The Grove Primary School
Design and Technology
Long Term Plan 2022 23

Vision for Design and Technology

At The Grove Primary School, we intend to ensure that our children develop the skills, knowledge and understanding to design and make functional products. It is the perfect subject to allow younger Primary age pupils to put Maths, English and Science knowledge to use, in a fun, contextual way and opens children's minds to the opportunities and careers that come from designing and making. Our world is full of things that have been thought of, designed and produced and we aim to give our children the opportunity to use their own creative ideas and experiences to do just the same.

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.

Through a variety of creative and practical activities, our pupils will be taught the knowledge, understanding and skills needed to engage in the process of designing, making and evaluating. Where possible, cross curricular links will be made, giving a purpose and relevance to the products the children will make. Currently available products will be investigated first, to give children a base from which to start. As production develops, the children will learn how to take risks and will become resourceful, innovative, enterprising and capable citizens. This is particularly important in our ever-changing world and our children will be encouraged to think about sustainability, environmentally friendly materials and opportunities for reusing and recycling.

All children will experience sequences of lessons to teach them about cooking and nutrition. It is intended that our children will develop a love of cooking, another expression of human creativity. Pupils will learn about the importance of a healthy balanced diet and how foods can be combined to make delicious meals and snacks. Within this, our children will learn about where food comes from, which foods are produced locally and nationally and how we can promote sustainability by eating foods when they are in season.

Throughout all aspects of our Design and Technology lessons, our children will be able to use 'real' tools and equipment, whilst adhering to and understanding, our health and safety guidelines.

The Grove Primary School
Design and Technology
Long Term Plan 2022 23

Planning based on the curriculum

EYFS planning is based on the Early Years Foundation Stage curriculum. In early years the children will look at Expressive Arts and Design. In this area of the curriculum they will create with materials and use their imagination and be expressive.

RECEPTION	Expressive Arts and Design ELG: Creating with Materials
	Children at the expected level of development will: • 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; • Make use of props and materials when role playing characters in narratives and stories.
	Please see EYFS Long term overview section of the website for details of DT in the Early Years

The Grove Primary School
Design and Technology
Long Term Plan 2022 23

The national Curriculum

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.

https://www.gov.uk/government/collections/national-curriculum#programmes-of-study-by-subject

The Grove Primary School
Design and Technology
Long Term Plan 2022 23

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.

https://www.gov.uk/government/collections/national-curriculum#programmes-of-study-by-subject

The Grove Primary School
Design and Technology
Long Term Plan 2022 23

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.

The Grove Primary School
Design and Technology
Long Term Plan 2022 23

Our school aims for progression in Design and Technology

Design and Technology can be a tricky lesson to deliver, especially as it incorporates practical lessons along with science and computing knowledge. We have adopted the Kapow Design and Technology Scheme to help support teachers and children with progression in this subject. We want to give children a vast range of experiences within our school and feel the Kapow scheme helps deliver this.

The key structures in DT are:

- Food
- Structures
- Textiles
- Electrical systems
- Mechanical systems
- Digital world

We have adapted their planning to fit into our school life. Using the resources and planning provided by Kapow, we will be able to monitor and see clear progression throughout the year groups.

We can use the progression and skills document to clearly see the progress the children make and the key skills and knowledge they are built upon each year.

The Grove Primary School
Design and Technology
Long Term Plan 2022 23

Whole School Design and Technology Overview

Year	Autumn	Spring	Summer
EYFS	**Through out the year the children will have access to continuous provisions. This will link into the EYFS curriculum for Expressive Arts and Design. See the EFYS LTP for more details.**		
1	**Food** **Fruit and vegetable** Handle and explore fruits and vegetables and learn how to identify which category they fall into, before undertaking taste testing to establish chosen ingredients for a smoothie they will make, with accompanying packaging. **Structures** **Constructing a windmill** Design, decorate and build a windmill for a mouse (client) to live in, develop an understanding of different types of windmill, how they work and their key features. Look at real existing examples and the functions that they carry out.	**Textile** **Puppets** Explore different ways of joining fabrics before creating hand puppets based upon characters from a well-known fairy-tale. Develop technical skills of cutting, gluing, stapling and pinning.	**Mechanisms** **Wheels and axles** Learn about the main components of a wheeled vehicle. Develop understanding of how wheels, axles and axle holders work; problem-solve why wheels won't rotate; to design and build their own vehicle designs.
2	**Mechanisms** **Making a moving monster** After learning the terms: pivot, lever and linkage, pupils design a monster that will move using a linkage mechanism. Pupils practise making linkages and experiment with various materials to bring their monsters to life. **Food** **A balanced diet**	**Structures** **Baby bears chair** Using the tale of Goldilocks and the Three Bears as inspiration, pupils help Baby Bear by making him a brand new chair, exploring different shapes and materials. When designing the chair, they consider his needs and what he likes.	**Textile** **Pouches** Introduction to sewing. Pupils make their own template, accurately cut their fabric and sew a basic running stitch.

