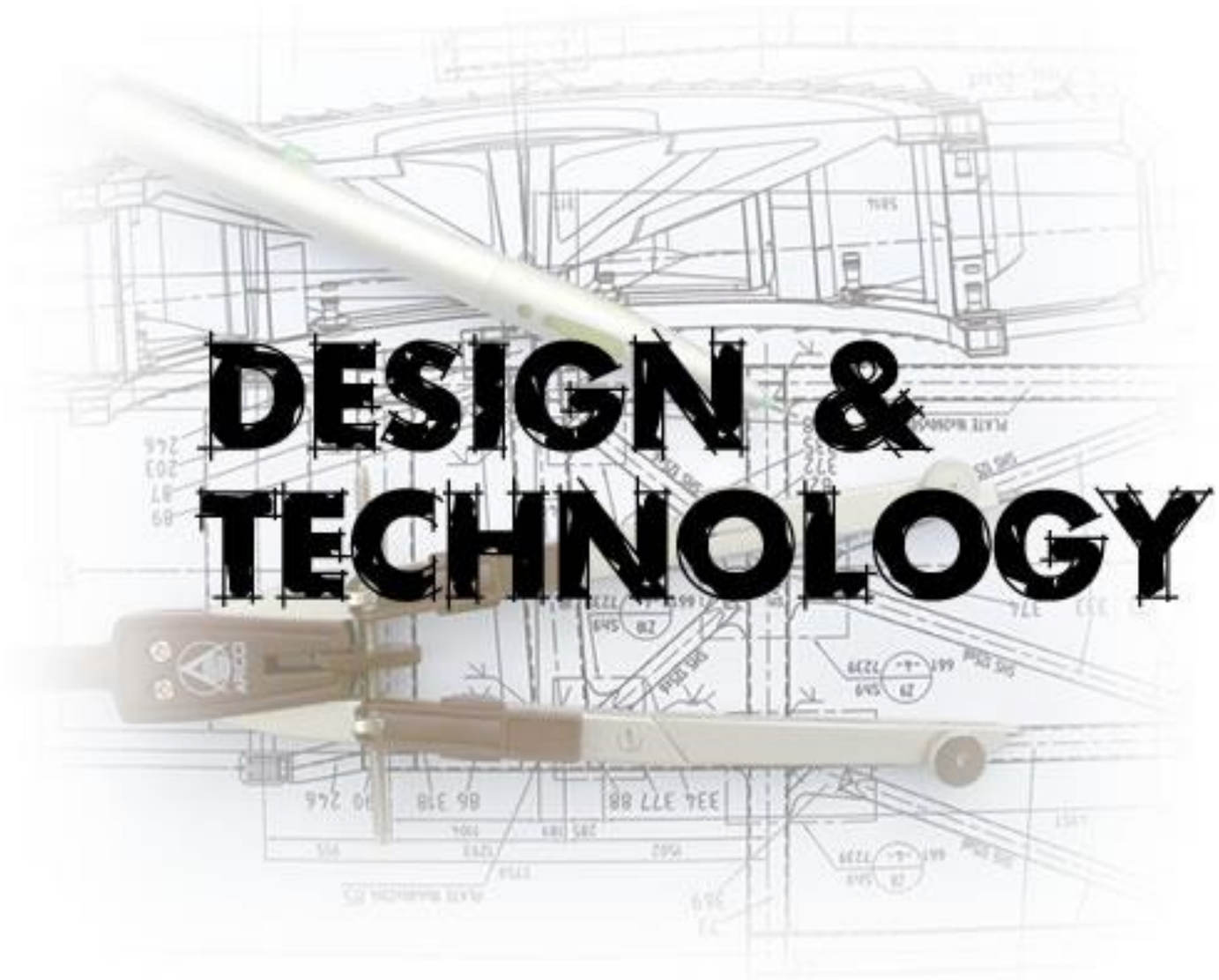
The Warriner Multi Academy Trust

Primary Design and Technology Curriculum



Design and Technology Overview

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.

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.

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.

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.

