Our Design & Technology Curriculum – A Journey of Ingenuity

National Curriculum 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.

National Curriculum 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.

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, making 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:

- Use the basic principles of a healthy and varied diet to prepare dishes.
- Understand where food comes from.

YEAR 1: Design & Technology

AUTUMN 2

The Great Fire of London

CAPITAL CITIES
KINGS & QUEENS

NC:

Design

- **Design purposeful, functional, appealing products for themselves and other users based on design criteria.**

Make

- **Select from and use a range of tools and equipment to perform practical tasks.**
- **Select from and use a wide range of ingredients.**

Evaluate

- **Explore and evaluate a range of existing products.**
- **Evaluate their ideas and products against design criteria.**

Cooking and Nutrition

- **Use the basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from.**

'But on Saturday 1st September 1666, no one made sure that the fire in Farriner's bakery had been properly put out.'

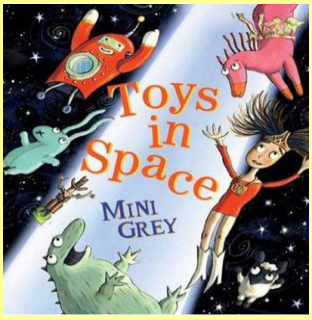
Create healthy buns for King Charles II.
Links to PSHE – Healthy Lifestyles - Where does food come from?

KNOWLEDGE	**SKILLS**
• Develop a food vocabulary using taste, smell, texture and touch. • Know where food comes from. • Inspiration - Nadiya Hussain Bake Off winner.	• Work safely and hygienically. • Measure and weigh food items, non-statutory measures e.g. spoons, cups. • Kneading • Baking

VOCABULARY
ingredients measure mixing bowl knead bake healthy

SPRING 1

Toys in Space



HISTORY OF TOYS

NC:

Design

- **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 construction materials.**

Evaluate

- **Explore and evaluate a range of existing products.**
- **Evaluate their ideas and products against design criteria.**

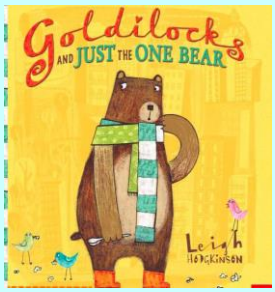
Technical knowledge

- **Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.**

'It took them to the Room of a Thousand Lost Toys. It had collected them from gardens all over Earth.'

Design a seesaw for a space playground. Materials to use; straws, sticks, dowling, ruler, card and lollypop sticks.

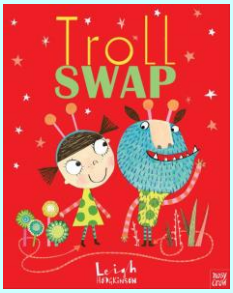
KNOWLEDGE	**SKILLS**
• Know that a lever is a simple machine consisting of a beam or rigid rod pivoted at a fixed hinge. • Understand how playground equipment operates – Pentagon Play.	• Make appropriate joins for different materials and situations e.g. glue, tape. • Roll paper to create tubes. • Cut dowel using a hacksaw and bench hook. • Experiment with levers and sliders to find different ways of

		making things move in a 2D plane.
	VOCABULARY dowel glue gun hinge pivot beam load	
SUMMER 2 **Goldilocks and Just the One Bear**  **TRADITIONAL TALES**	**NC:** **Design** • **Design purposeful, functional and appealing products for themselves and other users based on design criteria.** **Make** • **Select from and use a range of tools and equipment to perform practical tasks.** • **Select from and use a wide range of textiles.** **Evaluate** • **Explore and evaluate a range of existing products.** • **Evaluate their ideas and products against design criteria.** *'This bed is just right!" yawned the bear.'* **Design a colourful and decorated blanket for the bear.**	
	KNOWLEDGE • Know the term 'blanket' derives from a woolen weave pioneered by Thomas Blanket (Blanquette), a Flemish weaver who lived in Bristol, England, in the 14th century. • Learn about handmade Welsh blankets and tartan blankets.	**SKILLS** • Cut out shapes which have been created by drawing round a template onto the fabric. • Colour fabrics using tie dye. • Join fabrics by using a simple running stitch. • Decorate fabrics with attached items using a glue gun.
	VOCABULARY dye fabric textile needle running stitch template	

YEAR 2: Design & Technology

AUTUMN 1

Troll Swap



TRADITIONAL TALES

NC:

Design

- **Generate, develop, model and communicate their ideas through talking, drawing, making 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 construction materials.**

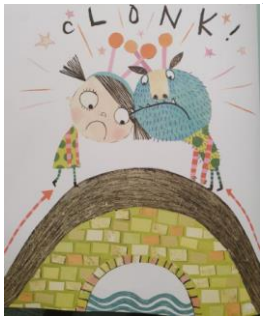
Evaluate

- **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.**

'Tabitha and Timothy were not looking where they were going, when…'



Design a stable bridge that will hold Timothy.

