Design and Technology Medium Term Plan

Saint Augustine Webster
CATHOLIC VOLUNTARY ACADEMY

OUR LADY OF LOURDES
CATHOLIC MULTI-ACADEMY TRUST

EYFS			
Three and Four-Year-Olds	Personal, Social and Emotional Development		• Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them.
	Physical Development		• Use large-muscle movements to wave flags and streamers, paint and make marks. • Choose the right resources to carry out their own plan. • Use one-handed tools and equipment, for example, making snips in paper with scissors.
	Understanding the World		• Explore how things work.
	Expressive Arts and Design		• Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. • Explore different materials freely, to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Create closed shapes with continuous lines and begin to use these shapes to represent objects.
Reception	Personal, Social and Emotional Development		• Show resilience and perseverance in the face of a challenge.
	Physical Development		• Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
	Expressive Arts and Design		• Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills
ELG	Personal, Social and Emotional Development	Managing Self	• Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. • Manage own personal hygiene and understand the importance of healthy food choices.

	Physical Development	Fine Motor Skills	• Use a range of small tools, including scissors, paintbrushes and cutlery.
	Expressive Arts and Design	Creating with Materials	• 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.

Year 1	Advent Mechanisms How can you make a picture move?	Advent Structures How can you stop a tower from toppling over?	Lent Food and Nutrition How does food affect your senses?	Pentecost Understanding Materials Can you build with bread?	Pentecost Textiles How can two squares of fabric keep you warm?
Core Knowledge	In this block, pupils will investigate how sliders work. They will design and make their own card slider product. 1. Exploring sliders and their applications Developing practical skills 2. Experimenting with different slider systems. Developing practical skills Developing designing and problem-solving skills 3. Developing practical skills Evaluating Outcomes **<u>At the end of the block, pupils will…</u>** **Know:**	In this block, pupils will investigate what needs to be in place so that a structure can remain standing on its own. They will use a range of materials to explore and reason about why some structures may fall. 1. Identification of the problem Exploring materials 2. Explicit teaching of skills relating to the brief 3. Application of skills Evaluation and adaptation **<u>At the end of the block, pupils will…</u>** **Know:**	Pupils will learn that eating is a sensory experience. They will learn about the nutritional value of vegetables and why colourful food can be better for you. They will use a range of culinary techniques to create and modify dishes that appeal to the senses. 1. Exploring sensory qualities of food Experimenting with new flavours and textures Explicit teaching of culinary skills and techniques 2. Exploring sensory qualities of food	In this block, pupils will be able to identify a range of construction materials. They will investigate how materials can be changed by adding heat or water. They will use a combination of materials to create a small model house. 1. Exploring materials 2. Explicit teaching of skills relating to the brief 3. Application of skills Evaluation and adaptation **<u>At the end of the block, pupils will…</u>** **Know:** • Building materials have different properties which	In this unit, pupils will learn how to sew pieces of fabric together to form a pouch. They will be able to name the parts of a needle and may be able to thread it. 1. Identification of the problem Exploring materials 2. Explicit teaching of skills relating to the brief 3. Application of skills Evaluation and adaptation **<u>At the end of the block, pupils will…</u>** **Know:** • Fabric can be joined together using a running stitch

	• Common uses of sliders • Different methods to create card sliders • How sliders can create simple mechanisms **Be able to:** • Design and make a slider product • Evaluate the success of their outcomes and recommend improvements	• A freestanding structure is a structure that stands on its own foundation or base without attachment to anything else **Be able to:** • Build structures that are freestanding using a range of different materials	Explicit teaching of culinary skills and techniques Evaluating outcomes 3. Exploring sensory qualities of food Applying skills Evaluating outcomes **<u>At the end of the block, pupils will…</u>** **Know:** • Why colourful food can be healthier • How different foods can affect their senses **Be able to:** • Peel, chop and grate a selection of vegetables • Modify food to suit their food senses	enable them to be used for different purposes **Be able to:** • Identify, sort and select materials that can be used in construction • Combine materials	• The types and names of tools needed for sewing **Be able to:** • Create a running stitch • Select tools for sewing • Thread a needle
Previous Learning	• Scissors can be used more accurately by placing the material to be cut near the pivot of the scissors and making small cuts • A push is a force to move something away from you	• Identify different types of building blocks • A wide base or foundation provides greater stability • For an object or structure to balance, weight	• Identify main food groups and distinguish between fruit and vegetables • Name a range of vegetables Identify the five senses • Identify the five senses and five key	• Sort objects according to size, shape and colour • Identify how the properties of cement change when water is added, and it is allowed to dry	• Identify materials such as cardboard, string and polystyrene • Manipulate fabrics and yarns by poking, pulling, threading and weaving