Long Term Plan 2024-2025

Early Years					
This is me	**This us you**	**Who are they**	**Where are they**	**Where do we fit**	**Looking forward**
Year 1					
A local history study – Brilliant Brackley / Banbury	**Arctic Explorers**	**The Greatest Britain's**		**London and the Great Fire of 1666**	
To design and make a coat of arms badge			To design and make a sock puppet		To design and make a moving picture that includes at least one lever
Year 2					
Around the World		**The Great Rainforests**		**The British Coastline**	
	To design and make a simple bridge for a model building		To use ingredients to make a smoothie using exotic fruit		To design and make a moving vehicle – wheels and axles
Year 3					
The Stone Age to the Iron Age	**The Romans in Britain**		**Natural Disasters**	**The Anglo-Saxons, The Vikings and the battle for England in 1066**	
To use pneumatics to make a moving Iron Man		To design and make a bridge strong enough to allow a model Roman chariot to cross		To design and build an Anglo Saxon longhouse using materials available to the Anglo Saxons	
Year 4					
A local history study – The Battle of Edgehill and the English Civil War	**Light and lenses**	**The Ancient Egyptians**		**Mountains, rivers and oceans**	
To design make a drum to be used in mock 'civil war'			To design and make an ancient Egyptian Shaduf		To design and make a popup book about volcanoes
Year 5					
Ancient Greeks Democracy – a good thing or not?		**Earth and Space**	**Early Islamic Civilisation**	**The Victorians - The Industrial Revolution**	
To design, make, test and evaluate an Archimedes screw		To design and make an air rocket		To design and make a mechanical Victorian fairground ride	
Year 6					
The Exploration of Antarctica	**20th Century Conflict**		**Windrush**	**The Human Race**	
To design and make a beanie hat that includes an electric light		To use ingredients to make a 'ration soup'			

Year 1	
Design Brief 1 – Term 1 – to design and make a badge displaying a 'coat of arms'	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**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
Design Brief 2 - Term 3 or 4 – to design and make a fabric 'sock puppet'	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**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
Design Brief 3 – Term 6 – to design and make a moving picture that includes at least one lever and one pulley	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**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

Year 2	
Design Brief 1 – Term 2 – To design, build, test and evaluate a model bridge	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**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 • 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 in their products
Design Brief 2 – Term 4 – to use a selection of ingredients to make a smoothie	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**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
Design Brief 3 – Term 6 – to design, make, test and evaluate a small moving vehicle	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**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 • 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 in their products

Year 3
Design Brief 1 – Term 1 – To use ingredients and follow a set recipe to make Iron age Bannock Bread
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan

National Curriculum Objectives covered in this unit of work	**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 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.

Design brief 2 – Term 3 – To design, build, test and evaluate a method of strengthing a model bridge so it holds a heavier weight
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan

National Curriculum Objectives covered in this unit of work	**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 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 understand and use electrical systems in their products

Design Brief 3 - Term 5 – To design and make an Anglo-Saxon longhouse from materials available to the Anglo-Saxons
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan

National Curriculum Objectives covered in this unit of work	**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 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 understand and use electrical systems in their products

Year 4

Design Brief 1 – Term 1 – to design, build, test and evaluate a working drum that could be used in a civil war battle field at the time of the Battle of Edgehill
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan

National Curriculum Objectives covered in this unit of work	**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 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
Design Brief 2 – Term 4 – to design, make, test and evaluate a model of an Ancient Egyptian Shaduf	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**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
Design Brief 3 – Term 6 – To design, make, test and evaluate a moving picture that includes an electrical component	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**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

Year 5	
Design brief 1 – Term 1 – To make, test and evaluate an Archimedes screw	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**Make** • select from and use a wider range of tools and equipment to perform practical tasks 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 • understand and use electrical systems in their products • apply their understanding of computing to program, monitor and control their products
Design Brief 2 – Term 3 – to design, make, test and evaluate a model air rocket	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	

National Curriculum Objectives covered in this unit of work	**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
Design brief 3 – Term 6 – To design, make, test and evaluate a model Victorian fairground ride with a mechanism	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**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

Year 6	
Design brief 1 – Term 1 – To design, make, test and evaluate a 'beanie hat' which includes a head torch	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**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
Design Brief 2 Term 3 – To use ingredients and follow a set recipe to make a 'ration soup'	
See detailed unit plans for a breakdown of declarative and disciplinary knowledge to be taught during this unit of work. Key vocabulary to be taught has also been recognised and defined in the unit plan	
National Curriculum Objectives covered in this unit of work	**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 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.