of using them. • Safely measure, mark, cut and construct with accuracy Strengthen frames using diagonal struts.	• Talk about different food groups and name food from each group. • Understand that food must be grown, farmed or caught in Europe and the wider world. • Begin to combine different ingredients. • Prepare and cook ingredients. (cut, slice, grate, spread, bake)	• Use knowledge of existing products to design their own product for a purpose. • Create designs using annotated sketches and cross sectional diagrams. • Safely measure, mark and cut with accuracy. • Discuss functionality and aesthetics. • Use a chenille needle to sew a range of fabrics. • Use a needle-threader for ease.
Exceeding Targets	• Cut internal shapes and include slots in framework.	• Understand different substances that the body needs to stay healthy.	• Measure and pin a seam allowance.

	• Understand the function of a wide range of materials and explore using them.	• Understand seasonality and the benefits of eating seasonal and locally produced foods. Create exploded diagrams.	• Use a wider range of stitch types (over-stitch, cross stitch, running stitch)

Year 4	**Mechanical Systems** Levers and linkages pneumatics	**Electrical Systems** Simple circuits and switches (including programming and control	**Food** 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. Know where and how a variety of ingredients are grown, reared, caught and processed.
Vocabulary	Lever, linkage, loose pivot, fixed pivot, system, system, input, output	circuit, conductor, insulator, system, output device, input device	sensory, texture, appearance, fresh, slice, peel, garnish, chop, grate, processed
Targets Expected	• Create a detailed annotated diagram which clearly shows where the lever and linkage will be added. • Accurately measure and cut materials. • Discuss how simple levers are used in existing products. • Explore fixed and moving pivots. • Discuss how a linkage connects and lever to create movement. • Decide where to add a lever and how to create a pivot.	• Understand and use electrical systems in products • Make a variety of switches by using simple classroom materials e.g. card, corrugated plastic, aluminium foil, paper fasteners and paper clips. • Incorporate a bulb and buzzer in their design. • Discuss, investigate and, where practical, disassemble different examples of relevant battery-powered products.	• Talk about different food groups and name food from each group. • Understand that food must be grown, farmed or caught in Europe and the wider world. • Begin to combine different ingredients. (cut, slice, grate, spread, juice, peel, mix, garnish) • Create exploded diagrams

Exceeding Targets	• Apply techniques from prior learning to strengthen and stiffen materials. • Add multiple linkages to alter input/output. • Consider how existing products and his/her own finished products might be improved and how well they meet the needs of the intended user	• Make switches that operate in different ways e.g. when you press them, when you turn them, when you push them from side to side.	• Understand seasonality and the benefits of eating seasonal and locally produced foods.

Intent

Design and Technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

Attainment targets
By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Implementation
The teaching of Design Technology across the school follows the National Curriculum. Children design products with a purpose in mind and an intended user of the products. Food technology is implemented across the school with children developing an understanding of where food comes from, the importance of a varied and healthy diet and how to prepare this.

Subject Content

Key stage 1
Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:
Design
- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make
- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate
- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Technical knowledge
- 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

Key stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- 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

- 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

- 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

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

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

Key stage 1

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from

Key stage 2

- 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

Impact

Assessment of children's learning in Design Technology is an ongoing monitoring of children's understanding, knowledge and skills by the class teacher, throughout lessons. This assessment is then used to inform differentiation, support and challenge required by the children.
Design Technology is also monitored by the subject leader throughout the year in the form of book monitoring, observations of children working, looking at outcomes and pupil interviews to discuss their learning and understanding and establish the impact of the teaching taking place.