	• A pull is a force to move something nearer to you • A slider is a rigid bar that moves backwards and forwards along a straight line • A linear movement is a movement along a straight line • Some cards and books have sliding mechanisms to make images move • There are different types of slider mechanism	needs to be equal on each side • Some structures need support to stop them from toppling • Cardboard can be joined in a variety of ways to add stability to a structure	flavours: sweet, salty, sour, bitter and umami • Explain the benefits of eating raw vegetables in a variety of colours • Use the ribboning technique • Use appropriate vocabulary to describe flavours and textures and state preferences • Identify what makes food appealing to all our senses • Prepare crudités using the claw and bridge techniques • Use appropriate vocabulary to describe texture and taste and in the evaluation of outcomes	• Sort materials according to their properties • Combine ingredients to create a bonding product • Identify how properties of a material change • Compare the properties of one material against another	• Make a stitch by sewing from the back to the front and from the front to the back • Name parts of a needle and use relevant vocabulary such as yarn and thread • Thread a darning needle independently • Make small running stitches • Describe some properties of different threads and make comparisons between them • Thread a darning needle independently
Working as a Designer (Expectations)	• Know common uses of sliders • Know different methods to create card sliders • Know how sliders can create simple mechanisms	• Know a freestanding structure is a structure that stands on its own foundation or base without attachment to anything else	• Know why colourful food can be healthier • Know how different foods can affect senses • Be able to peel, chop and grate a	• Know building materials have different properties which enable them to be used for different purposes • Be able to identify, sort and select materials that can	• Know fabric can be joined together using a running stitch • Know the types and names of tools needed for sewing • Be able to create a running stitch

	• Be able to design and make a slider product • Be able to evaluate the success of their outcomes and recommend improvements.		• Be able to build structures that are freestanding using a range of different materials.		selection of vegetables • Be able to modify food to suit food senses.		be used in construction • Be able to combine materials		• Be able to select tools for sewing • Be able to thread a needle.	
Design History Link	Pop up books – Matthew Paris 13th century Thomas Malton 1775		Leaning Tower of Pisa				Frank Lloyd Wright (1867-1959)		Bayeux Tapestry	
Vocabulary	**Core** slider slot bridge	**Technical** push pull rigid	**Core** tower topple lean	**Technical** foundation balance perpendicular	**Core** senses vitamins sensory	**Technical** ribboning caramelise marinade (verb)	**Core** construction properties architect	**Technical** modify cement (noun) solidify	**Core** binca sewing felt	**Technical** running stitch attach pouch

Year 2	Advent Textiles	Advent Food and Nutrition	Lent Mechanisms	Lent Materials	Pentecost Structures

	How can you repurpose an item of clothing?	What does healthy mean?	Are bigger wheels always better?	How can you waterproof a hat?	How strong is a piece of paper?
Core Knowledge	• In this block, pupils will learn how to use a template to create a simple patchwork by repurposing clothing to create something practical and useful. They will develop their skills using a needle and thread to create small, even stitches 1. Exploring materials and techniques 2. Explicit teaching of skills Evaluation 3. Application of skills 4. Evaluation and adaptation At the end of the block, pupils will: Know	• In this unit, pupils will consider what being healthy means. They will learn that eating a variety of vegetables provides the body with the nutrients it needs. They will make products that use a range of vegetables and minimally processed food 1. Exploring nutrition 2. Explicit teaching of culinary skills and techniques 3. Evaluating outcomes At the end of the unit, pupils will: Know	• In this block, pupils will learn how wheels and axles work together. They will build simple wheel mechanisms. They will explore how the size of the wheel and position of the axles affects the movement of simple vehicles. 1. Understanding how wheels and axles works 2. Exploring the size of wheels and positioning of axles 3. Building and testing a simple vehicle At the end of the unit, pupils will: Know	• In this block, pupils will investigate materials to discover whether they absorb or resist water. Pupils will also use wax or oil crayons to create a waterproof coating for a paper hat which they have made by creasing and folding a sheet of paper. 1. Exploration and testing of materials 2. Reference to other designers 3. Exploration of materials and properties 4. Application of knowledge and skills to fulfil a brief	• In this unit, pupils will discover that they can increase the strength and stability of paper by folding. They will test and record their paper structures and design a paper tower that is at least 50cm tall and can bear a 1kg weight. 1. Explicit teaching of skills 2. Exploring materials 3. Application of skills 4. Evaluation and adaptation At the end of the unit, pupils will: Know

	• How to cut out shapes which have been created by using a template • How to use a range of basic sewing skills Be able to • Use a template to transfer a pattern • Cut out and join fabric shapes using a template	• Why vegetables are so important to our health • What processed foods are Be able to: • Prepare a range of salad vegetables • Shape and season a bread snack	• How wheels and axles work together • The size and position of wheels affects how they move Be able to: • Create a simple wheel mechanism • Use wheel mechanisms to propel a simple vehicle	5. Evaluation <u>At the end of the unit, pupils will:</u> Know • Materials can be modified to become waterproof • Origami comes from the Japanese words: ori – folding and kami – paper Be able to: • Make paper waterproof • Transform flat paper by folding and creasing to form a hat	• Paper becomes stronger when it is folded • A load is the amount of weight a structure must carry Be able to: • Fold paper to increase strength and stability • Test and record how much weight paper can hold
Previous Learning	• Use scissors to cut fabric Identify some fabrics • Name a range of geometric shapes • Use a running stitch to join pieces of fabric • A template can be used to draw and cut shapes of fabric accurately	• Vegetables provide vitamins and minerals that the body cannot make • Cooking vegetables reduces their nutritional value • Ribboning is a technique of slicing vegetables into very thin strips • Processed food contains additives that make it less	• Identify different types of vehicles • Know that vehicles and everyday objects use wheels • Explain the terms wheel, axle, axle bearer / holder, chassis • Define the words centre, position, rotate • Explore the difference between	• Identify properties of materials • Sort materials according to their properties • Carry out a simple fair test • .Identify features of clothing designed to be suitable for wet weather conditions • Sort clothing according to their	• Use scissors correctly • Build structures that are free-standing using a range of different materials • A free-standing structure is a structure that stands on its own foundation or base without attachment to anything else