The Grove Primary School
Design and Technology
Long Term Plan 2022 23

	Explore and learn what forms a balanced diet, pupils will taste test ingredient combinations from different food groups that will inform a wrap design of their choice which will include a healthy mix of protein, vegetables and dairy.		
3 Electrical Digital	**Textiles** **Cushions** Introduce two new skills to add to the pupils' repertoire: cross stitch and appliqué. Pupils apply their knowledge to the design, decoration and assembly of their own cushions. **(4 lessons)**	**Mechanical systems** **Pneumatic toys** Design and create a toy with a pneumatic system, learning how trapped air can be used to create a product with moving parts. Pupil are introduced to thumbnail sketches and exploded diagrams.	**Food** **Eating seasonally** Pupils discover when and where fruits and vegetables are grown and learn about seasonality in the UK. They look at the relationship between the colour of fruits and vegetables and their health benefits by making three dishes. **Structures** **Constructing a castle** Learning about the features of a castle, pupils design and make one of their own. They will also be using configurations of handmade nets and recycled materials to make towers and turrets before constructing a stable base.
4 Textile structures	**Mechanical systems** **Making a sling shot car** Transform lollipop sticks, wheels, dowel and straws into a moving car. Pupils use a glue gun to construct, make the launch mechanism, design and create the chassis of a vehicle using nets.	.**Food** **Adapting recipes** Work in groups to adapt a simple biscuit recipe, to create the tastiest biscuit ensuring that their creation comes within the given budget of overheads and costs of ingredients. **Electrical systems** **Torches** Pupils apply their scientific understanding of electrical circuits to create a torch made from recycled and reclaimed materials and objects. They design and evaluate their product against set design criteria.	**Digital world** **Mindful moments timer** Design, program, prototype and brand a Micro:bit timer to a specified amount of minutes. Pupils carry out research and existing product analysis to determine how a programmable product could be personalised to their needs

The Grove Primary School
Design and Technology
Long Term Plan 2022 23

5 **Electrical Textile**	**Mechanical systems** **Making a pop up book** **4 lessons** Create a four-page pop-up story book design, incorporating a range of functional mechanisms that use levers, sliders, layers and spacers to give the illusion of movement through interaction	**Food** **What could be healthier** **4 lessons** Research and modify a traditional Bolognese sauce recipe to make it healthier. Cook improved versions, creating appropriate packaging and learn about where the ingredients the importance of animal welfare when farming cattle. **Structures** **Bridges** **4 lessons** After learning about various types of bridges and exploring how the strength of structures can be affected by the shapes used, create their own bridge and test its durability - using woodworking tools and techniques.	**Digital world** **Monitoring devices** **4 lessons** Program a Micro: bit animal monitoring device that will alert the owner when the temperature is not optimal. Develop 3D CAD skills by learning how to navigate the Tinker cad interface and essential tools.
6 **Structures mechanical**	**Digital world** **Navigating the world** Program a navigation tool to produce a multifunctional device for trekkers. Combine 3D virtual objects to form a complete product concept in 3D computer-aided design modelling software. **Food** **Come dine with me** Research and prepare a three-course meal and taste-test and score their food. Research the journey of their main ingredient from 'farm to fork' or write a favourite recipe.	**Textiles** **Waistcoats** Select fabrics, use templates, pin, decorate and stitch materials together to create a waistcoat for a person or purpose of their choosing. Create or use a pattern template to fit a desired person or item (e.g. teddy bear)	**Electrical systems** **Steady hand game** Design and create a steady hand game, use nets to create the bases and apply knowledge of electrical circuits to build an operational circuit with a buzzer that completes the circuit when the handle makes contact with the wire