Purpose of study

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.

	Autumn	Spring	Summer
	All year groups take part in a design technology week at the end of term 1.	"Barnes Bake off" invites all children to bake around a certain theme	
Nursery	Using hammers at the woodwork table. Making bridges in the 'Billy goats gruff' Learning to hold scissors Designing shoes in 'Elves and the shoemaker'	Making bread in 'The little red hen' Chopping vegetables and making vegetable soup	Using sellotape or glue to fix construction Designing paper airplanes Dinosaur smoothies
Throughout the year parents come in to cook with the children on a weekly basis. Children have access to both inside and outside construction every day in free flow play. Child have access to the design and making table daily during free flow play.			
Reception	Cutting, sticking, gluing and using sellotape at the making table. Barnes bear goes visiting: Rwanda, India, Japan, Antarctica and Australia links to buildings and food.	Chinese takeaway (Chinese home role play) Making menorahs Designing and making Diva lamps Taste testing different food	Making afternoon Tea
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Year 1	STRUCTURES (Free Standing structures) *Free standing structure – a structure that stands on its own foundation or base without attachment to anything else* To design and make an ideal bedroom for a Lego figure MECHANISMS (Sliders and levers)	STRUCTURES (Free Standing structures) *Free standing structure – a structure that stands on its own foundation or base without attachment to anything else.* To design and make a pirate ship for a stranded Barnes Bear.	

	To design and make a moving front cover for children's own book of Anders (linked to English)		
National curriculum link:	**Design, make, evaluate and use technical knowledge**	**Design, make, evaluate and use technical knowledge**	**Use basic principles of a healthy and varied diet to prepare dishes through chopping**
Year 2	FOOD (preparing fruit and vegetables – including cooking and nutrition) To design and make a bread product that can be sold in Thomas Farynor's bakery.	FOOD (preparing fruit and vegetables – including cooking and nutrition) To prepare and make sushi. MECHANISMS (Sliders and levers) (wheels and axles) To build a model fire truck that could transport water.	TEXTILES (templates and joining techniques) To design and make a glove puppet linked to the book 'The True Story of the Three Little Pigs'.
National curriculum link:	**Understand where food comes from and prepare dishes through kneading.**	**Use basic principles of a healthy and varied diet to prepare dishes through peeling , cutting and grating.**	**Design, make and evaluate using the over stitch**
Year 3	TEXTILES (2D shape to 3D shape) To design and make an apron. Children to sew on pocket and decorate.	SHELL STRUCTURES (including computer-aided design) *Shell structure – a hollow structure with a thin outer covering.* To design and make packaging for the healthy snack.	FOOD (healthy and varied diet including cooking and nutrition) To design and make a healthy snack.
National curriculum link:	**Design, make and evaluate through running stitch**	**Design, make, evaluate and use technical knowledge**	**Understand and apply the principles of a healthy and varied diet.**
Year 4	ELECTRICAL SYSTEMS (simple circuits and switches)	MECHANICAL SYSTEMS (levers and linkages)	FOOD (healthy and varied diet including cooking and nutrition)

	To design and make a Morse code machine (linked to science) COMPUTING (using computing skills to program and control) To use the Crumble microprocessor to control the Morse code machine	To design and make a moving picture linked to a Greek myth.	To prepare and make Greek food.
National curriculum link:	**Design, make, evaluate and use technical knowledge**	**Design, make, evaluate and use technical knowledge**	**Prepare and cook a varied of predominantly savoury dishes using a range of cooking techniques.**
Year 5	TEXTILES (combining different fabric shapes) To design and make a star to decorate Barnes Bear's bedroom.	FOOD (celebrating culture and seasonality – including cooking and nutrition) To prepare and make a mango lassi (linked with an India theme).	STRUCTURES (frame structures) *Frame structure – a structure made from thin components e.g. tent frame* To design and make a bridge for Barnes Bear to cross the Thames.
National curriculum link:	**Design, make and evaluate through cross stitching**	**Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.**	**Design, make, evaluate and use technical knowledge**
Year 6	MECHANICAL SYSTEMS (cams) To design and make a moving cam toy.		FOOD (celebrating culture and seasonality – including cooking and nutrition) To design and make a selection of dips and salads for an exhibition opening.
National curriculum link:	**Design, make, evaluate and use technical knowledge**		**Understand and apply the principles of a healthy and varied diet.** **Prepare and cook a varied of predominantly savoury dishes using a range of cooking techniques.**

Both Key Stages have inventor and designer assemblies throughout the year. In Summer term 1, the KS1 children have food and nutrition assemblies on the 'eat well plate'. In the Summer term 2, the KS2 children have cooking and nutrition assemblies on seasonality and how/where ingredients are grown.

Subject content

Nursery

Personal, Social and Emotional Development

- Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them.

Physical development

- Use large-muscle movements to wave flags and streamers, paint and make marks.
- Choose the right resources to carry out their own plan.
- Use one-handed tools and equipment, for example, making snips in paper with scissors.

Understanding the World

- Explore how things work

Expressive arts and design

- Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park.
- Explore different materials freely, in order to develop their ideas about how to use them and what to make.
- Develop their own ideas and then decide which materials to use to express them.
- Create closed shapes with continuous lines, and begin to use these shapes to represent objects.

Reception (Early learning goals)

Physical development

- Progress towards a more fluent style of moving, with developing control and grace.
- Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
- Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.

Fine motor

- Use a range of mall tools, including scissors, paintbrushes and cutlery.

Expressive arts and design

- Explore, use and refine a variety of artistic effects to express their ideas and feelings.
- Return to and build on their previous learning, refining ideas and developing their ability to represent them.
- Create collaboratively, sharing ideas, resources and skills.
- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
- Share their creations, explaining the process they have used

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