	• Create a patchwork by joining fabric shapes together • Appliqué a cut out shape onto another piece of fabric • Use an overstitch to join two pieces of fabric	healthy than fresh food • Having a healthy diet means to eat a range of foods to ensure the body receives all the nutrients it needs • Meat, dairy products and eggs are a major source of protein • Protein is needed by the body to repair and build muscle tissue • There are welfare issues to be considered in the production of the food we eat • Processed food tends to have additives and high quantities of salt or sugar that make it a less healthy option	fixed axles and rotating axles and identify their applications	suitability for specific weather conditions • Carry out a fair test to determine whether materials are waterproof • Draw conclusions from observations and test results	• Folding paper can increase its strength • A cylindrical pillar is stronger than a rectangular one • A combination of folds can increase the stability of paper
Working as a Designer (Expectations)	• Know how to cut out shapes which have been created by using a template • Know how to use a range of basic sewing skills	• Know why vegetables are so important to our health • Know what processed foods are	• Know how wheels and axles work together • Know size and position of wheels affects how they move	• Know materials can be modified to become waterproof • Know origami comes from the Japanese words: ori – folding and kami – paper	• Know paper becomes stronger when it is folded • Know a load is the amount of weight a structure must carry

	• Be able to use a template to transfer a pattern • Be able to cut out and join fabric shapes using a template		• Be able to prepare a range of salad vegetables • Be able to shape and season a bread snack		• Be able to create a simple wheel mechanism • Be able to use wheel mechanisms to propel a simple vehicle		• Be able to make paper waterproof • Be able to transform flat paper by folding and creasing to form a hat		• Be able to fold paper to increase strength and stability • Be able to test and record how much weight paper can hold	
Design History Link	Frank Havrah 'Kaffe' Fassett – 1937				Karl Friedrich Benz (1844 – 1929)		Arthur Wellesley – First Duke of Wellington (1769 – 1852)		Dame Zaha Mohammad Hadid (1950 – 2016) The Riverside Museum, Glasgow 2011	
Vocabulary	**Core** patchwork overstitch repurpose	**Technical** template applique quilt	**Core** free range processed coagulate	**Technical** vitamins protein wholemeal	**Core** Wheel Axle Axle holder chassis	**Technical** Rotate Position centre	**Core** Manipulate Flexible barrier	**Technical** Waterproof Resist absorbent	**Core** Paper Crease corrugated	**Technical** Pillar Storey load

Year 3	Advent Textiles How can you make a box out of cloth?	Advent Food and Nutrition What do we mean by a balanced diet?	Lent Mechanisms How can you do a lot of work with little effort?	Pentecost Systems How are things powered?	Pentecost Structures What makes a bridge strong?
Core Knowledge	In this block, pupils will explore ways to stiffen fabric. They will have the opportunity to cover a box with cloth and then go on to create a rigid box out of fabric. 1. Identification of the problem	In this block, pupils will consider what a balanced diet is. They will make three products that are often bought pre-made or highly processed. 1. Exploring nutrition	In this block, pupils will investigate various linkages and levers to design and make their own linkages and levers product. Pupils will select and use a variety of modelling materials to create their final outcomes	In this block, pupils will look at different types of energy and how these can be used to power different devices. They will consider how design choices are influenced by energy sources. 1. Understand what energy is	In this block, pupils will investigate how the shape and features of a bridge can affect how strong it is. They will also identify types of bridges and the structural changes that engineers and architects make to

	2. Exploring materials 3. Explicit teaching of skills relating to the brief 4. Application of skills 5. Evaluation and adaptation **<u>At the end of the block, pupils will …</u>** **Know** • Fabric can be stiffened • Stiffened fabric can hold a form **Be able to …** • Select and apply solutions to stiffen fabric • Make a box using stiffened fabric	2. Explicit teaching of culinary skills and techniques 3. Exploring the healing qualities of food 4. Applying knowledge 5. Modifying and improving 6. Exploring the sensory qualities of food 7. Evaluating outcomes **<u>At the end of the block, pupils will …</u>** **Know** • What is meant by the term balanced • Why fresh foods are better *Be able to …..* • Make a fruit and yoghurt dessert	1. Exploring levers and their applications Developing practical skills 2. Exploring levers and their applications Developing practical skills 3. Exploring linkages and their applications 4. Developing design skills 5. Making a linkages and levers product Evaluating outcomes **<u>At the end of the block, pupils will …</u>** **Know**	and why we need it 2. Identify types of energy 3. Understand how types of energy influence design choices 4. Explore energy in the context of design choices **<u>At the end of the block, pupils will …</u>** **Know** • Different types of energy • Why designers need to carefully consider energy sources **Be able to** • Identify how things are powered • Suggest appropriate energy sources for design problems	increase the stability of structures. 1. Identifying features of bridges 2. Exploring ways to stabilise a simple structure 3. Introducing a design and make challenge 4. Application of skills 5. Evaluation and adaptation **<u>At the end of the block, pupils will …</u>** **Know** • Bridges are structures that allow people and vehicles to cross over an open space • Towers, piers and arches provide strength to a bridge **Be able to** • Design and build a beam