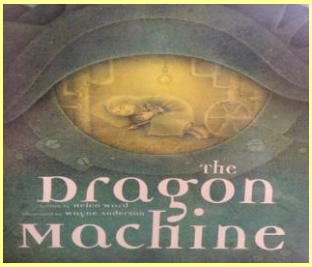
KNOWLEDGE	**SKILLS**
• Learn about and recognise different types of bridges – beam, arch, suspension, cantilever. • Learn about Manchester bridges. • Know who Thomas Telford is.	• Investigate different techniques for stiffening a variety of materials. • Test different methods of enabling structures to remain stable. • Use appropriate joins for different materials and situations e.g. glue, tape.

VOCABULARY

construction joint triangulation stable stiffen span

SPRING 1

Dragon Machine



INVENTORS

NC:

Design

- **Design purposeful, functional, appealing products for themselves and other users based on design criteria.**

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 according to their characteristics.**

Evaluate

- **Explore and evaluate a range of existing products.**
- **Evaluate their ideas and products against design criteria.**

Technical knowledge

- **Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.**

'George and his dreams of dragons went home.'

Create a paper dragon and drive it home.

The invention of the wheel and axel roughly dates back to 4000 BC in Mesopotamia, where it is believed the first potters wheels were created. Wheels and axels are used everywhere in modern life, including, cars, bicycles, fans, motors, merry go rounds and doorknobs.

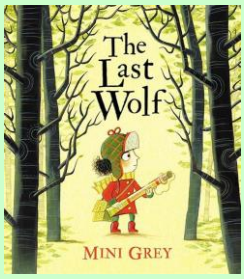
KNOWLEDGE	SKILLS
• Know that the wheel and axle is a machine consisting of a wheel attached to a smaller axle so that these two parts rotate together. • Learn about the Manchester Big Wheel and London Eye.	• Use a range of materials to create models with wheels and axles e.g. tubes, dowel, cotton reels. • Attach wheels to a chassis using an axle. • Mark out materials to be cut using a template. • Fold, tear and cut paper and card. • Cut along lines, straight and curved.

VOCABULARY

wheel axel rotate chassis motion origami

SUMMER 1

The Last Wolf



CONSERVATION

NC:

Design

- **Generate, develop, model and communicate their ideas through talking, drawing, making 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 ingredients.**

Evaluate

- **Explore and evaluate a range of existing products.**
- **Evaluate their ideas and products against design criteria.**

Cooking and Nutrition

- **Use the basic principles of a healthy and varied diet to prepare dishes.**
- **Understand where food comes from.**

'When there were endless miles of forest to run through and a thousand tasty grazing beasts to bite.'

Design a grilled vegetarian meal for Little Red Riding Hood.
Links to PSHE – Healthy Lifestyles - Why do I eat?

KNOWLEDGE	SKILLS
• Know how to group familiar food products e.g. fruit and vegetables. • Understand the need for a variety of foods in a diet. • Some understanding of the Eat Well guide.	• Cut, peel, grate, chop a range of ingredients. • Grilling

VOCABULARY

vegetarian protein grill nutrition equipment hygiene

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.

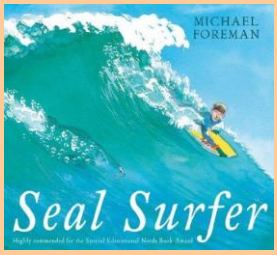
Pupils should be taught to:

- 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.

YEAR 3: Design & Technology

AUTUMN 1

Seal Surfer



COASTS

NC:

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.**
- **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.**

Technical knowledge

- **Apply their understanding of how to strengthen, stiffen and reinforce more complex structures**

'The warmth of spring brought wild flowers and the boy and his grandad to the cliffs once more.'

Design and make a picnic basket with a fastening for Tom. He would love to go on a picnic with Grandad.

