THE BOWLAND FEDERATION OF SCHOOLS

DESIGN TECHNOLOGY CURRICULUM NARRATIVE

THE 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.

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.

When designing and making, pupils in Key Stage 2 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, such as 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, such as gears, pulleys, cams, levers and linkages

♣ understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs, buzzers and motors

♣ apply their understanding of computing to programme, monitor and control their products.

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.

Working as a Designer			
Design	**Make**	**Evaluate**	**Apply**
The art or process of dividing how something will look or work.	Create something by combining materials or putting parts together.	Form an opinion of the value or quality of something after careful thought.	Use something or make something work in a particular situation.

UPPER KEYSTAGE 2 TOPICS			
TITLE	**FOOD AND NUTRITION**	**SYSTEMS**	**TEXTILES**
CONCEPT	Use techniques to make food appetising. Learn about Middle Eastern and Danish diets.	Write a simple program for a micro-bit.	Explore the function and properties of a range of fabrics.
	Study and make street foods from different cultures.	Learn how switches can be combined with electrical components to change the functionality of a product.	Learn how to reduce waste by recycling and repurposing snack packets and plastic bags into useful items.
BIG IDEAS/KEY QUESTIONS/LEARNING FOCUS	Why are our diets so different? **Designer – Georges Blanc (born 1943)** A French chef and restauranteur with 3 Michelin stars. Know some foods and key ingredients from other cultures Know how other cultures' foods can be nutritious Be able to make, roll and cook a flatbread Be able to prepare a range of vegetables –mezze bowl Be able to prepare foods to a high standard - smorrebrod	How can we keep ourselves safe on the road? **Designer – Emily Brookes (born 1985)** Emily Sophie Hastings Brooke (MBE) is a British inventor, industrial designer and entrepreneur who is best known for developing the Beryl (formerly Blaze) laser bike light projector which helps to protect cyclists caught in the blind spot of drivers. Know technology can be used to program and control a product – micro:bit Be able to combine elements of their design knowledge to fulfil a brief – create an all-in-one road safety belt.	Which fabric is ideal for creating a functional and hardwearing lunch bag? **Designer - Levi Strauss (1829 – 1902)** Levi Strauss was a German-born American businessman and clothing manufacturer who founded the first company to produce riveted blue jeans. Know which fabrics are both functional and hardwearing. Be able to use beeswax to waterproof cotton fabric. Be able to repurpose a pair of jeans.
	Can street foods save us? What street foods are How snacks can be good foods to eat Make a burrito Make and roll bread dough Make a savoury pastry	Can switches perform more than one function? **Designer - Albert Sadacca (1901 – 1980)** Albert Sadacca is credited with popularising electric Christmas tree lights for private use. More than one switch can be used to change the functionality of a product Use switches to adapt a product in response to a design brief	How can we reduce, recycle and repurpose? **Designer - Isatou Ceesay (born 1972)** Isatou is a Gambian activist and social entrepreneur who is often referred to as The Queen of Recycling. Plastic waste can be recycled and repurposed into practical, useful items Make a crochet hook out of a chopstick Use plastic bags and snack packets to create practical items

VOCABULARY	**High Frequency VOCABULARY** Culture Presentation Variety Smorrebrod Mezze bowl Flatbread	**Subject Specific VOCABULARY** Fibre Knead Unleavened	**High Frequency VOCABULARY** Properties Fastener Algorithm	**Subject Specific VOCABULARY** Fluorescent Reflective Attachment point Debug Programming	**High Frequency VOCABULARY** Durability Repurpose Functional	**Subject VOCABULARY** Beeswax Swatch Insulate
	Street food Culture Snack	Nutrient Fry Prove	Switch Parallel circuit Series circuit Component	Functionality Multi-function Brief Simultaneous	Recycle Repurpose Reduce	Chain Seal (verb) Skein
TITLE	**MECHANISMS**		**STRUCTURES**		**FOOD AND NUTRITION**	
CONCEPT	Investigate how pulleys and gears work.		Explore how frames are reinforced to make them stable.		Learn that the UK diet is influenced by a range of cultures.	
	Investigate how pulleys and gears work.		Construct a tower, from spaghetti, that is at least three levels tall.		Learn and apply techniques to make dishes designed to improve mood, energy levels and improve future health.	
BIG IDEAS/KEY QUESTIONS/LEARNING FOCUS	How can you lift a car onto a roof? **Designer – George Washington Gale Ferris Jnr** The Ferris wheel is an example of a machine that uses gear systems. The original Ferris wheel, sometimes referred to as the Chicago Wheel, opened in 1893. The London Eye is an example of a Ferris wheel and is the largest of its kind in Europe. Know types of gears and terminology related to gears. Know how pulleys and gears can change the direction of movement. Be able to design and make products that use pulleys and gears to lift loads. Be able to evaluate the success of outcomes and recommend improvements.		How are frames strengthened, reinforced and made rigid? **Designer - Abraham Darby III (1750 – 1789)** He built the largest cast iron structure of his era – the first cast iron bridge ever built, as a crossing over the Severn near Coalbrookdale. Know engineers use a range of methods to strengthen and reinforce structures. Be able to identify and describe ways that frames are strengthened and reinforced. Create a model shelter.		What can you learn from different cultures' diets? **Designer– Julia Child (1912- 2004)** Recognised for bringing French cuisine to the American public through her first book 'Mastering the Art of French Cooking' Know how foods can be used as medicines. Know how eating foods from different countries can help us to be healthy. Be able to roll and shape ingredients – Bombay potatoes Be able to slice and ribbon a range of vegetables – Summer rolls Be able to stir-fry vegetables.	

	How do pulleys and gears let you see the world? **Design – The London Eye** Types of pulley systems and gears Common uses of pulleys and gears How pulleys and gears can create simple mechanisms and change direction of movement Design and make a model Ferris wheel powered by gears Evaluate the success of their outcomes and recommend improvements		How strong is a piece of spaghetti? **Designers - James Maxwell (1838 – 1893) William Charles Tuke (1843 – 1893)** Blackpool Tower was designed by Lancashire architects James Maxwell and William Charles Tuke who oversaw the laying of its foundation stone on 29th September 1891. Dice, slice, peel, grate and cook a range of vegetables Make a sauce and a stock Use height and colour to improve the visual appeal of food Construct a flying buttress to support a tower Use appropriate lengths of spaghetti to increase strength and stability		Does food affect the way you feel? The difference between slow release and quick release carbohydrates How food can improve their mood and energy levels Dice, slice, peel, grate and cook a range of vegetables Make a sauce and a stock Use height and colour to improve the visual appeal of food	
VOCABULARY	**High Frequency VOCABULARY** Gear Pulley Mechanism	**Subject Specific VOCABULARY** Gear train Driver gear Idler	**High Frequency VOCABULARY** Frame I-beam Struts	**Subject Specific VOCABULARY** Brace Mitre Gussets	**High Frequency VOCABULARY** Culture Migration Spices	**Subject Specific VOCABULARY** Medicinal Fragrant Stir fry (noun/verb)
	Pulley Moveable pulley Fixed pulley	Block and tackle Rack and pinion Driver gear Driven gear	Guyed mast Flying buttress Load	Aesthetic Edifice Constraints	Carbohydrates Staple Nutrients	Saute Translucent Dice