		• Make homemade chips • Flavour foods to increase their sensory qualities	• Types of levers and linkages • Key terminology relating to levers and linkages • How levers and linkages can change the direction of movement *Be able to .....* • Design and make simplistic lever and linkage products • Evaluate the success of their outcomes and recommend improvements		bridge that can hold the weight of 100 pennies • Identify and name parts of a bridge
Previous Learning	• Set up a test with a control sample • A template is used to replicate shapes • Solutions can be applied to fabric to make it rigid • A starch or PVA solution can be used to stiffen fabric • A template can be used to cut desired	• Vegetables contain vitamins and minerals • Processed food is food that has been treated in some way to preserve or change it • Many processed foods contain additives or high quantities of salt or	• Identify simple mechanisms and their uses • Levers create a force that can move a load with minimal effort • A lever consists of: fulcrum, load and effort • There are three classes of lever	• A simple mechanism is one that is powered by hand • Animals and humans need food, water and air to survive • Know and use vocabulary to describe weather patterns, climates and physical features	• Build structures using a range of different materials • Make a structure in accordance with a set of criteria • Weights can be used to support a bridge • A pillar is used to give strength and stability to a structure

	shapes from fabric accurately	sugar which is unhealthy • To have a balanced diet we should eat healthy foods regularly and less healthy foods in moderation • Key flavours are sweet, salty, spicy and sour • Starch is a carbohydrate found in rice, flour and potatoes • The bridge is a method of cutting food in half or quarters • The claw is a technique used to slice, dice or chop food safely • Due to the use of additives, pre-made or processed food is often less healthy than freshly made food	• Simple mechanisms are those powered by hand • Linkages are a series of levers and pivots • Explore the difference between the input and output force in a range of linkage systems • Describe the different types of motion created by linkages	• Energy is another word for power • Energy makes things move • Energy makes machines work • Energy makes living things grow • An energy source is the origin of power or energy • Wind, water, sunlight, plants, animals, oil, coal and natural gas are all sources of energy • Energy can be controlled • Energy is converted from one form to another and cannot be created or destroyed • Fossil fuels are burnt to produce energy • Sustainable means to continue for a long time • Sustainable means to use natural products and energy in a way that does	• A cylindrical pillar is stronger than a rectangular one • Engineers and architects use their understanding of materials to ensure a structure has stability • A load is the amount of weight a structure can carry • Features such as arches and piers add stability to a bridge structure

								not harm the environment			
Working as a Designer (Expectations)	• Know fabric can be stiffened • Know stiffened fabric can hold a form • Be able to select and apply solutions to stiffen fabric • Be able to make a box using stiffened fabric		• Know what is meant by the term balanced • Know why fresh foods are better • Be able to make a fruit and yoghurt dessert • Be able to make homemade chips • Be able to flavour foods to increase their sensory qualities		• Know types of levers and linkages • Know key terminology relating to levers and linkages • Know how levers and linkages can change the direction of movement • Be able to design and make simplistic lever and linkage products • Be able to evaluate the success of their outcomes and recommend improvements		• Know different types of energy • Know why designers need to carefully consider energy sources • Be able to identify how things are powered • Be able to suggest appropriate energy sources for design problems		• Know bridges are structures that allow people and vehicles to cross over an open space • Know towers, piers and arches provide strength to a bridge • Be able to design and build a beam bridge that can hold the weight of 100 pennies • Be able to identify and name parts of a bridge	
Design History Link	Gisela Stromeyer – Frei Otto Retrospective				Gisela Stromeyer		William Kamkwamba (born 1987)		Sir Horace Jones (1819 – 1887) Sir John Wolfe Barry (1836 – 1918)	
Vocabulary	**Core** Starch PVA glue gelatin	**Technical** Stiffen Interfacing cloth	Core Seasonal Balance Preserve	Technical Stew Pressure Seasoning	Core Lever Linkage Mechanism	Technical Force Load Effort	Core Energy Energy source Types of energy	Technical Turbine Source Intermittent Renewable	Core Gap Deck Pier	Technical Suspension Arch Bascule

Year 4	Advent Food and Nutrition	Advent Mechanisms	Lent Textiles	Lent Structures	Pentecost Cooking and Nutrition