KNOWLEDGE

- Develop vocabulary for tools materials and their properties.
- Know what fastening would work best for the picnic basket.
- Know the best materials to make a picnic basket.
- Know the purpose of a picnic basket.
- Learn about famous companies: Cath Kidston, Polar Gear and Wild & Wolf.

SKILLS

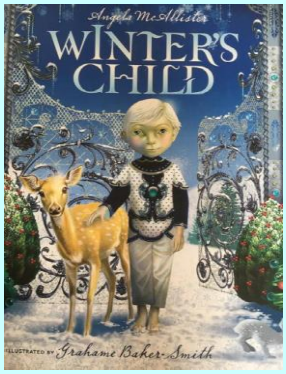
- Explore fastenings and recreate some.
- Sew on buttons and make loops.
- Use appropriate decoration techniques.

VOCABULARY

fastening annotated diagram design brief hessian sew aesthetics

AUTUMN 2

Winter's Child



WINTER

NC:

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.**

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.**

Make

- **Select from and use a wider range of tools and equipment to perform practical tasks.**
- **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.**

'Tom's mother took the last vegetables from the store cupboard to make hot soup for Nana.'

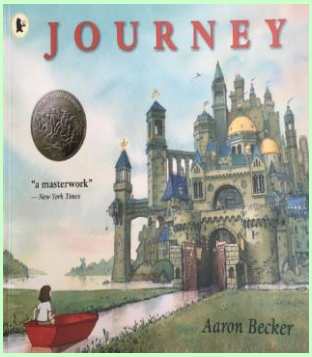
To make a winter warmer dish for Nana to eat using stewing.

KNOWLEDGE	**SKILLS**
• To understand the seasonality of vegetables and fruit. • Know which fruit and vegetables are grown in countries/continents studied in Geography. • Know about Lulu Grimes.	• Develop sensory vocabulary/knowledge using, smell, taste, texture and touch. • Analyse the taste, texture, smell and appearance of a range of foods (predominantly savoury). • Follow instructions/recipes • Make healthy eating choices – use the Eat Well plate • Join and combine a range of ingredients.

VOCABULARY
seasonality savoury recipe taste test stew roast

SUMMER 1

Journey



RIVERS

NC:

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.**
- **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.**

Create a lantern to help the girl escape the forest.

KNOWLEDGE	**SKILLS**
• Develop vocabulary for tools materials and their properties. • Know what materials would be best to use to create a lantern. • Know how to ensure the lantern structure is strong enough.	• Create shell or frame structures. • Strengthen frames with diagonal struts.

	• Know different uses of lanterns and their place in different cultures e.g. Lantern festival in China and Eastern Orthodox Church (Holy Week).	
	VOCABULARY transparent translucent strength structure framework strut	

YEAR 4: Design & Technology

AUTUMN 2

Leon & the Place Between

THE CIRCUS

NC:

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.**

Make

- **Select from and use a wider range of tools and equipment to perform practical tasks.**
- **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

- **Understand and use electrical systems in their products.**

'Now one dim spotlight found a barrel organ, still and silent on the stage. Everyone held their breath. The handle began to turn but there was no hand upon it.'

To make a light up animal toy to perform in the magic show.

KNOWLEDGE	**SKILLS**
• To know when electrical systems were introduced in the circus. • To know how to make a circuit to include different components. • To know the impact of different levels and linkages on movement. • To know how the impact of Italian physicist Alessandro Volta's discovery of electricity changed the world.	• Use lolly sticks/card to make levers and linkages. • Use linkages to make movement larger or more varied. • Incorporate a circuit into a model. • Use electrical systems such as switches bulbs and buzzers.

VOCABULARY

component electricity linkages pivot fulcrum series circuit

SPRING 2

Wisp

REFUGEE CAMPS: HOPE & FREEDOM

NC:

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

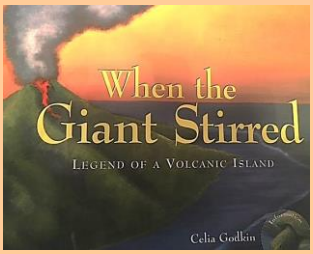
- **Select from and use a wider range of tools and equipment to perform practical tasks.**
- **Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.**

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.**

Technical knowledge

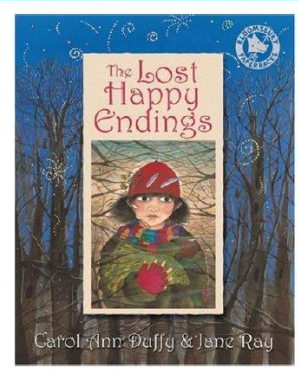
- **Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.**