	What's really in our food?	How many ways are there to open a door?	How do you keep a tea towel from slipping off a hook?	Which shapes will give a structure stability?	Is cheap food always worse for you?
Core Knowledge	In this unit, pupils will explore the difference between freshly made food and mass-produced food. The unit will focus on common foods that are part of a healthy diet but are often bought premade and can contribute to poor physical and mental health. 1. Exploring nutrition 2. Explicit teaching of culinary skills and techniques 3. Evaluating outcomes 4. Exploring bread making 5. Explicit teaching of culinary skills and techniques 6. Exploring how to make soup 7. Explicit teaching of culinary skills and techniques	In this block, pupils will investigate how hinges work. They will then select a range of modelling materials and tools to make their own hinged products, evaluating and modifying them throughout. 1. Exploring types of hinges 2. Developing practical skills 3. Evaluating outcomes **<u>At the end of the block, pupils will …</u>** **Know** • Types of hinges and the related terminology • Common uses for hinges **Be able to …** • Make a variety of model hinges • Make and evaluate hinged products using	In this block, pupils will learn how to sew a button onto fabric. They will identify the different functions of fastenings and reflect on the advantages or disadvantages of using certain fasteners. They will also create a solution to the problem of a towel slipping off a hook. 1. Identification of the problem 2. Exploring fasteners 3. Explicit teaching of skills 4. Application of skills 5. Evaluation and adaptation **<u>At the end of the block, pupils will …</u>** **Know** • Fastenings have different functions	In this block, pupils will explore which shapes can be used to provide stability in structures. They will use a range of materials to investigate 3D shapes and in Lesson 3 they will collaborate on a class geodesic dome structure 1. Exploration of the key question 2. Exploration of materials and techniques 3. Conducting investigations relating to the key question 4. Application of knowledge and skills 5. Evaluating and modifying **<u>At the end of the block, pupils will …</u>** **Know**	In this block, pupils will learn how to make healthy food from low-cost ingredients. They will start to consider how cheap processed foods will affect their diet and health in later life . 1. Explicit teaching of culinary techniques 2. Evaluating outcomes **<u>At the end of the block, pupils will …</u>** **Know** • That cheap processed food often contains additives, salt and sugar, which makes it less healthy than unprocessed food **Be able to …** • Peel, grate and chop vegetables

	8. Modifying and improving **<u>At the end of the block, pupils will …</u>** **Know** • Processed foods have many added ingredients **Be able to …** • Make, roll and shape bread dough • Make a soup	modelling materials	• A shank provides a small amount of space between the button and fabric **Be able to …** • Select appropriate fastenings and attach them to fabric • Make a shank for a button	• Triangles provide stability in a structure • Structural engineers work with architects to ensure structures withstand forces **Be able to …** • Make triangles to form and join trusses • Identify the forces that affect structures	to make economical, tasty and healthy food
Previous Learning	• Ultra-processed food is less healthy than fresh food • Vitamins, fibre and protein are nutrients the body needs and can be found in a range of fresh food • Healthy alternatives to processed food can be created from fresh ingredients • Mass-produced food often contains additional	• Identify simple mechanisms and their uses • Simple mechanisms are those powered by hand • The direction, speed and power of movement can be changed by using mechanisms • A hinge is a rotating joint that allows movement between two linked objects	• There are different types of fasteners • Materials can be sorted according to their properties • Objects can have different functions and purposes • Identify the component parts and purposes of a range of fasteners • Identify advantages and disadvantages of each fastener	• Paper can be made stronger by changing its shape • A column is strong because all parts of the cylinder share the load • A series of cylinders is stronger than one • Cylinders are regularly used in structures • Triangles are strong and stable shapes	• Recognise that good nutrition keeps the body healthy, provides energy and helps the body to repair • Chop, slice and grate vegetables • Some types of food that are processed are unhealthy because of the inclusion of additives, sugars and salt

	ingredients as flavour enhancers, sugar, salt and preservatives • Identify the nutrients present in flour, cheese and tomatoes: carbohydrates, vitamins, protein and calcium • Knead, roll and stretch dough • Gluten is a substance found in flour which develops elasticity when kneaded in dough • Mass-produced food can contain many additional ingredients such as saturated fat, sugar, salt and preservatives • Grate and chop vegetables safely	• There are different types of hinges that have differing features and applications • Use basic tools to cut and measure materials accurately • Design and make a product that incorporates a working hinge	• Explain the suitability of fasteners for specific purposes • Use running stitch • Attach a range of fasteners to fabrics • Reinforce a button hole using overstitching	• Triangles joined together have stability and create a rigid structure	• Compare the advantages of processed food with its disadvantages • Explore ways of using low-cost fresh ingredients to make simple and appetising meals • Compare the cost and nutritional content of pre-prepared and homemade food
Working as a Designer (Expectations)	• Know processed foods have many added ingredients • Be able to make, roll and shape bread dough	• Know types of hinges and the related terminology • Know common uses for hinges	• Know fastenings have different functions • Know a shank provides a small amount of space	• Know triangles provide stability in a structure • Know structural engineers work with architects to ensure	• Know that cheap processed food often contains additives, salt and sugar, which makes

	• Be able to make a soup		• Be able to make a variety of model hinges • Be able to make and evaluate hinged products using modelling materials		between the button and fabric • Be able to select appropriate fastenings and attach them to fabric • Be able to make a shank for a button		structures withstand forces • Be able to make triangles to form and join trusses • Be able to identify the forces that affect structures		it less healthy than unprocessed food • Be able to peel, grate and chop vegetables to make economical, tasty and healthy food	
Design History Link			Medieval times (500 – 700 AD) London's Tower Bridge		George de Mestral (1907 – 1990)		Roma Agrawal (born 1983) The Shard (started 2009 – completed 2012)			
Vocabulary	Core Ingredients Processed Bread	Technical Gluten Knead Ferment	Core Hinge Knuckle Leaf Pin Barrel	Technical Butt hinge Concealed hinge Net	Core Shank Burr Hook and loop	Technical Buckle Fastener Raw edges	Core Structural engineer Geodesic Gravity	Technical Truss Compression Tension	Core Cheap Fusion Texture	Technical Shallow fry Shortening Fragrant

5

Year 5	Advent Food and Nutrition Why are our diets so different?	Advent Textiles Which fabric is ideal for creating a functional and hardwearing lunch bag?	Lent Cooking and Nutrition What can you learn from different cultures diets?	Pentecost Structures How are frames strengthened, reinforced and made rigid?	Pentecost Mechanisms How can you lift a car onto a roof?
Core Knowledge	In this block, pupils will look to Middle Eastern and Danish foods for inspiration and consider what they can learn from the diets of different cultures. They will learn	In this block, pupils will consider the durability of fabrics. They will design and make a functional and hardwearing lunch bag. They will create fair tests to investigate the	In this block, pupils will look to different countries to see what can be learnt from different cultures. The recipes chosen showcase how certain foods can	In this unit, pupils will look at a range of ways that frames are reinforced to make them stable. They will identify joins and supports and create a model shelter	In this block, pupils will investigate how pulleys and gears work. They will design and make their own pulleys and gears products, selecting and using a variety of

	how to make flatbreads and use a range of techniques to make delicious, appetising food. **1.** Exploring nutrition **2.** Explicit teaching of culinary skills and techniques **3.** Exploring diets from different cultures **4.** Evaluating outcomes **5.** Applying skills **6.** Modifying and improving **<u>At the end of the block, pupils will …</u>** **Know** • Some foods and key ingredients from other cultures • How other cultures' food can be nutritious **Be able to …**	properties of a range of fabrics and consider insulation and waterproofing. 1. Identification of problem 2. Exploring materials 3. Specific teaching of skills relating to the brief 4. Application of skills 5. Evaluation and adaptation **<u>At the end of the block, pupils will …</u>** **Know** • How to waterproof cotton fabric • Which fabrics are both functional and hardwearing **Be able to …** • Use beeswax to waterproof cotton fabric • Repurpose a pair of jeans	contribute to good health and wellbeing. Pupils will also learn how modern British food represents an eclectic mix of cultures. 1. Exploring diets from different cultures 2. Explicit teaching of culinary skills and techniques 3. Exploring how a stir-fry is nutritious 4. Exploring health qualities of spices 5. Applying skills 6. Evaluating outcomes **<u>At the end of the block, pupils will …</u>** **Know** • How foods can be used as medicines • How eating food from different countries	based on what they have learnt 1. Identification of the problem 2. Exploring materials 3. Explicit teaching of skills relating to the brief 4. Application of skills 5. Evaluation and adaptation **<u>At the end of the block, pupils will …</u>** **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	modelling materials to create final outcomes. 1. Exploring pulleys and gears and their applications 2. Developing practical skills 3. Developing designing and problem-solving skills 4. Evaluating outcomes **<u>At the end of the block, pupils will …</u>** **Know** • Types of gears and terminology relating to gears • Common uses of pulleys and gears • How pulleys and gears can change the direction of movement **Be able to …** • Design and make products that

	• Make, roll and cook a flatbread • Prepare a range of vegetables • Present foods to a high standard		can help us be healthy **Be able to …** • Roll and shape ingredients • Slice and ribbon a range of vegetables • Stir-fry vegetables		use pulleys and gears to lift loads • Evaluate the success of their outcomes and recommend improvements
Previous Learning	• Knead, roll and stretch dough • Gluten is a substance found in flour which develops elasticity when kneaded in dough • Yeast is used as a raising agent in bread making • The UK diet is influenced by the diets of different cultures • Bread is a staple of most countries around the world and there are a variety of bread types • Vegetables can be prepared using a range of techniques	• Identify properties of everyday materials • Compare suitability of materials for particular uses • Explore the different properties of a range of fabrics and how these determine their uses • Sort fabrics according to their properties • Plan and carry out a fair test • Understand the water resistant properties of wax • Use a range of stitches including blanket stitch • Be able to make simple fastenings	• Chop, slice, ribbon, peel and grate vegetables • Make the link between good nutrition and improved health, energy levels and resistance to illness • Identify the vitamins and minerals found in a range of vegetables and their associated health benefits • Explain that the nutritional value of vegetables reduces as they are cooked • Explain how changes in lifestyles over time require a change in diet	• Triangles are used in construction to provide stability • A truss is made up of a series of triangles joined together • Identify and recognise structural supports • Understand and use technical vocabulary relating to structures • Create strong joins for paper straws • Structural engineers work with architects to ensure structures withstand forces • Triangles are the most suitable shape to create gussets to reinforce joins and	• Levers and linkages can change the direction of movement and provide a mechanical advantage • Know and use technical vocabulary to describe simple mechanisms and how they work • Gears and pulleys are used to transfer rotational movement • A pulley is a grooved wheel around which a cord or belt is passed which can be used to lift heavy loads • Two connected pulleys will rotate in