	'The Wisp began to wriggle. Flitting and fluttering, it bustled Idris past rows of tents.' **To make a tent that Idris travelled past.**	
	KNOWLEDGE • Understand seam allowance. • Develop vocabulary for tools materials and their properties. • Develop vocabulary related to the project. • Know which materials will be best for the purpose of the tent. • Have an understanding of the five best tent designers: Big Agnes, MSR, Black Diamond, Kelty and Nemo Equipment.	**SKILLS** • Join fabrics using running stitch, over sewing and blanket stitch. • Make structures more stable by giving them a wide base. • Measure and mark square section, strip and dowel accurately to 1cm. • Explore strengthening and stiffening of fabrics.
	VOCABULARY canvas running stitch build blanket stitch prototype synthetic	
SUMMER 1 **When the Giant Stirred**  **VOLCANOES**	**NC:** **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 technique.** • **Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.** **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.** **Make** • **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** • **Understand how key events and individuals in design and technology have helped shape the world.** *'They collected coconuts from the beaches, fruit from the forest and fish from the lagoon.'* **To create a fish dish for the villagers to enjoy.**	
	KNOWLEDGE • Know which fruit and vegetables are grown in countries/continents studied in Geography. • Know how fish are caught, packaged and transported. • Know about the influence of Chef Shireen Anwar.	**SKILLS** • Develop sensory vocabulary/knowledge using, smell, taste, texture and touch. • Analyse the taste, texture, smell and appearance of a range of foods (predominantly savoury).
	VOCABULARY searing canning vacuuming influential reared sensory	

YEAR 5: Design & Technology

AUTUMN 2

Lost Happy Endings



TRADITIONAL TALES: WITCHES, THE TUDORS & THE STUARTS

NC:

Design
- **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
- **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
- **Understand and use mechanical systems in their products.**

'Once she had reached the edge of the forest, Jub had to climb to the top of a huge old oak tree, still with her sack on her back, and sit on the tallest branch.'

Design and make a contraption to help Jub reach the top of the tree safely without getting so tired.

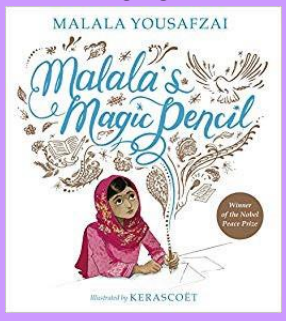
Inspiration: Engineers combine many pulleys to significantly reduce the amount of force required to lift an object. Archimedes was the famous Greek scientist who is said to have invented a pulley to drag a ship out of the water onto land. Pulleys are used in elevators, theatres and to pull water up from wells, amongst other things.

KNOWLEDGE	**SKILLS**
• To understand the mechanisms of the pulley system. • To know how to mark-up correctly. • To understand Ancient Greek influence on the pulley system.	• Use pulleys and pulley systems. • Join ropes and strings using appropriate knots. • Use a bradawl to mark hole positions. • Build frameworks to support mechanisms.

VOCABULARY
engineering pulley drive belt function criteria mechanism

SPRING 2

Malala's Magic Pencil



NC:

- **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.**

'When I was younger, I used to watch a TV show about a boy who had a magic pencil. If he was hungry, he drew a bowl of curry, and it appeared.'

Design and make an Asian-inspired meal:
- **Steamed vegetables in parchment paper**
- **Potato and chickpea curry**
- **Chapati**
- **Raita**

WOMEN WHO CHANGED THE WORLD

Inspiration: Atul Kochhar: an Indian-born, British based chef, restaurateur, and television personality. His unique talent has changed the way people perceive and experience Indian cuisine.

KNOWLEDGE	SKILLS
• Have an understanding of Indian cuisine. • Understand the importance of food hygiene. • To know how to read scales accurately.	• Prepare food products taking into account the properties of ingredients and sensory characteristics. • Weigh and measure using scales. • Show an awareness of a healthy diet. • Consider the influence of chefs.

VOCABULARY
savoury proportion parchment combine cuisine steaming

SUMMER 2

Leather Shoe Charlie

INDUSTRIAL MANCHESTER

NC:

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.**

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.**

Technical knowledge
- **Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.**

'In a small village in England, lived a boy called Charlie. He always wore leather shoes made for him by his grandfather who was a cobbler. The shoes were well made and comfortable, and Charlie was proud of them.'