	• A healthy diet includes a range of vegetables and ingredients • The visual appeal of food can be improved • Eating a variety of colours of vegetables ensures that we obtain the range of vitamins the body needs	• Make accurate measurements	• Explore the nutritional value of traditional Asian recipes, ingredients and cooking methods • Make a traditional Vietnamese summer roll • Use traditional Asian ingredients such as mint, coriander, fish sauce and rice wine vinegar to add flavours • Identify and use some core ingredients and flavours found in Asian cuisine • Explore how specific vegetables enhance our health and have medicinal qualities, such as garlic and ginger • Use the stir-fry cooking technique	provide stability in a structural frame	the same direction, but forming a figure of eight with the band attaching them will make them rotate in opposite directions • A small gear wheel will rotate faster but with less force than a larger gear wheel • Two connected gear wheels will rotate in opposite directions • Cranes use pulley systems to provide a mechanical advantage • A design brief has specific constraints and limitations • Structures can be made more stable by adding triangular supports or frames • The speed of movement can be altered by changing the size of a pulley
Working as a Designer (Expectations)	• Know some foods and key ingredients from other cultures	• Know how to waterproof cotton fabric	• Know how foods can be used as medicines • Know how eating food from different	• Know engineers use a range of methods to strengthen and reinforce structures	• Know types of gears and terminology relating to gears

	• Know how other cultures' food can be nutritious • Be able to make, roll and cook a flatbread • Be able to prepare a range of vegetables • Be able to present foods to a high standard		• 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		countries can help us be healthy • Be able to roll and shape ingredients • Be able to slice and ribbon a range of vegetables • Be able to stir-fry vegetables		• *Be able to* Identify and describe ways that frames are strengthened and reinforced		• Know common uses of pulleys and 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 their outcomes and recommend improvements	
Design History Link			Levi Strauss (1829 – 1902)				Abraham Darby III (1750 – 1789) Iron Bridge (1779)		George Washington Gale Ferris Jnr. (1859 – 1896) The London Eye (2000)	
Vocabulary	**Core** Culture Presentation Variety Smorrebrod Flatbread Mezze	**Technical** Fibre Knead Unleavened	**Core** Durability Repurpose Functional	**Technical** Beeswax Swatch Insulate	**Core** Culture Migration Spices	**Technical** Medicinal Fragrant Stir - fry	**Core** Frame I – beam Struts	**Technical** Brace Mitre Gussets	**Core** Gear Pulley Mechanism	**Technical** Gear train Driver gear Idler

Year 6	Advent	Advent	Lent	Pentecost	Pentecost

	Food and Nutrition Can street foods save us?	Mechanisms How do pulleys and gears let you see the world?	Food and Nutrition Does food affect the way you feel?	Electrical systems Can switches perform more than one function?	Textiles How can we reduce, recycle and repurpose?
Core Knowledge	In this block, pupils will study and make street foods from different cultures. The aim of these sessions is to encourage pupils to think about their own diet and snacks and how their nutritional value could be improved. The block provides an opportunity for pupils to learn about a range of different cultures. 1. Exploring nutrition 2. Exploring other cultures' foods 3. Explicit teaching of culinary skills and techniques 4. Evaluating outcomes 5. Repeating and improving **<u>At the end of the block, pupils will …</u>** **Know**	In this block, pupils will investigate how pulleys and gears work and design and make their own gears product. Pupils will select and use a variety of modelling materials to create final outcomes. 1. Exploring pulleys and their applications 2. Experimenting with different pulley systems 3. Developing design and problem solving skills 4. Developing practical skills 5. Evaluating outcomes **<u>At the end of the block, pupils will …</u>** **Know** • Types of pulley systems and gears	Pupils will learn how to cook foods that are often pre-made and processed. They will learn and apply techniques to make dishes designed to help improve energy levels, mood and future health. 1. Exploring nutrition 2. Explicit teaching of culinary skills and techniques 3. Exploring healing qualities of food 4. Evaluating outcomes 5. Exploring sensory qualities of food 6. Applying skills 7. Modifying and improving **<u>At the end of the block, pupils will …</u>** **Know** • The difference between slow	In this block, pupils will learn how switches can be combined with electrical components in different ways to change the functionality of a product. 1. Revisit switches and circuits and the associated vocabulary 2. Explore how multiple switches and components can be included in a circuit 3. Incorporate multiple switches and components into a product to meet a design brief **<u>At the end of the block, pupils will …</u>** **Know**	In this block, pupils will learn how they can reduce waste by recycling and repurposing snack packets and plastic bags into useful items. 1. Identification of the problem 2. Explicit teaching of skills 3. Exploring materials 4. Application of skills 5. Evaluation and adaptation **<u>At the end of the block, pupils will …</u>** **Know** • Plastic waste can be recycled and repurposed into practical, useful items **Be able to …** • Make a crochet hook out of a chopstick

	• What street foods are • How snacks can be good foods to eat **Be able to …** • Make a burrito • Make and roll bread dough • Make a savoury pastry	• Common uses of pulleys and gears • How pulleys and gears can create simple mechanisms and change direction of movement **Be able to …** • Design and make a model Ferris wheel powered by gears • Evaluate the success of their outcomes and recommend improvements	release and quick release carbohydrates • How food can improve their mood and energy levels **Be able to …** • 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	• More than one switch can be used to change the functionality of a product **Be able to …** • Use switches to adapt a product in response to a design brief	• Use plastic bags and snack packets to create practical items
Previous Learning	• The UK diet is influenced by a range of different cultures • The bridge and claw are techniques used to chop, slice and dice ingredients safely T • he wider the range of vegetables we include in our diet, the wider the range	• A pulley is a grooved wheel around which a cord or belt is passed which can be used to lift heavy loads • Two connected pulleys will rotate in the same direction, forming a figure of eight - the band attaching them makes them rotate	• Know the basic food groups • Hold utensils correctly • Dice vegetables using the claw method • Know the difference between simple and complex carbohydrates • Cook pasta and a simple tomato sauce	• Batteries, bulbs, motors, switches and buzzers are components of electrical circuits • A continuous flow of electrical energy is needed to enable an appliance to work • A switch is a control mechanism used to interrupt the flow of electricity in a circuit Some switches have	• A chain stitch can be made using yarn • Crochet fabric can be created with a simple chain stitch using recycled materials • A crochet hook can be made from a chopstick • Recycled materials can be repurposed • Recycled materials can be repurposed

	of nutrients we take in • Bread is a staple food in most cultures Yeast is a type of fungus that ferments when added to water, which causes bread dough to rise Kneading bread dough develops the gluten in flour and creates an elastic consistency • The UK diet is influenced by a range of different cultures • Shallow frying is a method of cooking food over heat in a small amount of oil	in opposite directions • Pulley systems are used to lift heavy loads with little effort • Pulleys are used to transfer rotational movement • Speed of movement can be changed by altering the size of pulley wheels • Gears are toothed wheels on a shaft that when placed together are used to transfer rotational movement • A small gear wheel will rotate faster but with less force than a larger gear wheel • Two connected gear wheels will rotate in opposite directions • A driver wheel causes other wheels to rotate • An idler gear is used for support or guidance instead of power transmission	• Know how to use seasoning to adjust flavour • Identify some foods which have remedial qualities • Make a basic stock • Use a range of culinary techniques to prepare vegetables: dice, chop, grate, peel	more than one function • There are different types of switches • Some switches perform one function only, whilst others are multi-functional • A circuit diagram is a graphical representation of an electrical circuit • Series circuits are where components are connected together in one loop • If one component fails or is turned off in a series circuit then none of the components will work • In series circuits, components work simultaneously • Parallel circuits are where components are connected in separate loops • If one component is switched off in a parallel circuit, the	• The properties of recycled materials will determine how they are repurposed

			• A gear train is a system of gears which transmits motion from one shaft to another				rest of the components will still work • In parallel circuits, components work independently of each other			
Working as a Designer (Expectations)	• Know what street foods are • Know how snacks can be good foods to eat • Be able to make a burrito • Be able to make and roll bread dough • Be able to make a savoury pastry		• Know types of pulley systems and gears • Know common uses of pulleys and gears • Know how pulleys and gears can create simple mechanisms and change direction of movement • Be able to design and make a model Ferris wheel powered by gears • Be able to evaluate the success of their outcomes and recommend improvements		• Know the difference between slow release and quick release carbohydrates • Know how food can improve their mood and energy levels • Be able to dice, slice, peel, grate and cook a range of vegetables • Be able to make a sauce and a stock • Be able to use height and colour to improve the visual appeal of food		• Know more than one switch can be used to change the functionality of a product • Be able to use switches to adapt a product in response to a design brief		• Know plastic waste can be recycled and repurposed into practical, useful items • Be able to make a crochet hook out of a chopstick • Be able to use plastic bags and snack packets to create practical items	
Design History Link			The London Eye (completed 2000)				Albert Sadacca (1901 – 1980) Inventor of Christmas tree lights		Isatou Ceesay (born 1972)	
Vocabulary	<u>Core</u> Street food Culture Snack	<u>Technical</u> Nutrient Prove Fry	<u>Core</u> Pulley Movable pulley Fixed pulley	<u>Technical</u> Block and tackle Rack and pinion Driver gear Driven gear	<u>Core</u> Carbohydrates Staple Nutrient	<u>Technical</u> Saute Translucent Dice	<u>Core</u> Switch Parallel circuit Series circuit Component	<u>Technical</u> Functionality Multi – function Brief Simultaneous	<u>Core</u> Recycle Repurpose Reduce	<u>Technical</u> Chain Seal Skein