Design and make a new pair of shoes for Charlie.
Inspiration: Find out about ethical shoe company TOMS and the work they do to ensure children living in poverty have shoes. Base shoe designs on these simple canvas shoes.

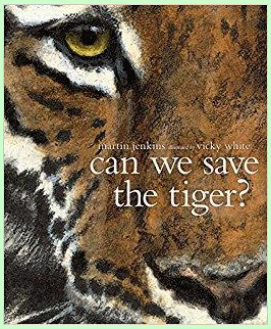
KNOWLEDGE	SKILLS
• Understand pattern layout. • Know how to reinforce, strengthen and stiffen complex structures. • Have some understanding of ethical shoe companies.	• Create 3D products using pattern pieces and seam allowance. • Pin and tack fabric pieces together. • Join fabrics using over sewing, back stitch or blanket stitch. • Combine fabrics to make useful products.

VOCABULARY
dismantle felt sole pattern adhesive durability

YEAR 6: Design & Technology

AUTUMN 2

Can we Save the tiger?



ECOLOGY/ CONSERVATION

NC:

Design

- **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

- **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

- **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.**

'When it comes to looking after all the species that are already endangered, there's such a lot to do that sometimes it might all seem to be too much… but if we stop trying, the chances are that pretty soon we'll end up with a world where there are no tigers… and I think that would be a shame, don't you?'

Design a safe, crate to transport a valuable, endangered animal. Create a prototype that can be lifted onto and moved using a programmed robot.

Inspiration: Basel Zoo, Switzerland is dedicated to its animals in a big way, making it a leader in breeding endangered species. Toronto Zoo, Canada remains dedicated to expanding and creating natural environments for their animals. Chester Zoo is one of the best in the world; it is committed to developing a long-term conservation strategy for animals in Africa and has a focus on research and education.

KNOWLEDGE	**SKILLS**
• Understand different mechanical systems. • Know about some of the key people and events in design and technology. • Apply understanding of electrical systems to prototype.	• Use a hand drill to drill tight and loose fit holes. • Cut strip wood accurately to 1mm. • Join materials using appropriate methods. • Use electrical systems such as motors. • Program, monitor and control using ICT.

VOCABULARY

Exploded diagram programme rigid specification vehicle transport

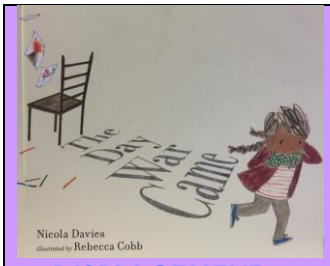
SPRING 2

The Day War Came

NC:

- **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 day war came… my mother made my breakfast, kissed my nose and walked with me to school.'



DISPLACEMENT & MIGRATION

Design and make a meal for a family using ingredients available in the war.

Inspiration: Rationing in World War 2 meant that people had to be inventive about their family meals. Look at some of Mrs Beeton's Everyday Cookery recipes. Research a range of traditional British food:

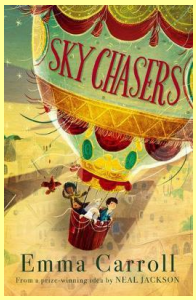
- Cheese and Potato Dumplings
- Corned Beef Fritters
- Scones and Jam

KNOWLEDGE	SKILLS
• Understand the importance of food hygiene • Know where and how ingredients are grown and processed. • Understand a variety of techniques used for cooking.	• Select and prepare foods for a particular purpose. • Work safely and hygienically. • Use a range of cooking techniques. • Explain how food is grown and processed.

VOCABULARY
principles dehydrated powdered staple preserve traditional

SUMMER 2

Sky Chasers



THE SKIES ABOVE

NC:

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.**

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.**
- **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.**

'Orphan Magpie can't believe her eyes when she sees a boy swept off his feet by a kite… or something that twists and dances in the wind.'

Design and make a kite.

Inspiration: The Kite Society of Great Britain was founded in 1979 and provides a comprehensive reference source about kites. The exact date and origin of kites is unknown, but it is believed that they were flown in China more than 2000 years ago. Research 'My Best Kite' for inspiration.

KNOWLEDGE	SKILLS
• Know about some of the key people and events in design and technology. • Understand the importance of planning and presenting a design. • Understand how to alter complex structures.	• Decorate textiles appropriately (often before joining components). • Stiffen and reinforce complex structures. • Cut dowel accurately to 1mm.

VOCABULARY
framework synthetic lightweight aerobatic glide reinforce